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NESO Operational Transparency Forum

25 June 2025

NESO
National Energy System Operator

Introduction | Sli.do code #OTF

To ask questions live & give us post event feedback go to Sli.do event code #OTF

- **Ask your questions as early as possible** as our experts may need time to ensure a correct answer can be given live.
- **Please provide your name or organisation**. This is an operational forum for industry participants therefore questions from unidentified parties will not be answered live. If you have reasons to remain anonymous to the wider forum, please use the advance question or email options below.
- **The OTF is not the place to challenge the actions of individual parties** (other than the NESO), and we will not comment on these challenges. This type of concern can be reported to the Market Monitoring team at: marketreporting@neso.energy
- **Questions will be answered in the upvoted order whenever possible**. We will take questions from further down the list when: the answer is not ready; we need to take the question away or the topic is outside of the scope of the OTF.
- **Sli.do will remain open until 12:00**, even when the call closes earlier, to provide the maximum opportunity for you to ask questions. After that please use the advance questions or email options below.
- **All questions will be recorded and published.** Questions which are not answered on the day will be included, with answers, in the slide pack for the next OTF.
- **Ask questions in advance** (before 12:00 on Monday) at: https://forms.office.com/r/k0AEfKnai3
- **Ask questions anytime** whether for inclusion in the forum or individual response at: box.nc.customer@neso.energy

Stay up to date on our webpage: https://www.neso.energy/what-we-do/systems-operations/operational-transparency-forum (OTF Q&A is published with slide packs)

Note: to access previous OTF webinars from Slido click on the three lines to the left of forum title

Future deep dive / focus topics

Slido code #OTF

Today's Focus Topics/deep dives

Space Weather: SWIFTER project update – 25 June

Voltage Control Tests update – 25 June

Future

Managing Low Demand – 2 July

Centralised Strategic Network plan (CSNP) – 9 July

Introduction to Skip Rates – 16 July

Balancing Costs: June costs – 23 July

If you have questions/suggestions of areas to cover during above presentations or ideas for deep dives or focus topics you would like us to consider, please send them to us at: box.nc.customer@neso.energy

NESO National Energy System Operator

Iberian Peninsula Outage Update

As a prudent system operator NESO works closely with its global counterparts to learn from each other and to maintain our world leading levels of resilience and reliability. We will consider the findings of the report by the Spanish Government, as well as the ENTSO-E report expected later this year, to understand what lessons are applicable given the differences between the GB and Spanish electricity network designs.

Update on NESO Changes

Since becoming the National Energy System Operator in October 2024, we have been on a journey to separate our systems, processes and services from National Grid.

We are now migrating to NESO Microsoft M365. This change will occur gradually between now and early July 2025, affecting all personal mailboxes, shared mailboxes and distribution lists.

Slido code #OTF

What is changing?

We're migrating to Microsoft 365 and updating our email domain to **@neso.energy**.

- Emails sent to **@nationalenergyso.com** will still reach us.
- You may receive an auto-response from our mailboxes notifying you of the change.
- We are phasing out the use of **@nationalgrideso.com** and **@nationalgrid.com** for NESO communications. If you communicate with an older email you will **receive an automatic out-of-office (OOO) reply** from the old mailbox, advising of the new **@neso.energy** address. This is expected and part of the transition.
- **All mailboxes, including shared & operational mailboxes are migrating throughout June and July.** If you currently contact any shared mailboxes, you'll need to update the domain to continue reaching the right teams.

What does this mean?

- From July 2025, start using our new email addresses ending in @neso.energy for all correspondence with NESO.
- Stop using @nationalgrideso.com and @nationalgrid.com when contacting NESO.
- **If you contact mailboxes**, please update the email address by replacing the old domain with **@neso.energy**.
  For example:
  old: name@nationalgrideso.com
  new: name@neso.energy

<u>If you use Microsoft Teams to contact us:</u>

- Ask your IT administrator to whitelist the domain neso.energy in your Microsoft 365 environment.
- To ensure continued access to Teams and smooth communication, we have proactively whitelisted known domains for our customers. However, if you experience any access issues, please raise an incident ticket by calling 0800 917 711 so we can investigate and whitelist your domain if necessary.

Quick Reserve Phase 2 Webinar

End to end onboarding process

Join us for a webinar where we will run through the full process for joining phase 2 of our Quick Reserve service on **3 July** at **10:30am**.

We'll deep-dive into registering for the service and the process for both **BM** and **Non-BM** market participants to take part, which include API requirements for **existing providers**

A recording of the session will also be available on the Quick Reserve webpage.

Sign up here

box.futureofbalancingservices@nationalenergyso.com

Future Event Summary

Slido code #OTF

Event	Date & Time	Link
Quick Reserve Phase 2 Webinar	3rd July (10:30-11:30)	Sign up here
Response & Reserve Locational Procurement Webinar	9th July (15:00-16:00)	Register here

Check out the NESO Events Calendar for more...

NESO National Energy System Operator

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Update: Commercial offer prices on Wind BMUs

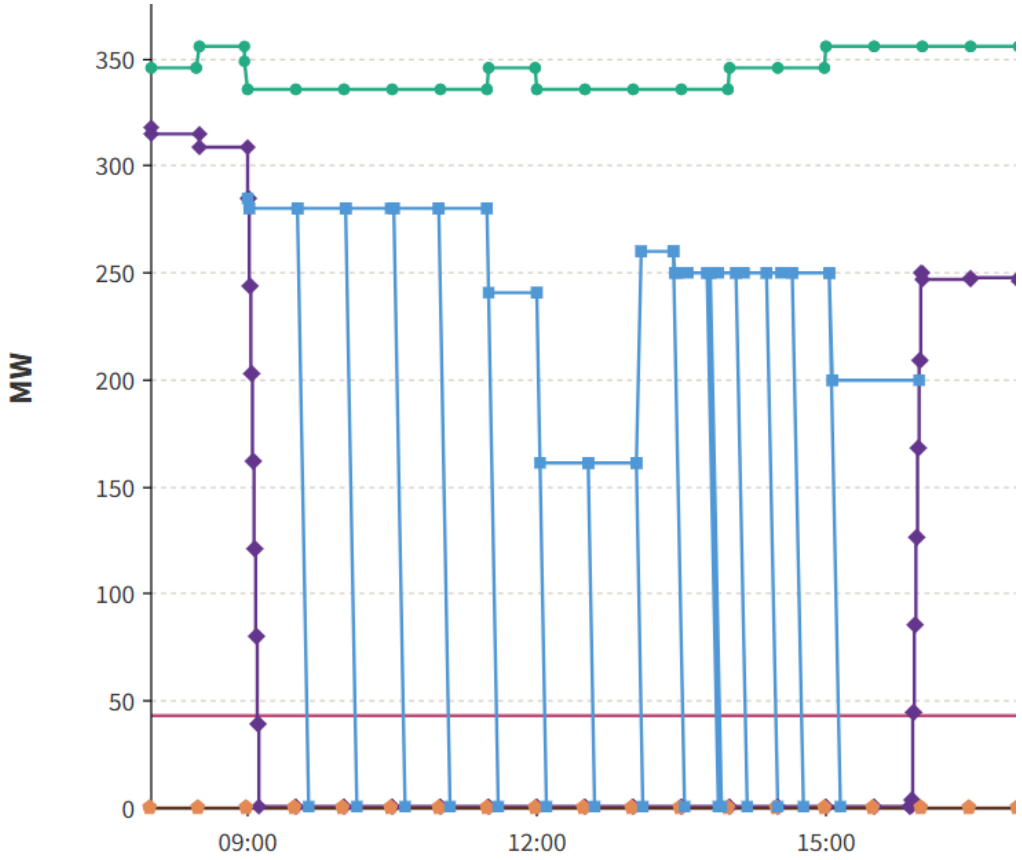
Following the recent deep dive on 'Submission of offer prices in the BM' presented at the OTF on the 28th May 2025, we are pleased to provide the positive progress update below:

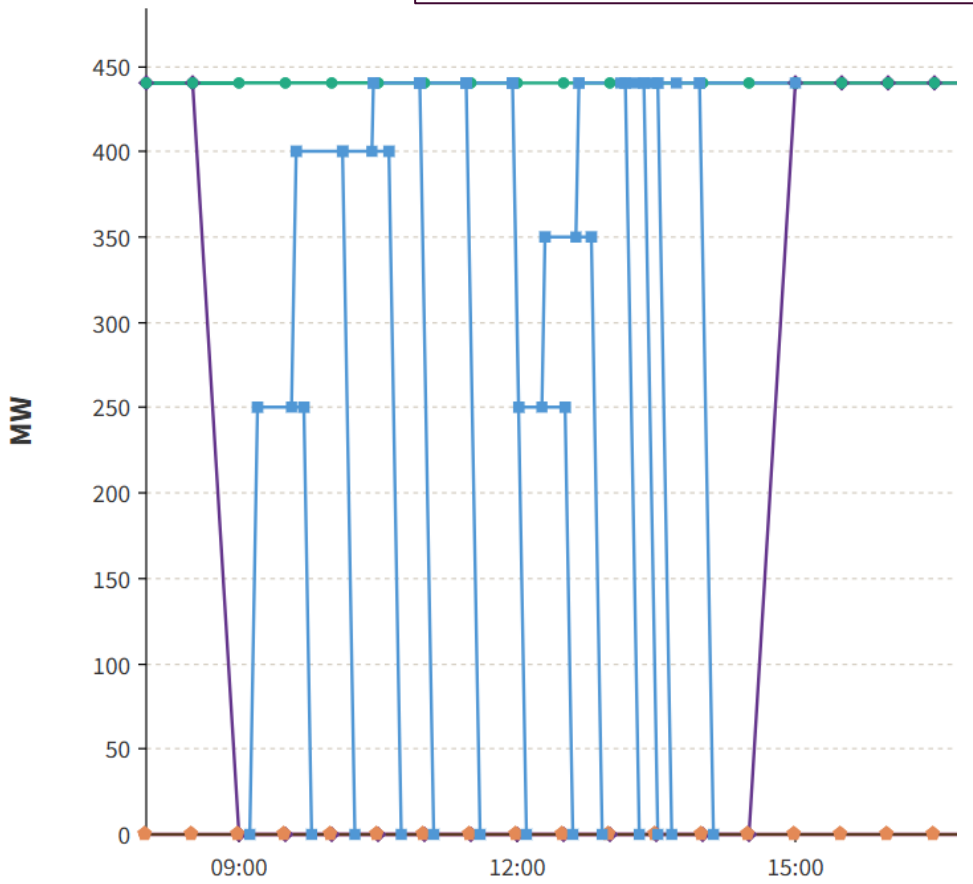
During an extended period (>6hrs) of negative pricing on Monday 23rd June, we saw ~3GW of Wind BMUs deload with approximately 60% of these providing commercial offer prices to remain generating if required. This allowed the ENCC to carefully manage upward and downward regulation in a secure and economic manner and is a testament to the value of strong customer relationships and the strength of customer forums like the Wind Advisory Group (WAG).

The NESO control room issued a significant number of BOAs to these BMUs to keep them generating, thus utilising the commercial offer prices submitted. Some examples of these BOAs can be seen on the next slide.

Example BOAs

Legend
Green = Maximum Export Limit (MEL)
Purple = Physical Notification (PN)
Blue = Accepted BOAs





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Voltage Control Tests 2025 – What is it?

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- Annual testing of Voltage Control capability took place in June. Voltage Control, or Voltage Reduction, is a provision in Grid Code-Operating Code 6 that allows demand to be reduced as an emergency action when there isn't enough generation to meet demand.

- Tests are carried out to test operational communication between NESO and DNOs and to validate the volume of demand reduction that can be expected.

- Each stage should deliver between 2% and 4% voltage reduction and the expectation is that each stage will deliver around 1.5% demand reduction.

- Notification of each test happened through BMRS – firstly 24 hours before the test and again shortly before the test.

- Customers may have noticed a change in their electricity supply, e.g. dimming of lights, but they should be otherwise unaffected during the tests.

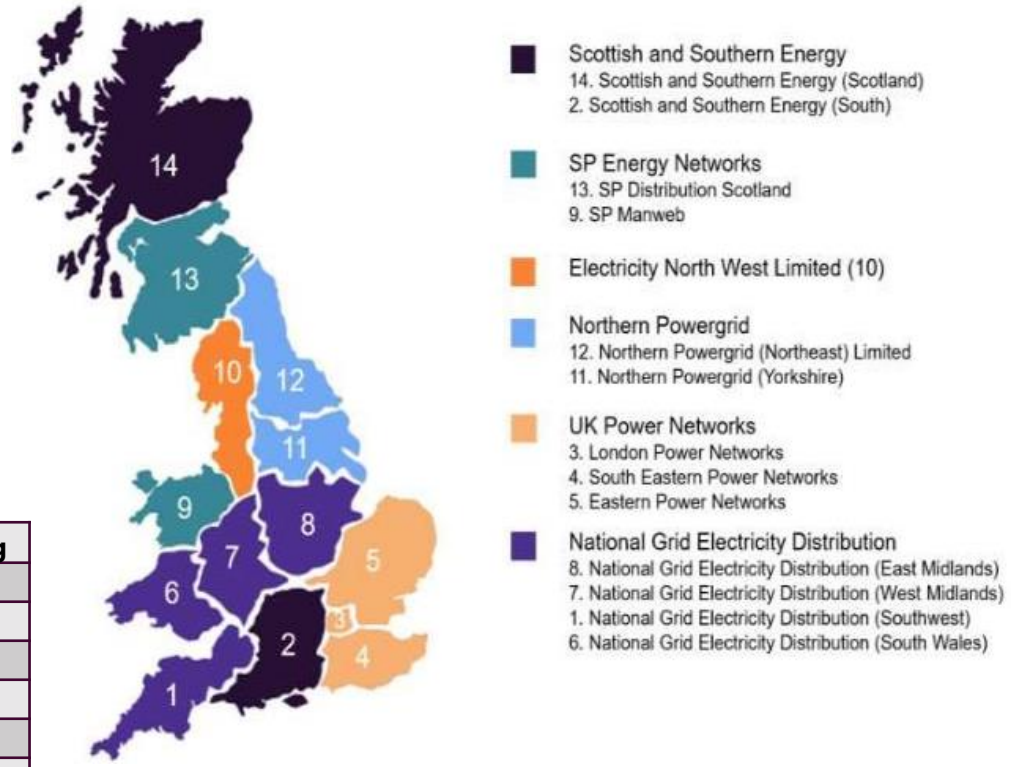
Voltage Control Tests 2025 – When and where

Two tests took place last week, the first test will be the ‘Northern’ block (9-14 in diagram) and the second will involve the ‘Southern’ block (1 -8).

Test details:

- Northern block test took place on Tuesday 17th of June between 10:30 and midday
- Southern block test will took place on Thursday 19th of June between 10:30 and midday

Distribution Network Operator	Test Date (2025)	Block	Testing happening
Scottish Power Distribution (SPD)	17 June	Northern	Stage 1 and 2
SP Manweb plc			Stage 1 and 2
Northern Powergrid (Northeast) Limited (NPG)			Stage 1 and 2
Northern Powergrid (Yorkshire) plc (NPG)			Stage 1 and 2
Scottish Hydro Electric Power Distribution plc			Stage 1 and 2
Electricity North West Limited (ENW)			Stage 1
Southern Electric Power Distribution plc (SSE)	19 June	Southern	Stage 1 and 2
National Grid Electricity Distribution (South Wales) plc			Stage 1 and 2
National Grid Electricity Distribution (South West) plc			Stage 1 and 2
National Grid Electricity Distribution (West Midlands) plc			Stage 1 and 2
National Grid Electricity Distribution (East Midlands) plc			Stage 1 and 2
Eastern Power Networks plc (UKPN)			Stage 1
London Power Networks plc (UKPN)			Stage 1
South Eastern Power Networks plc (UKPN)			Stage 1



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Voltage Control Tests 2025 – Initial results

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- Working with DNOs to analyse the results and assess the level of demand reduction achieved.

Initial results from reported demand reductions		
	Tuesday 17th	Thursday 19th
Stage 1	4.3%	1.3%
Stage 2	4.3%	1.26%
From Grid Code OC6.5.3: "…[each stage] can reasonably be expected to deliver around 1.5 percent Demand reduction"		

- Communications test between control room was successful.
- Wider engagement this year with more stakeholders. We had discussions and we will look to put more enduring processes in place for future tests.
- If suppliers with access to smart meter data would like to discuss their observations during the testing periods then please get in touch.

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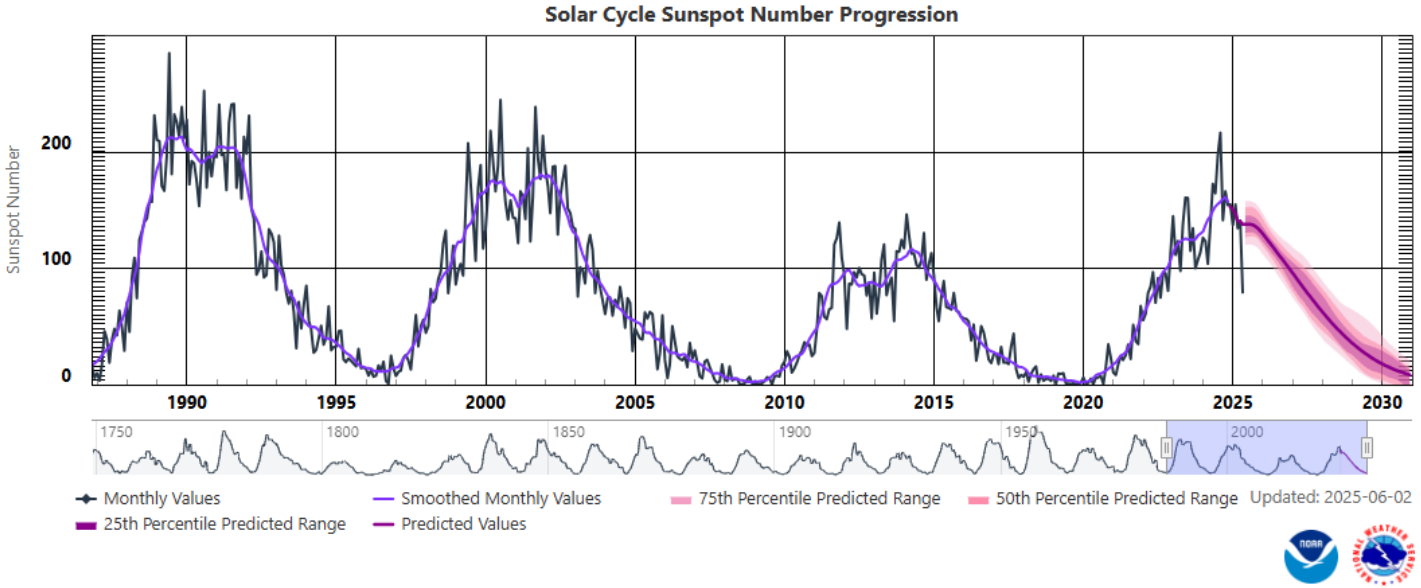
NESO Space Weather – SWIFTER Update

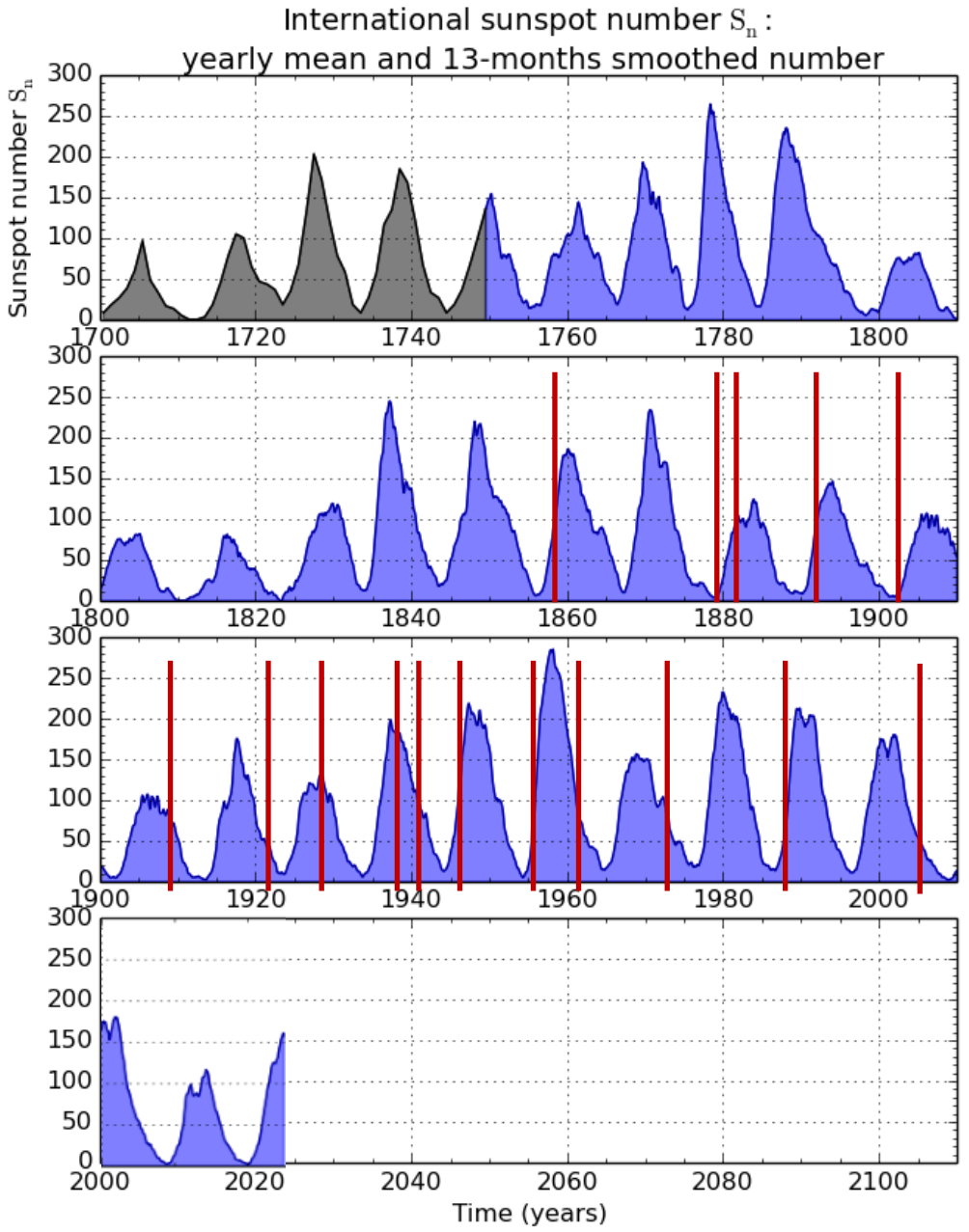
Mathew Hofton - National Planning Manager

June 2025

NESO
National Energy System Operator

Solar Cycles





- There is an approximate 11 year solar cycle
- We move from solar minimum, with no sunspots (on almost all days) on the sun and very few CMEs to solar maximum with many sunspots and many CMEs
- There are many more ordinary sized flares and CMEs during solar maximum
- But largest events are scattered throughout the solar cycle and are not restricted to period of solar maximum.

Impacts on the Power Grid – Geomagnetically Induced Currents

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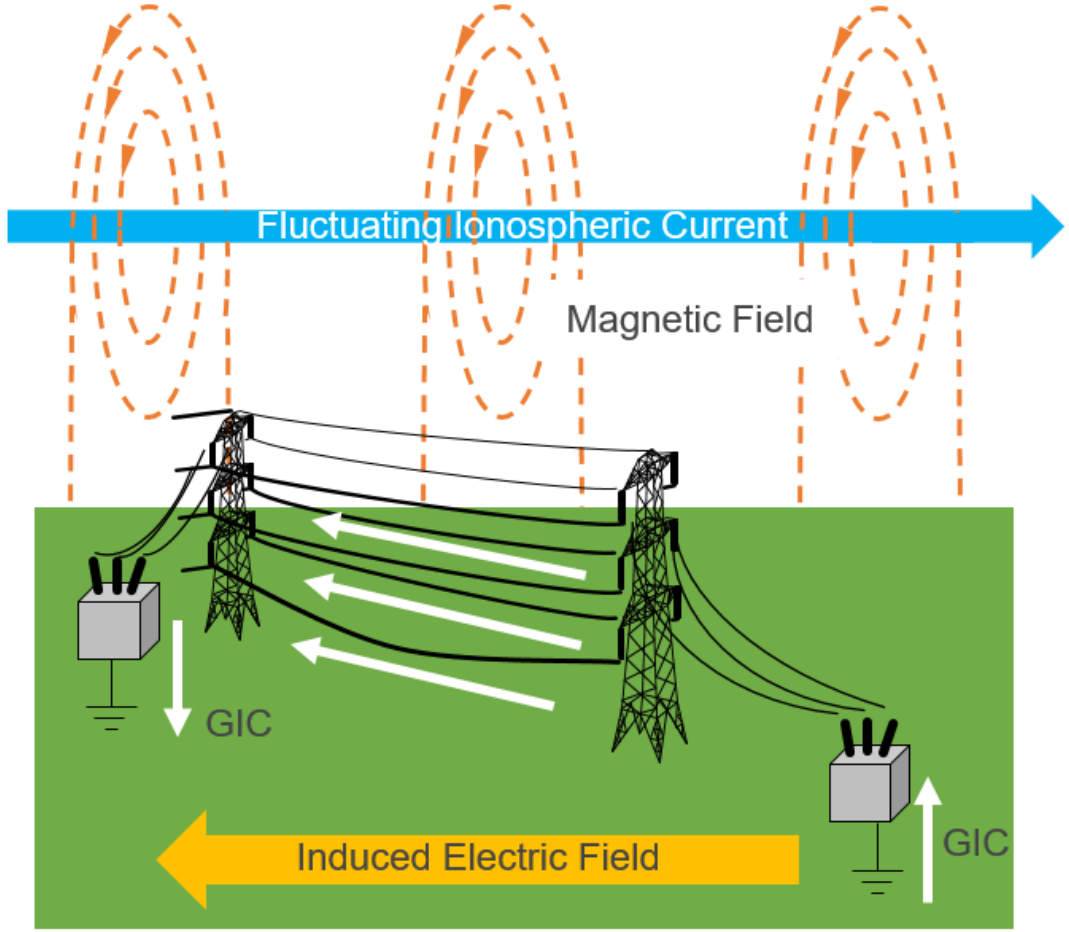
GIC can cause part-cycle saturation in transformer cores

Transformer heating, damage in severe cases

An increase in absorption of reactive power, voltage depression

Harmonics, protection mal-operation



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Project SWIFTER update

Slido code #OTF

Space Weather Impact for Future Electricity System Resilience

The Problem

What are the potential impacts of a reasonable worst case scenario severe space weather event on Great Britain's electricity system.

Which mitigations should be implemented, pre-event, during event, and post event to reduce the impact and to inform contingency and response plans developed by electricity industry participants?

Department for Energy Security & Net Zero

NESO National Energy System Operator

Met Office

BGS British Geological Survey

FRAZER-NASH CONSULTANCY A KBR COMPANY

Lancaster University

UNIVERSITY OF OXFORD

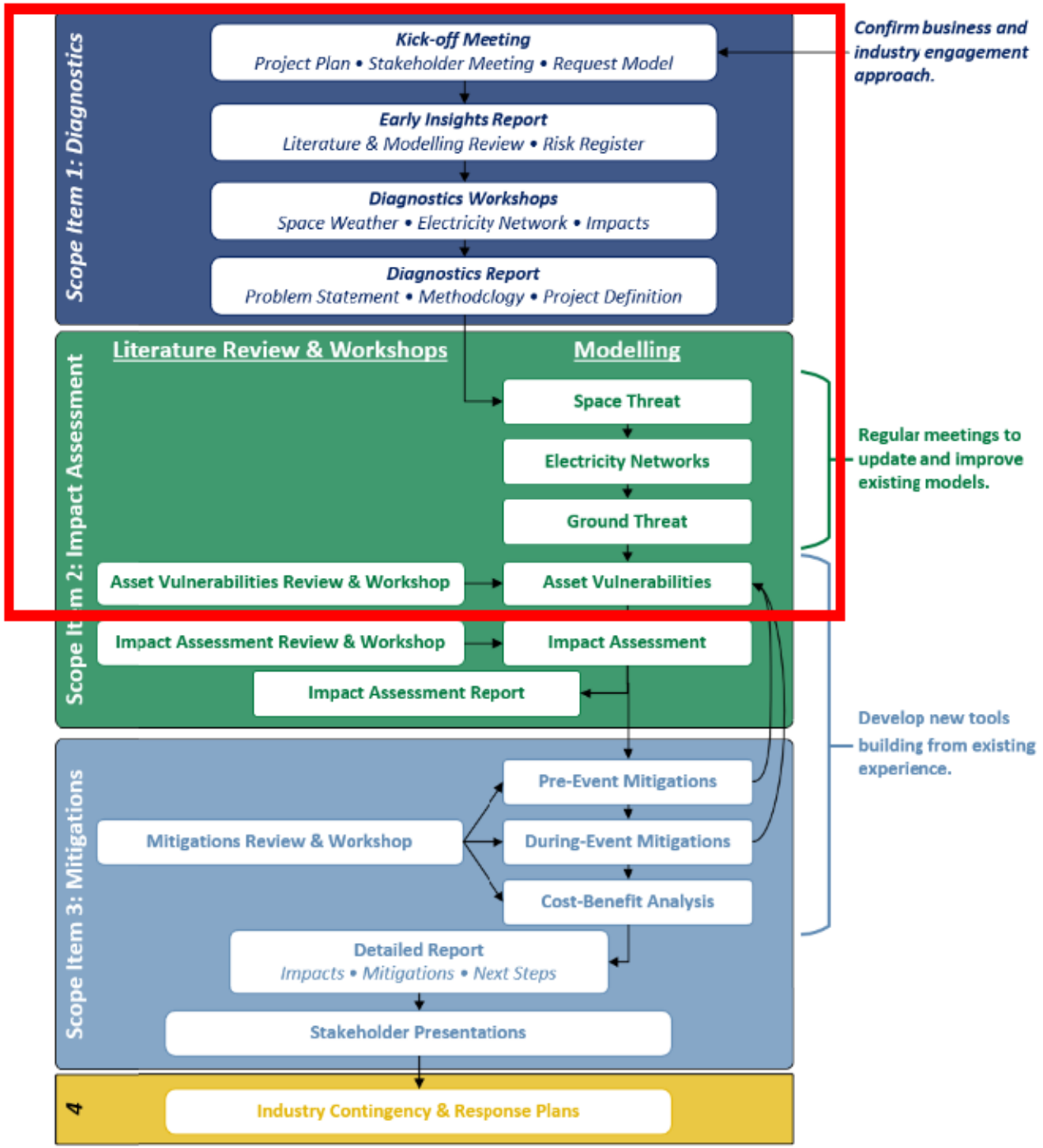
Project Objectives and Methodology

The objectives map to the project methodology:

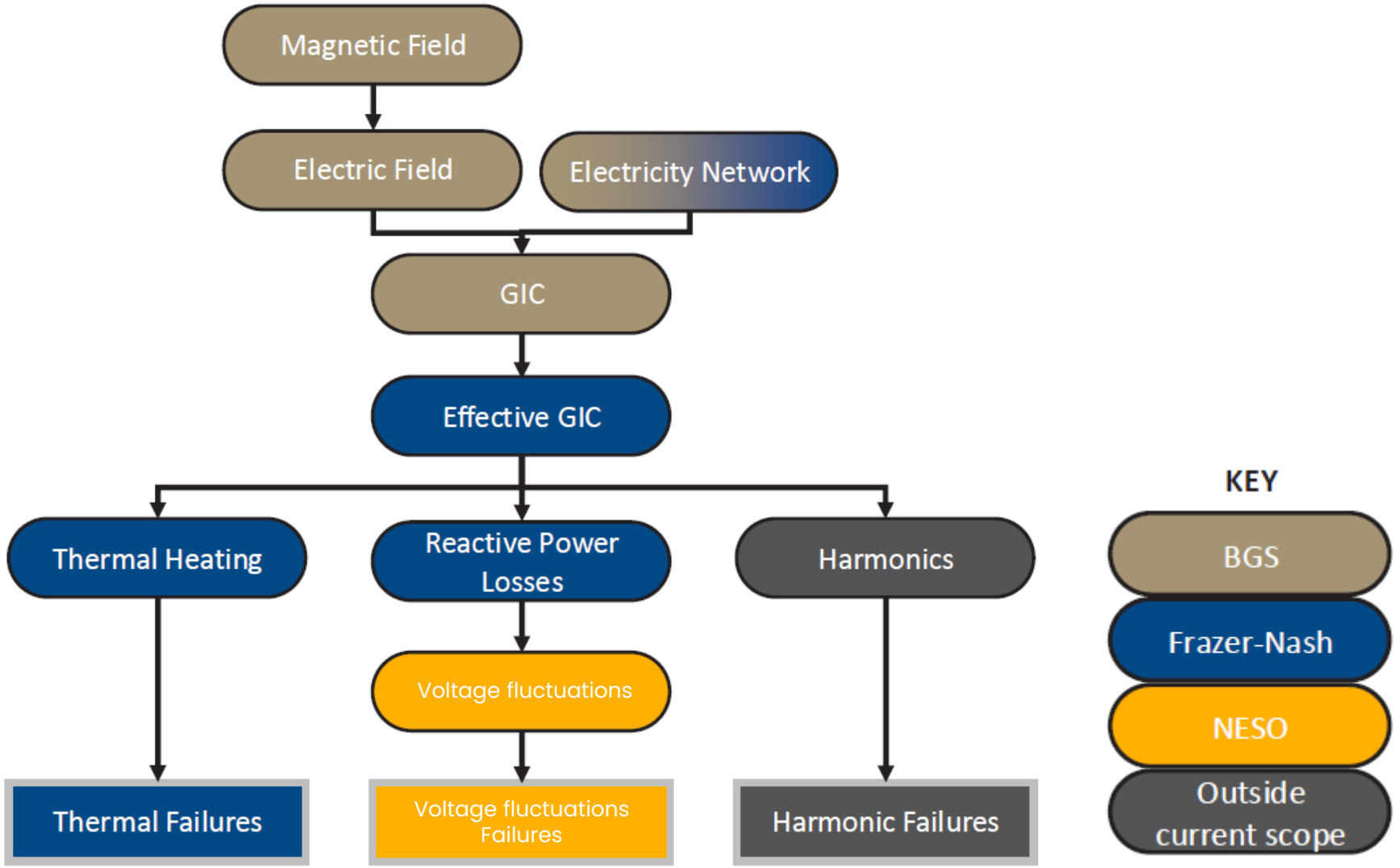
Engage with stakeholders and experts to understand the problem and develop the methodology.

Cary out detailed modelling to inform and up-to-date assessment of the impact of a reasonable worst-case scenario space weather event on the GB system.

Assess and model potential mitigations that could be implemented, both pre-event and during an event to inform contingency and response plans.



Vulnerability Assessment Methodology



Modelling Electric Field

The SWIMMR project derived new transfer functions from magnetotelluric surveys at 69 locations. Using these transfer functions, Figure 5 shows the geoelectric field approximated for the peak of the March 1989 event. The SWIMMR surveys provided additional detail to previous studies which were based on surface geology. These helped to show that geoelectric field measurements around West Yorkshire were significantly elevated compared to previous models.

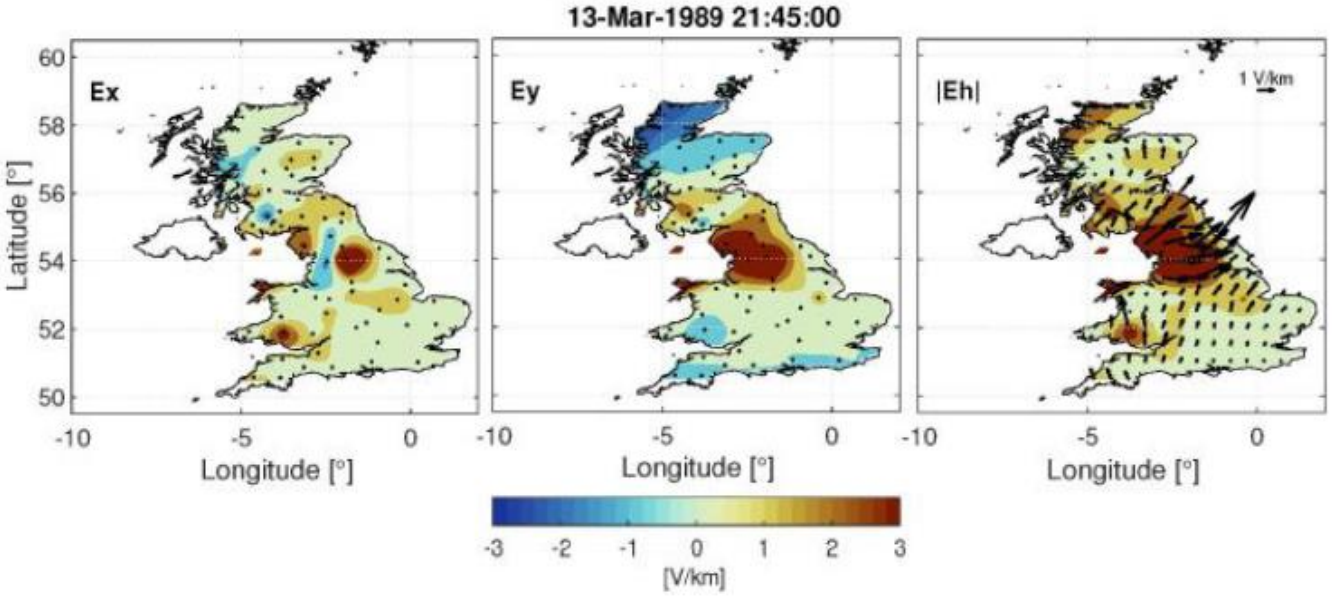


Figure 5: Snapshot of the geoelectric field modelled for the peak of the March 1989 storm in the North (Ex), East (Ey) and total field magnitude (Eh) and direction (arrows). Note the large magnitude in the Lancashire-Yorkshire regions.

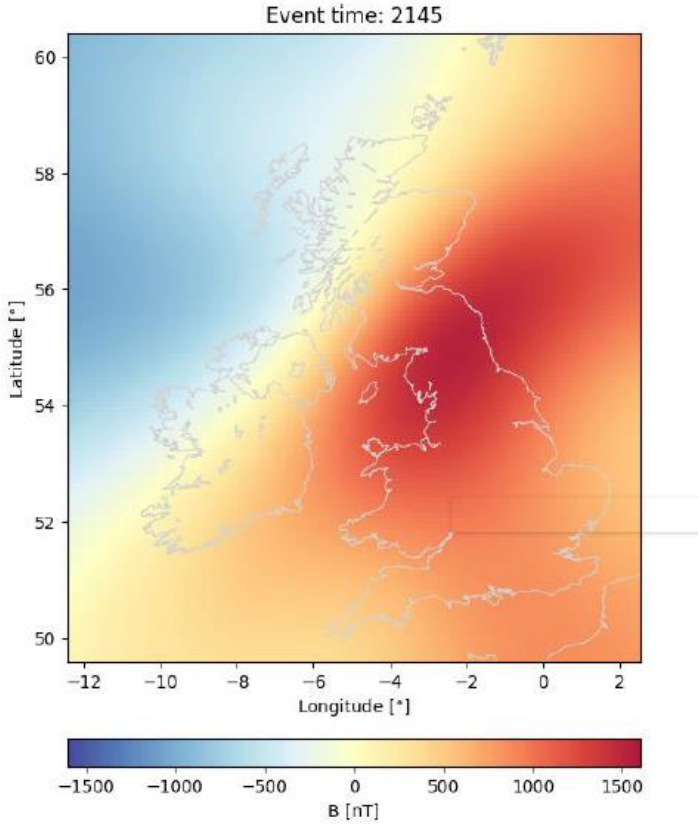


Figure 3: Magnetic field strength during event peak from March 1989 event.

The 1989 event (1 in 40) was then scaled to a 1 in 200 and 1 in 500 year event.

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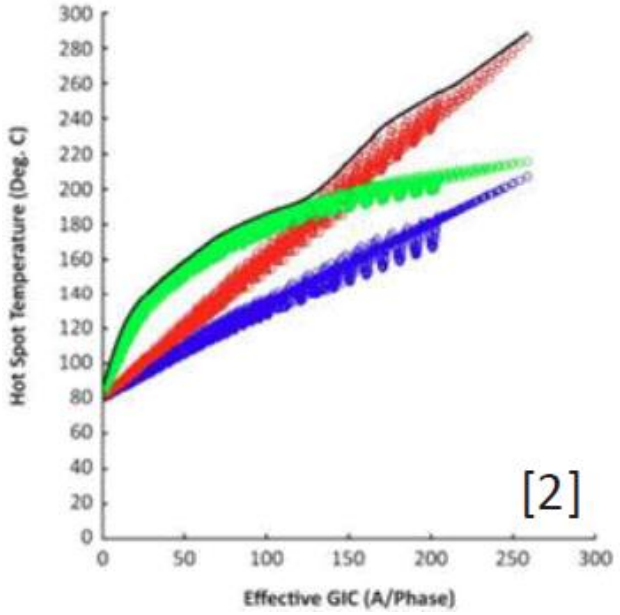
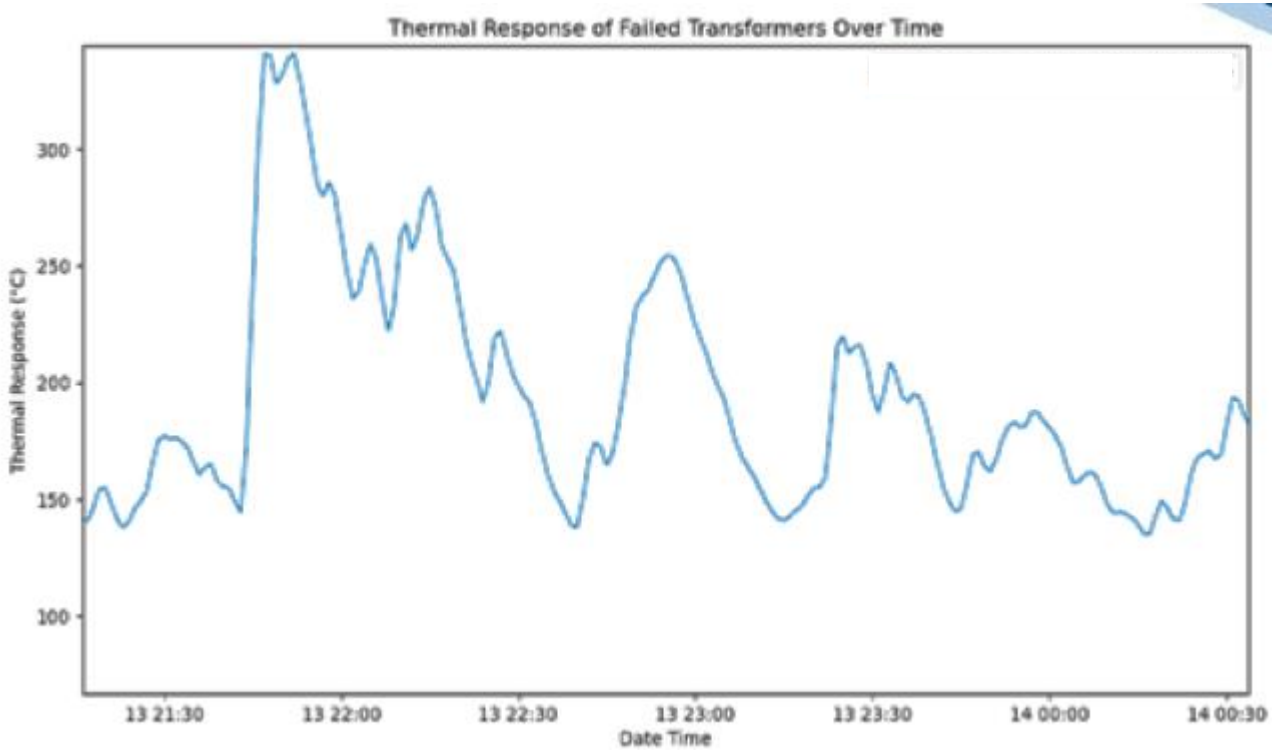
Thermal Heating

Electric field then converted to effective GIC and transformer thermal heating.

Total time over 75 A (min)	Maximum GIC reached (A)	Upper Bound Temperature (°C)	Condition (1-10)
49	230.8	**> 247**	2
32	223.1	**> 247**	3
29	211.7	**> 247**	2
2	96.2	182	2
1	93.1	182	2
2	86.9	179	1
2	83.9	179	2
1	81.3	179	6



NERC, “Screening Criterion for Transformer Thermal Impact Assessment,” NERC, 2017.



Voltage Fluctuation: Reactive Power Loss

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- Frazer Nash provided NESO with a timeseries of GIC driven reactive power losses at the different nodes of the GB network during a RWCS event.
- The minimum and maximum system wide reactive power loss in the RWCS data set were 4.2 MVAr and 2522 MVAr, respectively. Up to 1000 MVAr of the maximum system reactive power loss was concentrated around the southern Scotland, and the northwest England and west midlands.
- For appropriate comparison, no changes were made to the assumptions on transformer tap settings and the availability of reactive power compensation equipment in both the base case and GIC cases.
- The results are based on static analysis. Since the GIC driven MVAr loss profile is time-varying with a resolution of 1-min, there is also a need to study the system response to the min-by-min variations in MVAr losses.
- At the top 50 sites, MVAr losses ranged from between 12MVAr to 119MVAr.
- In a high network flow scenario, the highest resulting voltage drop at a single site was -6.5kV

Voltage Fluctuation: Power Flows

Slido code #OTF

- In isolation the resulting drop in system voltage was not large enough to cause concern. However, during high system flows boundary flows can be limited by low volts.
- Operationally, the network would be most susceptible to a voltage drop when there is high wind generation in Scotland and the north of England & Wales causing high north – south power flows.
- Power transfer from Scotland to the north of England & Wales through the B6 and B7 boundaries, and from the north and midlands of England & Wales to the south of England & Wales, through the B9 boundary would typically be limited to prevent voltage collapse following a credible network fault.
- There may be a requirement to reduce some constraint transfers during large Space Weather events to avoid the risk of low voltage impacts. B6 & B7 boundaries would have to be dropped by ~350MW, while that of the B9 boundary would have to be decreased by 200MW.

Interim Conclusions

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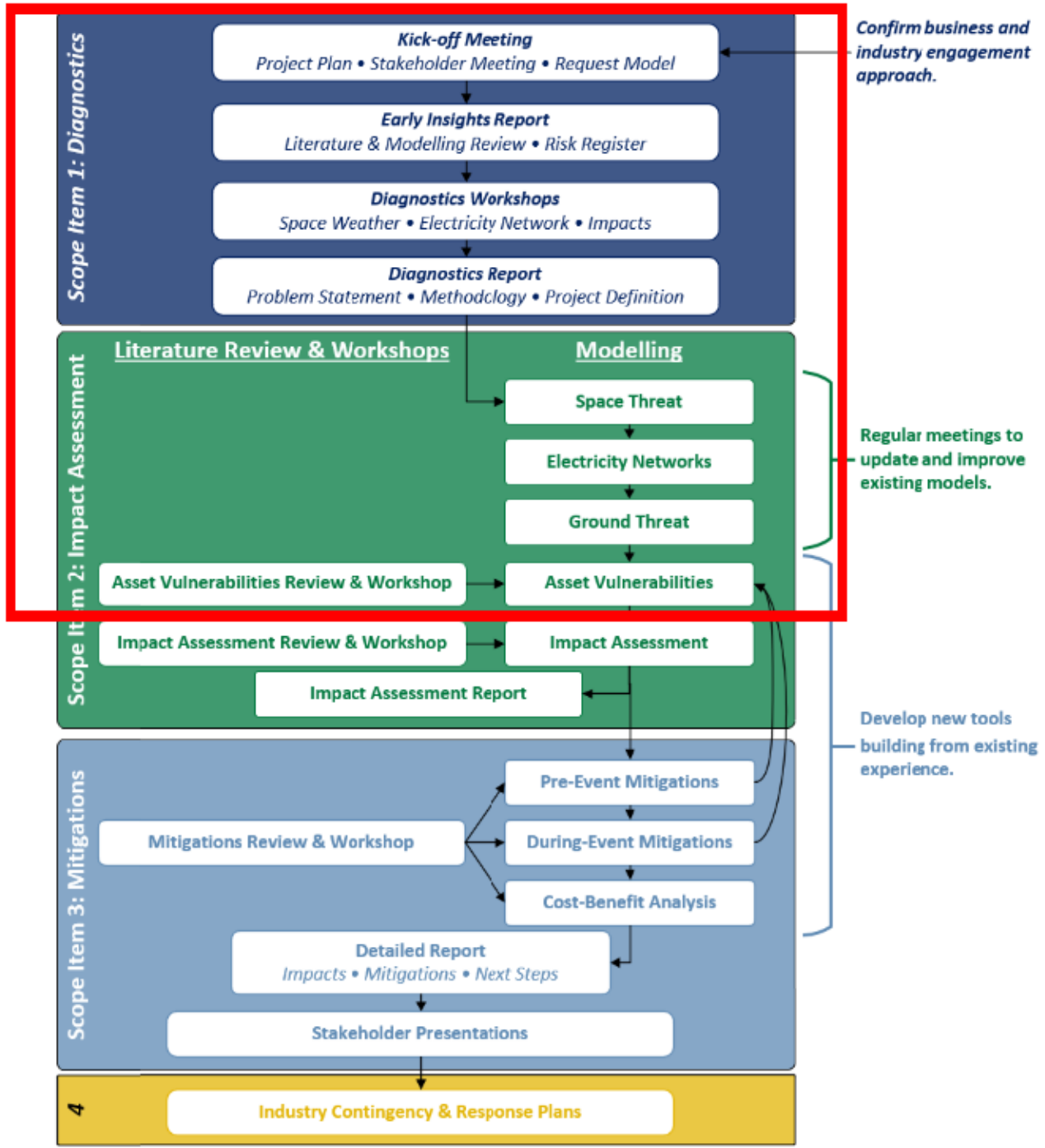
- Three transformers identified as most vulnerable to thermal heating failure from a reasonable worst case scenario space weather event using the current models.
- Even if those transformers were to fail catastrophically, they would be unlikely to cause network outages. Significant cost would be incurred through network constraints and for transformer replacement, however.
- Mitigations such as GIC blocking may help protect the most vulnerable transformers.
- Risk of voltage fluctuations can be managed by reducing high power transfers during large events.
- The networks may still be vulnerable to harmonics. Modelling vulnerability to harmonics is technically challenging and further work is required to determine capability and availability of data to perform this work.

Next Steps

Base the impact assessment on the costs of failure of vulnerable transformers, and cost of other mitigations.

Simulate and evaluate the effectiveness of mitigations.

- Re-simulate the BGS GIC model, FrazerNash effective GIC and thermal heating models with the most at-risk transformers disconnected from the network. This would help to understand whether disconnection or GIC blockers could help to protect the most vulnerable transformers without causing issues elsewhere on the network.
- Assess the effectiveness of constraint flow reduction to manage voltage fluctuations, consider any alternative actions.
- Evaluate the costs and benefits of proposed mitigations



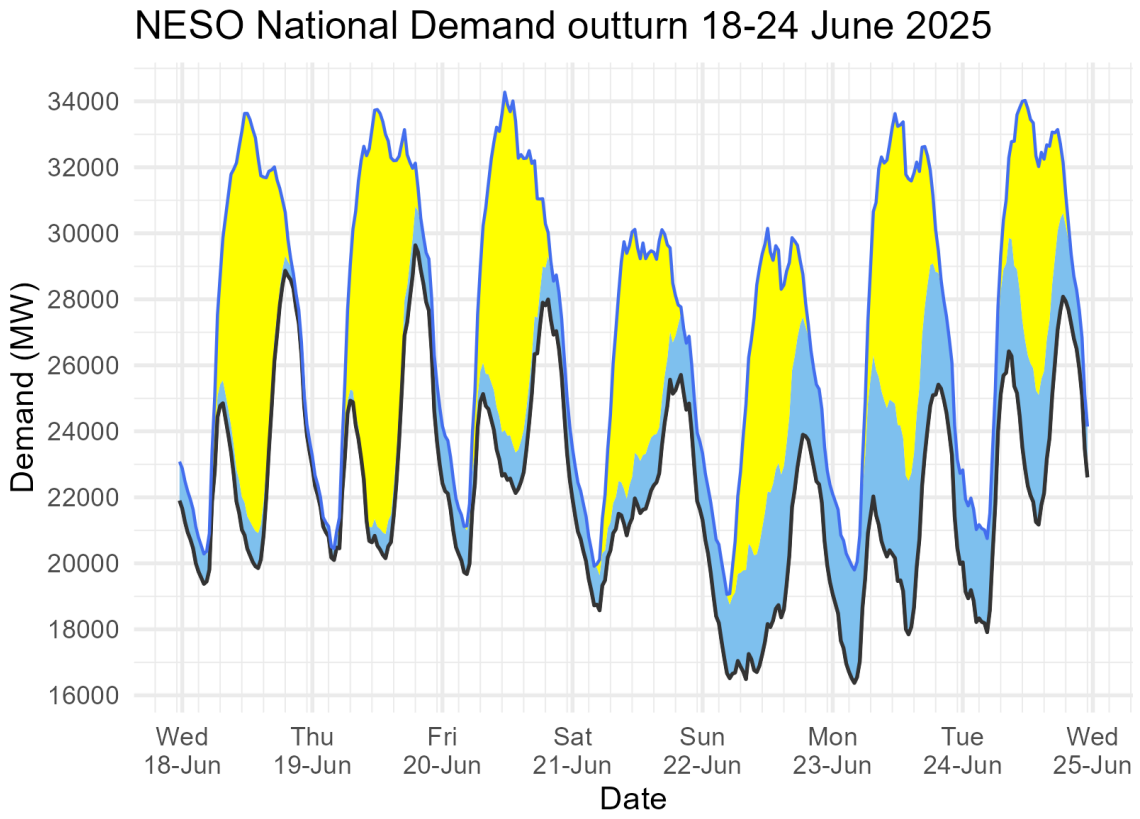
Future Work

Slido code #OTF

- Improve existing models
- Validate with measured GIC data
- Capture actual transformer earthing resistances
- Model the England & Wales 132 kV network
- Perform Finite Element Analysis for detailed temperature response
- Simulate interconnector and generator owned transformers
- Develop harmonics failure simulation capability
- Build an integrated model
- Research circuit breaker operation and flashover failure likelihood during high GIC

Demand | Last week demand out-turn

Slido code #OTF



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 NESO has no real time data.

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

Distributed generation

Peak values by day

Date	OUTTURN	
	Daily Max Dist. PV (GW)	Daily Max Dist. Wind (GW)
18 Jun 2025	12.2	1.2
19 Jun 2025	12.6	1.7
20 Jun 2025	10.4	1.7
21 Jun 2025	7.5	2.1
22 Jun 2025	8.3	4.3
23 Jun 2025	9.6	4.7
24 Jun 2025	7.5	4.0

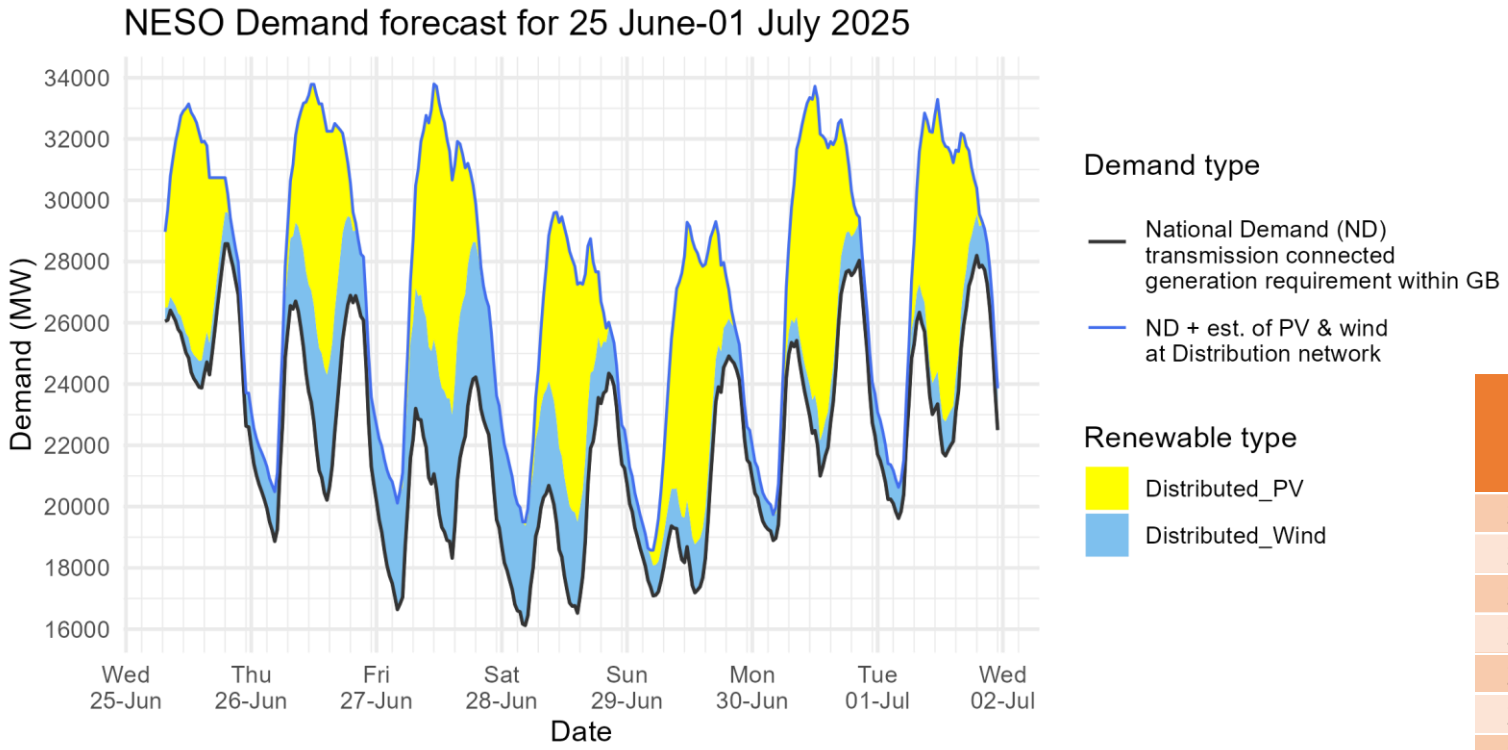
National Demand

Minimum Demands

Date	Forecasting Point	OUTTURN		
		National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
18 Jun 2025	Daytime Min	19.9	1.1	11.4
19 Jun 2025	Overnight Min	20.1	0.3	0.0
19 Jun 2025	Daytime Min	20.2	0.7	12.1
20 Jun 2025	Overnight Min	19.7	1.3	0.1
20 Jun 2025	Daytime Min	22.1	1.2	10.0
21 Jun 2025	Overnight Min	18.6	1.1	0.5
21 Jun 2025	Daytime Min	20.4	0.9	3.3
22 Jun 2025	Overnight Min	16.5	2.2	0.3
22 Jun 2025	Daytime Min	16.5	3.3	5.0
23 Jun 2025	Overnight Min	16.4	3.4	0.0
23 Jun 2025	Daytime Min	17.8	4.7	9.1
24 Jun 2025	Overnight Min	17.9	2.8	0.0
24 Jun 2025	Daytime Min	21.2	3.9	6.9

Demand | Week Ahead

Slido code #OTF



National Demand

Minimum Demands

		FORECAST (Wed 25 Jun)		
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
25 Jun 2025	Daytime Min	23.9	0.9	7.1
26 Jun 2025	Overnight Min	18.9	1.6	0.1
26 Jun 2025	Daytime Min	20.2	4.1	8.0
27 Jun 2025	Overnight Min	16.6	3.5	0.0
27 Jun 2025	Daytime Min	18.3	4.7	7.7
28 Jun 2025	Overnight Min	16.1	3.3	0.1
28 Jun 2025	Daytime Min	16.5	3.0	7.8
29 Jun 2025	Overnight Min	17.1	1.0	0.5
29 Jun 2025	Daytime Min	17.2	1.6	9.7
30 Jun 2025	Overnight Min	18.9	0.8	0.0
30 Jun 2025	Daytime Min	21.0	1.2	10.0
01 Jul 2025	Overnight Min	19.6	1.0	0.0
01 Jul 2025	Daytime Min	21.7	1.1	9.0

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

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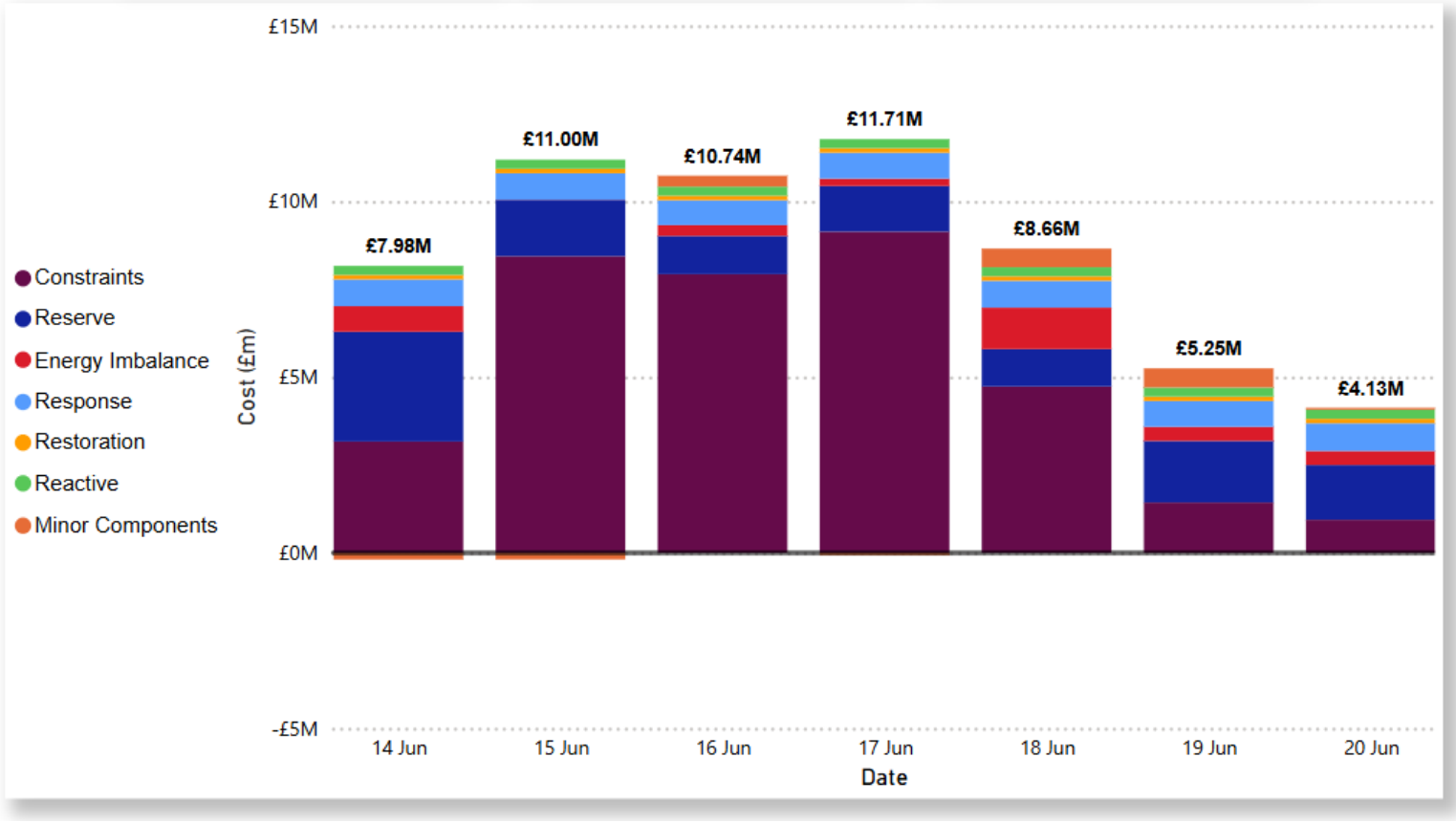
NESO Actions | Category Cost Breakdown

Slido code #OTF

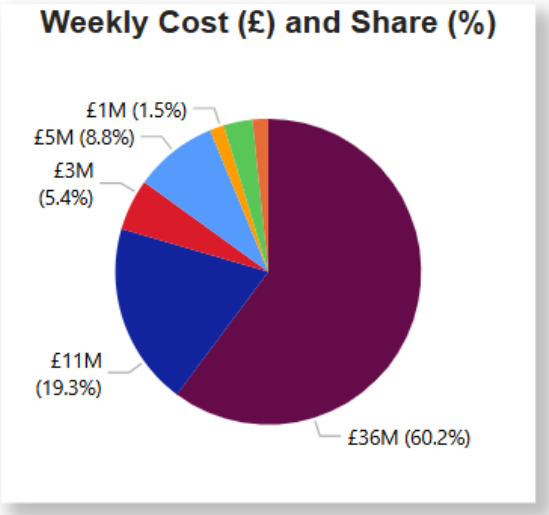
Date

14/06/2025 20/06/2025

Weekly Total Costs (£)	Last Week Total Costs (£)	Past 30-Day Average Costs (£)
59.5M	66.2M	10.2M



Date	Total Costs
14 June 2025	£7,977,245
15 June 2025	£11,001,806
16 June 2025	£10,736,169
17 June 2025	£11,713,500
18 June 2025	£8,659,974
19 June 2025	£5,251,920
20 June 2025	£4,128,102
Total	**£59,468,715**



NESO Actions | Constraint Cost Breakdown

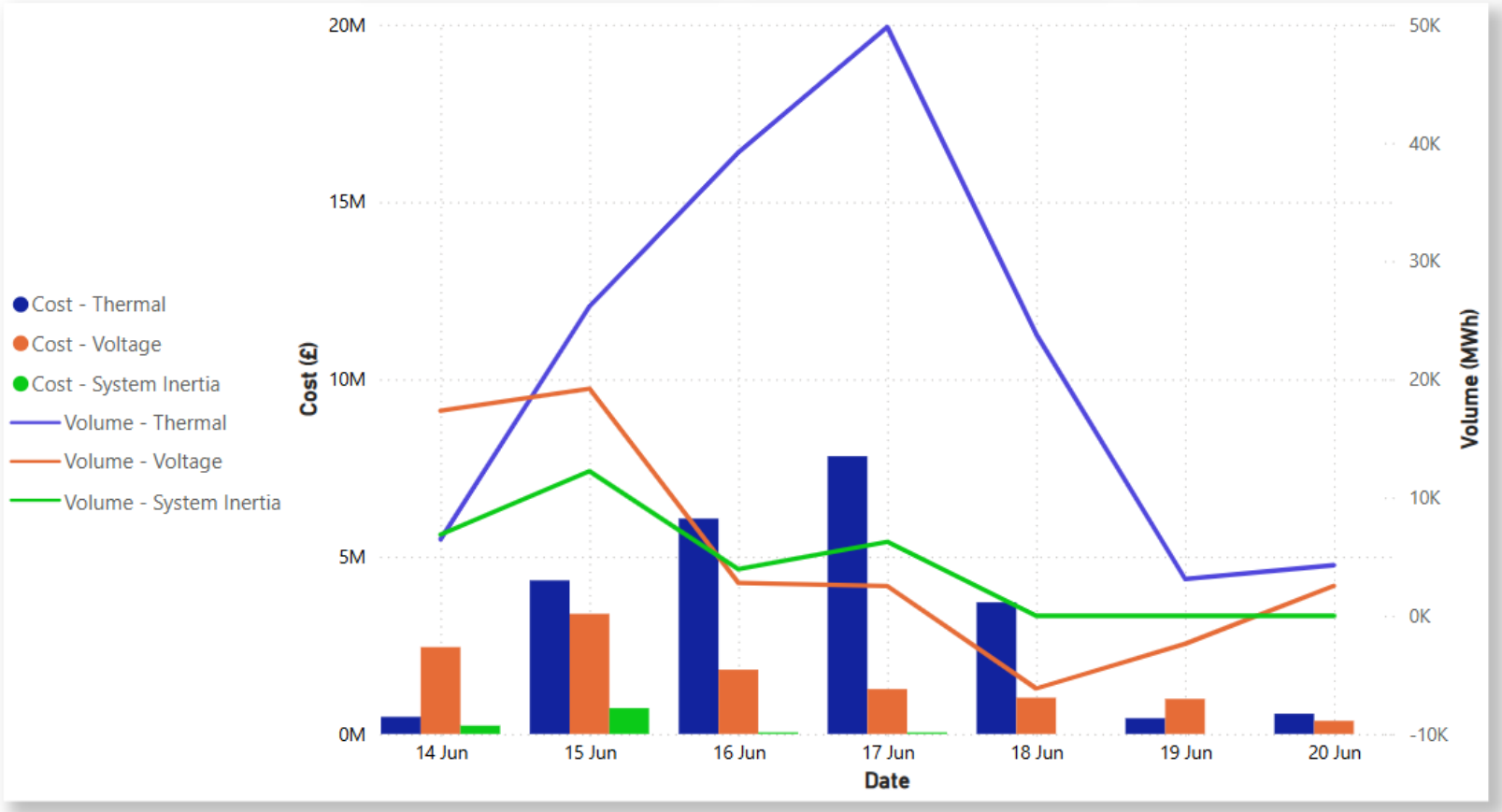
Slido code #OTF

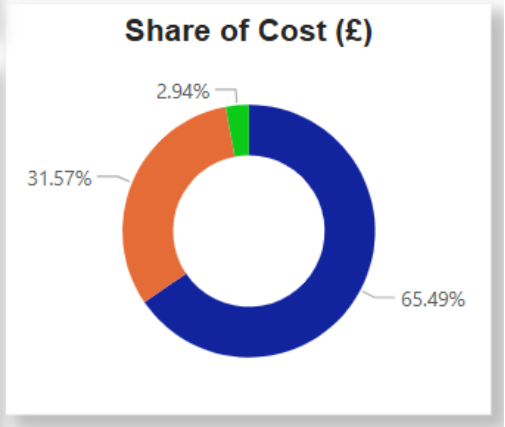
Date
14/06/2025 20/06/2025

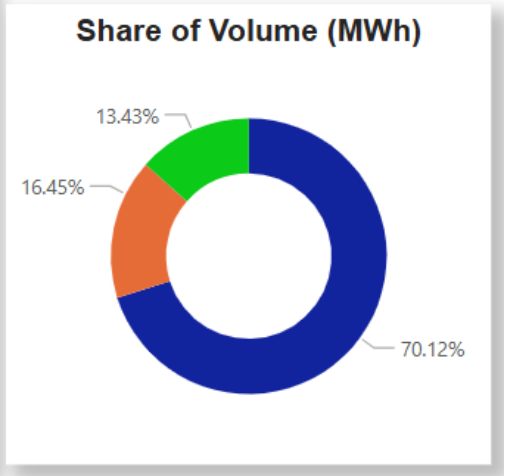
Thermal Constraints	
Costs (£)	Vol (MWh)
23.45M	152.83K

Voltage Constraints	
Costs (£)	Vol (MWh)
11.30M	35.85K

System Inertia	
Costs (£)	Vol (MWh)
1.05M	29.28K



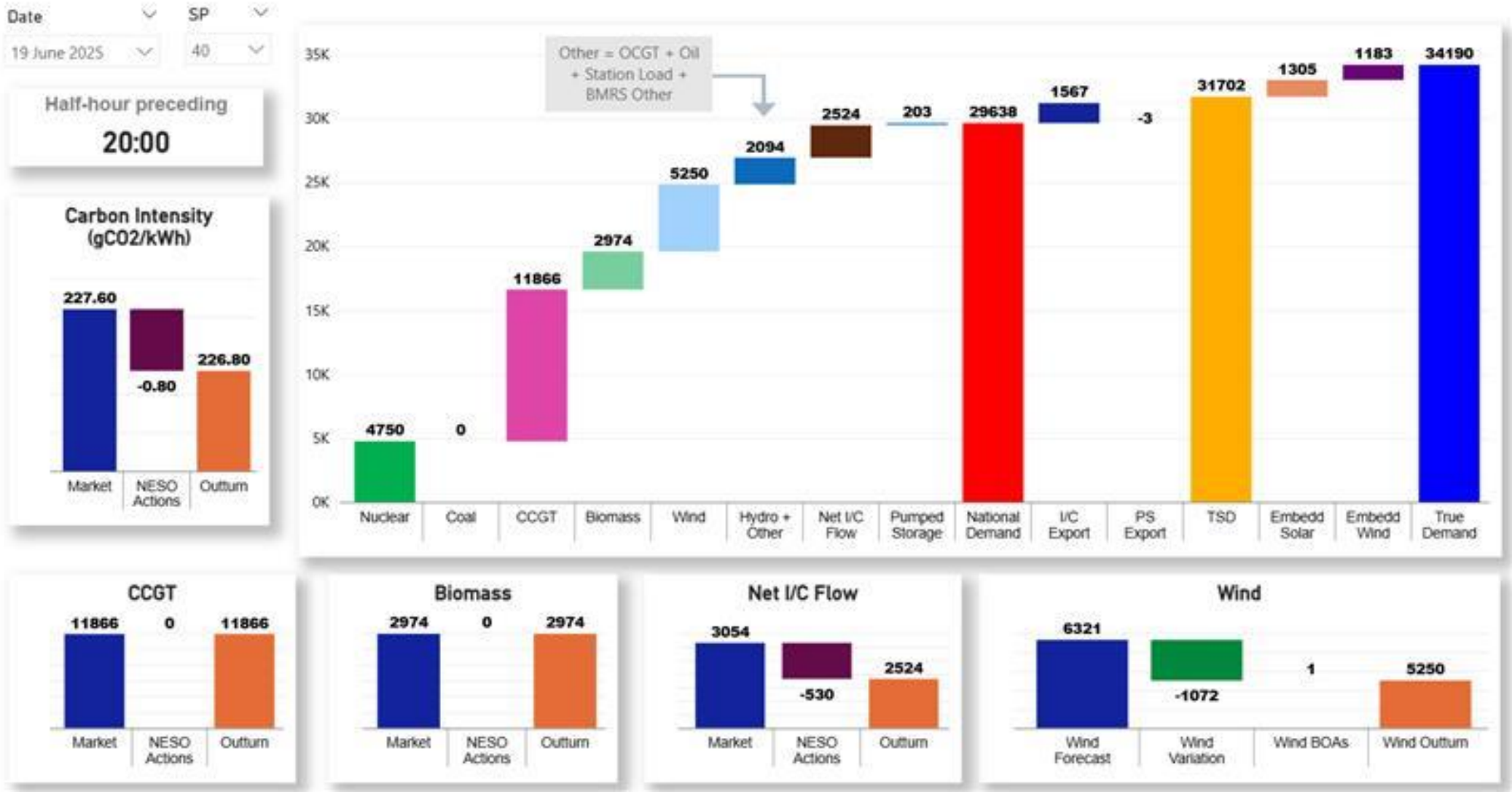




Note: Thermal Constraint volume is reported as an absolute figure.

NESO Actions | Peak Demand – SP spend ~£28k Thursday 19th June

Slido code #OTF

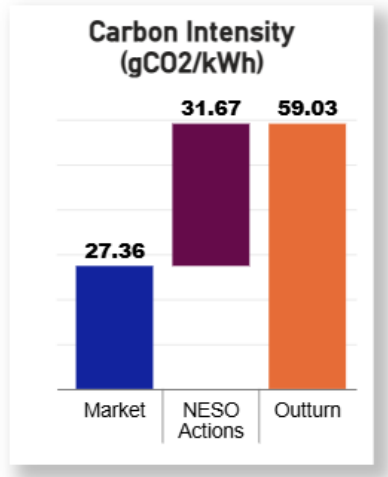


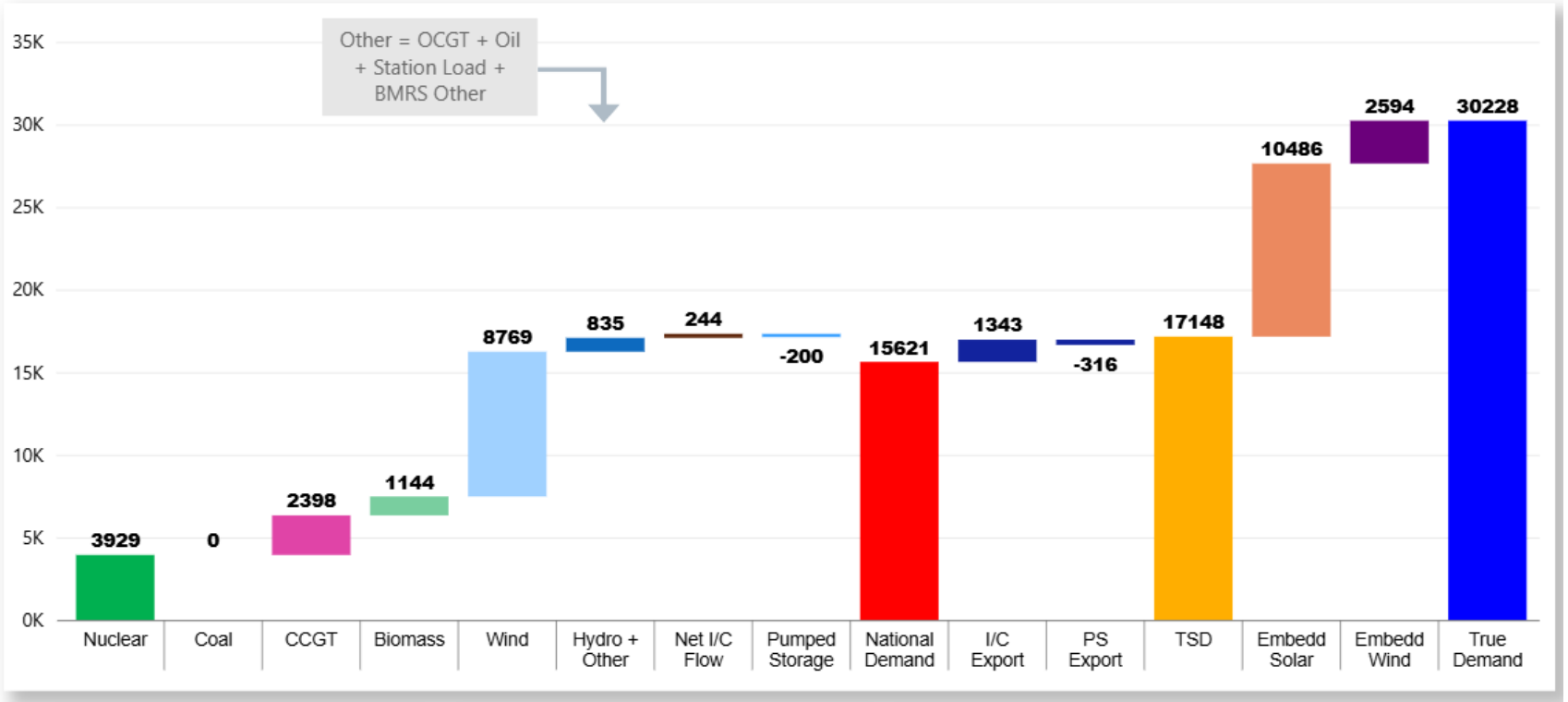
NESO Actions | Minimum Demand – SP spend ~£251k
Saturday 14th June

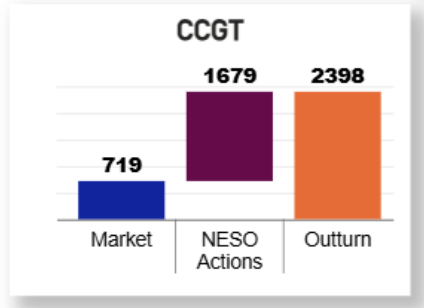
Slido code #OTF

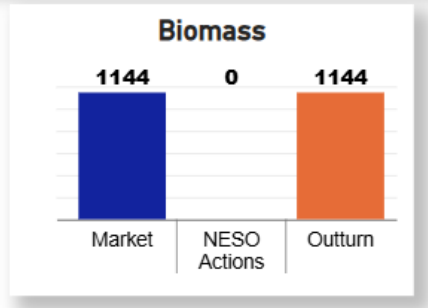
Date: 14 June 2025 | SP: 29

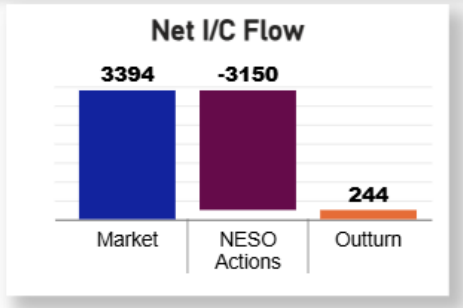
Half-hour preceding
14:30

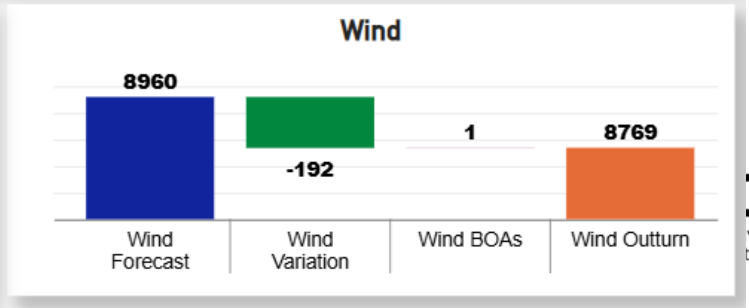






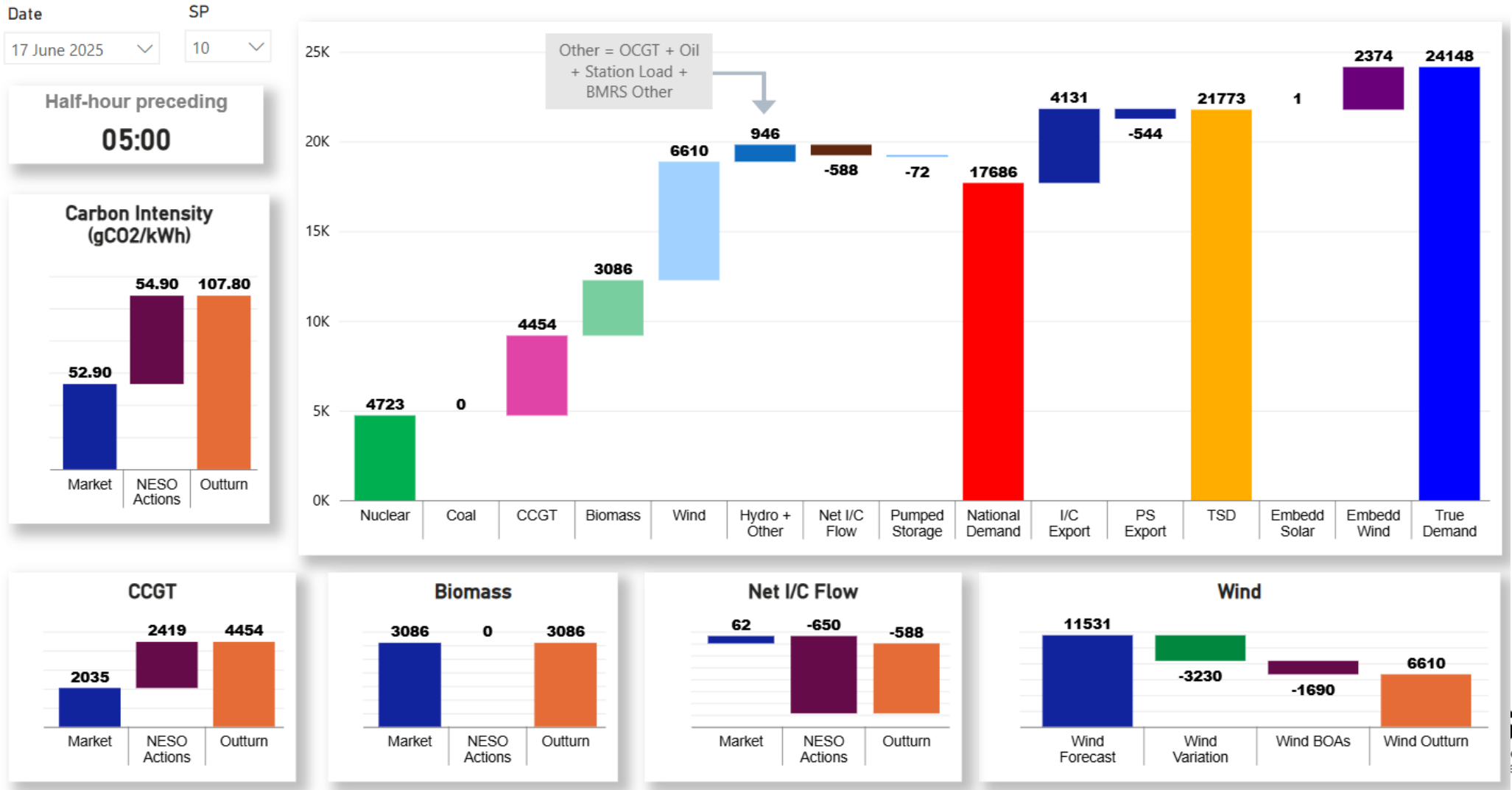




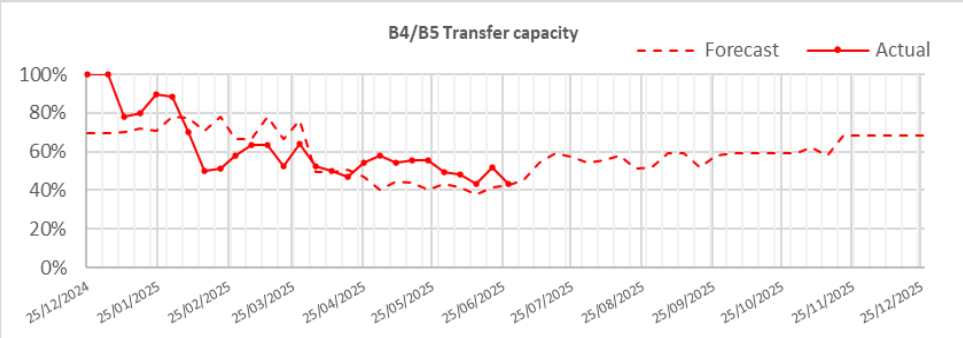


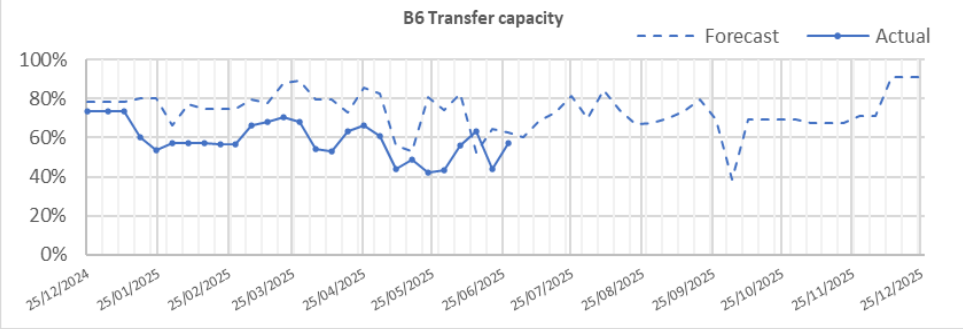
NESO Actions | Highest SP spend ~£500k
Tuesday 17th June

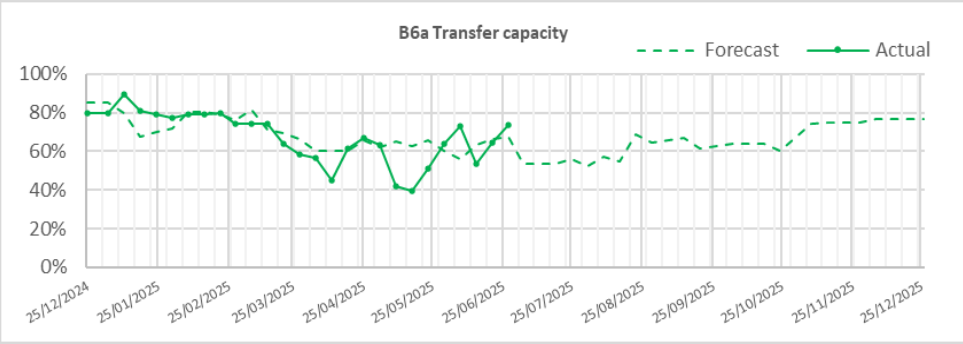
Slido code #OTF



Transparency | Network Congestion







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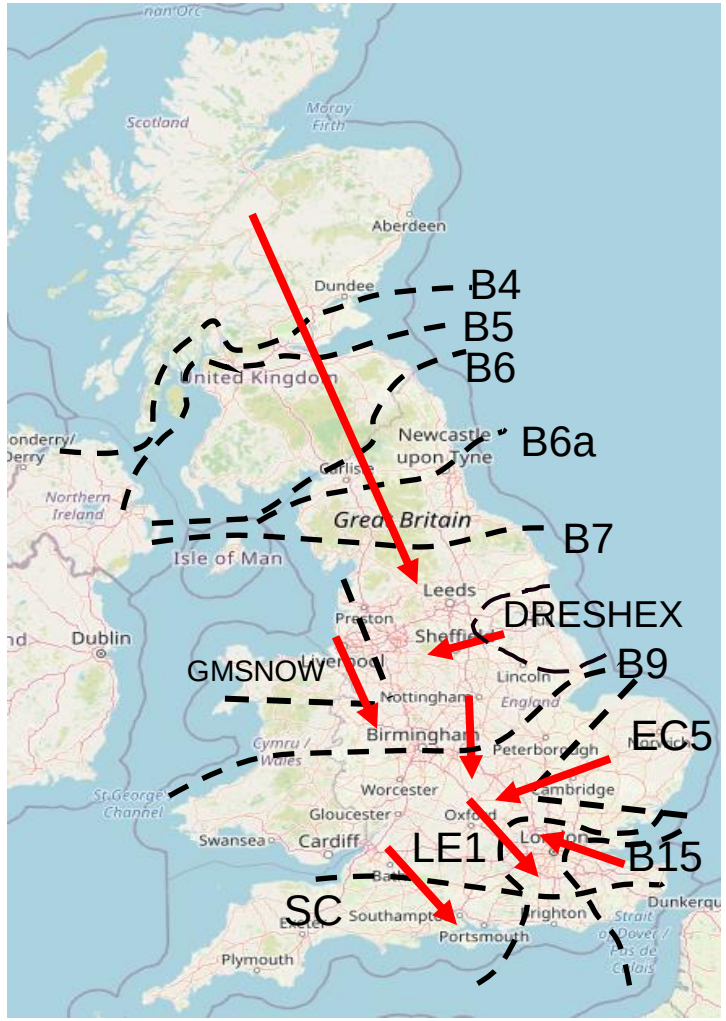
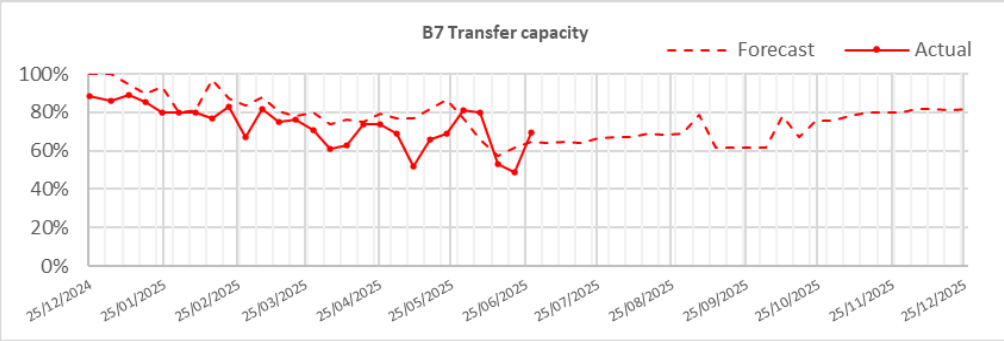
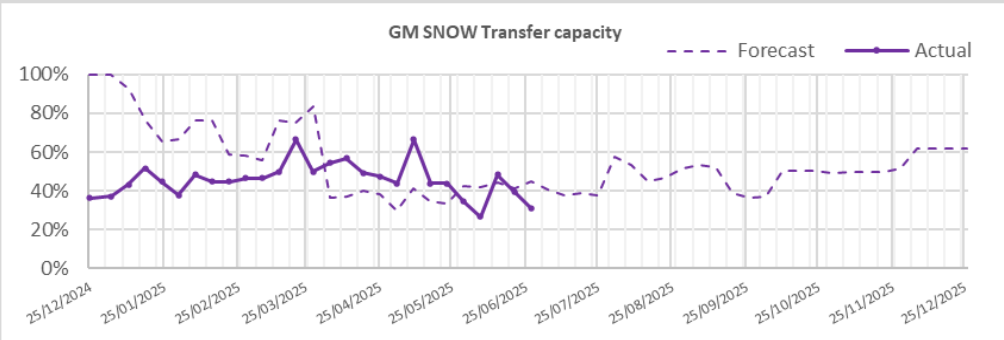
B6a	8000	73%
B7 (SSHARN)	9850	69%
GMSNOW	5800	31%
FLOWSTH (B9)	12700	63%
DRESHEX	9675	48%
EC5	5000	69%
LE1 (SEIMP)	8750	57%
B15 (ESTEX)	7500	82%
SC1	7300	100%

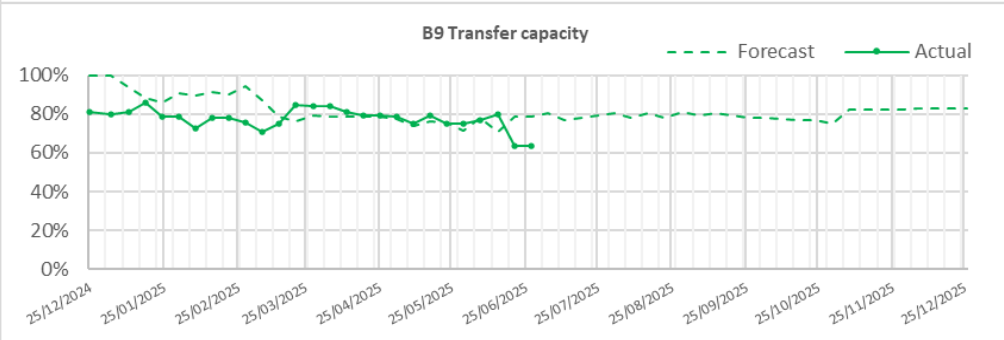
Slido code #OTF



Transparency | Network Congestion







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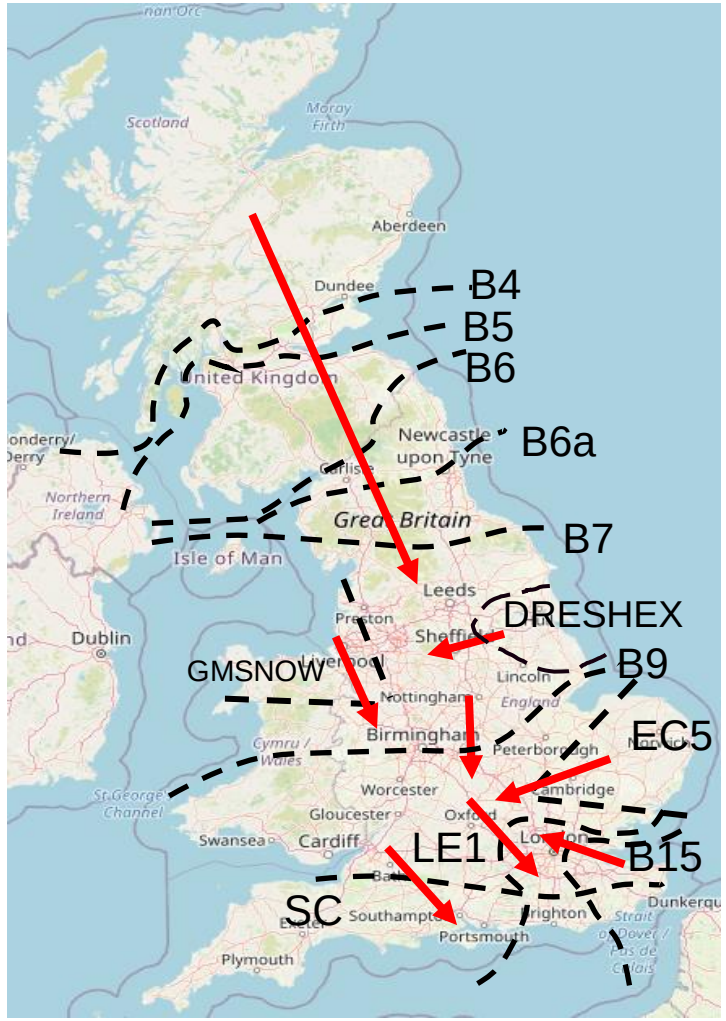
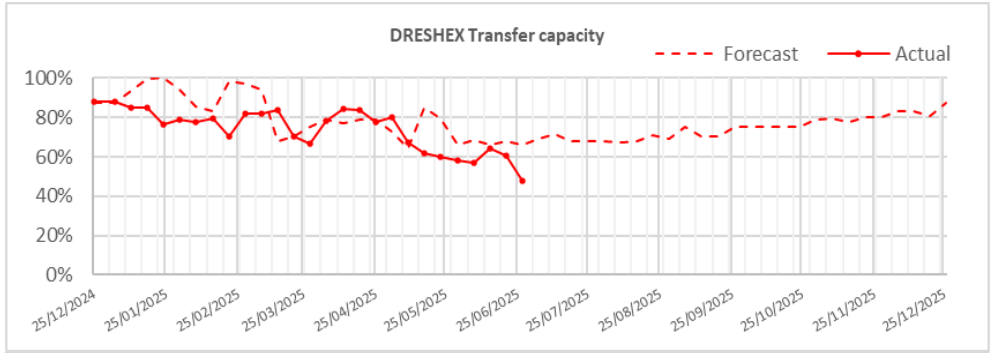
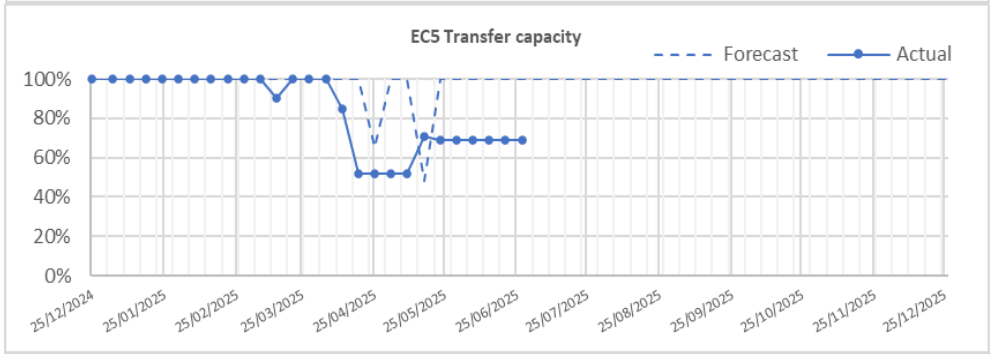
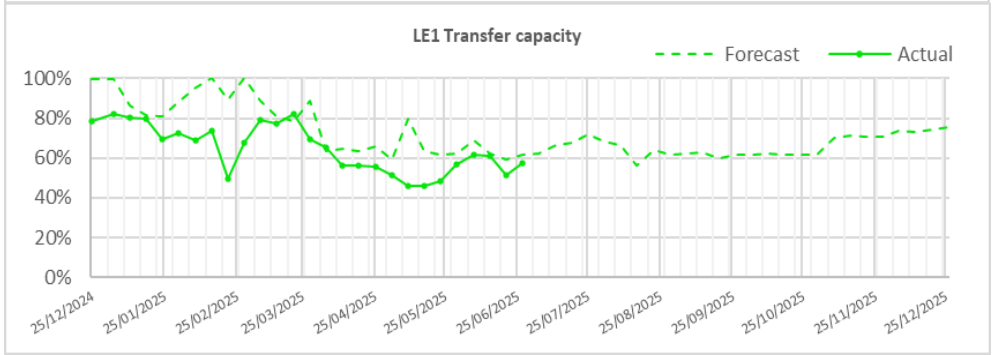


Transparency | Network Congestion







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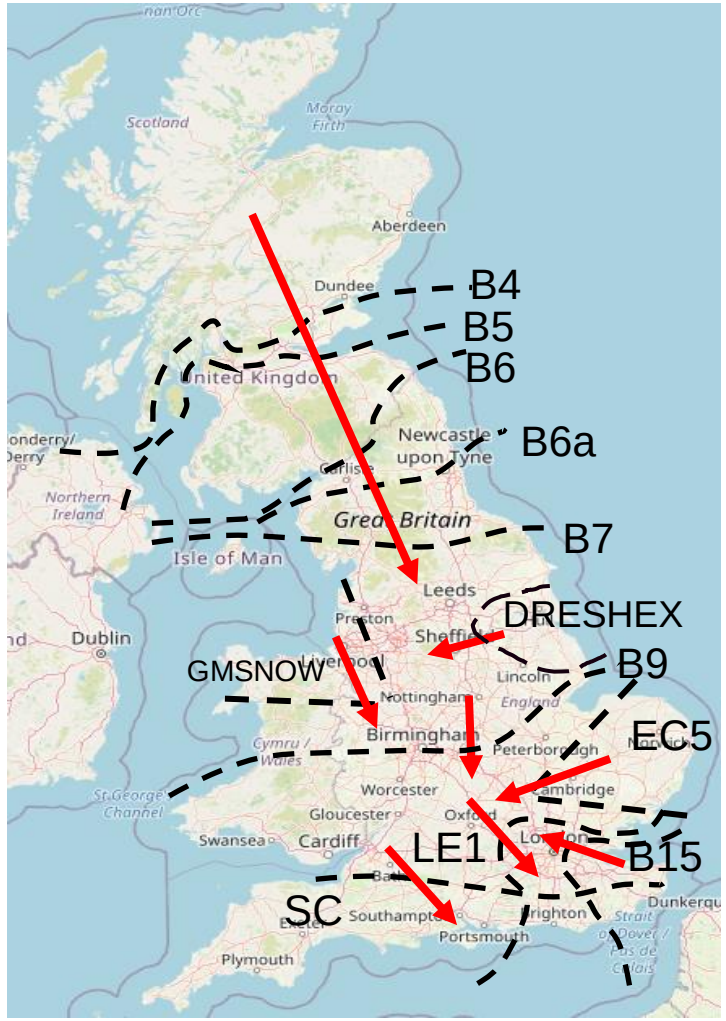
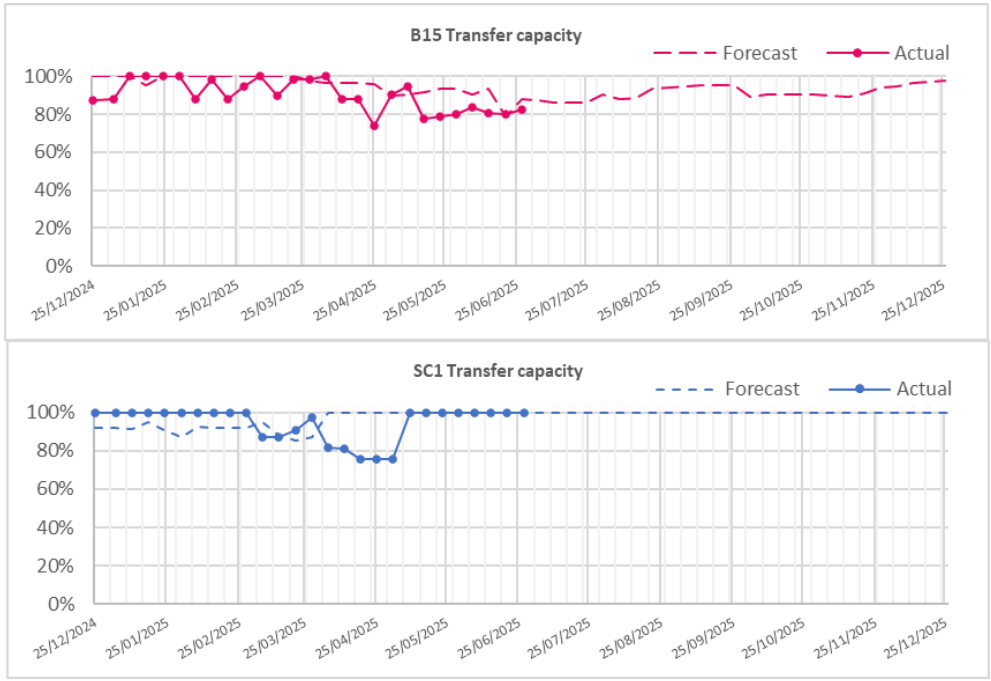


Transparency | Network Congestion



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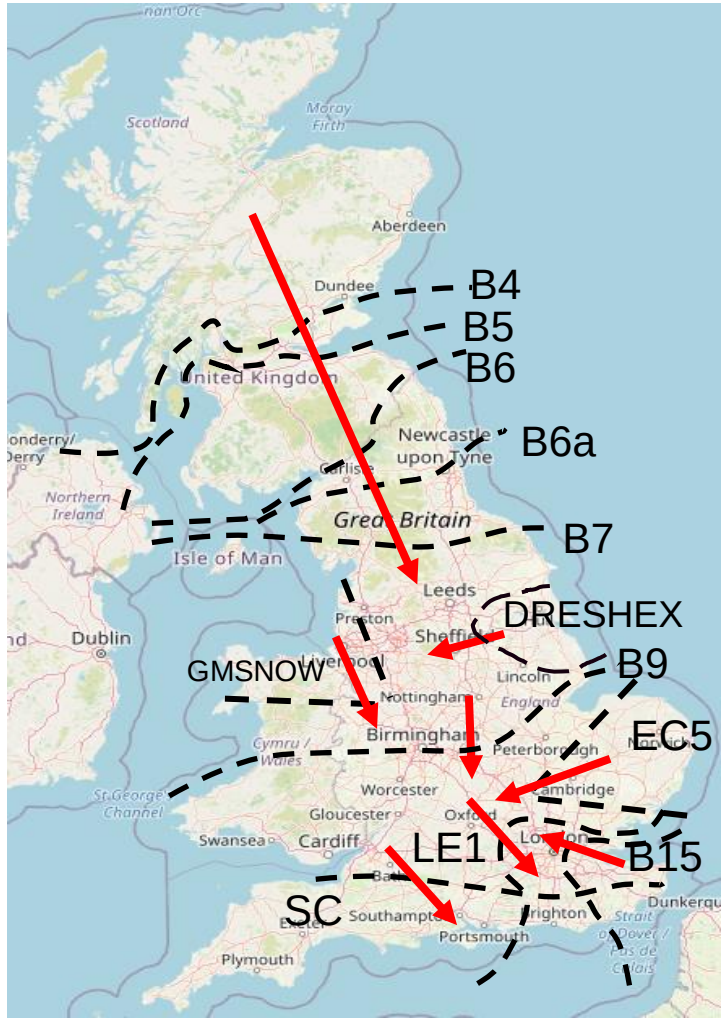


Day ahead flows and limits, and the 24-month constraint limit forecast are published on the ESO Data Portal: [Constraints Management]

(The forecast and day ahead limits may vary due to changes in the outage plan. The plan is reviewed periodically throughout the year to ensure we are optimising system conditions, whilst managing any necessary outage plan changes)

NESO National Energy System Operator

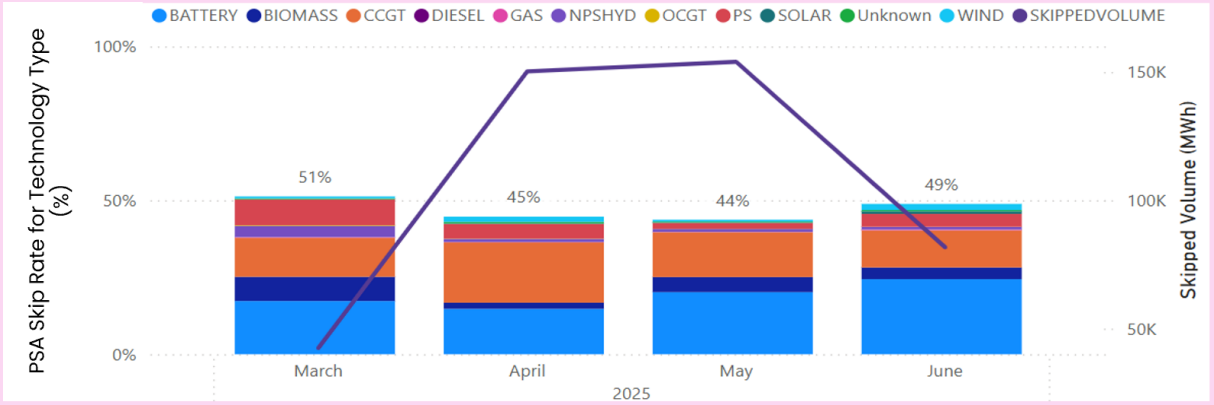
Skip Rates

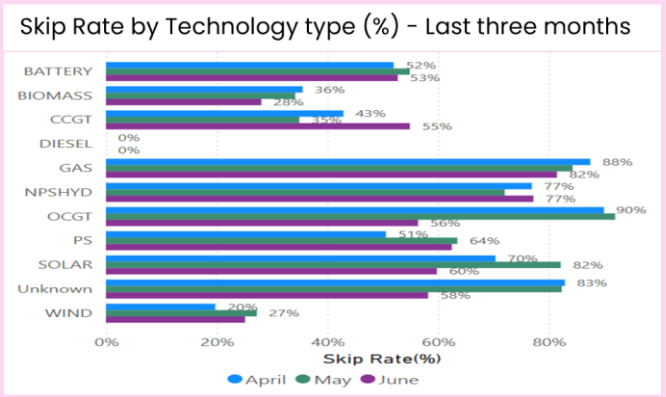
We have added skip rate by technology type to our 4-week rolling summary. We welcome your comments on if you find this valuable and feedback on how we present this data.

Weekly Average w/e	Offers - All BM	Offers - PSA	Bids - All BM	Bids - PSA
01/06	8%	31%	7%	49%
08/06	14%	37%	5%	48%
15/06	9%	29%	11%	49%
22/06	11%	33%	9%	50%

Slido code #OTF

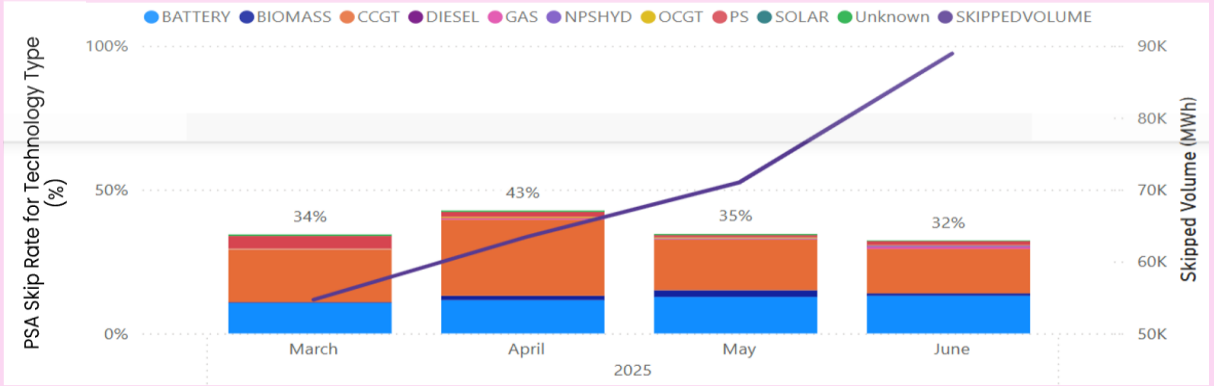
BIDS

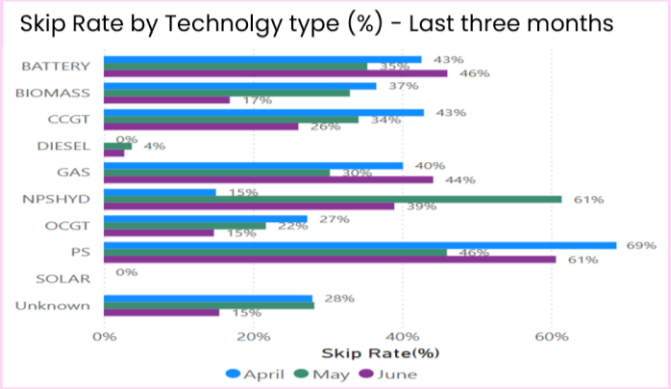




Gas: Gas reciprocating units

OFFERS





A

B

Contact us on box.SkipRates@neso.energy

Skip rate data and more info on skip rates and battery storage including methodology.

PSA: Post System Action

Skip Rates by Technology Type

Slido code #OTF

We have presented two views of skip rates by technology type. Both definitions can be calculated using the published 'In Merit – PSA' dataset

A

Skipped volume by technology type as a percentage of all in-merit

$$\frac{\text{Technology Type Skips}}{\text{All Skips} + \text{All in merit taken}}$$

These technology type skip rates add up to the total skip rate

Considers amount of technology within the skipped volume

B

Skipped volume by technology type as a percentage of in-merit by technology type

$$\frac{\text{Technology Skips}}{\text{Technology Skips} + \text{Technology type in merit taken}}$$

Each technology type skip rate is independent

No consideration of total volume of energy

Previously Asked Questions

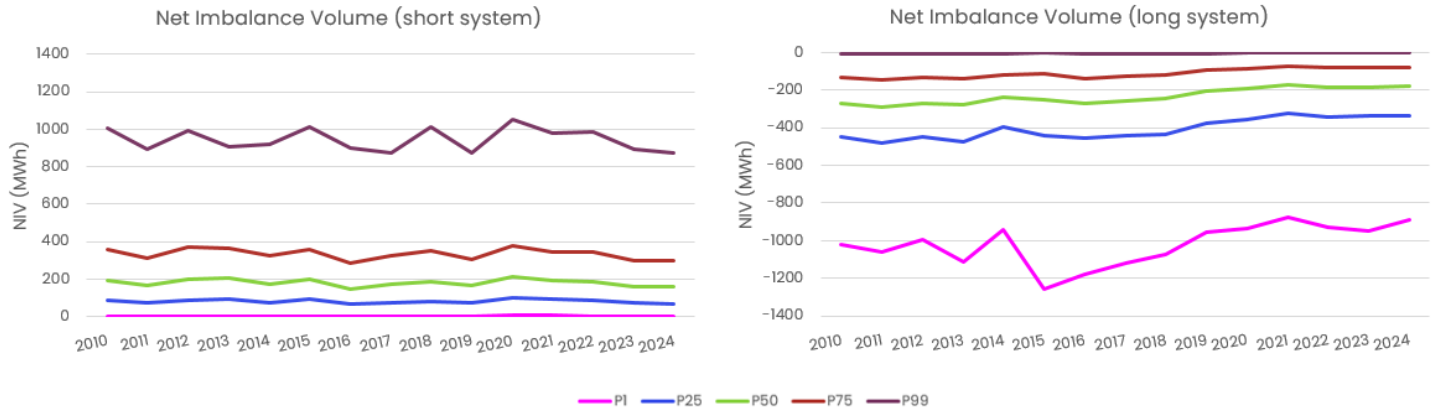
Slido code #OTF

Q: (11/06/2025) Looking at the DUKES tables out to 2023, it looks like wind and solar generation has doubled since 2015/2016, absolute NIVs have come down by c.20% over the same period (~290->230mwh). Is this an example of the system working well for energy balancing if not constraints?

A: Thanks for your feedback and observations, we will pass on your feedback to our REMA program.

We have analysed NIV data from 2010-2024 (see figures) by splitting between negative and positive NIV (i.e. when the system is long or short) and plotting the distribution of NIV. We observe a small decline in the NIV when the system is long, whereas we don't see a significant change in the NIV when the system is short.

In our Scheduling and Dispatch Case for Change published last year, it was identified that the volume of 'pure' energy balancing actions have been approximately stable since 2017, contrary to actions for constraints and other system needs which have increased significantly. Hence, it was concluded that energy balancing is a limited driver in terms of the inefficiency of the current dispatch arrangements.



Previously Asked Questions

Slido code #OTF

Q: (11/06/2025) Tagging onto lower abs NIV while renewables doubling: There is strong evidence this is due to increased liquidity in the intraday market. Would NESO comment on the fact that its REMA proposal for dual cash-out price will drive liquidity away and could undo all this progress on NIV?

A: Thanks for your feedback and observations, we will pass on your feedback to our REMA program.

The dual imbalance price does not represent NESO's position and/or recommendation, it is one reform under consideration as part of a wider assessment of dispatch and balancing arrangements. NESO is supporting DESNZ on this assessment as part of the REMA Programme; however, the final decision on any reform is with DESNZ. We are unable to comment on the development of reforms or recommendations at this stage.

Q: (11/06/2025) On the 650MW sell trades against IFA1 - you have mentioned that this is a result of a line outage. Should there not be a remit submitted and visible to the market indicating that there is an import cap on IFA1? Is there any update as to when the line outage will be resolved?

A: When there is a network outage condition which requires reduction/increase in any energy resource NESO does not restrict wholesale market trading of the asset. This means that the capacity and nominations on IFA1 occurred in a similar way to any other non-outage period. NESO used interconnector trades to manage the constraint position as they would for any other system need and the actions were system flagged. As no wholesale market restriction applied no REMIT was published.

NESO National Energy System Operator

Previously Asked Questions

Slido code #OTF

Q: (18/06/2025) thanks for ratio of curtailing wind (20.7%)vs replacement energy costs brining on CCGTs (79.3%!)Clearly some of this latter cost is for Inertia/volts can u a)breakdown the 79.3% further how much of this cost is 4 Inertia/volts needs b)when will your d-1 inertia mkt be implemented as cheaper than BM?

A:

a) CCGTs instructed for energy replacement in the system also provide non-energy services as by-products, such as inertia and voltage support. However, these costs are allocated to constraint margins, as this is the primary reason for instructing the units. NESO co-optimises these decisions when possible, aiming to run CCGTs for constraint margins in areas where voltage support is also needed, subject to pricing and technical requirements. If further voltage support is necessary at certain locations, additional BMUs can be utilised through trades or the Balancing Mechanism, with these costs being allocated to voltage constraints. Once the most onerous constraints are addressed, if inertia requirements are identified, additional BMUs may be required to run.

b) In our 2025 Markets Roadmap, we shared how the delivery of the mid-term (Y-1) market was prioritised over other stability market development to access capability from assets already connected to the electricity system that can offer cheaper inertia than currently accessible in the Balancing Mechanism. This market procured 5GVA.s inertia in its first delivery year and is currently out for tender for the second delivery year. In tandem, we have launched the Long-term Stability Market through the Long-term 2029 Tender. The short-term stability market is intended to facilitate competition from assets closer to real-time however, we have identified some technical challenges with grid-forming assets providing variable inertia that must be addressed before this market can be developed further. We will be engaging with industry on this and will signpost how to get involved on our short-term stability market webpage.

NESO National Energy System Operator

Previously Asked Questions

Slido code #OTF

Q: (11/06/2025): I can go back and take a look at the data but as a general rule of thumb is it unusual that the most expensive period was 11pm? If you could point me in the direction of the best form of data to analyse this please?

A: While it may seem unusual at first glance for the most expensive period to occur at 11pm, it is not uncommon for lower demand periods to experience higher prices. This is often due to the reduced availability of cheaper generation options and the need to rely on more expensive peaking power plants to meet demand, even if it is relatively low.
For example, the last two most recent weeks:

Weekly snapshot between 24th-30th May - The most expensive period was on 25th May in the half-hour preceding 9pm (SP42)

Weekly snapshot between 17th-23rd May - The most expensive period was on 21st May in the half-hour preceding 12am (SP48)

Our published cost data is currently aggregated by day. NESO is looking to publish more granular cost data later this year. However, further information can be found on Elexon BMRS.

Advance Questions

Slido code #OTF

Q: (11/06/25) April 19th 2012, I visited Britned with Hitachi - we spent a day there. At the time H' was interested in HVDC hence the visit. In the questions of 11th June, NESO stated that "While interconnectors are asynchronous".....but as Nigel Wood observed during the visit - NG did not want FR (& by extension inertia) services from BritNed. So interconnectors can be synchronous it is just that NESO treats them as asynchronous. This begs the question: given the cost implications of getting inertia from CCGTs etc, would it not be cheaper/better/less Co2 getting the services from the i/cs?

A: Interconnectors are asynchronous but depending on their set up, can provide frequency services.

NESO has always procured services to balance demand and supply, and to ensure the security and quality of the electricity supply across Britain's transmission system. However, since 2012 there have been significant changes in the way NESO procures balancing services, including frequency and inertia.

Any potential provider, including an interconnector, able to meet the requirements (as defined for the specific service) can offer their services to NESO.

To find out more about the services NESO wants to procure and how to participate please see: Balancing Services | National Energy System Operator

To understand more about interconnectors and how NESO work with them, please see the Interconnector Special Refresh presented at the OTF on 5 March 2025

Outstanding Questions

Slido code #OTF

Q: (05/06/2025) This morning, 4th June, SVRP-10 was offered on for energy at £200/MWh. This is significantly above GW's of more flexible generation. Has there been an issue with flagging here? And what is being done to prevent this in the future?

Q: (11/06/2025) Has NESO made certain newspaper writing people aware that the wind forecast is what would generate unconstrained and so it being different from outturn when the wind is curtailed does not indicate a forecast error?

Q: (18/06/2025) We note that the Spanish Government recently released its conclusions on the blackout in Iberia in late April. Will NESO undertake any analysis on whether the voltage events experienced there could happen in GB, and/or whether the report recommendations could be implemented here?

Outstanding Questions

Slido code #OTF

Q: (18/06/2025) What are the security of supply considerations related to constraint information? Are you saying gencos would deliberately act to destabilise the system if they could? Is there any evidence of any power plant ever having tried to do this?

Q: (18/06/2025) If there are national security concerns about publishing transmission constraint data (which will be required in a Zonal market), has the national security view been submitted as part of REMA?

Reminder about answering questions at the NESO OTF

Slido code #OTF

- **Questions from unidentified parties will not be answered live**. If you have reasons to remain anonymous to the wider forum, please use the advance question or email options. Details in the appendix to the pack.
- **The OTF is not the place to challenge the actions of individual parties** (other than the NESO), and we will not comment on these challenges. This type of concern can be reported to the Market Monitoring team at: box.nc.customer@neso.energy.
- **Questions will be answered in the upvoted order whenever possible**. We will take questions from further down the list when: the answer is not ready; we need to take the question away or the topic is outside of the scope of the OTF.
- **Slido will remain open until 12:00**, even when the call closes earlier, to provide the maximum opportunity for you to ask questions.
- **All questions will be recorded and published** All questions asked through Sli.do will be recorded and published, with answers, in the Operational Transparency Forum Q&A on the webpage: https://www.neso.energy/what-we-do/systems-operations/operational-transparency-forum
- **Takeaway questions** – these questions will be included in the pack for the next OTF, we may ask you to contact us by email in order to clarify or confirm details for the question.
- **Out of scope questions** will be forwarded to the appropriate NESO expert or team for a direct response. We may ask you to contact us by email to ensure we have the correct contact details for the response. These questions will not be managed through the OTF, and we are unable to forward questions without correct contact details. Information about the OTF purpose and scope can be found in the appendix of this slide pack

NESO National Energy System Operator

slido

Audience Q&A

ⓘ Start presenting to display the audience questions on this slide.

Feedback

Slido code #OTF

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@neso.energy

Appendix

Purpose and scope of the NESO Operational Transparency Forum

Slido code #OTF

Purpose:

The Operational Transparency Forum runs once a week to provide updated information on and insight into the operational challenges faced by the control room in the recent past (1-2 weeks) and short-term future (1-2 weeks). The OTF will also signpost other NESO events, provide deep dives into focus topics, and allow industry to ask questions.

Scope:

Aligns with purpose, see examples below:

In Scope of OTF

Material presented i.e.: regular content, deep dives, focus topics
NESO operational approach & challenges
NESO published data

Out of Scope of OTF

Data owned and/or published by other parties
e.g.: BMRS is published by Elexon
Processes including consultations operated by other parties e.g.: Elexon, Ofgem, DESNZ
Data owned by other parties
Details of NESO Control Room actions & decision making
Activities & operations of particular market participants
NESO policy & strategic decision making
Formal consultations e.g.: Code Changes, Business Planning, Market development

NESO National Energy System Operator

Managing questions at the NESO Operational Transparency Forum

Slido code #OTF

- OTF participants can ask questions in the following ways:
  - Live via Slido code #OTF
  - In advance (before 12:00 on Monday) at https://forms.office.com/r/k0AEfKnai3
  - At any time to box.nc.customer@neso.energy

- **All questions asked through Sli.do** will be recorded and published, with answers, in the Operational Transparency Forum Q&A on the webpage: Operational Transparency Forum | NESO
- **Advance questions** will be included, with answers, in the slide pack for the next OTF and published in the OTF Q&A as above.
- **Email questions** which specifically request inclusion in the OTF will be treated as Advance questions, otherwise we will only reply direct to the sender.
- **Takeaway questions** – we may ask you to contact us by email in order to clarify or confirm details for the question.
- **Out of scope questions** will be forwarded to the appropriate NESO expert or team for a direct response. We may ask you to contact us by email to ensure we have the correct contact details for the response. These questions will not be managed through the OTF, and we are unable to forward questions without correct contact details. Information about the OTF purpose and scope can be found in the appendix of this slide pack.

NESO National Energy System Operator

Skip Rates – 'In Merit' datasets

We recognise that these datasets aren't as intuitive as they could be – specifically the column headings. Please be reassured that we are looking at ways to improve this - we will update the documentation to include this information and will also discuss the datasets in more detail at the webinar on 27th February.

We will use 'accepted' and 'instructed' differently in this context, even though they are normally the same.

These datasets show the units that should have been instructed if decisions were solely based on price, rather than all units that were instructed. Therefore this dataset does not match the total accepted volume datasets in Elexon.

In Merit Volume = Accepted Volume + Skipped Volume

In Merit Volume
- This is the recreated in merit stack showing the lowest cost units that were available to meet the requirement, where the requirement is based on the volume of units that were actually instructed
- Therefore this is the volume that should have been accepted if decisions were solely based on price
- The sum of this column is the total instructed volume in the 5 minute period (subject to the relevant exclusions)

Accepted Volume
- This is the volume that was accepted in merit, as a subset of the 'In Merit Volume' column – i.e. how much volume was accepted in merit
- The sum of this column will be less than the sum of the 'In Merit Volume' column, unless there is no skipped volume
- Note: this column does not list all instructed units

Skipped Volume
- This is the volume that was skipped, as a subset of the 'In Merit Volume' column – i.e. of the volume that we should have instructed, how much was skipped

It's possible that the list of units increases, decreases, or stays the same between stages, but the total 'In Merit Volume' will always remain the same (or no volume is excluded) or decrease (due to exclusions).