

ESO Operational Transparency Forum

27 July 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

- System Events
- Questions from last week
- Demand review
- Costs for last week
- Constraints

Focus Areas

- Trading costs – Wednesday 20th July
- Domestic Reserve Scarcity Trial Results (Octopus – ESO)
- Signpost for BSUoS Fixed Tariff Model webinar

Contingency Contracts

Things we hope to answer in the coming weeks

Costs

- When will you be able to provide a forecast of costs?
- How much will the contracts cost?
- How will the contracts work in relation to cash-out?

Dispatch

- Will market be made aware of ESO chooses to warm the plant ahead of dispatch?
- How will it be dispatched?
- What does 'not in the market' mean?
- When will they be dispatched in relation to the Capacity Market?

Other

- What data will the unit be submitting and how will this data be made public?
- How are you considering the units in other analysis?

We will be unable to answer further questions on this at today's forum.

Other updates

SONAR emails are now working again.

This has been confirmed with a number of users that had previously logged queries.

We are still investigating an issue regarding people changing the email notifications they receive.

This issue is also being discussed specifically with the people who raised it.

OTF webinars are now available online.

The OTF webinars recording of 13th and 20th of July have been updated on the data portal on Monday.

We apologise for the delay and inconvenience.

Future deep dive/ response topics

Upcoming soon:

Demand control test deep dive – 3rd August

Inertia deep dive – 3rd August

ESO Trading on Interconnectors - September

To be published this week

Early view of Winter Outlook

Items we have taken offline and will come back to this forum on in the future

REMIT obligations on ESO

Feedback welcomed on our identified topics for inclusion

Response Roadshow

Having launched the full suite of new response services, we would like to take the opportunity to hear directly from our stakeholders and invite you to one of three roadshows we will be hosting. We would love for you to come and talk to us about what future developments you'd like to see, and to have your questions answered!

To help accommodate a large number of participants we will be hosting three roadshows in the following locations:

London – 2nd August

Warwick – 10th August

Edinburgh – 17th August

The aim of the roadshows is to give you the opportunity to come and talk to us about all things frequency response, with topics ranging from service design, to procurement and IT systems. We will listen to feedback you may have and also share our plans for the future. We will also be offering a number of 1-2-1 slots throughout the day. Please do let us know if there is anything specific you may want to discuss in these 1-2-1s and we can ensure the right people are available for the conversation.

You can sign up to [here](#) on a first-come, first-served basis.

The main event will be an informal set up where you can join us for refreshments at a time that suits you, and we will have people on hand to talk you through our plans for the future of ancillary services, upcoming developments, our backlog and prioritisation process, and more. There will be representatives there throughout the day so you can just 'drop in' when you are available, no need to book.

Questions outstanding from previous weeks

Q: IFA experienced convenient losses of load over the past two tight days. How much did that save NGC ESO in balancing cost? I'm estimating £4mn+ (Max price x ~250mw x 4 hrs x 2 days). Are capacity holders reimbursed in any way for that?

A: We assume this question references capacity holders on interconnectors. In this case, any commercial impact from availability would be the responsibility of the interconnector owner to resolve, and we have no visibility of that as a legally separate company.

Balancing costs are affected by a number of factors, and the ESO always seeks to minimise these costs which are then recovered through Balancing Services Use of System (BSUoS) Charging. Any party which is not in balance with their market position will be exposed to imbalance pricing as settled by Elexon.

Q: If the control room issues an EMN and interconnectors are exporting will the ESO immediately reduce exports to resolve the EMN?

A: ESO will take all available market actions to maintain system security. If all available market actions do not resolve a system security issue then emergency action may be necessary which may include emergency actions on interconnectors. But this will depend on system conditions at the time.

Questions outstanding from previous weeks

Q: At what point during the day do the ESO getting better indication of actual D in other Member States?

A: The control room will have operational discussions with directly connected TSOs as required and are also able to see the system status of other TSOs through the European Awareness System.

Q: Obviously, we all get how the IC and interconnectivity works. But doesn't it feel wrong to be subjecting UK consumers to £600/MWh, (which we saw in Monday evening peak) in order to export as much as we did to France?

A: The commercial markets dictated the interconnector flows with only NGESO involvement to guarantee system security. Once the markets have produced their initial results, NGESO considers all possible options to operate the system in the most economical way possible and therefore in the best interest of the end consumer.

Q: Why isn't the ESO dispatching units in the BM within the LE1 constraint instead of buying back the interconnector at such high prices?

A: All available operational actions including BM actions are considered in line with interconnector trading and the best cost action is taken.

Questions outstanding from previous weeks

Q: Why does ESO have to do trades to back off IC's in order to prevent a CMN? UK generators are obligated to make generation available. Do IC's not get Cap Mech payments exactly for this type of scenario?

A: ESO use commercial mechanism to meet our demand and reserve requirements, and this is managed under our control room process, e.g. EMN process. This is not directly linked to CM mechanism.

Q: Is there anywhere we can find information on the Emergency Instruction issued to IFA yesterday? It's in the system message on BM Reports. Is there more detail somewhere? volume affected and time period it is for ahead of it ending?

A: As answered previously, we do not publish the Emergency Instruction volumes however the unit metering is available in BMRS.

Regarding the time period notification prior to ending, Emergency Instructions are open ended and are in place until the situation is resolved by another method. Therefore the end time is not known until the situation is resolved in real-time.

Q: Can the Daily Costs reports be updated please? No reports have been published since the 7th. Also several reports for May and June are missing.

A: We are experiencing an issue with publishing these reports, we will be publishing these reports as soon as the issue is fixed.

Questions outstanding from previous weeks

Q: The data portal is reporting 875MWh of interconnector trades in settlement periods 25 and 26 today at an average price of £2800/MWh (max £9.7k/MWh). Can you explain the reason for these very expensive trades?

A: All trades are available on the data portal, and these are all tagged, you can see the reasons behind these in this document https://data.nationalgrideso.com/trade-data/interconnector-trading-procurement-framework/r/trading_so_flags_and_reason_codes

The trades on the 20/7 were all for 'LE1'. This is a system requirement.

Q: There are a lot of balancing actions now being taken on the ICs. These have to be taken a few hours in advance. The cost of these will significantly add up. What checks and balances are in place to ensure the levels procured are appropriate and can this be shared in the interests of transparency.

A: As above. Trades are always compared against the options available in control timescales.

Q: A question from several weeks ago that still hasn't been answered: On 10th June 2022, in SP32 and 33, wind units such as AKGLW-3 were reversed at expensive prices up to £99,999. Was this legitimate?

A: This question from 6th July has been answered in the slides on 20th July. You can also find the answer to this question in the Q&A log on ESO Data Portal. We will try to come back with any further updates in the future.

Questions outstanding from previous weeks

Q: Was the STOR shortfall for Monday due to lack of auction supply or due to price?

A: The STOR shortfall for Monday was due to lack of auction supply. Daily auction data is published on the ESO data portal which shows prices and participation.

<https://data.nationalgrideso.com/ancillary-services/short-term-operating-reserve-stor-day-ahead-auction-results>

Q: Why was the CM notice only cancelled with ten minutes to spare before it became live?

A: We are reviewing this as part of our lessons learnt. We will share more information in the future forums.

Q: Why was the CMN cancellation format different from historical ones? i.e. 'Message from Electricity System Operator' rather than the standard 'Electricity Capacity Market Notice Cancelled'

A: Same as above.

Q: Despite the CMN's being issued there were no renominations to reduce exports on the IC's my market participants except for the trades on IC's done by the ESO. Does this go against your expectations of IC flows following a CMN being issued?

A: CMN is an early notification at 4.5HA of the potential for a System Stress Event, but Capacity Market parties may not revise their positions according to the CM rules if demand control or a System Stress Event is not expected to be likely.

Questions outstanding from previous weeks

Q: Why is there the disconnect in prices between VoLL and max price in the BM / Interconnectors? Surely VoLL should be the higher price here? Is it just that it was never forecast to be an issue / get to those levels?

A: VoLL is used as part of Reserve Scarcity Pricing (RSP) mechanism by ELEXON as part of the cashout price calculation and methodology. The RSP component of cashout is $LoLP \times VoLL$, as LoLP approaches 1, the RSP approaches VoLL which is £6000/MWh.

Q: Previously we have had deep dives into monthly BSUoS forecasts update, can we expect these going forward?

A: Thanks for the suggestion. We did deep dives when the methodology was changing and we can do this again.

Questions outstanding we are still working on

Q: Leaving the BSU in play for so long resulted in battery operators charging up to full capacity beforehand, making a shortfall more likely prior to the CM notice going live. How much consideration do you put on this considering it could easily be a 1.5GW swing and this will only grow?

ESO are working with BEIS and Ofgem to understand any potential impacts on demand forecast when CMN is triggered.

Q: Any lessons learned from Monday that can be shared to this forum? It could happen again this summer so would you do anything different next time?

We are reviewing this and will provide any lessons learnt at a future forum.

Q: Given the latest IC export levels and rather frequent unplanned outages this year, are you considering higher derating levels for your winter outlook that in previous years?

We will be publishing the Winter Outlook in early Autumn.

Q: Does usage of CLASS for ancillary services pose greater system risk as using your reserve/response puts the distributed network closer to their failure point when the network is heading that direction anyway? Would it be more likely to start tripping customers in CLASS providing regions than others

A: Thank you for this question. It would be good to understand from this question more details or specific risks the CLASS service can pose on the system. Any concerns please liaise with DNOs.

Questions outstanding we are still working on

Q: There are interconnector trades taken at prices above the VoLL today. What is the reason behind this?

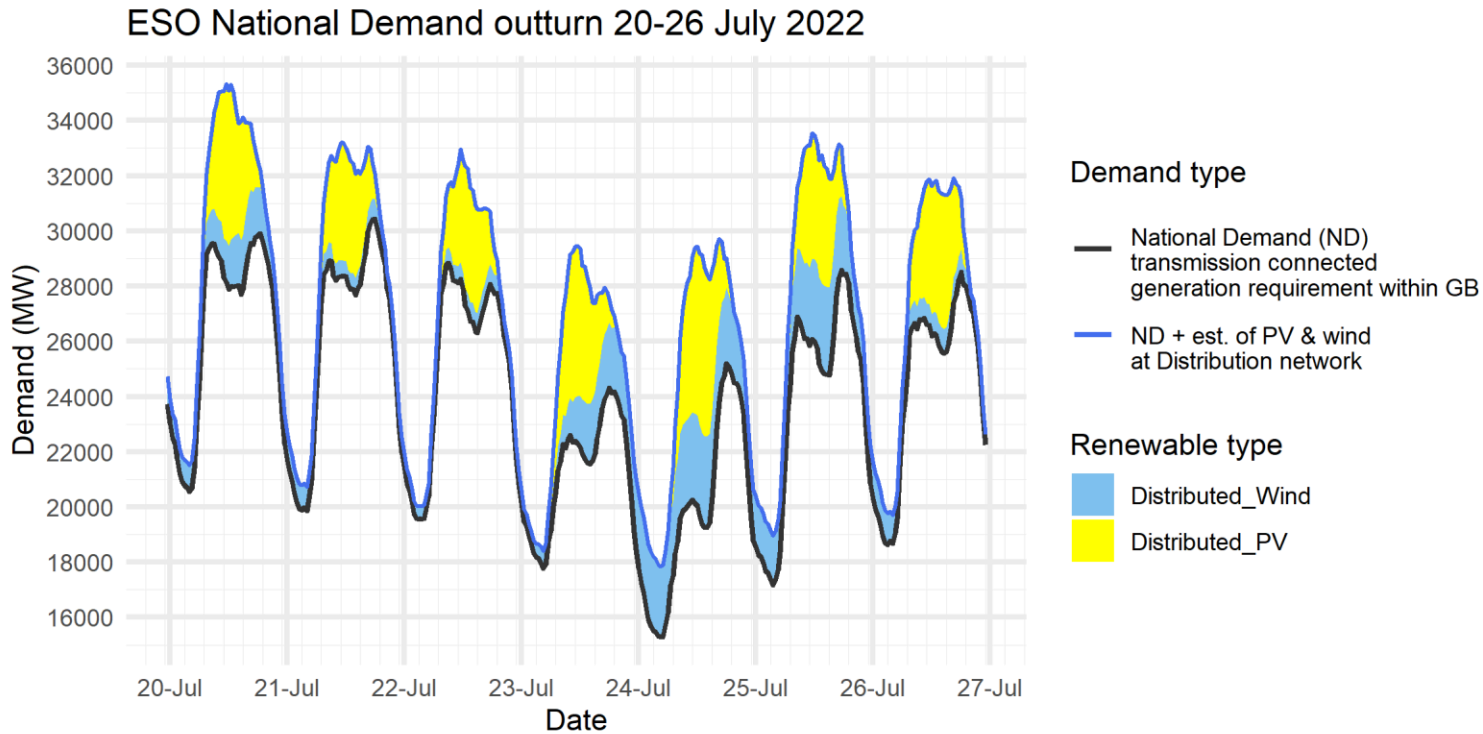
Q: There has been no Outturn and Commentary for BSUOS published for June or July. Are you going to be doing this?

Q: How much self-dispatch, excluding plant which submits PNs, was ENCC expecting at the commencement of the CMN period on Monday at 8pm, had the CMN not been cancelled ? Clarification: the question about self-dispatch was about ESO's estimate of expected volumes of non-PN dispatch that would have arrived at 8pm, if the CMN had remained in force. It wasn't about whether or how much margin or reserve was available.

Q: Regarding TSO-TSO trade with SEMO - I am interested with trades with Ireland (I have not seen trades with Ireland appear in disbsad)

Q: To confirm, does Emergency Instructions not feed into cash out regardless of which TSO requested it?

Demand | Last week demand out-turn



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

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

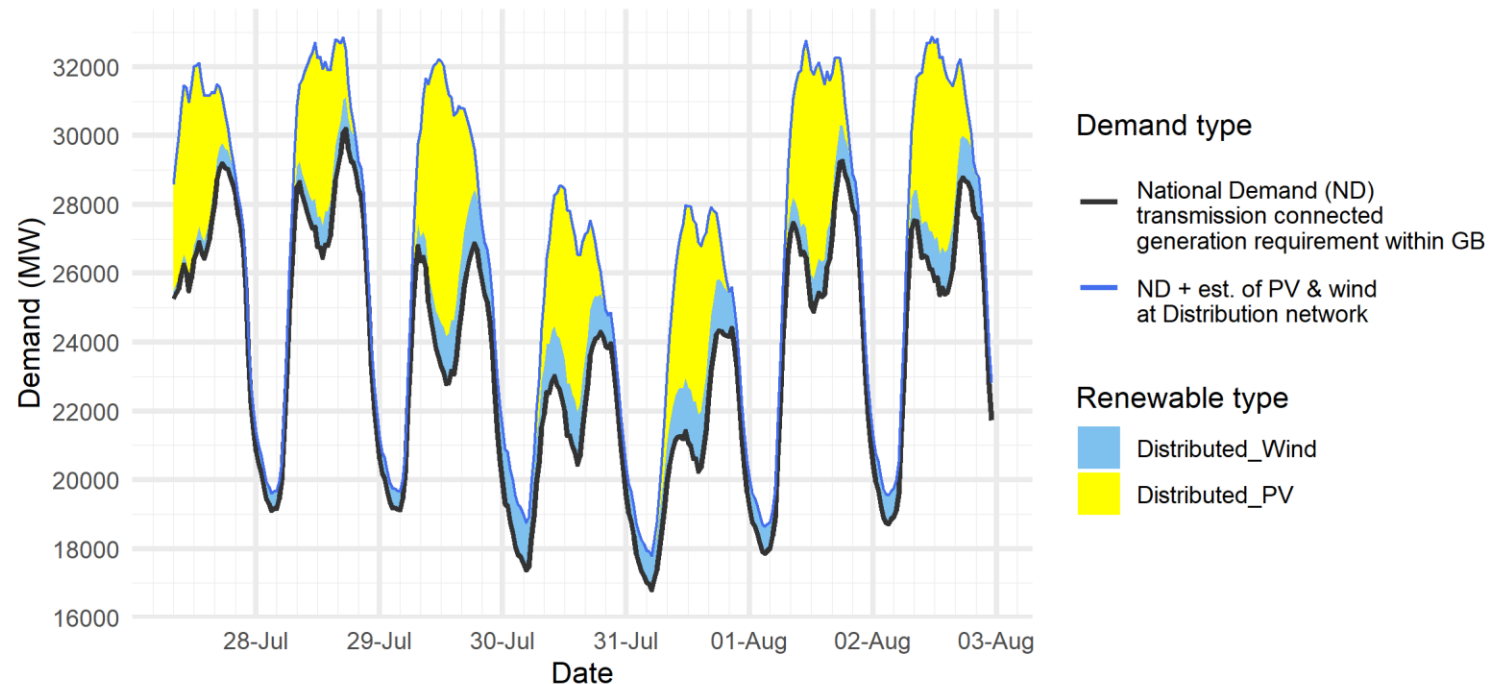
Blue line serves as a proxy for total GB customer demand. It includes demand supplied by the distributed wind and solar sources, but it **does not include** demand supplied by non-weather driven sources at the distributed network for which ESO has no real time data.

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

Date	Forecasting Point	FORECAST (Wed 20 Jul)			OUTTURN		
		National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
20 Jul	Afternoon Min	27.4	1.9	4.3	27.7	2.0	4.3
21 Jul	Overnight Min	19.4	1.0	0.0	19.9	0.9	0.0
21 Jul	Afternoon Min	27.9	0.7	4.2	27.7	0.6	3.8
22 Jul	Overnight Min	19.6	0.4	0.0	19.6	0.5	0.0
22 Jul	Afternoon Min	26.3	0.7	4.5	26.3	0.7	3.8
23 Jul	Overnight Min	18.3	0.4	0.2	17.8	0.6	0.0
23 Jul	Afternoon Min	19.3	1.8	5.4	21.6	2.2	4.2
24 Jul	Overnight Min	15.9	1.9	0.1	15.3	2.6	0.0
24 Jul	Afternoon Min	18.1	2.9	6.5	19.3	3.3	6.1
25 Jul	Overnight Min	17.1	1.8	0.0	17.2	1.8	0.0
25 Jul	Afternoon Min	24.8	2.4	5.0	24.8	3.2	3.9
26 Jul	Overnight Min	17.9	1.7	0.0	18.6	1.1	0.0
26 Jul	Afternoon Min	23.4	2.4	5.8	25.6	0.9	4.9

Demand | Week Ahead

ESO Demand forecast for 27 July-02 August 2022



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

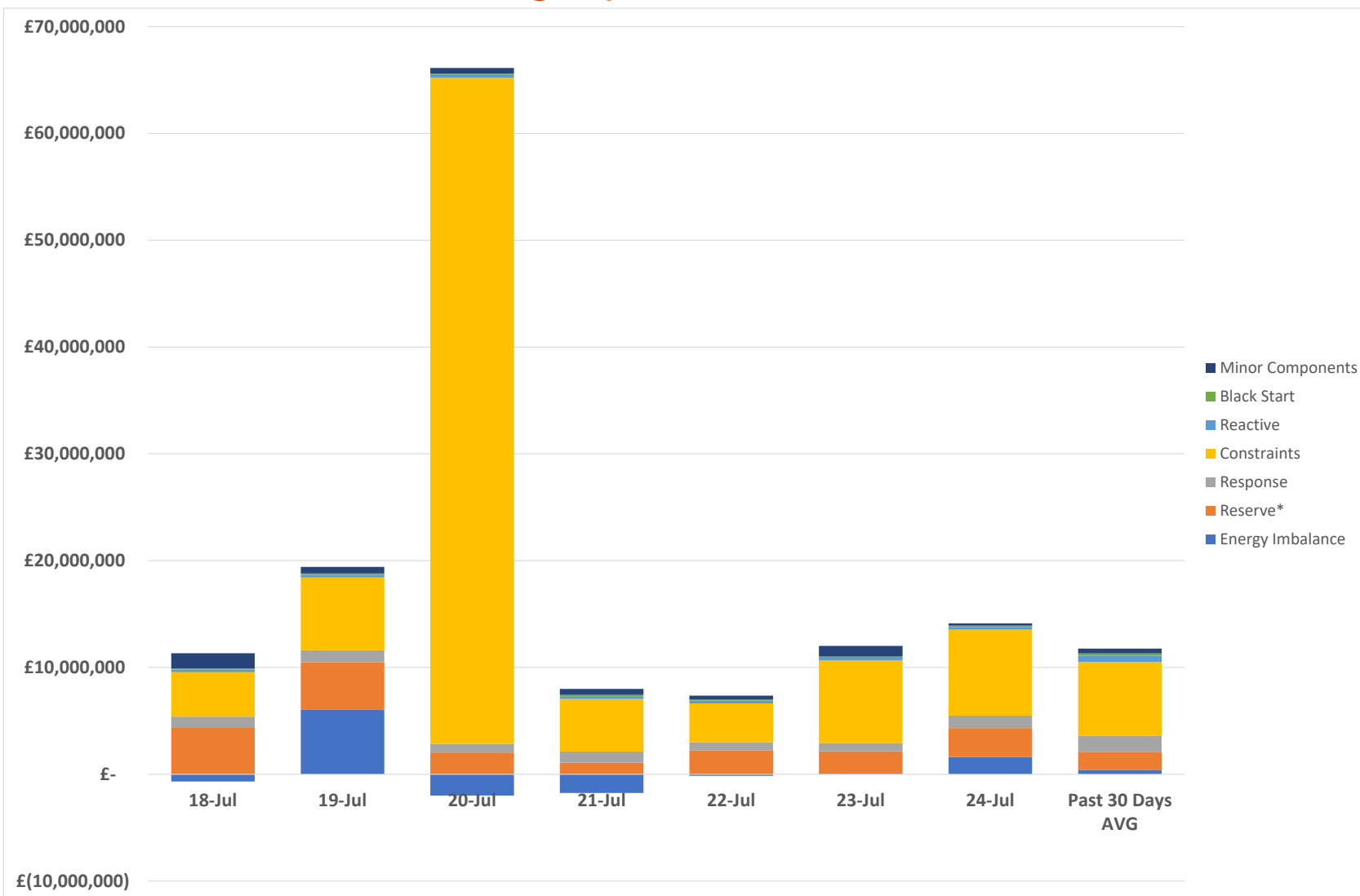
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		FORECAST (Wed 27 Jul)		
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
27 Jul 2022	Afternoon Min	26.4	0.5	4.2
28 Jul 2022	Overnight Min	19.1	0.5	0.0
28 Jul 2022	Afternoon Min	26.4	0.9	4.6
29 Jul 2022	Overnight Min	19.1	0.5	0.0
29 Jul 2022	Afternoon Min	22.8	1.4	7.4
30 Jul 2022	Overnight Min	17.4	1.4	0.0
30 Jul 2022	Afternoon Min	20.5	1.5	4.6
31 Jul 2022	Overnight Min	16.8	0.9	0.1
31 Jul 2022	Afternoon Min	20.2	1.6	5.0
01 Aug 2022	Overnight Min	17.9	0.8	0.0
01 Aug 2022	Afternoon Min	24.9	1.0	5.9
02 Aug 2022	Overnight Min	18.7	0.8	0.0
02 Aug 2022	Afternoon Min	25.4	1.2	5.7

ESO Actions | Category costs breakdown for the last week



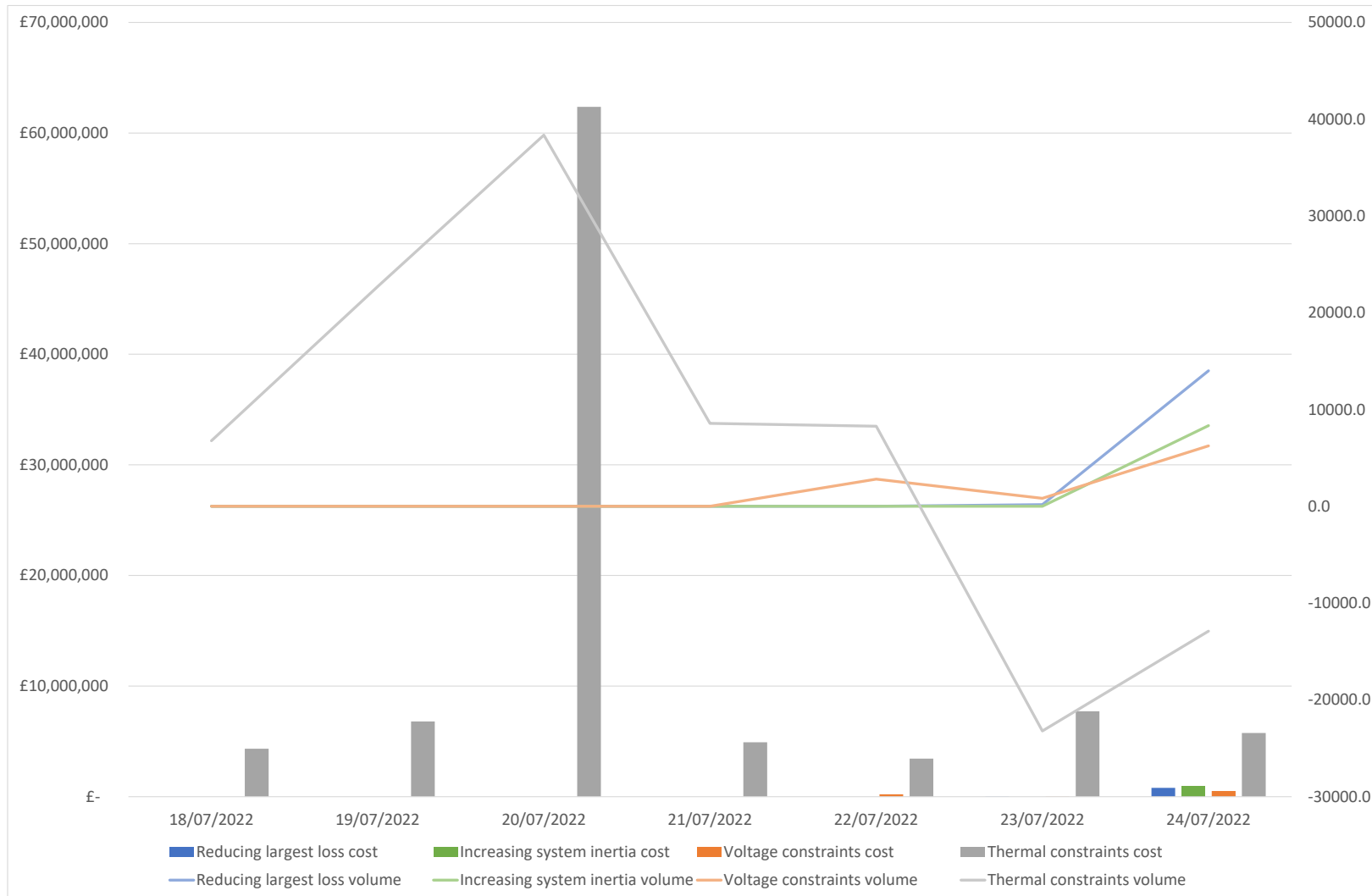
Date	Total (£m)
18/07/2022	10.7
19/07/2022	19.4
20/07/2022	64.1
21/07/2022	6.2
22/07/2022	7.2
23/07/2022	12.0
24/07/2022	14.1
Weekly Total	133.8

Constraint category was the key cost component throughout the week.

*Reserve includes Operating Reserve, STOR, Fast Reserve, Negative Reserve, Other Reserve

Past 30 Days Average is displayed in the chart

ESO Actions | Constraint Cost Breakdown



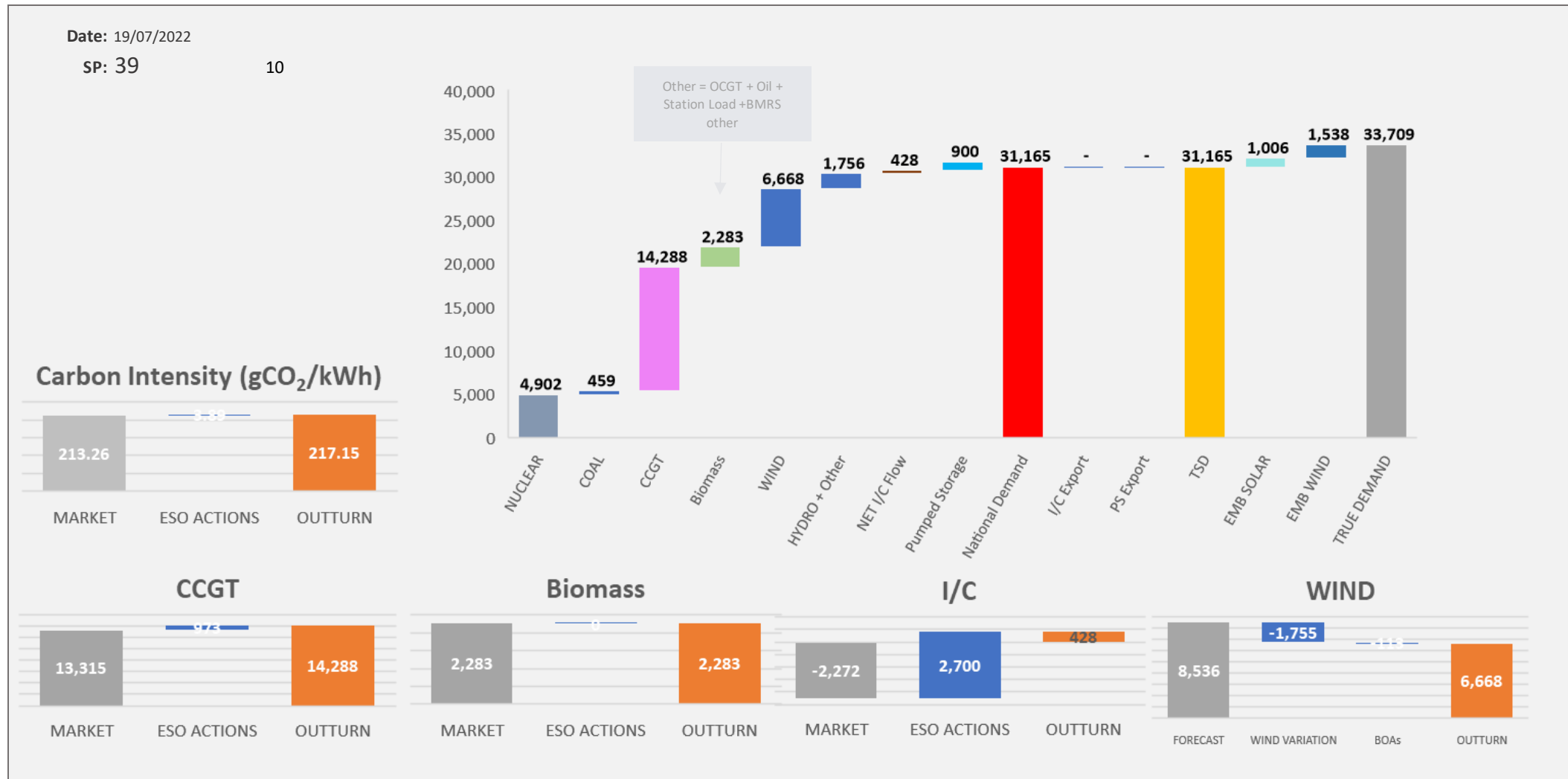
Thermal – network congestion
 Actions required to manage Thermal Constraints throughout the week

Voltage
 Intervention to manage the voltage levels on Friday and Sunday.

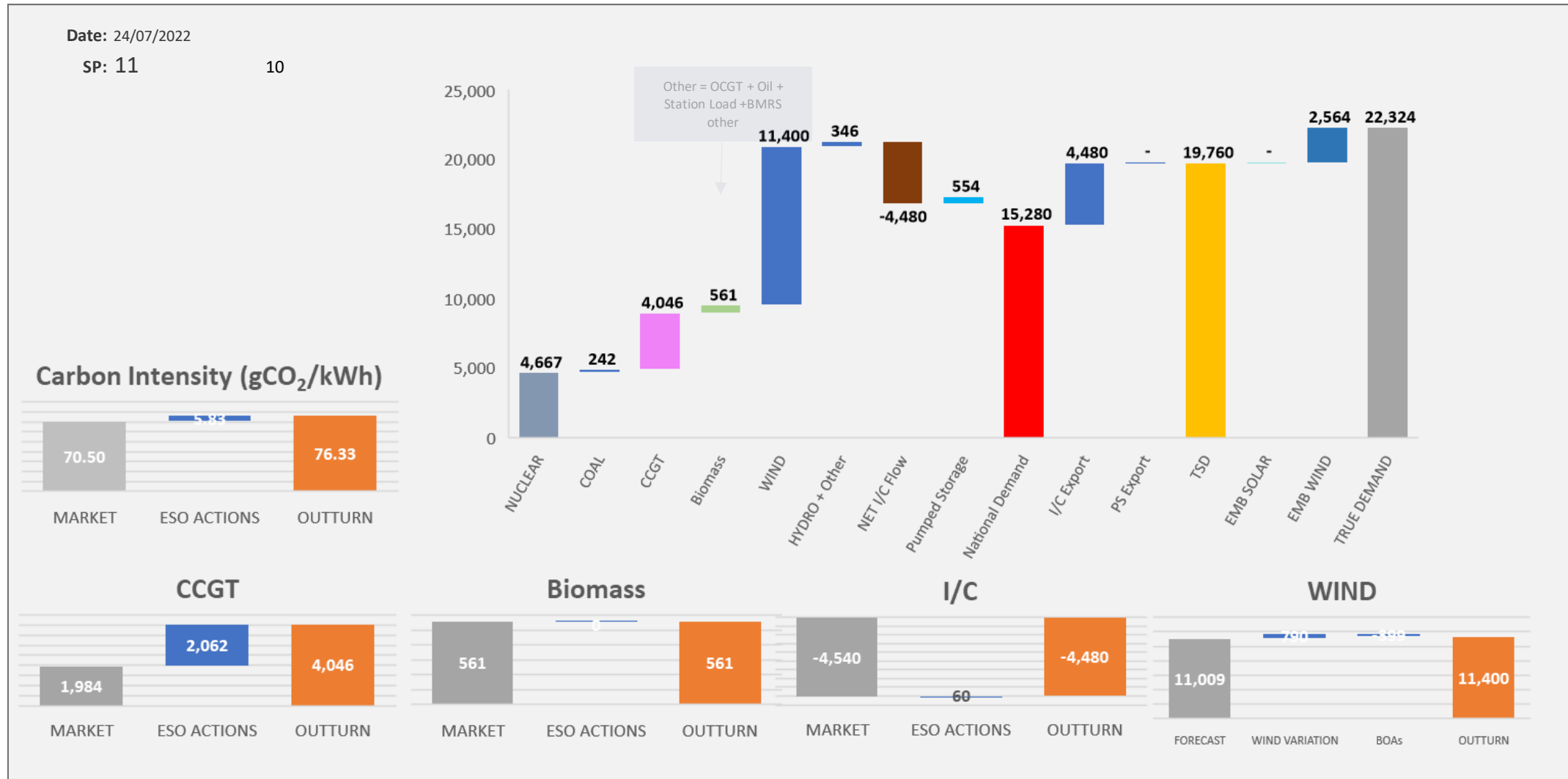
Managing largest loss for RoCoF
 Intervention required to manage largest loss on Sunday

Increasing inertia
 Intervention required to manage Inertia on Sunday

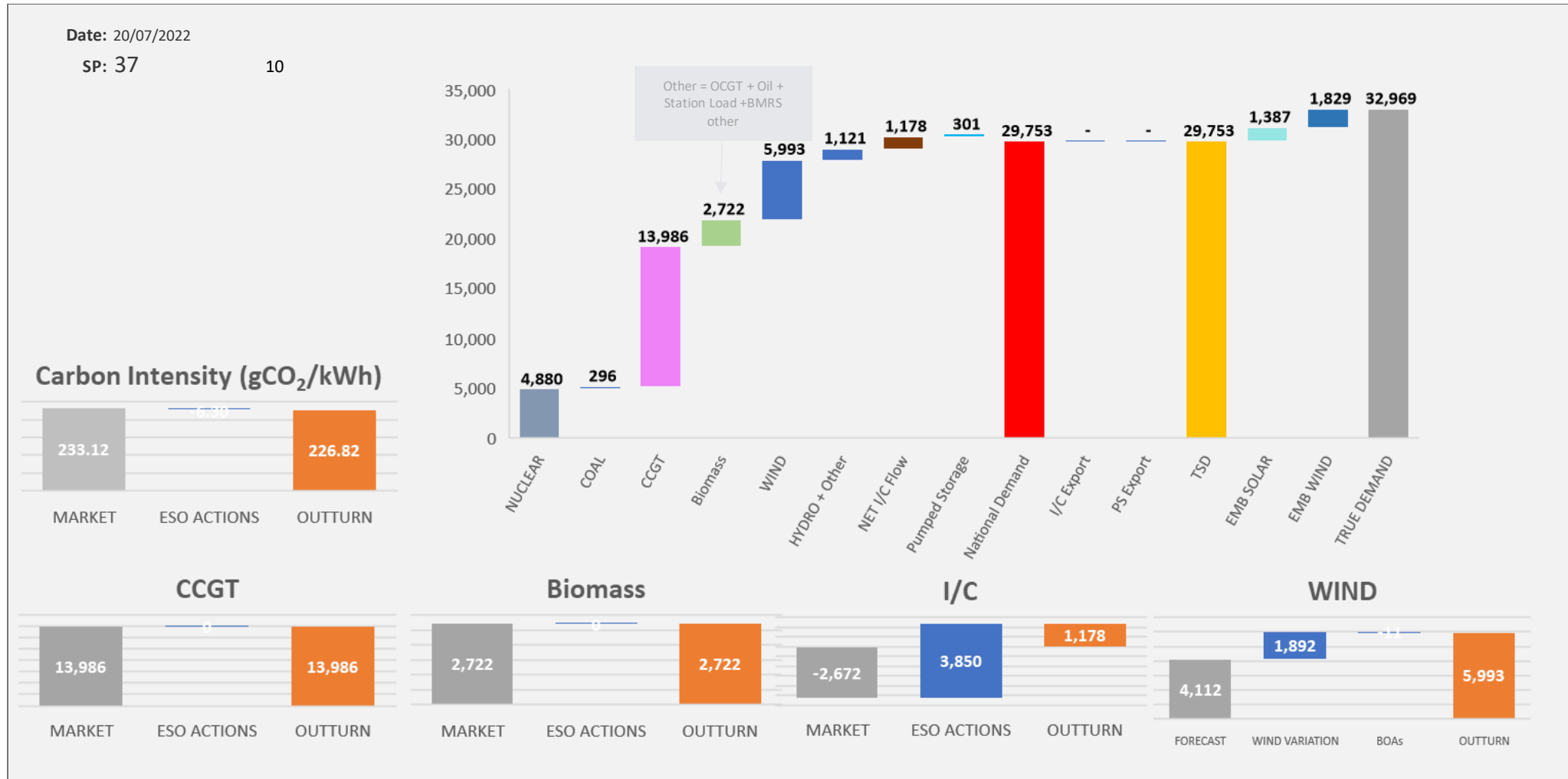
ESO Actions | Tuesday 19 July – Peak Demand



ESO Actions | Sunday 24 July – Minimum Demand



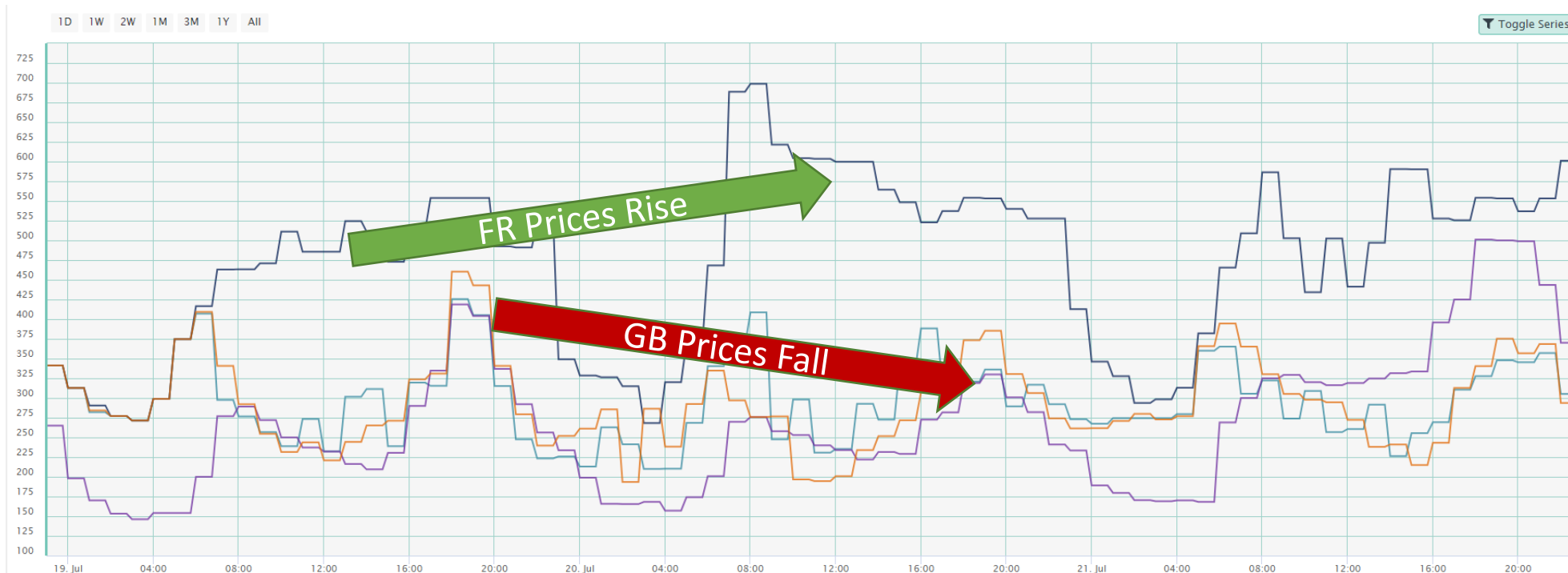
ESO Actions | Wednesday 20 July - Highest SP Spend ~£5.1m



Wednesday 20th July 2022

Fundamental Context

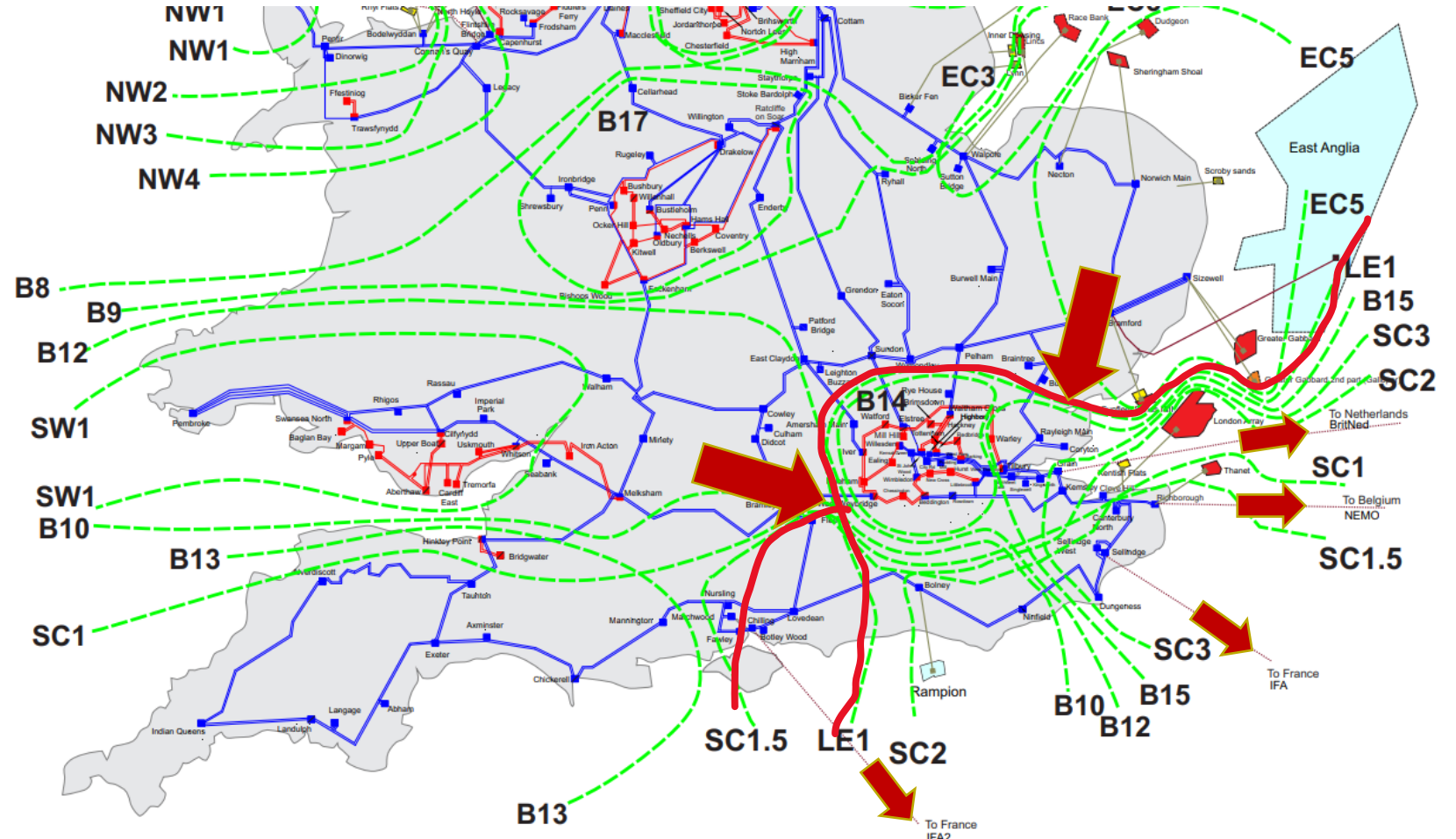
- As of 19/7: NBP Gas trading at significant discount to TTF (€74/MWh vs €158/MWh)
- Power market tightness in GB eased on 20/7 while tightness on the continent intensified. (DAH Spread to France up to 424 £/MWh)



Wednesday 20th July 2022

Fundamental Context

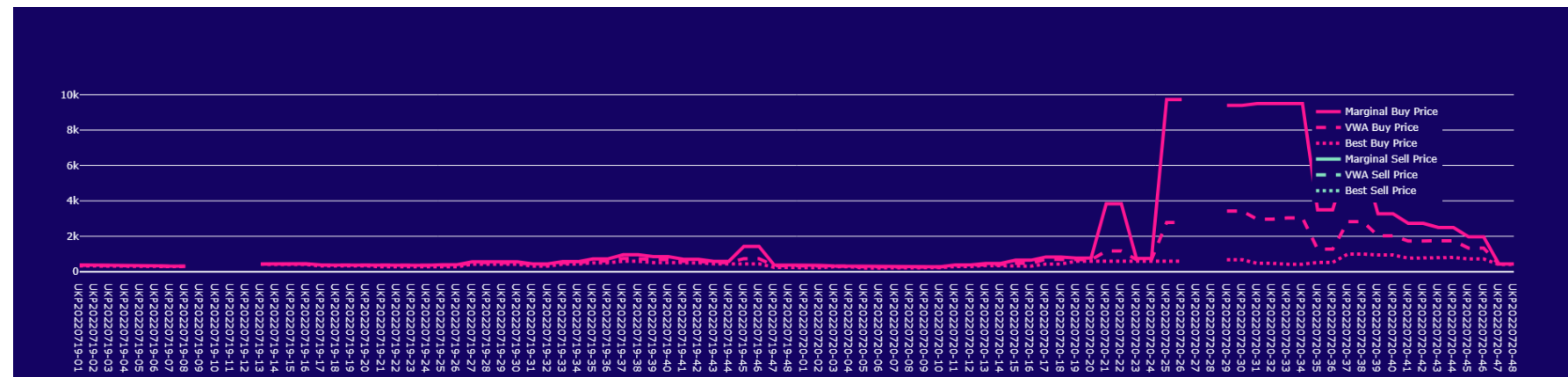
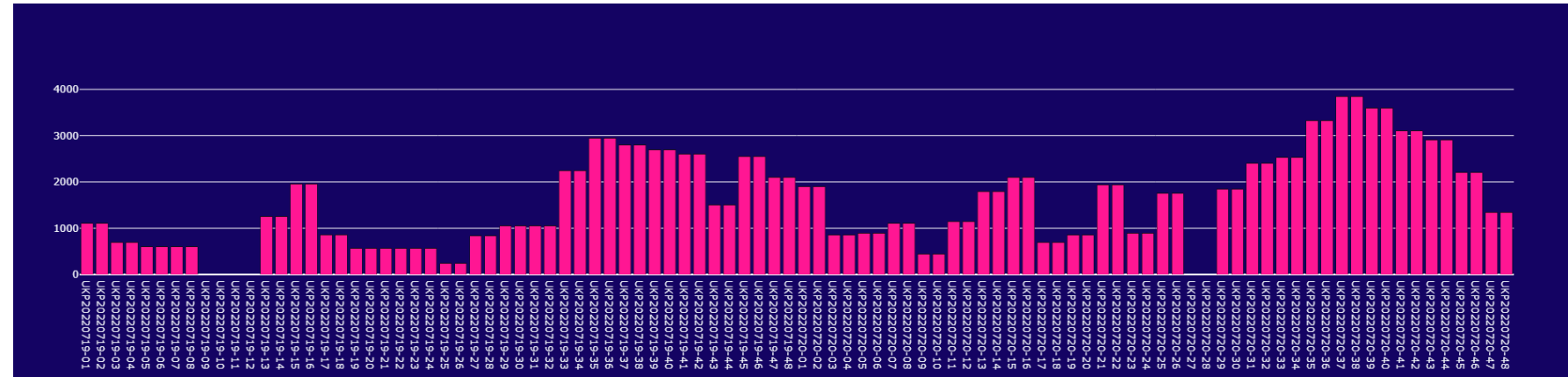
- Strong spread to the continent caused exports on all South East interconnectors.
- Combined with London demand, this drove power flows across the LE1 and SC boundaries.
- These boundaries had been weakened by unplanned outages.



Wednesday 20th July 2022

Trading Activity

- NG ESO Buys power over the interconnectors to manage flows across the LE1 and SC boundaries.
- Overall volumes larger than, but similar to previous days.
- Scarcity on the continent resulted in extreme prices on the 20th.
- The total trade expenditure was ~£69m.



Wednesday 20th July 2022

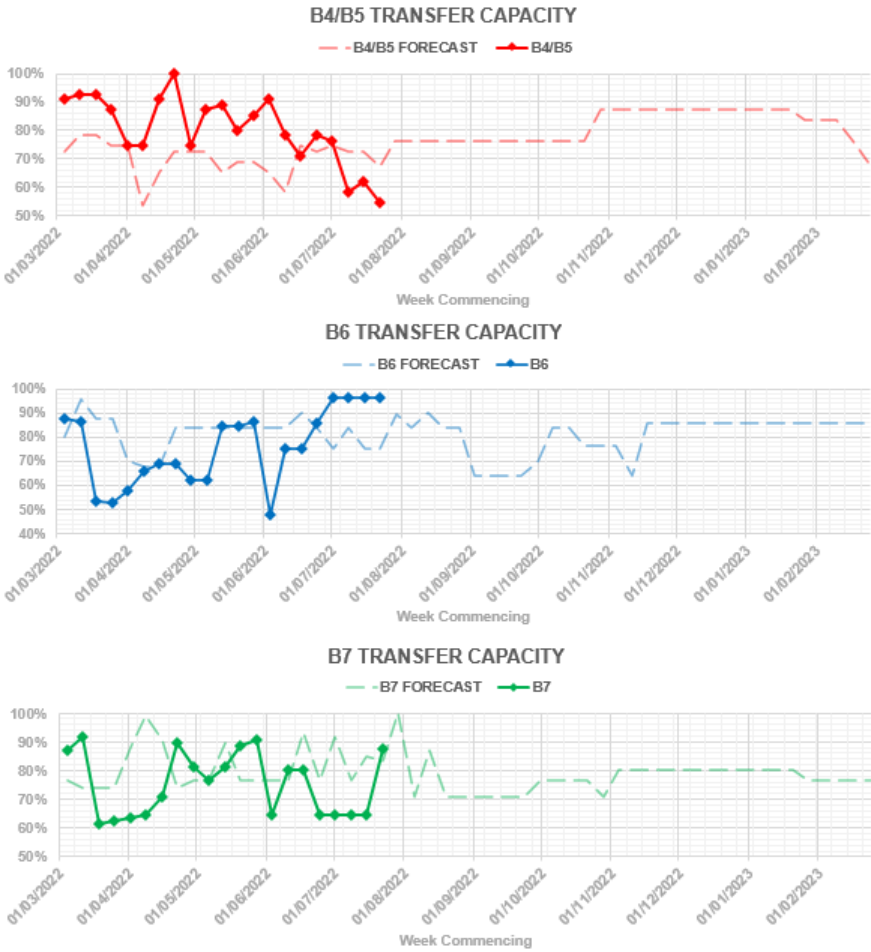
Observations

- The trades were necessary to reduce power flows across the South East 'LE1' boundary. There was no general scarcity in GB.
- Flows into the south east were constrained, in part, by a number of unplanned outages.
- Generation scarcity on the continent meant NL, BE and FR markets were extremely tight, driving the extreme prices.

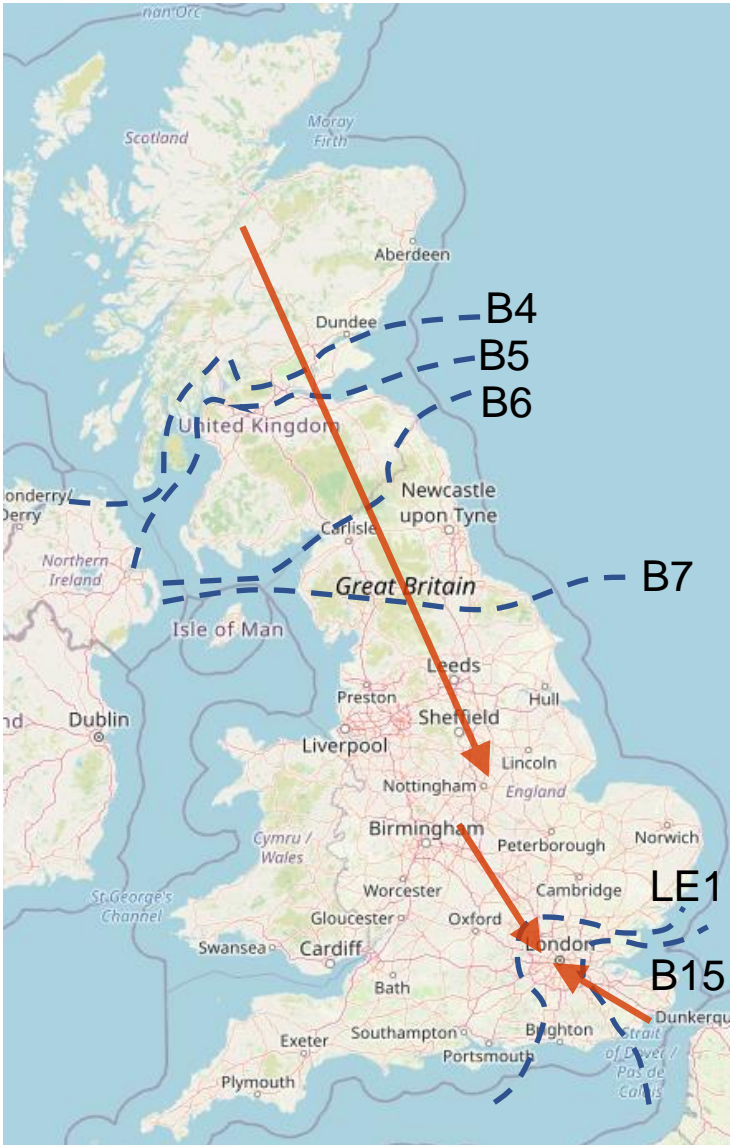
What next?

- ESO Control Room liaising closely with the Transmission Operators and their works are continuing to reduce the current constraints on the 'LE1' boundary and TOs unplanned outages are returning.
- Continuing from the BM Review, we would welcome your views on the broader impact of high cost and associated balancing costs.
 - We are holding a technical listening session to voice thoughts, concerns and solutions regarding the recent high costs observed and the impacts on your organisations.
 - The event will be held Friday 29th July 13:00 to 14:00. Please sign up here: [Balancing Costs - Technical Listening Session \(office.com\)](#)

Transparency | Network Congestion

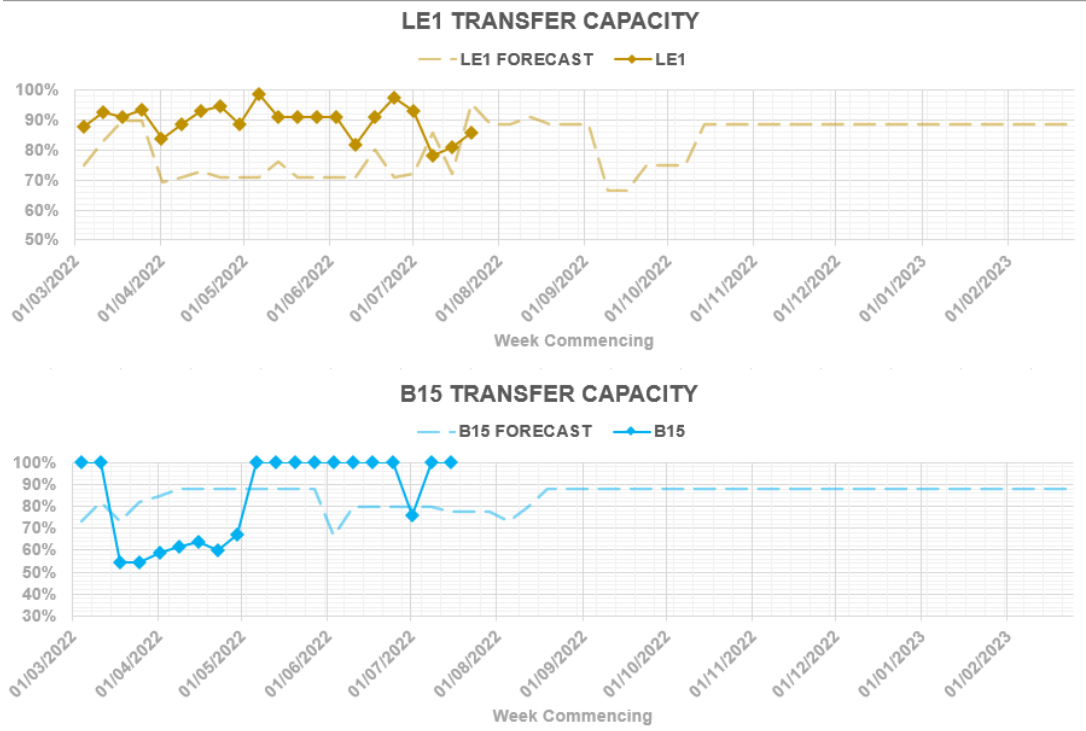


Boundary	Max. Capacity (MW)
B4/B5	2750
B6	5600
B7	8400
LE1	7000
B15	7500

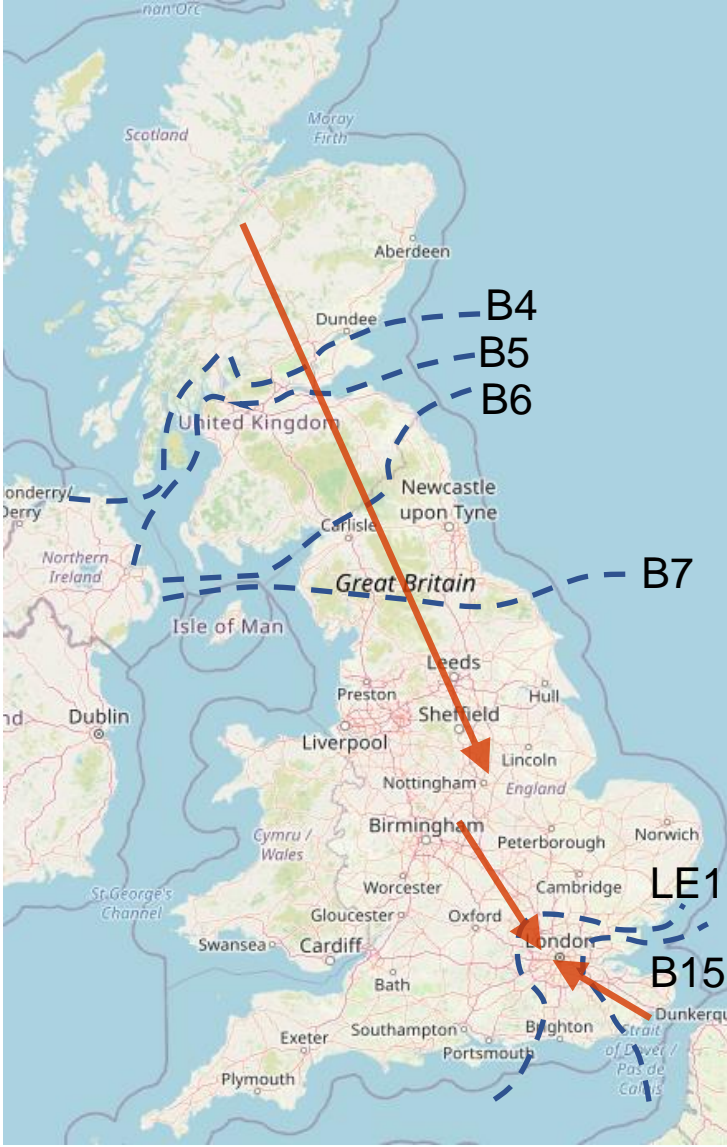


Day ahead flows and limits, and the 24 month constraint limit forecast are published on the ESO Data Portal: <https://data.nationalgrideso.com/data-groups/constraint-management>

Transparency | Network Congestion



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Signpost for BSUoS Fixed Tariff Model Webinar 2

Huge thanks to everyone that attended our first BSUoS fixed tariff model consultation webinar on the 27th June.

We had some great questions and feedback during the session and at some follow up meetings held afterwards.

We are holding our second webinar to discuss the changes that have been made to the model, this is taking place on the **3rd August at 1pm.**

At this 2nd Webinar we will primarily be looking at the following two changes to the model:-

- BSUoS chargeable volume
- Wholesale forward price curve

Although Webinar 2 will not cover all aspects of the model, we are of course happy to answer questions and receive feedback about any parts of the model.

We issued some comms this morning regards Webinar 2, you can see them [HERE](#)

Register directly in Teams for Webinar 2 at the link [HERE](#)

Links to the Webinar 1 media can be found [HERE](#)

Join our BSUoS mailing list at the following link [HERE](#)

Octopus-National Grid ESO - Domestic Reserve Scarcity Trial Results

Trial process: Customers were dispatched day-ahead and received a reward if the 30% or 40% turn down target was met

Pre-Trial

Three two-hour time windows were selected in line with advice from the Electricity National Control Centre (ENCC): 00:00-02:00, 09:00-11:00, 16:30-18:30. For a trial event to be initiated, a pre-agreed threshold in the day-ahead margin forecast would need to be met.

OE emailed **322,245 smart-meter customers** and published a blog with trial information and a 'trial sign-up' form. Those who signed-up became part of the 'trial group'.¹ Both smart and non-smart tariff customers were targeted. Half-hour granularity of data was required by ESO to provide forecast and actuals data.

OE calculated a forecast² of consumption by looking at a customer's half-hourly consumption the same day and settlement period four weeks prior to the event and set a **baseline** at average demand.

Pre-Event

At 12pm Sunday to Friday inclusive, OE sent ESO a day-ahead **volume forecast**.

By **4pm day-ahead**, OE emailed all customers in the trial group with an 'event opt-in'³ request, the turn down window and their turn down target. The target was calculated as **30% or 40%⁴ of the customer's forecasted consumption** (the baseline) for the event period.

By **10pm day-ahead**, OE sent an updated volume forecast to ESO based on event opt-in numbers.

Before the 09:00-11:00 and 16:30-18:30 events, OE sent a **reminder email** to the trial group (00:00-02:00 was deemed antisocial).

Post-Event

OE calculated the **turn down response** as the difference between actual demand and baseline demand.

Customers who **successfully reached their target** were deemed to have 'participated' and received one of two incentives⁵: i) credit equivalent to the cost of electricity consumed, or (ii) credit equivalent to customer's unit rate multiplied by their turn down response in kWh (the '**alternative incentive**').

OE provided a post-event summary of demand response to ESO including participation rate and depth of response.

Note: (1) 1 Trial 'sign-ups' are people confirming they wanted to join the trial and formed the group of customers emailed ahead of each event, or the 'trial group'; (2) We agreed a forecast methodology with NGENSO but observed some deviation later in the trial that suggested more work is needed in this area (see Section 4); (3) 'Event opt-ins' are people confirming they wanted to take part in a particular event; (4) A 30% target was set for the 00:00-02:00 events and a 40% target was set for the 09:00-11:00 and 16:30-18:30 events; (5) Approx. 50% of the trial group were selected as a representative sample and offered the option of incentive (ii) after the first event of the trial had taken place.

Octopus-National Grid ESO - Domestic Reserve Scarcity Trial Results

Snapshot of key figures

105,320

customers 'signed up'¹ to the trial out of 322,245 emailed

197 MWh

total turn down across the trial

12.3 MW

average turn down per event

44%

average 'event opt-ins'² hitting target³ ('participating') per event

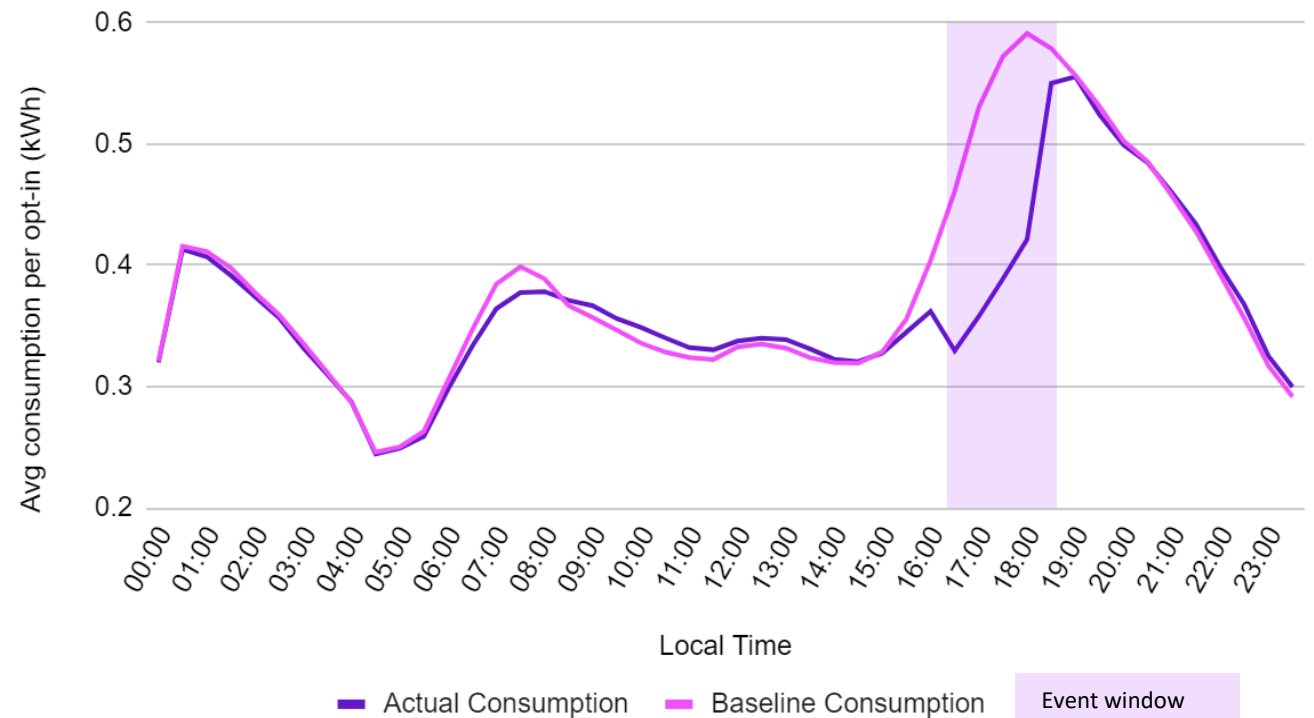
0.51 kWh

average turn down per hhold per event – 0.79 kWh smart tariff & 0.46 kWh flat tariff

£227/
MWh

average cost of demand reduction

Demand Profile for Event 1: 16:30-18:30

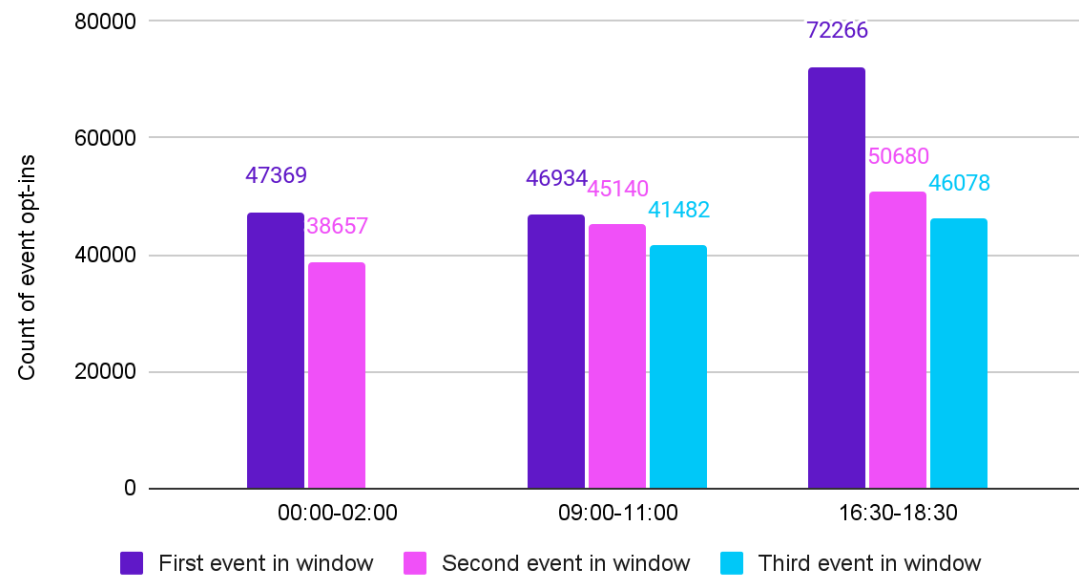


Octopus-National Grid ESO - Domestic Reserve Scarcity Trial Results

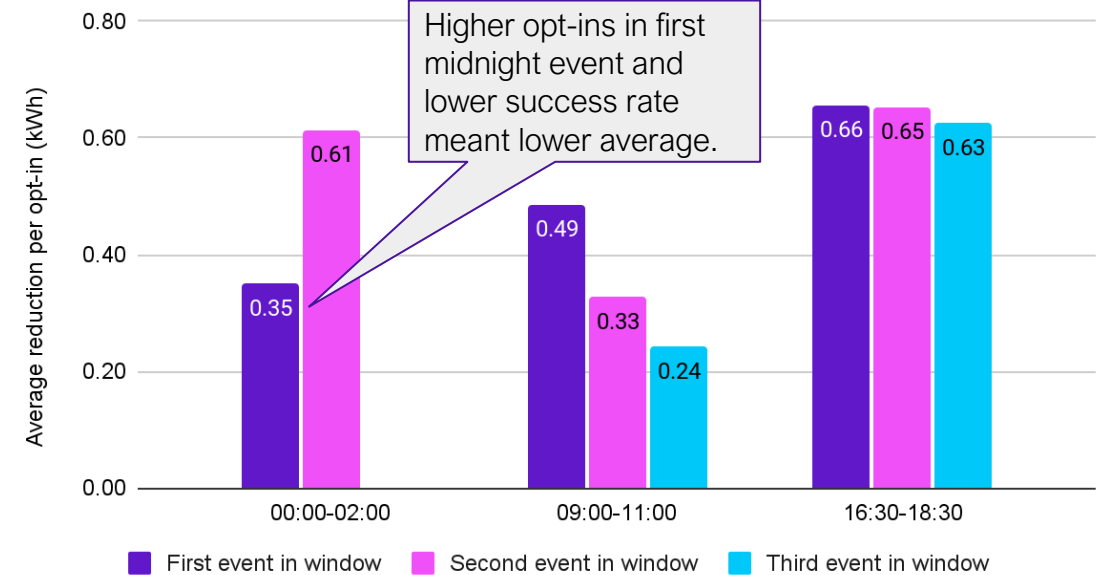
Repeat events show some evidence of stabilising participation - average depth of response varied by period

- In general, turn down response dropped off as the trial went on, although average kWh reduction stabilised in the evening peak and opt-in numbers stabilised quickly, suggesting habit forming.
- The highest levels of kWh response were observed in the 16:30-18:30 window, with an average of 0.65 kWh.
- Greater response for the 16:30-18:30 events is likely because people are typically home and awake at this time. This is backed up by the results of the feedback questionnaire, where 47% of respondents said they were reliant on manually switching off appliances.
 - It is also worth noting that a text reminder was sent 30 minutes before these events, and this window had the longest notification period (24 hours compared to 8

Opt-ins per event



Average kWh reduction per opt-in



Octopus-National Grid ESO - Domestic Reserve Scarcity Trial Results

Next steps

1. Develop knowledge base through Crowdflex and others

[The Crowdflex programme](#) is one of the main ways National Grid ESO is analysing and understanding how domestic flexibility can be used in grid operations.

Crowdflex and other projects can deepen this analysis by considering the following areas:

- Develop deeper understanding of extrapolation of response and participation.
- Improve demand response forecast methodology.
- Refine baselining methodology.
- Test new modes of response - varying lengths, different times of day, locational-based response, demand turn up and down, notice periods, interaction with DNO services - through Crowdflex and others.

2. Work on removing barriers to utilise domestic demand as a flexible resource

- Explore how domestic demand can be utilised by NGENSO.
- Collaborate with industry stakeholders to quantify potential levels of national demand flexibility.
- Understand routes for settlement for the resource.

Note: CrowdFlex explores how domestic flexibility can be used in grid operations to help align demand to generation, improve coordination across the network, reduce stress on the system, while empowering consumers to be active players in reducing their energy bills via new tariffs and incentives. See more at <https://www.nationalgrideso.com/virtual-energy-system/crowdflex>.

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Further details

- [The full report](#) can be found on Octopus Energy's Blog on their website.
- There will be a one-off technical webinar doing a deep dive into the results of the trial on **Friday 5 August, 12:00 – 13:00**. [Register here](#)
- Further analysis of the data set is being completed by Octopus Centre for Net Zero to further increase understanding of consumer behaviour and explore different modelling methodologies.
- The link to the Octopus blog is available [here](#).

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Audience Q&A Session

① Start presenting to display the audience questions on this slide.

Feedback

Please remember to use the feedback poll in sli.do after the event.

We welcome feedback to understand what we are doing well and how we can improve the event for the future.

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

