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

ESO Operational Transparency Forum

4 May 2022

nationalgridESO

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
Constraints

Focus Areas

ETYS consultation

Signposts to:
DM first auction
BP2 consultation launch

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:

- Managing constraints in real-time – inertia/ RoCoF – scheduled for 11th May

Questions outstanding from previous weeks

Q: I think the purpose of Steve's observation earlier was to point out that a continental European constraint can be "outsourced" to GB system & lead to GB constraint. This must something happening frequently across the many continental boundaries - how consistent is this with GB cost treatment?

A: System Operators (SOs), NGESO included, will look to solve system constraints in the most economic and efficient manner; in some instances, the lowest cost solution may be to adjust the cross-border flows that will have been determined by market out-turns. A System Operator has a number of ways to adjust such flows including using third parties to take a position in the remote market and nominate a change in interconnector flow or to use a pre-agreed SO-SO tools (which are reciprocated and available to both SOs). Such tools are priced in a cost neutral way so that the consumers in the 'donor' market are not impacted by the support given.

Q: We are seeing quite the variance in the 4 day NG Dynamic Containment (DC) forecast in block 5 versus executed volume. Please can you explain why that is?

A: DC forward forecasting methodology aligns with Frequency Risk and Control Report (FRCR) methodology. The methodology uses forecasted demand, inertia, and response volumes as well as a view of the largest losses on the system to estimate the DC requirements.

The actual requirements day-ahead are likely to change based on optimisation carried out closer to real-time coupled with greater visibility of inertia, demand, and loss sizes. For example, changes to interconnector flows from our forecasted position can lead to either an increase or decrease in our requirements if the change impacts the largest loss we need to secure.

Questions outstanding from previous weeks

Q: How dependent is the system on the reactive power absorbed by the Line Commutated Converters (LCC) High Voltage Direct Current (HVDC)? What would happen if the LCCs trip when they are importing the highest amount of VARs?

A: LCC HVDC typically requires substantial harmonic filtering. The filters also inject reactive power to the system, offsetting the reactive power absorbed by the converter (depending on the MW transmission and the number of filters in service). Typically, when an LCC converter trips, the filters will trip as well, so the actual change in MVArs won't equal the maximum MVAr absorption of the converter, it will depend on the MW transmission level, the associated absorption of the link and the MVAr injection of the filters in service.

To answer the questions:

- We're not dependent on the MVAr absorption of LCC HVDC, as the filtering requirements change the actual MVAr exchange, and we have to plan for the worst case
- To plan for the loss of an LCC HVDC link, we have to consider the worst case in terms of total loss of MVAr exchange, which can be a slight absorption, but can be a substantial injection due to the filtering needs

Q: Monday 25th April: Moyle Interconnector (IC) did not submit a Physical Notification (PN), yet still generated MWs. Observed this multiple times over the years and it is a semi-regular occurrence. It would be unacceptable for any other Balancing Mechanism Unit (BMU). Why do they keep doing this? Irish TSO not bound by Grid Code?

A: Interconnectors do need to submit PN's like normal generators, but each interconnector trading party submits them separately rather than them being submitted for each whole interconnector in one submission. Each interconnector trading party submits an individual PN and a system known as RNP then collates and issues an FPN which is the net interconnector flow including the necessary adjustments for the physical losses of the interconnector. Interconnectors must submit PNs as any other generator and we have looked at this instances and we can see a system error that caused this situation.

Questions outstanding from previous weeks

Q: Sizewell B station tripped on Monday 18th April - can you describe what the impact on system frequency was (there was a notable drop) and how the system and control room reacted with the tools available (DC action had a good response/ effect). thanks

A: At 17:25 hours on Monday 18th April 2022 Sizewell B Units 1 and 2 tripped. This was a loss of 1260MW from the power station. During the event we have also seen a very small Distributed Energy Resources (DER) loss of 52MW which takes the total loss of energy to 1312MW. The system demand at the time was just under 27GW and calculations estimates that the system inertia was approximately 250GVAs.

After the trip the system frequency fell from 50.055Hz and reached to a minimum of 49.641Hz. The Electricity System Operator (ESO) Control Room took immediate actions including instructions on BM and Non BM fast reserves, which resulted in the system frequency being recovered to within the lower operational limit of 49.8Hz within 5 minutes.

The ESO held 750MW dynamic response and 653MW DC – L responses prior to the trip based on the system condition, and the post event analysis indicated they performed as expected following the trip.

Questions outstanding from previous weeks

Outstanding questions we are still working on

Q: On 8th Apr 2022: the NDF (National Demand Forecast) was unusual - sudden drop in demand forecast for period 15 and then sudden rise in demand forecast for period 21 - was there any specific rational/reason for that forecast – referring to the within day 6 hour ahead forecast?

Q: Will the ESO be publishing any further information on the methodology behind the DC price caps and how these are being calculated day to day?

System Events

3rd May:
At 02:12 an interconnector tripped while it was exporting 1000MW. Rate of Change of Frequency (RoCoF) was 1251MW at the time of fault.
Max High Frequency (HF) loss was 1166MW. The frequency increased to 50.34Hz.

30th April:
At 05:33 an interconnector tripped while it was exporting 1028MW. RoCoF was 1274MW at the time of fault.
Max HF loss was 1187MW. The frequency rose to 50.31Hz.

29th April
At 06:10 an interconnector tripped while it was exporting 1028MW. RoCoF was 1341MW at the time of fault.
Max HF loss was 1270MW. The frequency increased to 50.34Hz

28th April:
At 09:10 a unit tripped while generating 645MW.
The frequency had dropped to 49.66Hz. The frequency returned to operational limits, 49.8Hz, at 09:12.

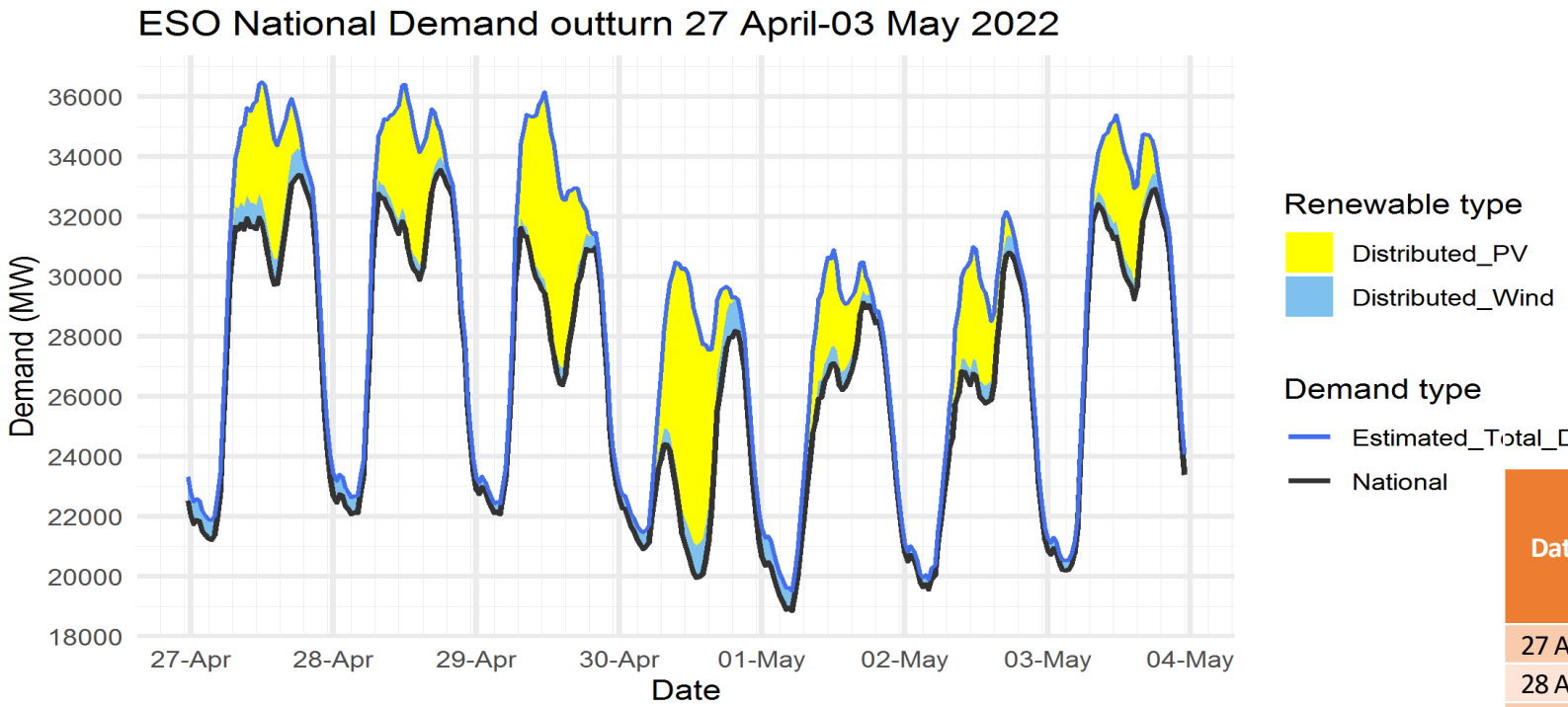
Dynamic Moderation (DM) - first auction

The first auction for Dynamic Moderation will go live on Friday this week at 14:30 on the EPEX Auction platform.

Any questions, please contact your account manager or the team at the Future of Balancing services email address.

box.futureofbalancingservices@nationalgrideso.com

Demand | Last week demand out-turn



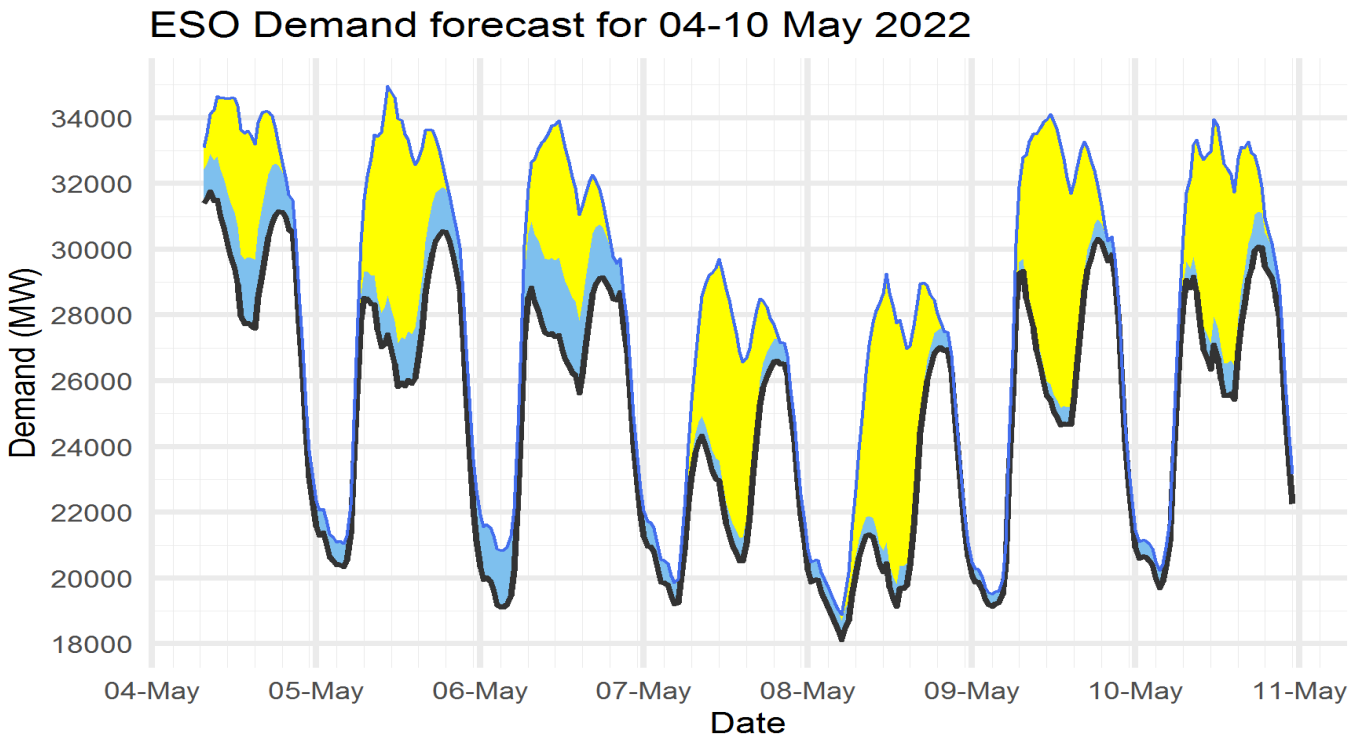
		FORECAST (Wed 27 Apr)			OUTTURN		
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
27 Apr	Afternoon Min	26.9	0.9	5.9	29.7	0.8	4.0
28 Apr	Overnight Min	21.3	0.5	0.0	22.1	0.5	0.0
28 Apr	Afternoon Min	27.8	0.5	5.8	29.9	0.5	3.8
29 Apr	Overnight Min	21.3	0.4	0.0	22.1	0.3	0.0
29 Apr	Afternoon Min	25.4	0.6	6.3	26.4	0.6	5.6
30 Apr	Overnight Min	20.1	0.4	0.0	20.9	0.5	0.0
30 Apr	Afternoon Min	21.1	0.8	5.2	20.0	1.1	7.6
01 May	Overnight Min	18.0	0.6	0.0	18.9	0.6	0.0
01 May	Afternoon Min	19.8	0.8	5.4	26.2	0.6	2.4
02 May	Overnight Min	18.7	0.6	0.0	19.6	0.3	0.0
02 May	Afternoon Min	20.4	0.9	5.9	25.8	0.6	3.1
03 May	Overnight Min	19.0	0.7	0.0	20.2	0.3	0.0
03 May	Afternoon Min	26.6	1.2	5.5	29.2	0.6	3.1

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.

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

Demand | Week Ahead



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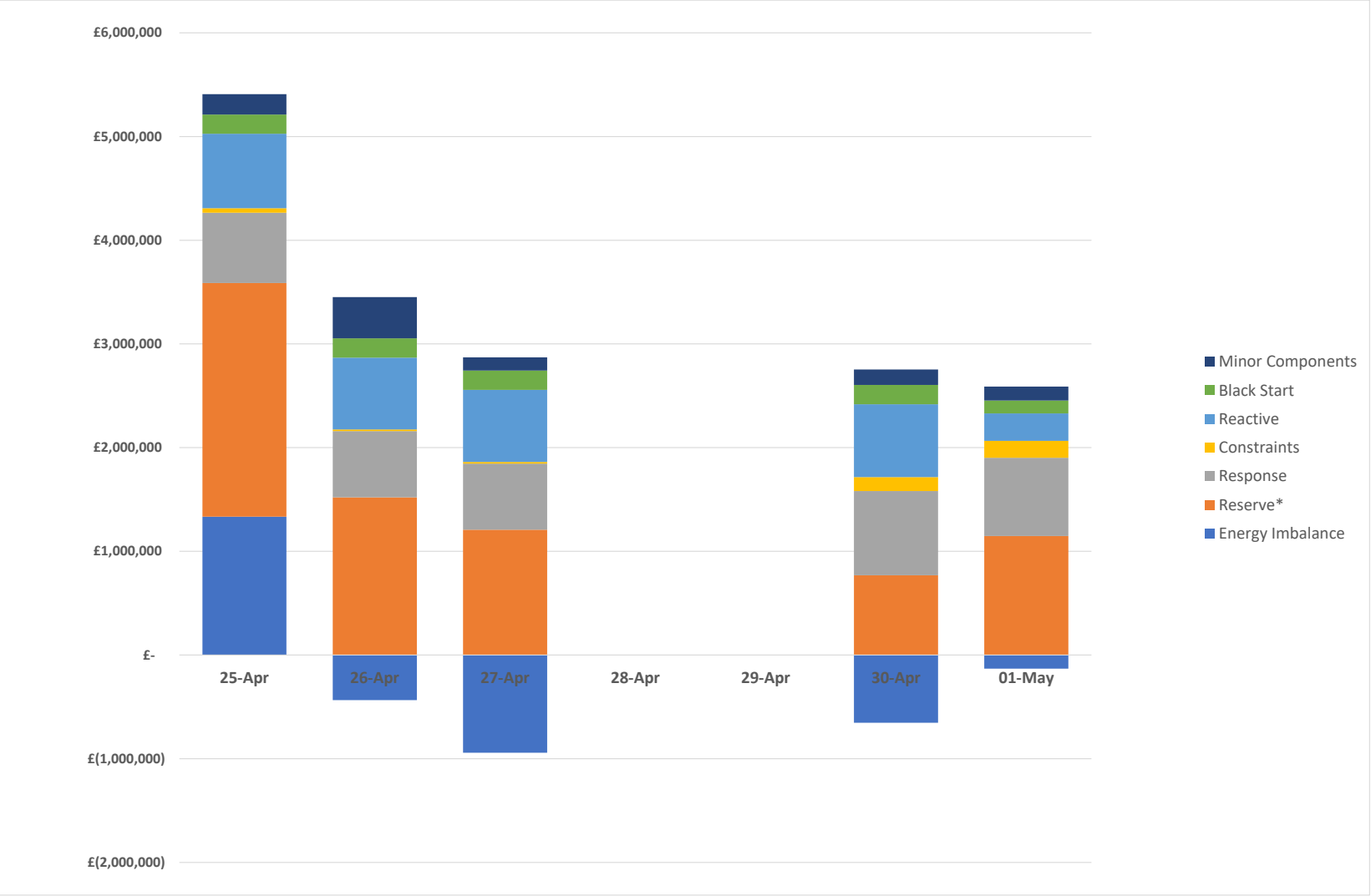
Forecast of the embedded solar & wind generation for the next 14 days can be found on the ESO Data Portal in the following data set: Embedded Solar and Wind Forecast

		FORECAST (Wed 04 May)		
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
04 May	Afternoon Min	27.6	2.1	3.5
05 May	Overnight Min	20.3	0.7	0.0
05 May	Afternoon Min	25.8	1.4	6.2
06 May	Overnight Min	19.1	1.7	0.0
06 May	Afternoon Min	25.6	2.2	3.2
07 May	Overnight Min	19.2	0.6	0.0
07 May	Afternoon Min	20.5	0.7	5.7
08 May	Overnight Min	18.1	0.6	0.2
08 May	Afternoon Min	19.1	0.7	7.9
09 May	Overnight Min	19.1	0.4	0.0
09 May	Afternoon Min	24.7	0.5	8.0
10 May	Overnight Min	19.7	0.5	0.0
10 May	Afternoon Min	25.4	1.0	5.3

ESO Actions | Category costs breakdown for the last week



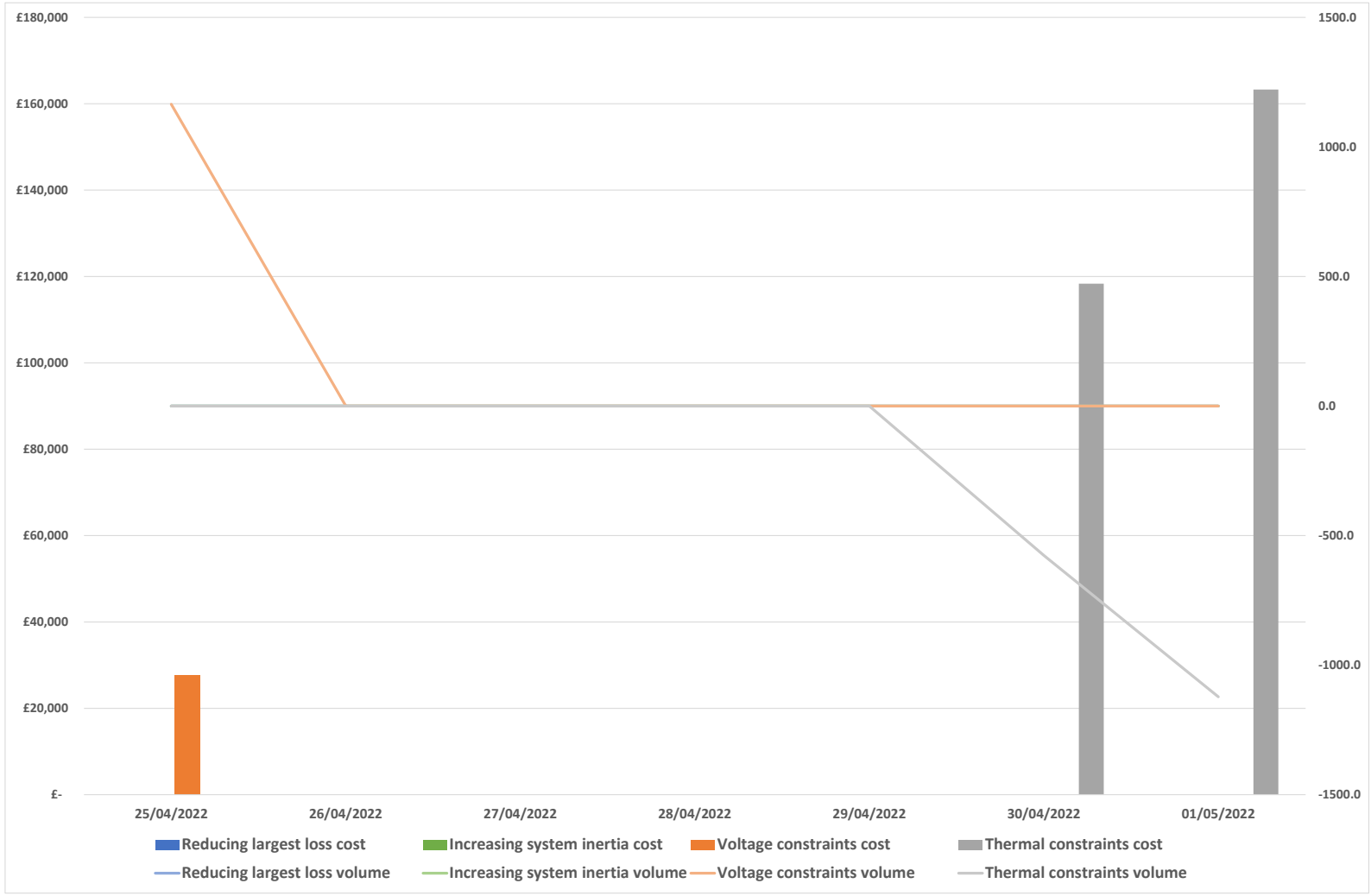
Date	Total (£m)
25/04/2022	5.4
26/04/2022	3.0
27/04/2022	1.9
28/04/2022	3.8
29/04/2022	2.6
30/04/2022	2.1
01/05/2022	2.5
Weekly Total	21.3

Key driver of costs was Reserve category

Past 30 Days Average is displayed in the chart

Please note that the costs for 28th and 29th have been given as indicative figures as we have been unable to process due to an IT fault we are looking to resolve.

ESO Actions | Constraint Cost Breakdown



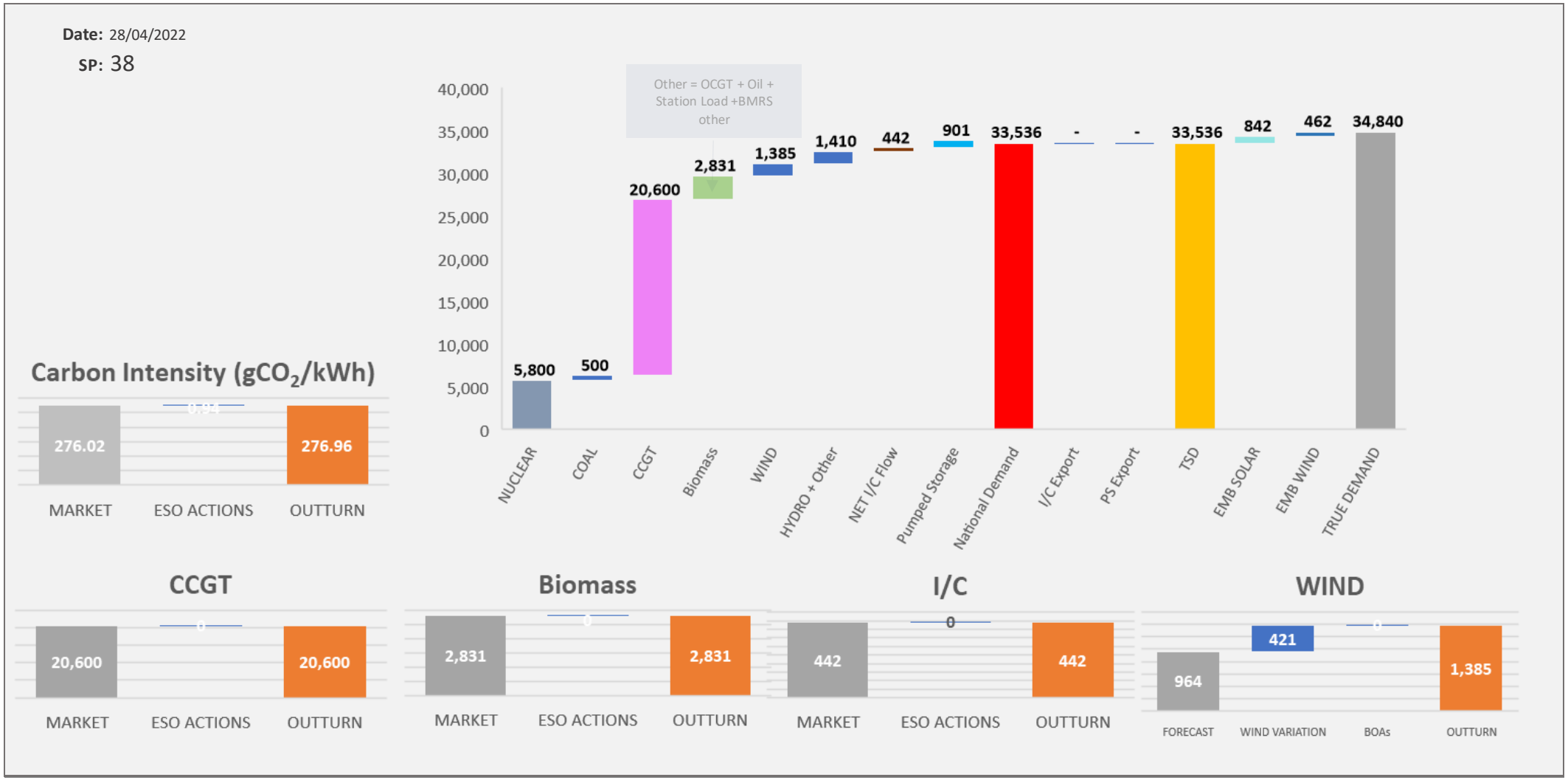
Thermal – network congestion
Little or no actions required to manage Thermal Constraints during the week

Voltage
Actions taken to synchronise generation to meet voltage requirements were required on Monday

Managing largest loss for RoCoF
No intervention required to manage largest loss

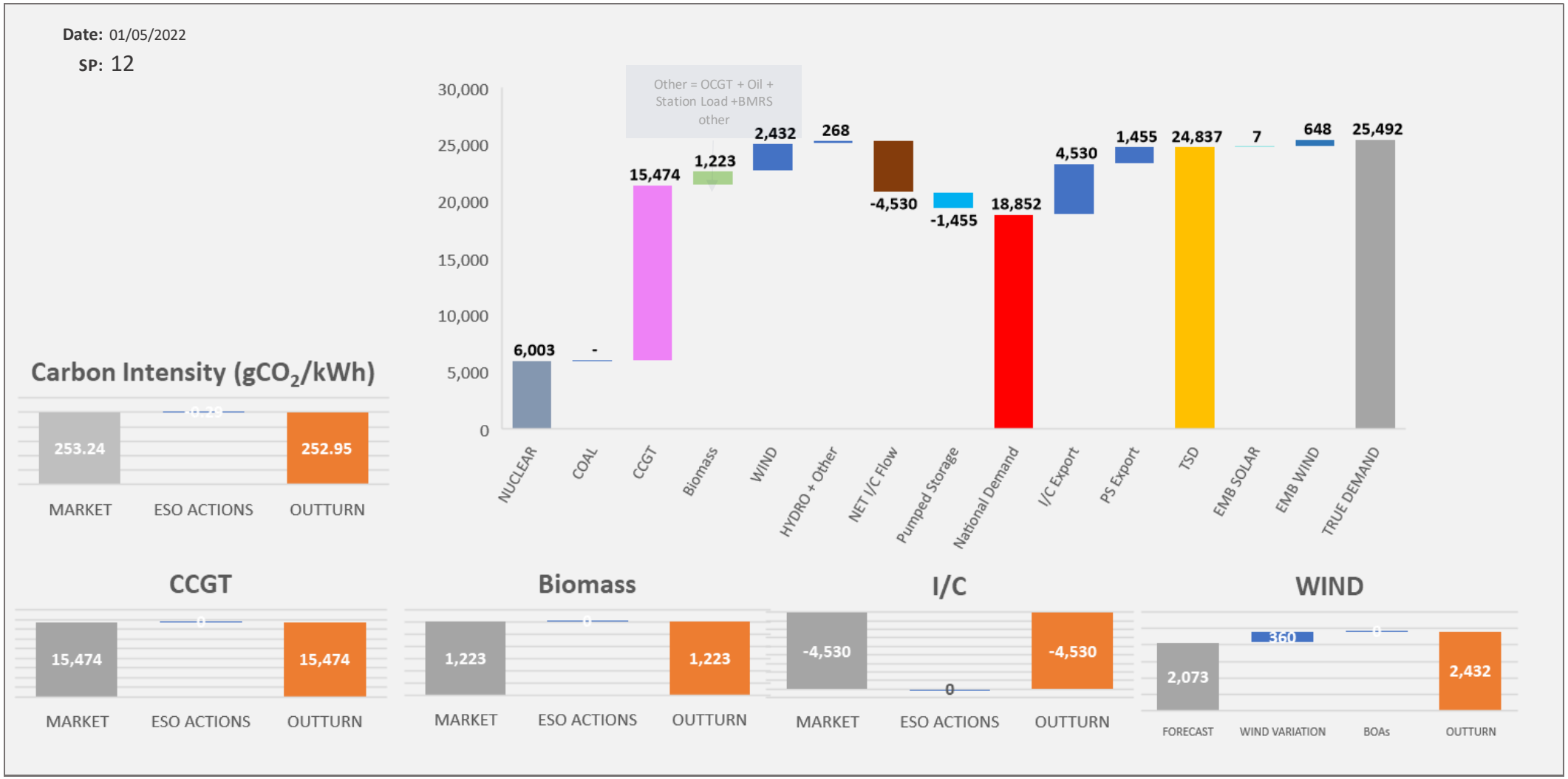
Increasing inertia
No Intervention required to increase minimum inertia

ESO Actions | Thursday 28 April Peak



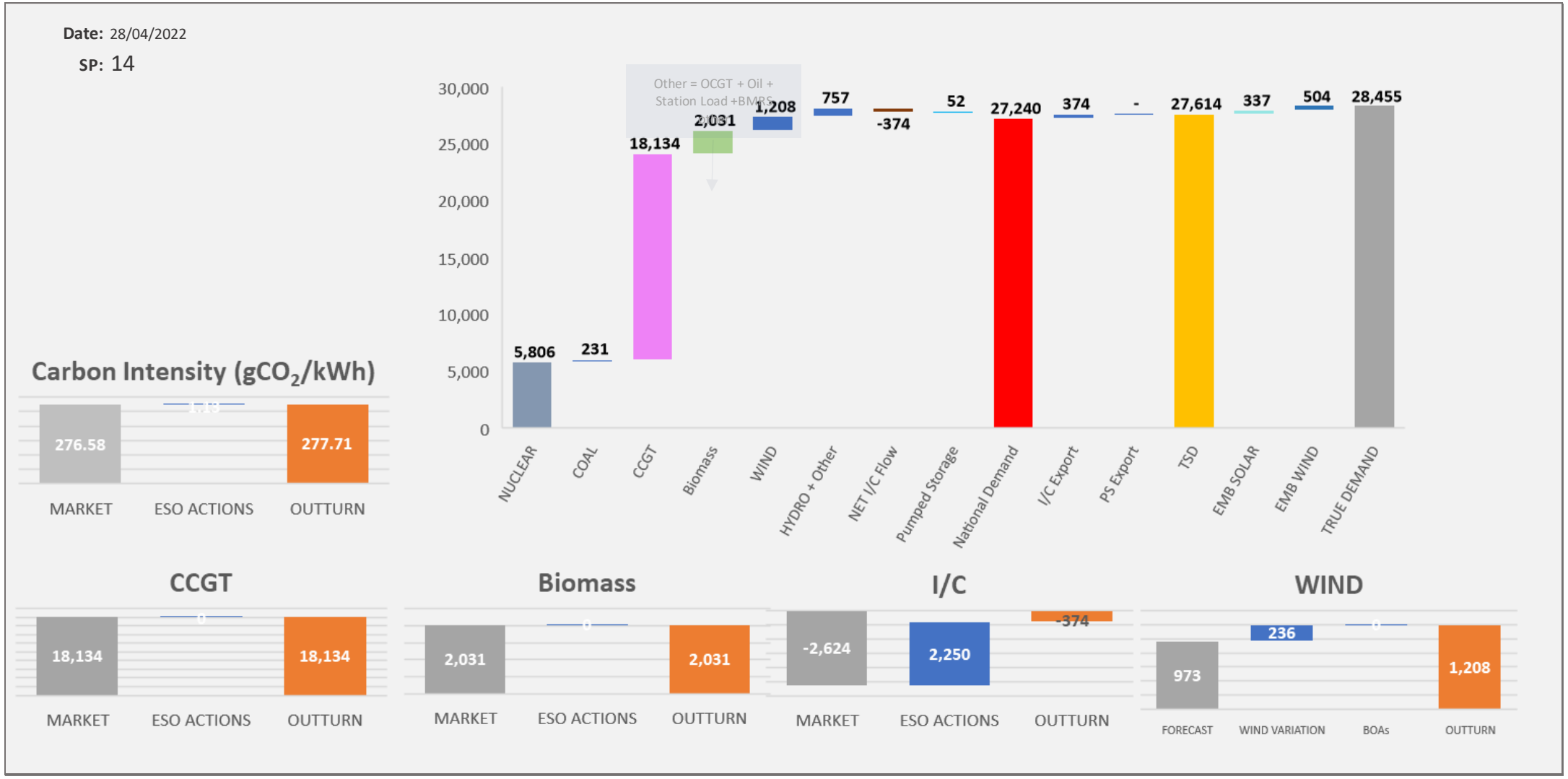
Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

ESO Actions | Sunday 01 May Minimum



Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

ESO Actions | Thursday 28 April Highest Spend ~£0.2m



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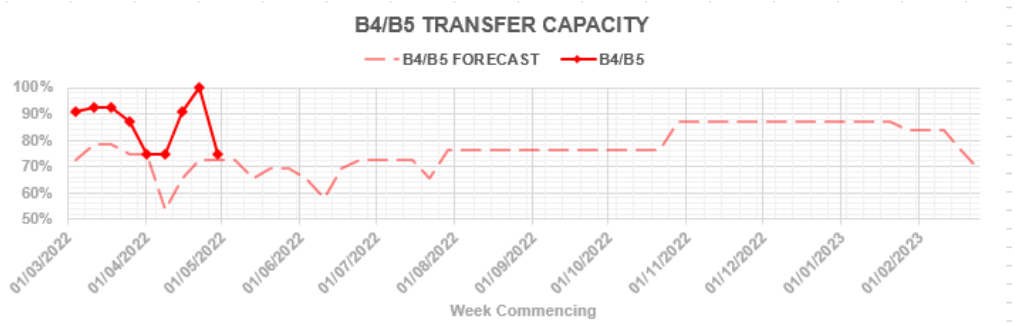
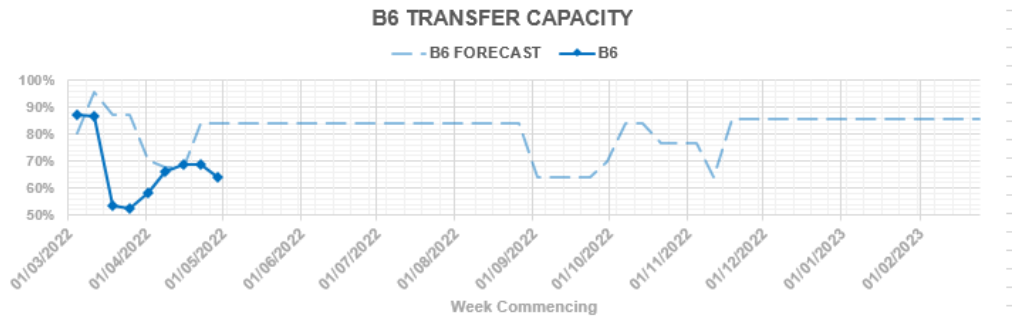
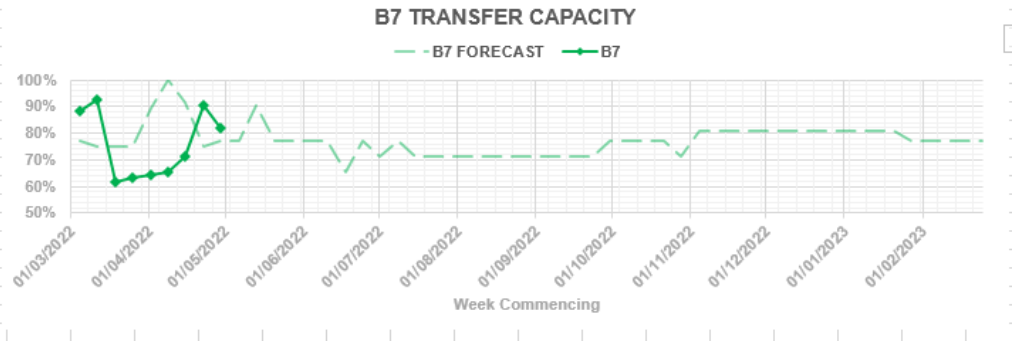
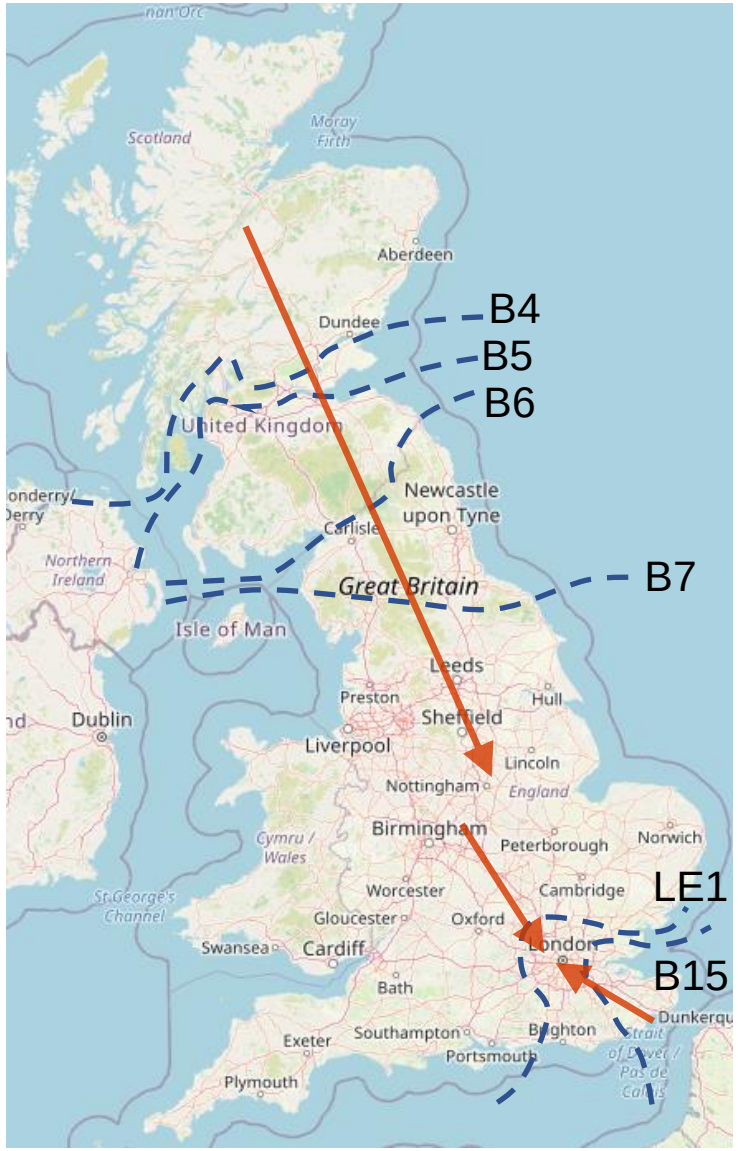
Transparency | Network Congestion





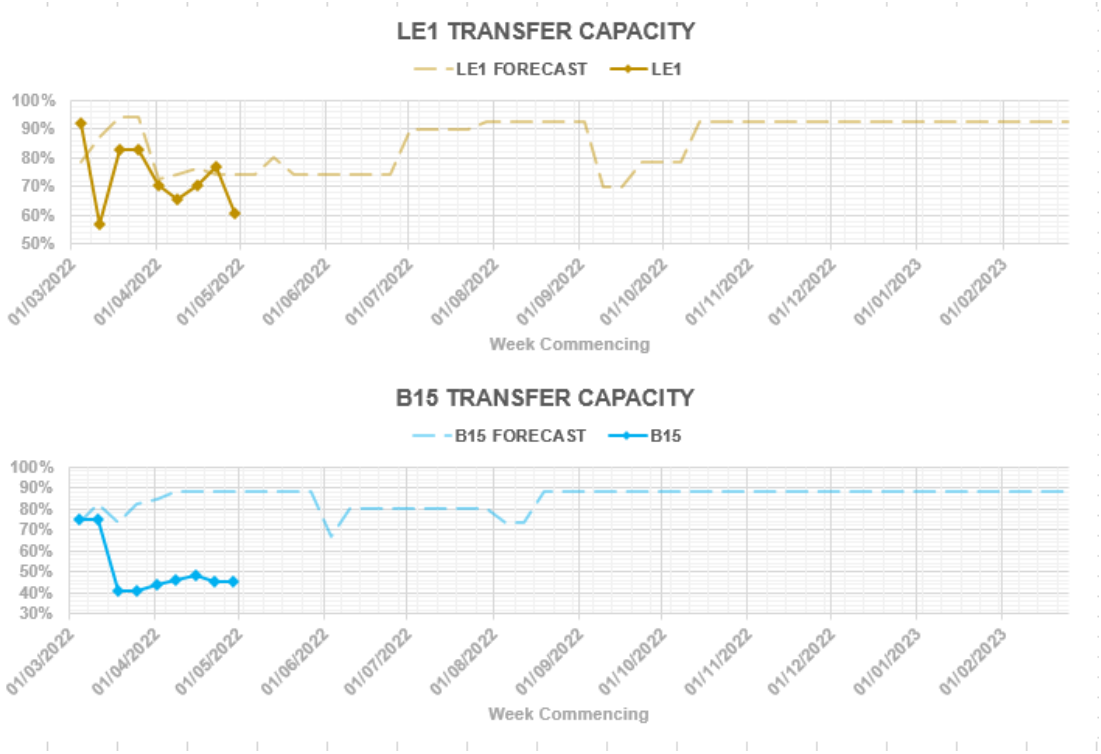


Boundary	Max. Capacity (MW)
B4/B5	2750
B6	5600
B7	8400
LE1	7000
B15	7500



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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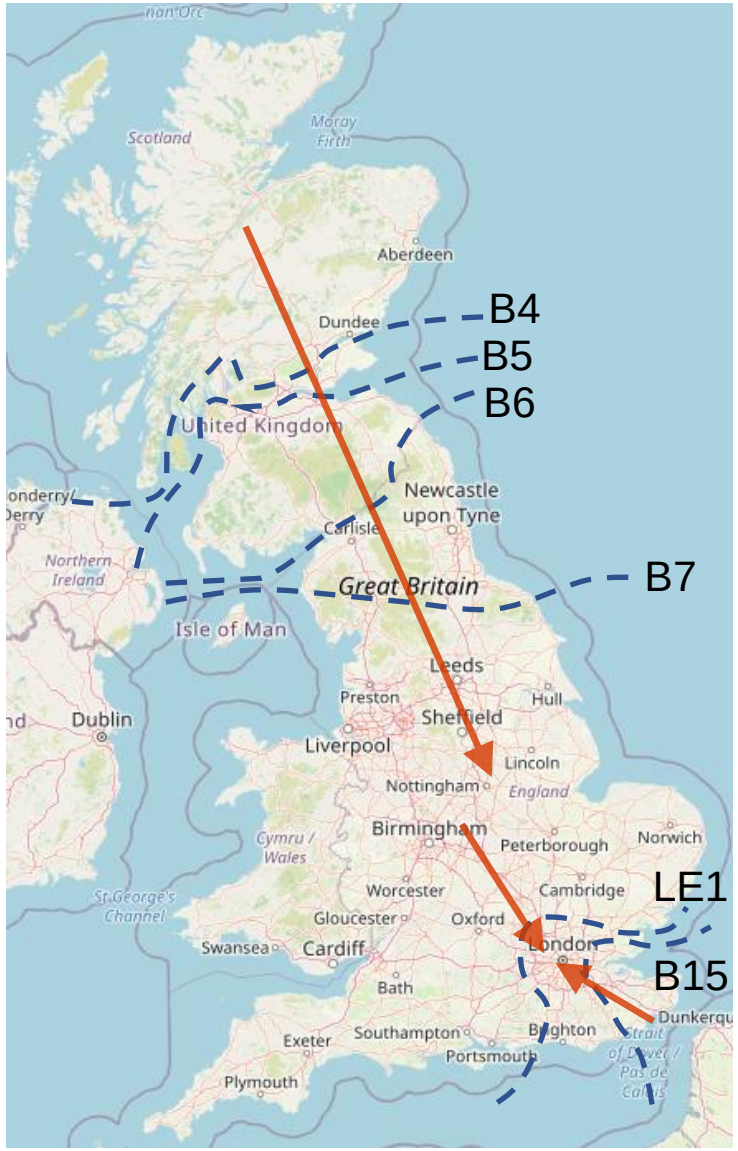

Day ahead flows and limits, and the 24 month constraint limit forecast are published on the ESO Data Portal:
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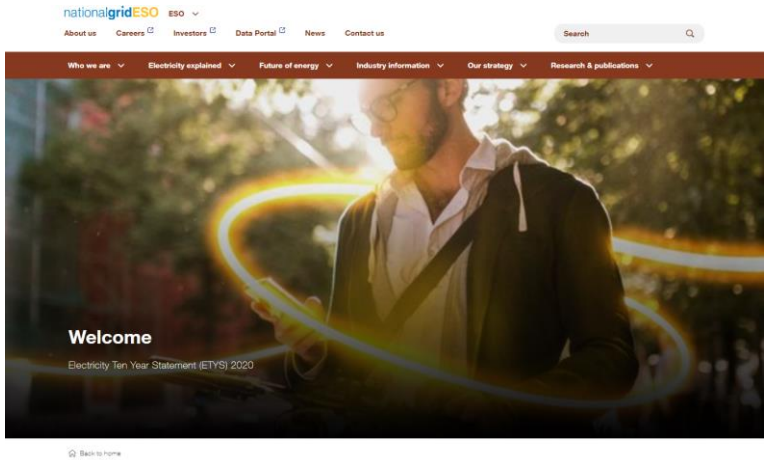
What is the ETYS?

The ETYS is the ESO's view of future transmission requirements and the capability needed on Great Britain's National Electricity Transmission System (NETS) in the next ten years.

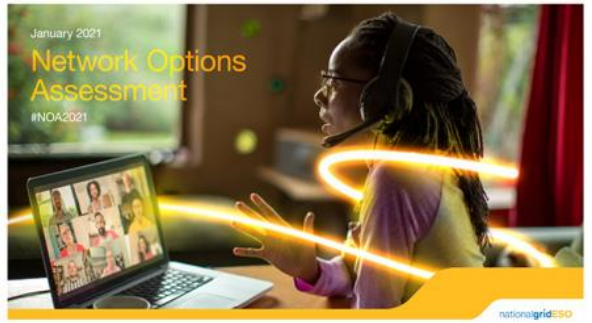


You can access the ETYS by visiting https://www.nationalgrideso.com/research-publications/etys

The ETYS sits is the middle of the planning process.

Range of credible pathways for the future of energy from today to 2050

Informs the likely future transmission requirements on the electricity system



Shows what options are available to meet reinforcement requirements on the electricity system.

Consultation

Every year we consult on the ETYS and get feedback on our proposal for the next ETYS.

You can find out about the proposal here and join the survey here.

Consultation closes at **5PM** on **Friday 20th May**.

We would be grateful for your participation and your feedback so we can make the document more useful for the industry.

There are big changes upcoming for the ETYS as we are currently looking at how we can integrate a wider range of system needs:

- year-round thermal needs,
- high voltage issues,
- network requirements across the transmission/distribution interface.

We are looking to hear how this could be useful to our readers, what kind of data/information they would like us to publish, and how we could best communicate these issues.

If you have any questions please get in touch by emailing transmission.etys@nationalgrideso.com.

Context headlines for our BP2 plans

A number of new themes have emerged, while others have become more significant since we produced our BP1 plans:

- Accelerated drive to zero carbon operation
- The transformation of markets
- Spike in volume of data and information
- Rapid development and deployment of new technology
- An energy cost crisis
- Challenging operating conditions during the COVID-19 pandemic
- Increased need for Whole Electricity System coordination
- Changing ESO roles and responsibilities
- Regulatory changes
- EU Exit

Fundamental changes to the way we operate the electricity system

BP2 activity key takeaways

Our three ESO roles are the same for BP

Significant number of new and changed activities for each role:

5 new activities:

- Market Monitoring
- Data and analytics operating model
- Net Zero Market Reform
- Role in Europe
- Offshore Coordination/Network Planning revie

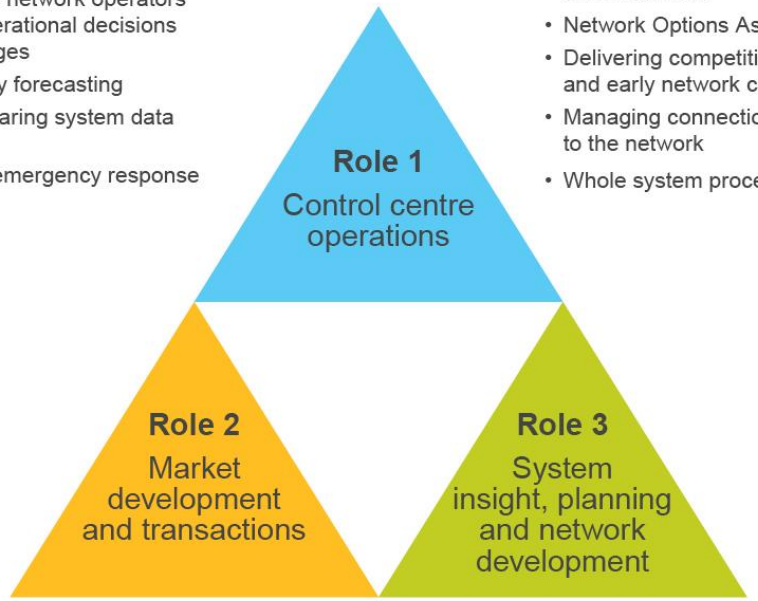
And 12 new sub-activities

Role 1 activities:

- Operating the system (monitoring and dispatch)
- Coordinating with network operators on short term operational decisions and outage changes
- Short term energy forecasting
- Managing and sharing system data and information
- Restoration and emergency response

Role 3 activities:

- Long term forecasting, energy scenarios and identification of network needs
- Network Options Assessment
- Delivering competitive system solutions and early network competition
- Managing connections and access to the network
- Whole system process development



Role 2 activities:

- Balancing and ancillary service market design
- Service procurement and settlement
- Revenue collection
- Policy advice and delivery of market framework changes
- Code administrator
- EMR delivery body

Work related to FSO sits separately to our draft plan in Annex 5

How to get involved

- Live consultation webinar 1pm today – sign up in chat, recording will be available on website https://www.nationalgrideso.com/our-strategy/riio
- Consultation is open until Friday 10th June
- Consultation document and questions available on ESO website
- You can sign up to our mailing list, email your consultation responses / queries or set up a meeting with us through box.ESO.RIIO2@nationalgrideso.com

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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

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