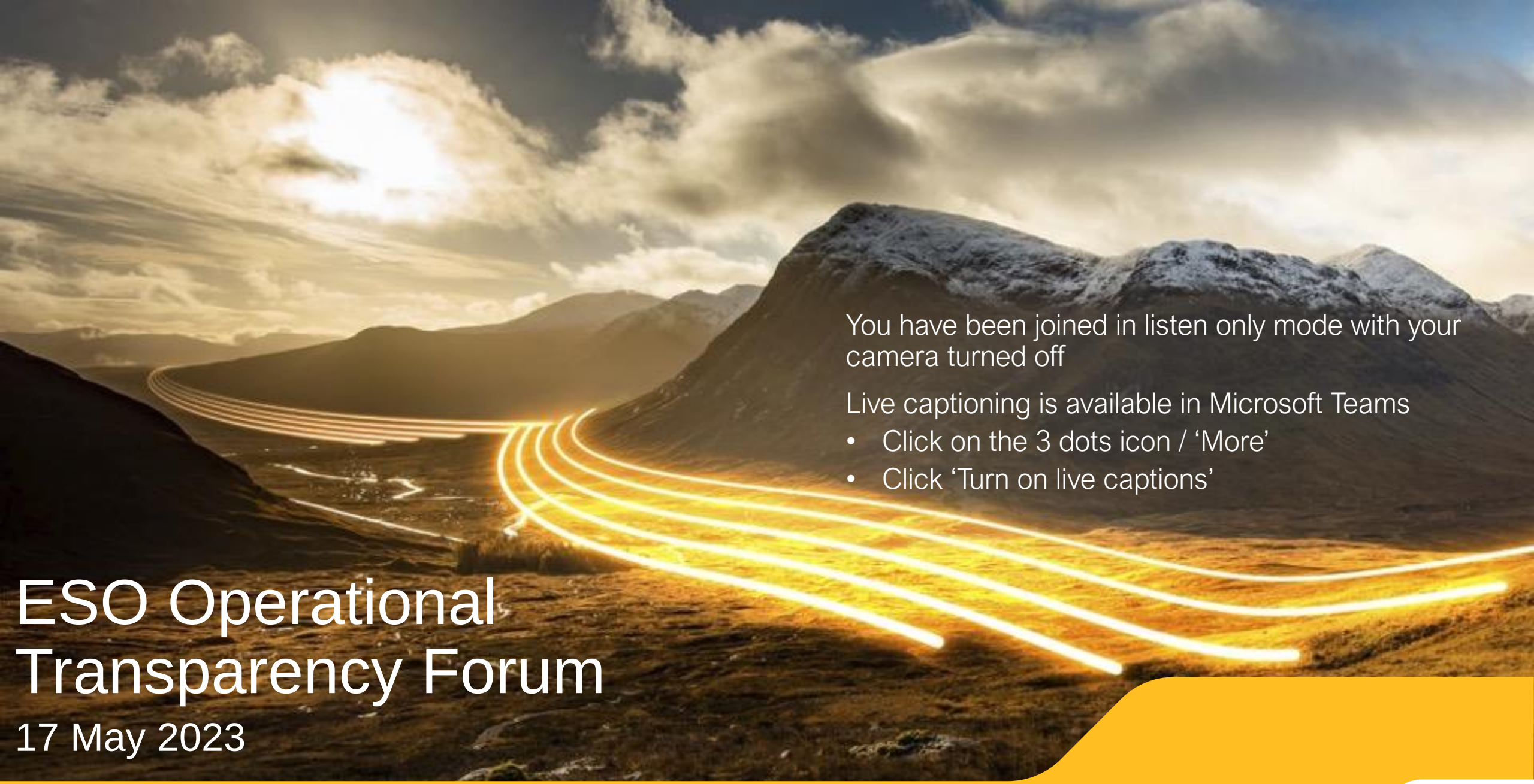


You have been joined in listen only mode with your camera turned off

Live captioning is available in Microsoft Teams

- Click on the 3 dots icon / ‘More’
- Click ‘Turn on live captions’

ESO Operational Transparency Forum

17 May 2023

ESO

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 Advanced questions option (see below) or email us at: box.NC.Customer@nationalgrideso.com

These slides, event recordings and further information about the webinars can be found at the following location:

Advanced question can be asked here: https://forms.office.com/r/k0AEfKnai3

Stay up to date on our new webpage: https://www.nationalgrideso.com/OTF

Future deep dive / focus topics

Future

Coronation review – today

Update on BSUoS report - today

If you have suggestions for future deep dives or focus topics please send them to us at: .box.NC.customer@nationalgrideso.com and we will consider including them in a future forum

Dispatch Transparency Event

We will be hosting an online event on **the morning of Friday 2nd June** for a deep dive about how we dispatch and "Skip Rates".

Content will be similar to the event held on 5 December 2022, including:

- How the ESO currently dispatches – illustrating the cumulative challenges faced by our control engineers and explaining our approach to managing this
- The future of dispatch – overview of the Open Balancing Platform roadmap highlighting how progress will improve transparency and support the control room to manage the dispatch challenges
- Current ESO Dispatch Transparency methodology – explaining the reasons for accepting bids or offers which appear to be out of merit; or not accepting those which appear to be in merit. Including risk management actions

There will also be opportunity for a Q & A session and all materials, including the event recording will be shared.

Please register here: https://forms.office.com/r/LHpReRqWCp

Balancing Programme Engagement event

- On the 15th June the Balancing Programme will be hosting their next engagement event in London.
- As part of our ongoing commitment to keep you, our stakeholders, informed of our progress to transform our balancing capabilities and continue to ensure our roadmap for the future has your input and meets your needs.
- The details of the event are below:

Date: 15th June

Time: 09:00 – 16:30

Venue: Hilton London Paddington, 146 Praed St, London, W2 1EE

- You can register your attendance at the event at this link

If you have any questions please get in touch by emailing .box.balancingprogramme@nationalgrideso.com

Balancing Reserve – Call for input

We still see substantial end consumer benefit in introducing BR and have continued to develop the service to address Ofgem's concerns, specifically to address the eligibility rules which required a minimum bid size of 50MW and the £250,000 liability cap on reimbursement.

We are grateful to Ofgem and our industry partners for their time and effort in taking a proactive role in engaging with us throughout the development of the Balancing Reserve service. This engagement has been invaluable in enabling us to shape the service design as a direct result of your feedback.

Link to Slides

We would like to continue this collaboration and would welcome your feedback. The Balancing Reserve call for input slides provide a summary of our current thinking.

We would welcome your feedback or reflections on the proposals or any further areas of the BR service design you feel should be reviewed and ask you to send these using the **'call for input pro forma'** by email to box.futureofbalancingservices@nationalgrideso.com by **Friday 26 May 2023.**

Link to Pro Forma

More information is available on Balancing Reserve ESO Website.

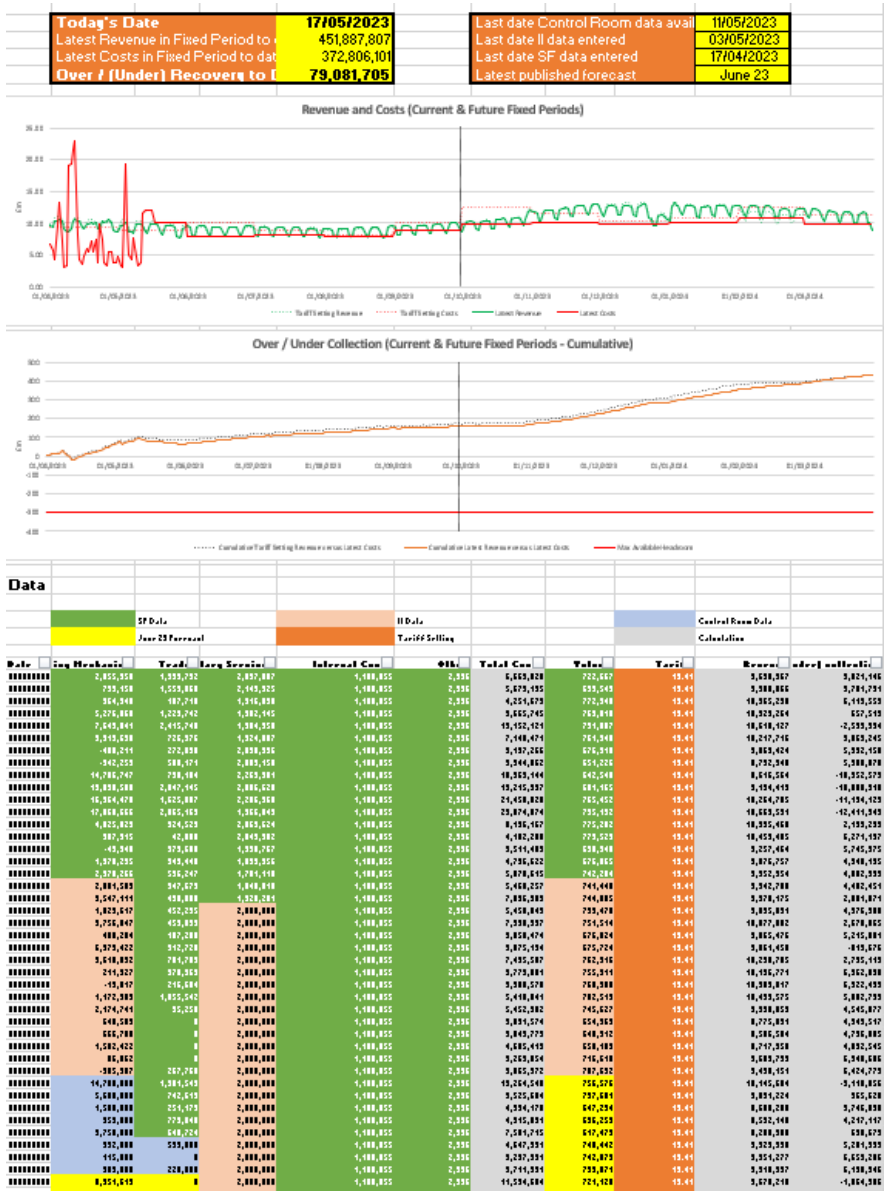
BSUoS Report Changes

17TH May 2023

Nick Everitt

BSUoS New Report – View of Actual Costs v Future Projections

Sli.do code #OTF



- Intent is to publish this monthly or even weekly.
- View that covers the first two fixed tariff periods.
- Data in the table area is based on the latest available.
- Actual cost data replaces forecast data as that becomes available.
- Report will be published on the website and portal and we are looking at how we can publish a dataset on the portal too.

We welcome feedback on the new report and changes to the existing reports.

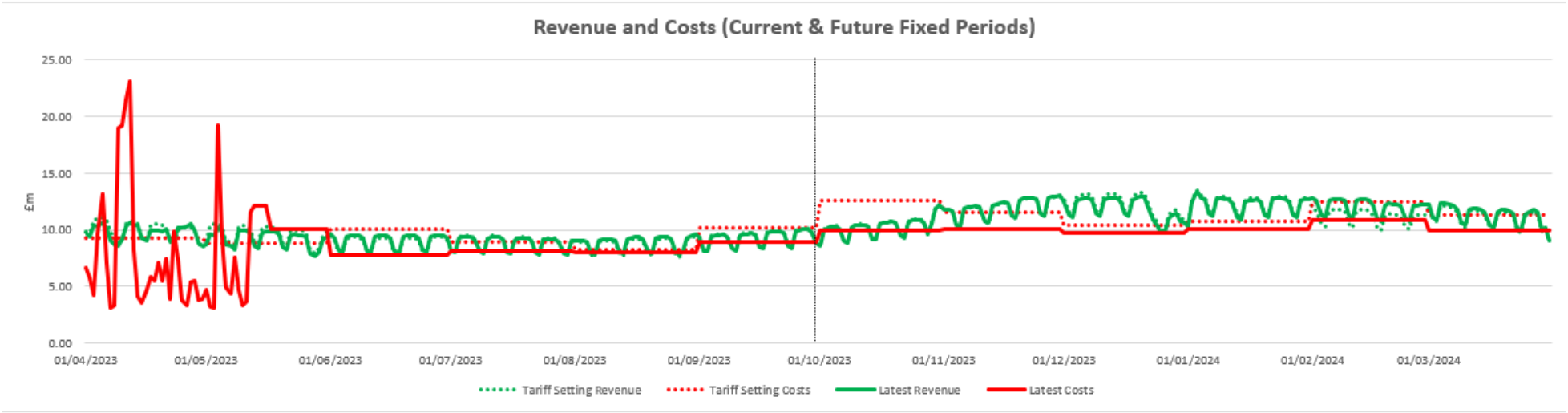
Please email bsuos.queries@nationalgrideso.com with any feedback or if you want to discuss these further.

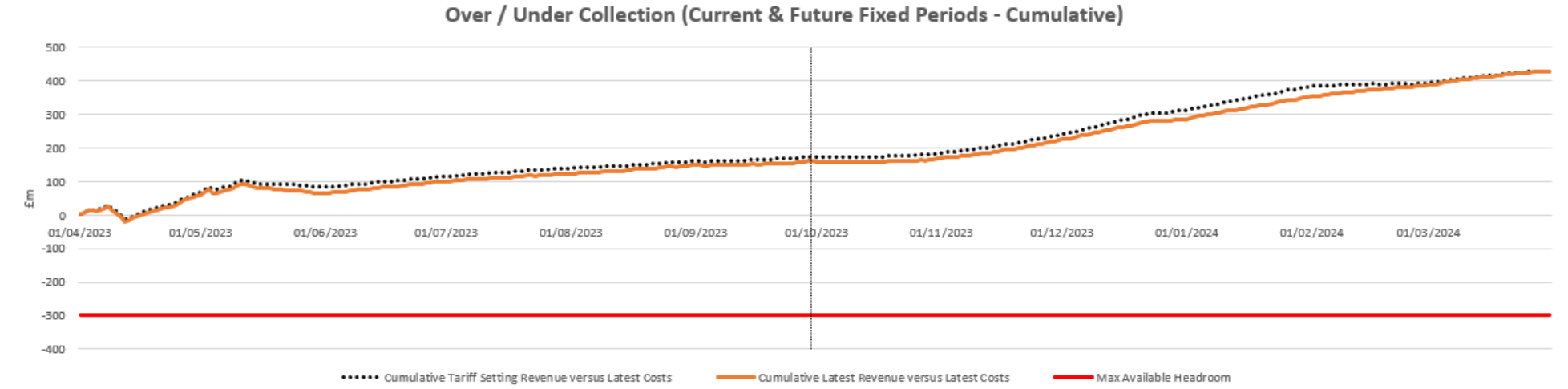
BSUoS New Report – Graph Section

Sli.do code #OTF

Today's Date	**17/05/2023**
Latest Revenue in Fixed Period to date	451,887,807
Latest Costs in Fixed Period to date	372,806,101
Over / (Under) Recovery to Date	**79,081,705**

Last date Control Room data available	11/05/2023
Last date II data entered	03/05/2023
Last date SF data entered	17/04/2023
Latest published forecast	June 23





ESO

BSUoS New Report – Data Section

Sli.do code #OTF

Data

SF Data
June 23 Forecast
II Data
Tariff Setting
Control Room Data
Calculation

Date	Balancing Mechani	Trad	Ancillary Servi	Internal Co	Ot	Total Co	Volu	Ta	Rever	Over/(under) collect
01/04/2023	2,055,950	1,333,792	2,097,087	1,180,055	2,936	6,669,820	722,667	13.41	9,690,967	3,021,146
02/04/2023	793,158	1,559,060	2,143,925	1,180,055	2,936	5,679,135	699,543	13.41	9,380,866	3,701,731
03/04/2023	964,940	187,710	1,916,038	1,180,055	2,936	4,251,679	772,948	13.41	10,365,238	6,113,559
04/04/2023	5,276,868	1,223,742	1,982,145	1,180,055	2,936	9,665,745	769,818	13.41	10,323,264	657,519
05/04/2023	7,649,041	2,415,740	1,904,350	1,180,055	2,936	13,152,121	791,807	13.41	10,618,127	-2,533,994
06/04/2023	3,313,698	726,976	1,924,807	1,180,055	2,936	7,148,471	761,948	13.41	10,217,716	3,069,245
07/04/2023	-408,211	272,090	2,090,396	1,180,055	2,936	3,137,266	676,318	13.41	9,069,424	5,932,158
08/04/2023	-342,259	500,171	2,003,158	1,180,055	2,936	3,344,062	651,226	13.41	8,732,940	5,388,878
09/04/2023	14,786,747	730,104	2,269,301	1,180,055	2,936	18,969,144	642,548	13.41	8,616,564	-10,352,579
10/04/2023	13,898,580	2,047,145	2,086,620	1,180,055	2,936	19,215,337	681,165	13.41	9,134,419	-10,080,918
11/04/2023	16,364,470	1,625,007	2,286,360	1,180,055	2,936	21,458,828	765,452	13.41	10,264,705	-11,194,123
12/04/2023	17,860,666	2,065,169	1,966,049	1,180,055	2,936	23,074,874	795,192	13.41	10,663,531	-12,411,343
13/04/2023	4,025,029	924,523	2,063,624	1,180,055	2,936	8,196,167	775,202	13.41	10,395,460	2,199,293
14/04/2023	907,315	42,000	2,049,982	1,180,055	2,936	4,182,288	779,529	13.41	10,453,485	6,271,197
15/04/2023	-49,948	379,680	1,998,767	1,180,055	2,936	3,511,489	690,340	13.41	9,257,464	5,745,975
16/04/2023	1,370,235	349,440	1,833,956	1,180,055	2,936	4,736,622	676,865	13.41	9,076,757	4,340,135
17/04/2023	2,370,266	536,247	1,781,110	1,180,055	2,936	5,870,615	742,204	13.41	9,952,954	4,082,339
18/04/2023	2,081,583	347,673	1,848,010	1,180,055	2,936	5,460,257	741,440	13.41	9,942,708	4,482,451
19/04/2023	3,547,111	438,000	1,928,201	1,180,055	2,936	7,096,303	744,085	13.41	9,978,175	2,881,871
20/04/2023	1,823,617	452,235	2,000,000	1,180,055	2,936	5,458,843	733,470	13.41	9,835,831	4,376,988
21/04/2023	3,756,047	459,899	2,000,000	1,180,055	2,936	7,398,937	751,514	13.41	10,077,802	2,678,865
22/04/2023	480,204	187,280	2,000,000	1,180,055	2,936	3,850,474	676,024	13.41	9,065,476	5,215,001
23/04/2023	6,379,422	312,720	2,000,000	1,180,055	2,936	9,875,134	675,724	13.41	9,061,458	-813,676
24/04/2023	3,610,892	701,703	2,000,000	1,180,055	2,936	7,495,587	762,916	13.41	10,230,705	2,735,119
25/04/2023	211,927	378,963	2,000,000	1,180,055	2,936	3,773,881	755,911	13.41	10,136,771	6,362,890
26/04/2023	-19,017	216,604	2,000,000	1,180,055	2,936	3,380,578	768,308	13.41	10,303,017	6,922,439
27/04/2023	1,172,309	1,055,542	2,000,000	1,180,055	2,936	5,410,841	782,519	13.41	10,493,575	5,082,733
28/04/2023	2,174,741	95,250	2,000,000	1,180,055	2,936	5,452,982	745,627	13.41	9,998,859	4,545,877
29/04/2023	648,583	0	2,000,000	1,180,055	2,936	3,831,574	654,369	13.41	8,775,091	4,943,517
30/04/2023	666,788	0	2,000,000	1,180,055	2,936	3,849,779	640,312	13.41	8,586,584	4,736,805
01/05/2023	1,502,422	0	2,000,000	1,180,055	2,936	4,685,413	650,109	13.41	8,717,958	4,032,545
02/05/2023	86,062	0	2,000,000	1,180,055	2,936	3,269,054	716,610	13.41	9,609,739	6,340,686
03/05/2023	-385,387	267,768	2,000,000	1,180,055	2,936	3,065,372	707,692	13.41	9,490,151	6,424,779
04/05/2023	14,700,000	1,381,549	2,000,000	1,180,055	2,936	19,264,540	756,576	13.41	10,145,684	-9,118,856
05/05/2023	5,600,000	742,613	2,000,000	1,180,055	2,936	9,525,604	737,601	13.41	9,891,224	365,620
06/05/2023	1,500,000	251,179	2,000,000	1,180,055	2,936	4,934,170	647,294	13.41	8,680,208	3,746,038
07/05/2023	359,000	773,040	2,000,000	1,180,055	2,936	4,315,031	636,253	13.41	8,532,148	4,217,117
08/05/2023	3,750,000	648,724	2,000,000	1,180,055	2,936	7,581,715	617,479	13.41	8,280,388	698,673
09/05/2023	932,000	533,000	2,000,000	1,180,055	2,936	4,647,991	740,442	13.41	9,929,330	5,281,339
10/05/2023	115,000	0	2,000,000	1,180,055	2,936	3,297,991	742,079	13.41	9,951,277	6,653,286
11/05/2023	309,000	220,000	2,000,000	1,180,055	2,936	3,711,991	739,071	13.41	9,910,937	6,198,946
12/05/2023	8,351,613	0	2,000,000	1,180,055	2,936	11,534,604	721,120	13.41	9,670,218	-1,864,386

BSUoS Web Prices – Additional Field to be added

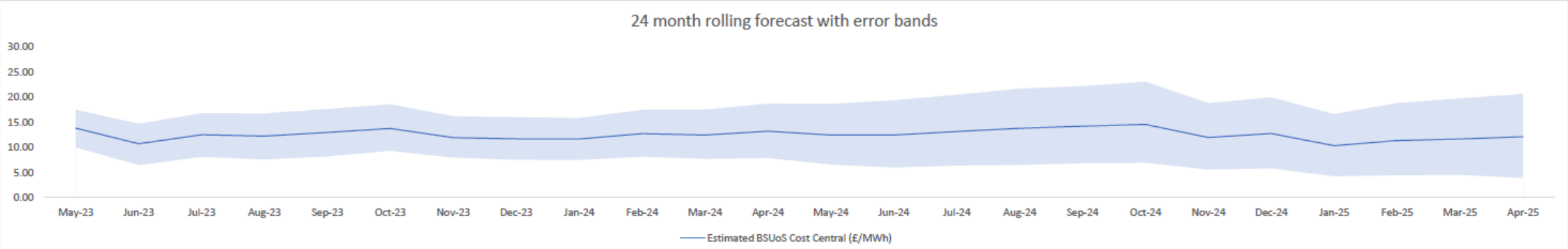
Sli.do code #OTF

Settlement Day	Settlement Period	BSUoS Tariff (£/MWh)	BSUoS Fund Tariff (£/MWh)	Volume (MWh)	BSUoS Recovery (£)	BSUoS Fund Recovery (£)	BSUoS Total Recovery (£)	Run Type	Actual Cost
01/04/2023	1	13.41		12,834.24	172,107.22	0	172,107.22	SF	
01/04/2023	2	13.41		12,618.87	169,219.11	0	169,219.11	SF	
01/04/2023	3	13.41		12,562.10	168,457.80	0	168,457.80	SF	
01/04/2023	4	13.41		12,739.13	170,831.76	0	170,831.76	SF	
01/04/2023	5	13.41		12,589.90	168,830.59	0	168,830.59	SF	
01/04/2023	6	13.41		12,346.69	165,569.10	0	165,569.10	SF	
01/04/2023	7	13.41		12,115.73	162,471.89	0	162,471.89	SF	
01/04/2023	8	13.41		11,935.06	160,049.16	0	160,049.16	SF	
01/04/2023	9	13.41		11,819.58	158,500.56	0	158,500.56	SF	
01/04/2023	10	13.41		11,721.97	157,191.60	0	157,191.60	SF	
01/04/2023	11	13.41		11,767.84	157,806.70	0	157,806.70	SF	
01/04/2023	12	13.41		11,937.07	160,076.12	0	160,076.12	SF	
01/04/2023	13	13.41		12,497.56	167,592.33	0	167,592.33	SF	
01/04/2023	14	13.41		12,889.83	172,852.60	0	172,852.60	SF	
01/04/2023	15	13.41		13,619.19	182,633.30	0	182,633.30	SF	
01/04/2023	16	13.41		14,291.75	191,652.38	0	191,652.38	SF	
01/04/2023	17	13.41		15,138.49	203,007.14	0	203,007.14	SF	
01/04/2023	18	13.41		15,643.79	209,783.27	0	209,783.27	SF	
01/04/2023	19	13.41		16,213.24	217,419.48	0	217,419.48	SF	
01/04/2023	20	13.41		16,480.59	221,004.67	0	221,004.67	SF	
01/04/2023	21	13.41		16,717.90	224,187.02	0	224,187.02	SF	
01/04/2023	22	13.41		16,835.18	225,759.79	0	225,759.79	SF	
01/04/2023	23	13.41		16,896.30	226,579.32	0	226,579.32	SF	
01/04/2023	24	13.41		16,971.74	227,590.97	0	227,590.97	SF	
01/04/2023	25	13.41		17,000.54	227,977.25	0	227,977.25	SF	

BSUoS Forecast Report – Removal of Legacy Fields

Sli.do code #OTF

BSUoS Forecast for Jun-23



	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25
Balancing Costs (Central) £m	258.9	182.8	199.5	195	216.1	255.3	252.2	249.7	259.5	264.8	254.5	260.6	231.9	219.9	235.6	249	266.4	297.1	268.2	299.1	239.6	242.6	251.4	235
Balancing Costs (Upper) £m	336.3	263.3	286.9	288.1	313.1	363.4	360.9	361.5	371.8	382.6	381	384.4	367	362.9	388.7	414.2	437.5	494.1	443	489.8	409.3	426	452.3	427.5
Balancing Costs (Lower) £m	175.6	95.2	108.7	98.8	115.7	154.3	148.6	139.5	145.8	149.4	135.2	138.6	103.4	84.7	93	95.4	106.8	120.4	103.3	113.6	73.9	72.5	72.1	49.4
Estimated Internal BSUoS & ESO Incentive £m	36.58	35.40	36.58	36.58	35.40	36.58	35.40	36.58	36.58	34.22	36.58	38.76	40.05	38.76	40.05	40.05	38.76	40.05	38.76	40.05	40.05	36.18	40.05	38.12
ALoMCP £m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CMP381 Deferred Costs £m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter Contingency Cost (Central) £m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter Contingency Cost (Upper) £m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter Contingency Cost (Lower) £m	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter Security of Supply Cost £m	0.00	0.00	19.73	19.73	19.09	19.73	19.09	19.73	19.73	18.45	19.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total BSUoS (Central) £m	295.5	218.2	255.8	251.3	270.6	311.6	306.7	306.0	315.8	317.5	310.8	299.4	272.0	258.7	275.7	289.1	305.2	337.2	307.0	339.2	279.7	278.8	291.5	273.1
Total BSUoS (Upper) £m	372.9	298.7	343.2	344.4	367.6	419.7	415.4	417.8	428.1	435.3	437.3	423.2	407.1	401.7	428.8	454.3	476.3	534.2	481.8	529.9	449.4	462.2	492.4	465.6
Total BSUoS (Lower) £m	212.2	130.6	165.0	155.1	170.2	210.6	203.1	195.8	202.1	202.1	191.5	177.4	143.5	123.5	133.1	135.5	145.6	160.5	142.1	153.7	114.0	108.7	112.2	87.5
Estimated BSUoS Volume (TWh)	21.3	20.3	20.4	20.5	20.8	22.6	25.6	26.1	27	24.9	24.9	22.6	21.8	20.7	20.9	20.9	21.4	23.1	25.6	26.5	27	24.5	24.9	22.5
Estimated BSUoS Cost Central (£/MWh)	13.87	10.75	12.54	12.26	13.01	13.79	11.98	11.72	11.70	12.75	12.48	13.25	12.47	12.50	13.19	13.83	14.26	14.60	11.99	12.80	10.36	11.38	11.70	12.14
Estimated BSUoS Cost Upper (£/MWh)	17.51	14.71	16.82	16.80	17.67	18.57	16.23	16.01	15.86	17.48	17.56	18.72	18.67	19.40	20.51	21.73	22.26	23.12	18.82	19.99	16.64	18.86	19.77	20.69
Estimated BSUoS Cost Lower (£/MWh)	9.96	6.43	8.09	7.57	8.18	9.32	7.93	7.50	7.49	8.12	7.69	7.85	6.58	5.96	6.37	6.48	6.80	6.95	5.55	5.80	4.22	4.44	4.50	3.89

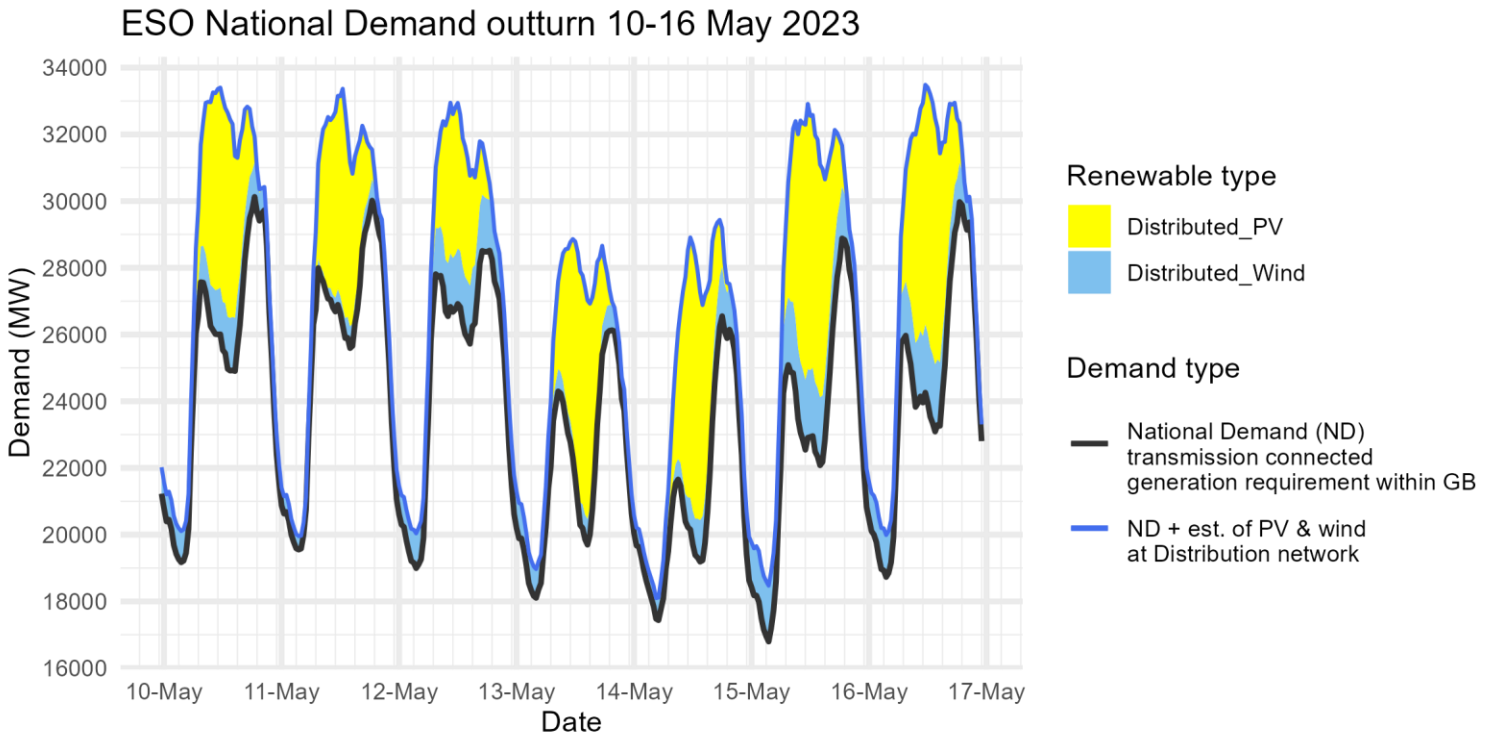
Please note: As a result of the approval of CMP308, BSUoS charges have been removed from Generation from 1 April 2023. Therefore the chargeable volume approximately halved and the BSUoS charge (£/MWh) approximately doubled

As a result of the approval of CMP361/362, the BSUoS charge is a fixed tariff from 1 April 2023. The fixed BSUoS tariffs for the periods Apr 2023 – Sep 2023 and Oct 2023 – Mar 2024 were published at the end of January 2023

BSUoS Fixed Tariff 2023-24 - Final - January 2023 (nationalgrideso.com)

As there are no forecast charges for ALoMCP, CMP381 Deferred Costs and Winter Contingency Costs (Central, Upper and Lower), these elements will be removed from our July Forecast report and data table, which will be published in June.

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.

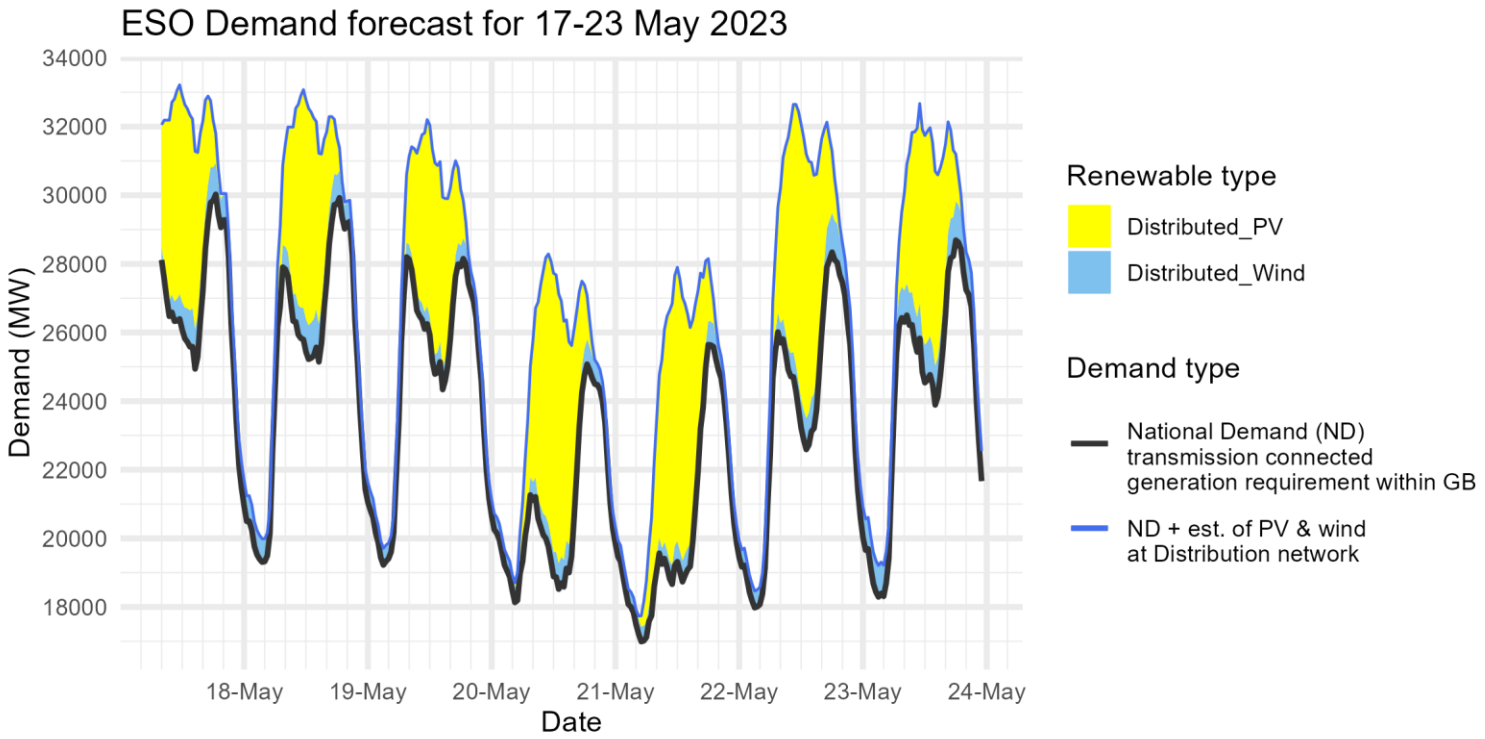
ND values **do not include** export on interconnectors or pumping or station load

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

		FORECAST (Wed 10 May)			OUTTURN		
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
10 May	Afternoon Min	26.5	1.7	5.2	24.9	1.6	4.8
11 May	Overnight Min	19.6	0.5	0.0	19.6	0.4	0.0
11 May	Afternoon Min	25.7	0.7	5.6	25.6	0.7	4.9
12 May	Overnight Min	19.2	0.8	0.0	19.0	1.0	0.0
12 May	Afternoon Min	24.1	1.4	4.8	25.7	1.7	3.3
13 May	Overnight Min	18.1	0.7	0.0	18.1	0.9	0.0
13 May	Afternoon Min	19.1	0.7	6.4	19.7	0.8	6.5
14 May	Overnight Min	16.9	0.7	0.2	17.4	0.6	0.0
14 May	Afternoon Min	20.7	1.0	6.1	19.2	1.2	6.8
15 May	Overnight Min	17.4	1.2	0.0	16.8	1.7	0.0
15 May	Afternoon Min	24.5	1.8	5.4	22.1	2.0	7.0
16 May	Overnight Min	18.4	1.3	0.0	18.7	1.3	0.0
16 May	Afternoon Min	24.3	1.8	5.6	23.1	2.0	7.4

Demand | Week Ahead



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

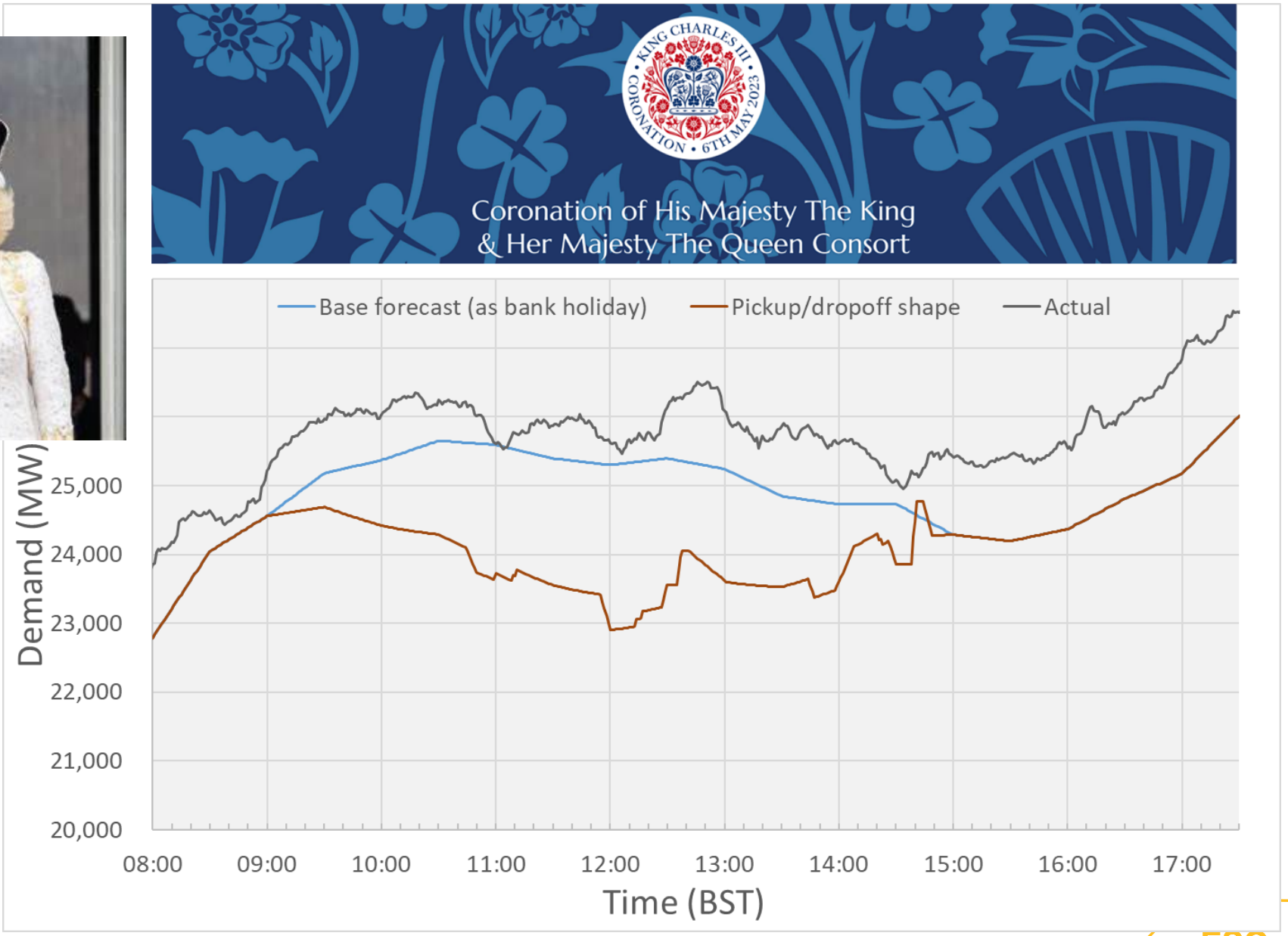
Blue line serves as a proxy for total GB customer demand. It includes demand supplied by the distributed wind and solar sources, but it does not include demand supplied by non-weather driven sources at the distributed network for which ESO has no real time data.

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

		FORECAST (Wed 17 May)		
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	Dist. PV (GW)
17 May 2023	Afternoon Min	24.9	1.2	5.2
18 May 2023	Overnight Min	19.3	0.7	0.0
18 May 2023	Afternoon Min	25.1	1.1	5.0
19 May 2023	Overnight Min	19.2	0.5	0.0
19 May 2023	Afternoon Min	24.3	0.6	5.0
20 May 2023	Overnight Min	18.1	0.5	0.1
20 May 2023	Afternoon Min	18.5	0.8	7.8
21 May 2023	Overnight Min	17.0	0.4	0.3
21 May 2023	Afternoon Min	18.7	0.6	7.7
22 May 2023	Overnight Min	18.0	0.5	0.0
22 May 2023	Afternoon Min	22.6	0.9	7.7
23 May 2023	Overnight Min	18.3	0.9	0.0
23 May 2023	Afternoon Min	23.9	1.1	5.7

Coronation of King Charles III & Queen Camilla on 6th May 2023

Sli.do code #OTF



Coronation Planning & Operational Strategy

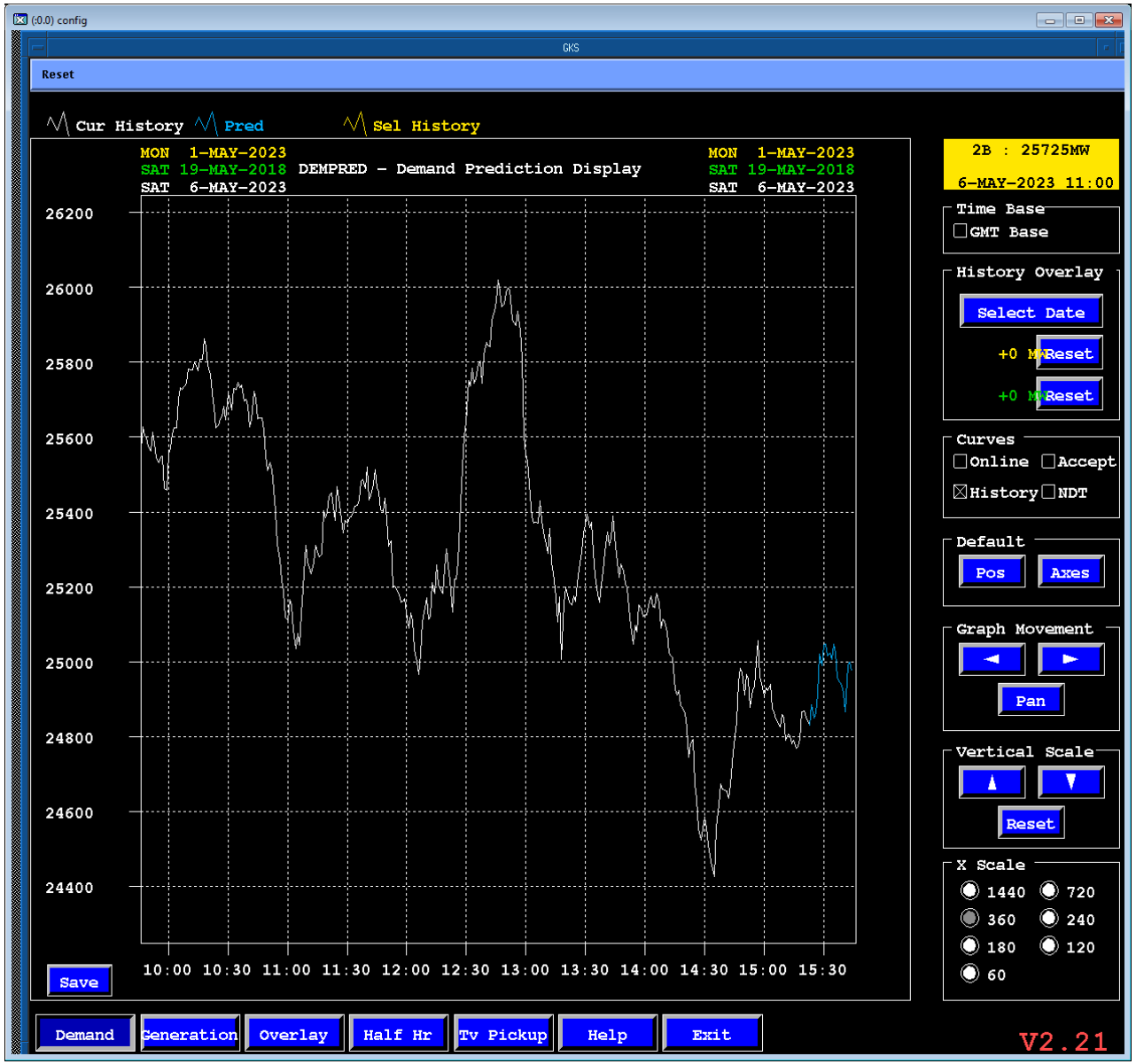
Sli.do code #OTF

Planning
Created planning team from across ESO teams, including Energy Forecasting & duty shift team on the day
Daily stand-up calls
Coronation event timings supplied by DESNZ
Demand forecast curve created using experience from Queen's Funeral & other royal events – minute history
Customised demand curve tested & loaded into BM systems
Response & reserve holdings & timings agreed, including frequency response, pumped storage, plant scheduling, interconnectors
Additional resources & support arrangements put in place
London network defensive posture agreed with network operators (NGET & DNOs)
System conditions continually assessed, including weather, transmission constraints, etc.

Operations
London network integrity strengthened. NGET returned to service 2 transmission circuits & 3 supergrid transformers feeding central London. Field staff at relevant substations
System conditions relatively benign – low wind & no active transmission constraints
Additional reserve scheduled to run in system operating plans
IFA2 interconnector traded down to 500MW import to GB (from 1000MW) to provide upward & downward margin. Emergency Push Button arrangements agreed with RTE & Control Point
Customised demand curve utilised to aid dispatch decisions
Minimum dynamic response levels increased by 300MW primary, secondary & high. Response on Irish interconnectors agreed with SONI & EirGrid.
Dinorwig pumped storage – 2 units instructed to spin generate, 2 units instructed to spin pump to provide upwards & downwards options
Control room energy balancing workload optimised. Evacuation positions set up in case needed

Coronation – how it played out in real time

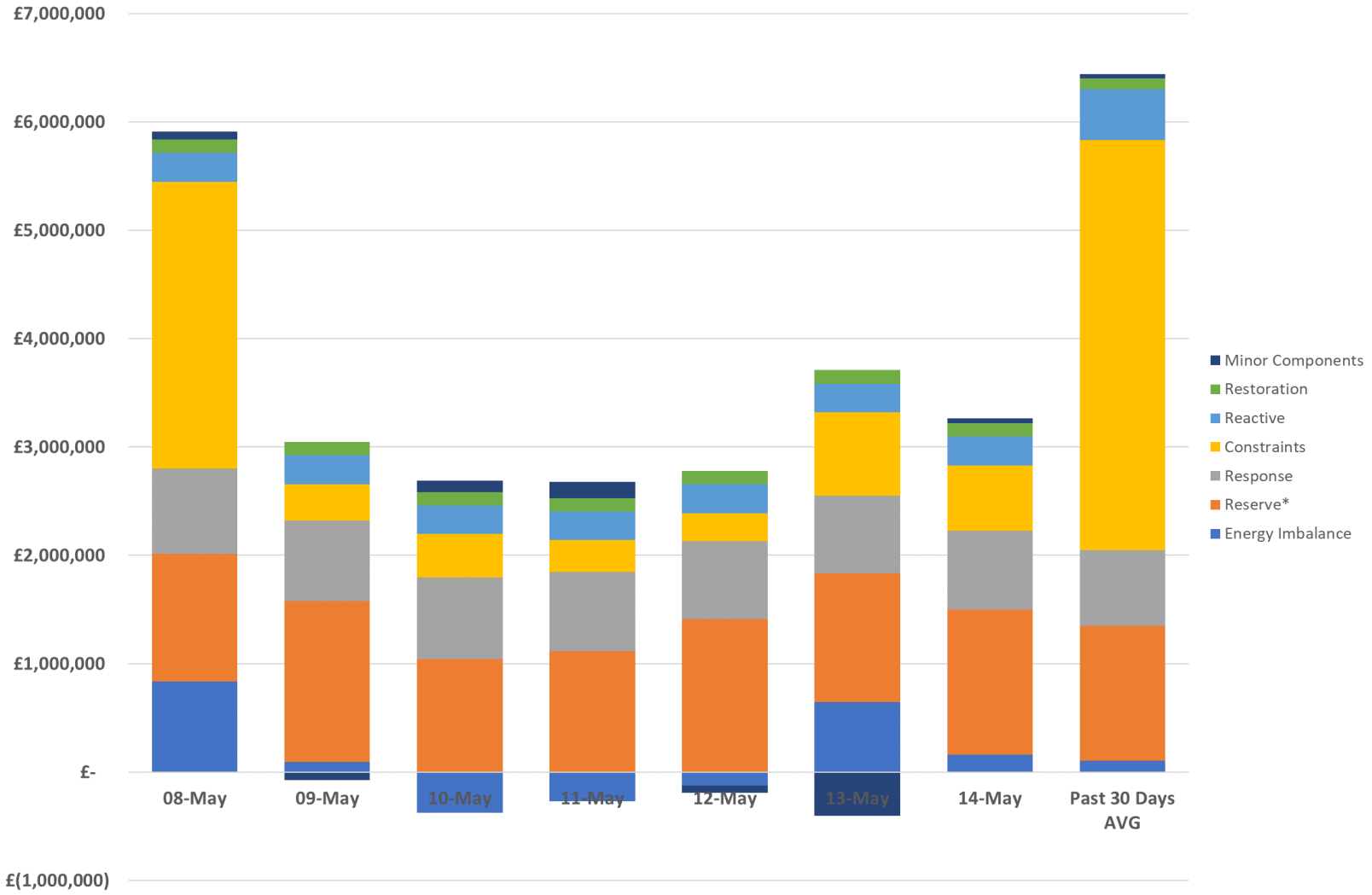
Sli.do code #OTF



- Demand generally higher (1.5 – 2.5GW) than forecast due to inclement weather
- **10:20:** Demand decreased as guests arrived in Westminster Abbey ahead of the King
- **11:00:** Demand didn't follow planned shape, instead it increased shortly after 11:00 after arrival of the King
- **11:50:** Demand suppressed slightly when the King sat on the coronation chair in preparation for receiving the crown
- **12:08:** Demand picked up by 200MW following crowning of the King
- **12:25:** Demand picked up by 650MW following crowning of the Queen, when King & Queen were taking Holy Communion
- **12:55:** Demand suppressed by 400MW at end of ceremony when King left Westminster Abbey to start procession to Buckingham Palace
- **14:05:** Demand suppressed gradually as King & Royal Family went onto balcony at Buckingham Palace
- **14:35:** Demand picked up by 250MW
- **14:42:** Demand picked up by 400MW following end of Coronation proceedings

System frequency was kept within normal limits throughout (49.8 - 50.2 Hertz)!

ESO Actions | Category costs breakdown for the last week



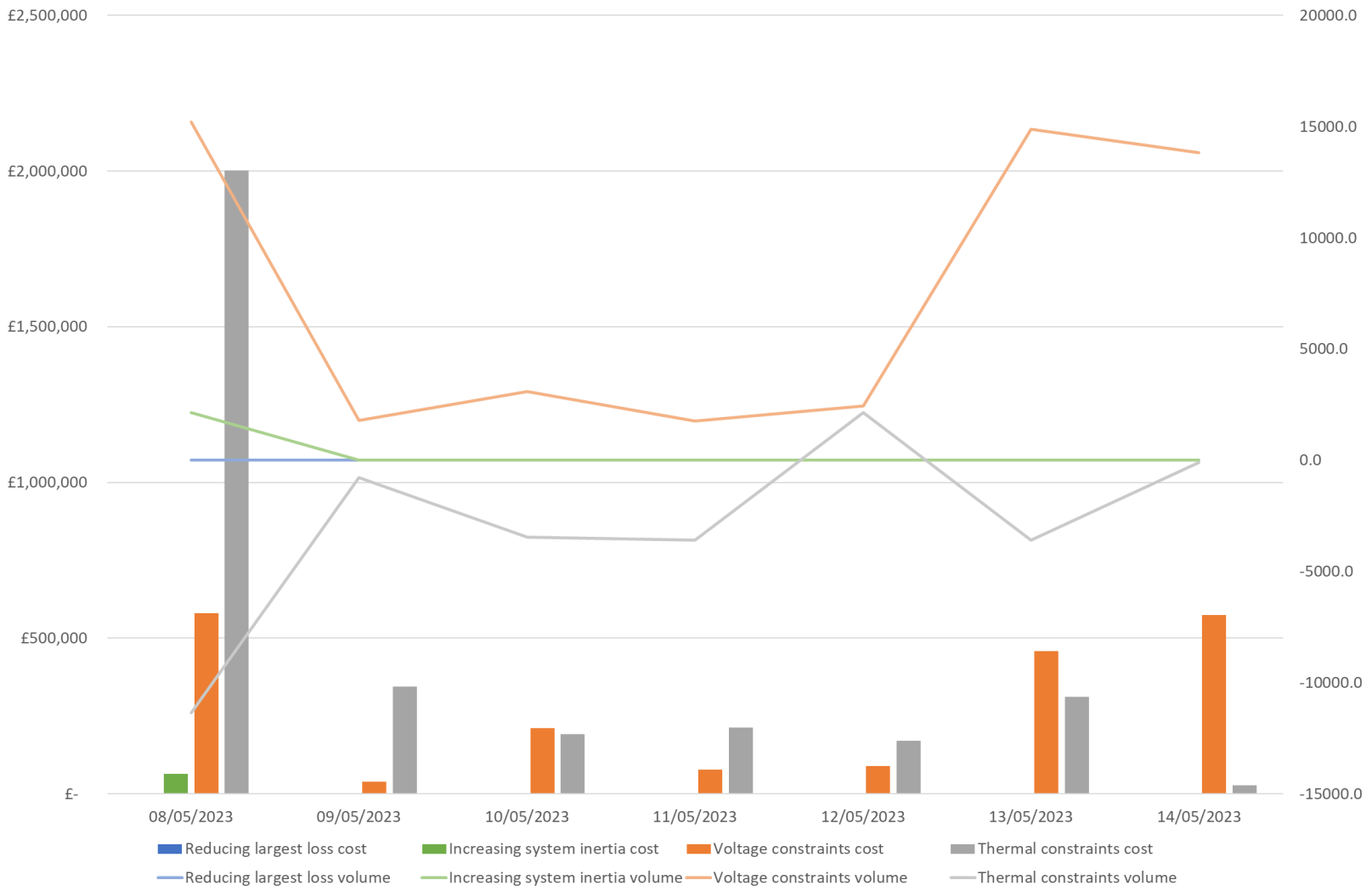
Date	Total (£m)
08/05/2023	5.9
09/05/2023	3.0
10/05/2023	2.3
11/05/2023	2.4
12/05/2023	2.6
13/05/2023	3.3
14/05/2023	3.3
Weekly Total	22.8
Previous Week	35.7

Constraints costs were the key cost component throughout the week.

Please note that all the categories are presented and explained in the MBSS.

Data issue: Please note that due to a data issue on a few days over the last few months, the Minor Components line in Non-Constraint Costs is capturing some costs on those days which should be attributed to different categories. It has been identified that a significant portion of these costs should be allocated to the Operating Reserve Category. Although the categorisation of costs is not correct, we are confident that the total costs are correct in all months. We continue to investigate and will advise when we have a resolution.

ESO Actions | Constraint Cost Breakdown



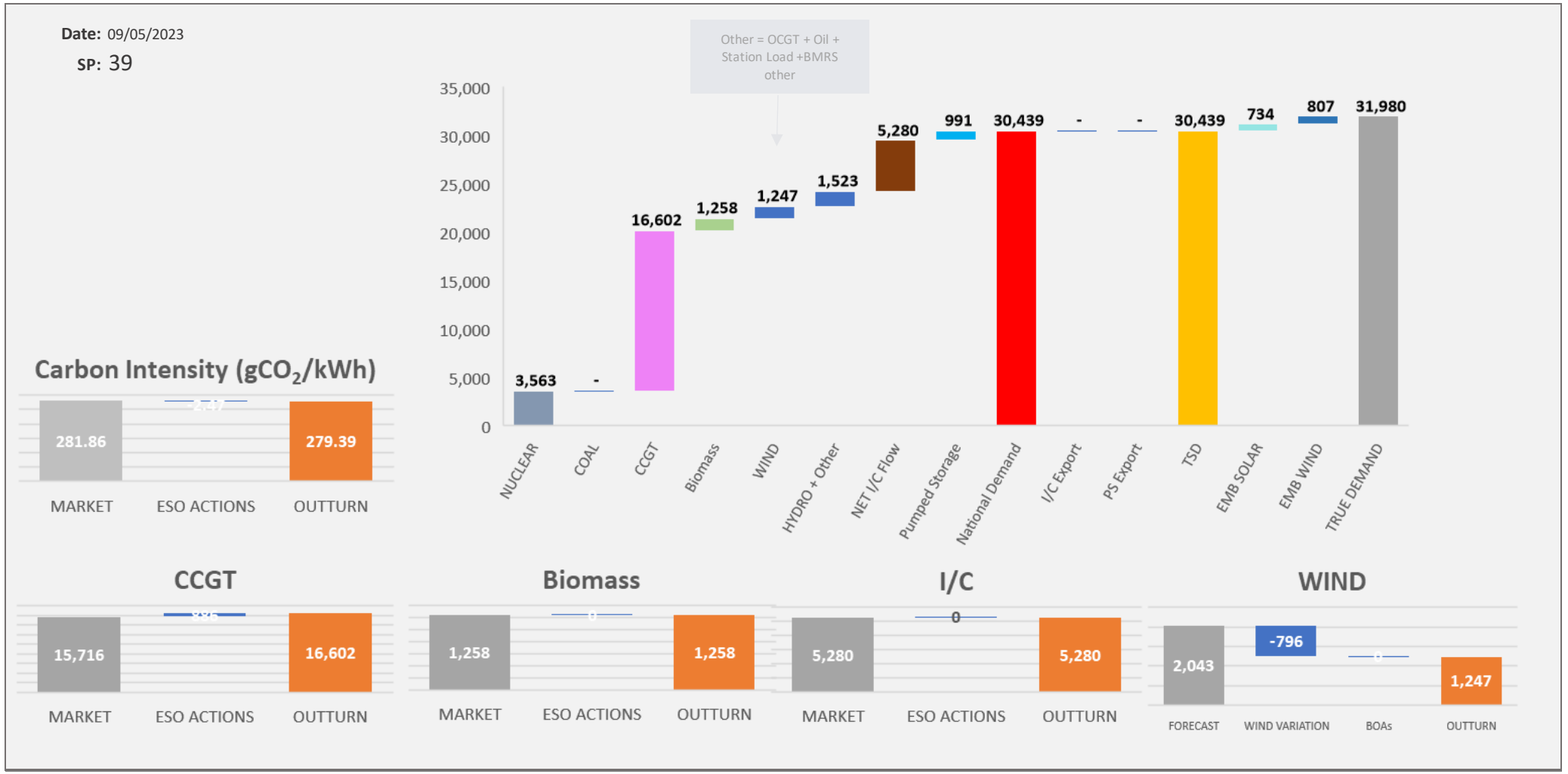
Thermal – network congestion
Actions required to manage Thermal Constraints throughout the week with the highest costs on Mon.

Voltage
Intervention was required to manage voltage levels throughout through the week.

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

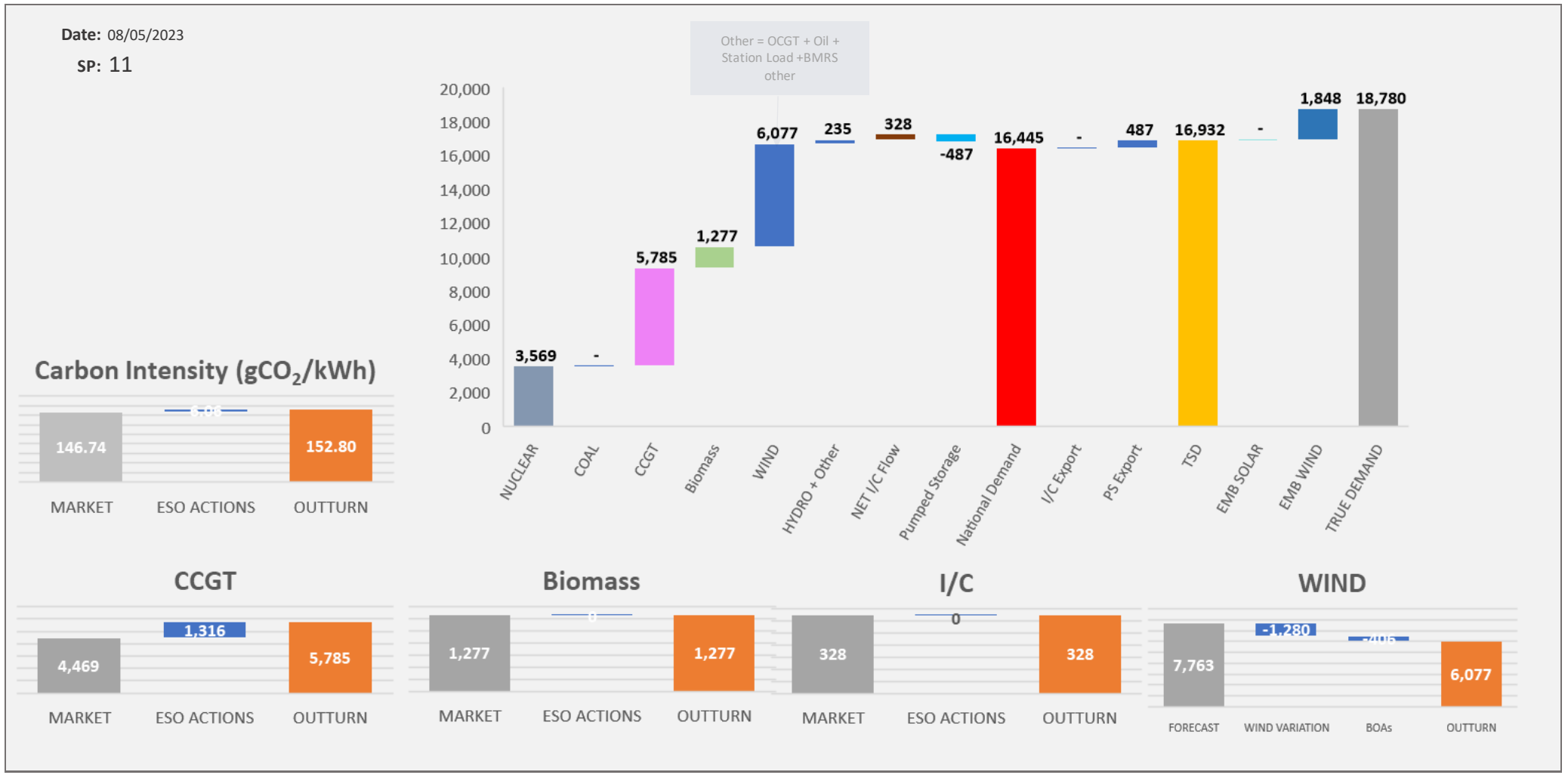
Increasing inertia
Intervention was required to manage system inertia on Mon.

ESO Actions | Tuesday 9 May – Peak Demand – SP spend ~£40k



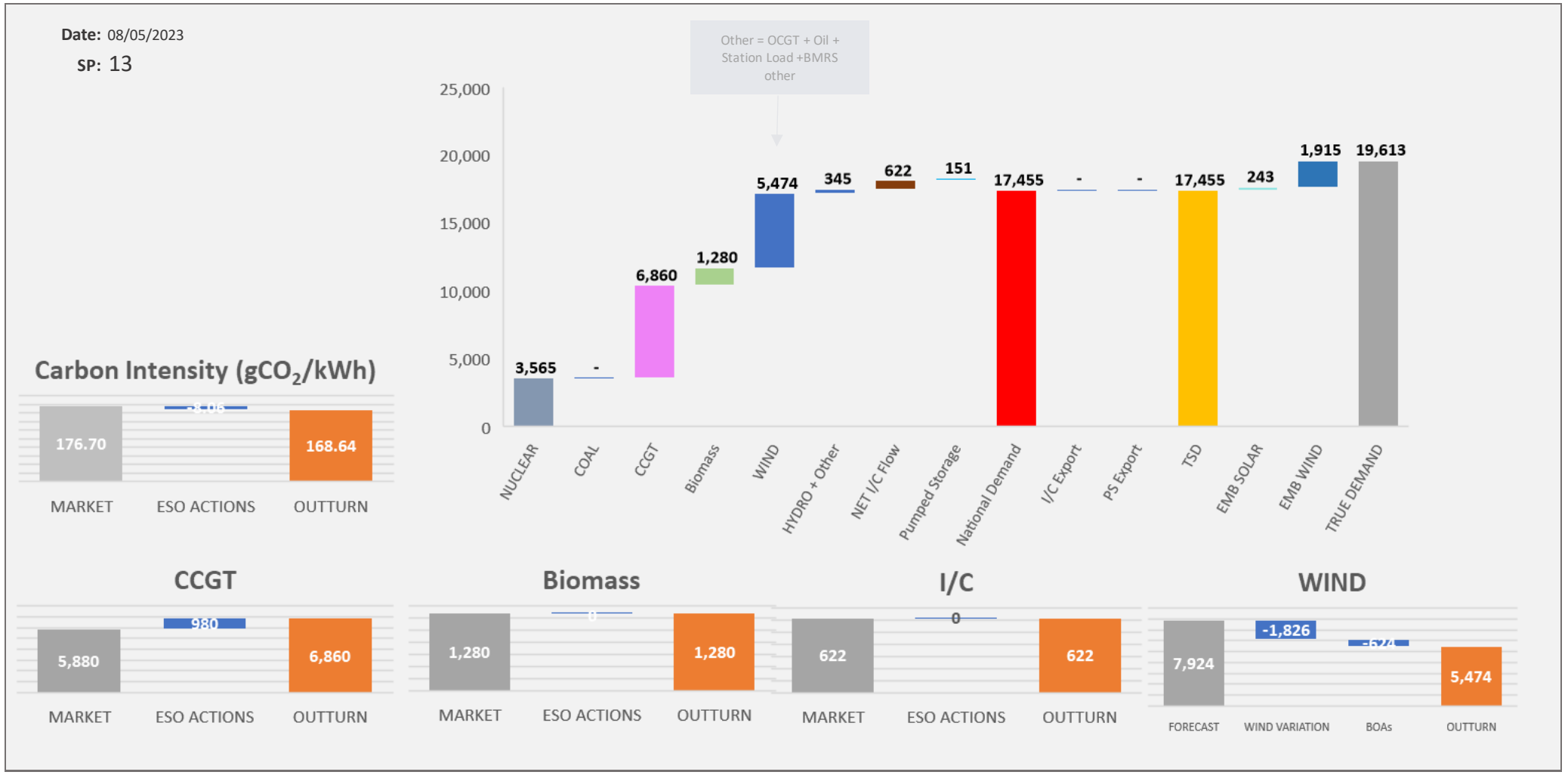
Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

ESO Actions | Monday 8 May – Minimum Demand – SP Spend ~£135k



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

ESO Actions | Monday 8 May – Highest SP Spend ~£176k



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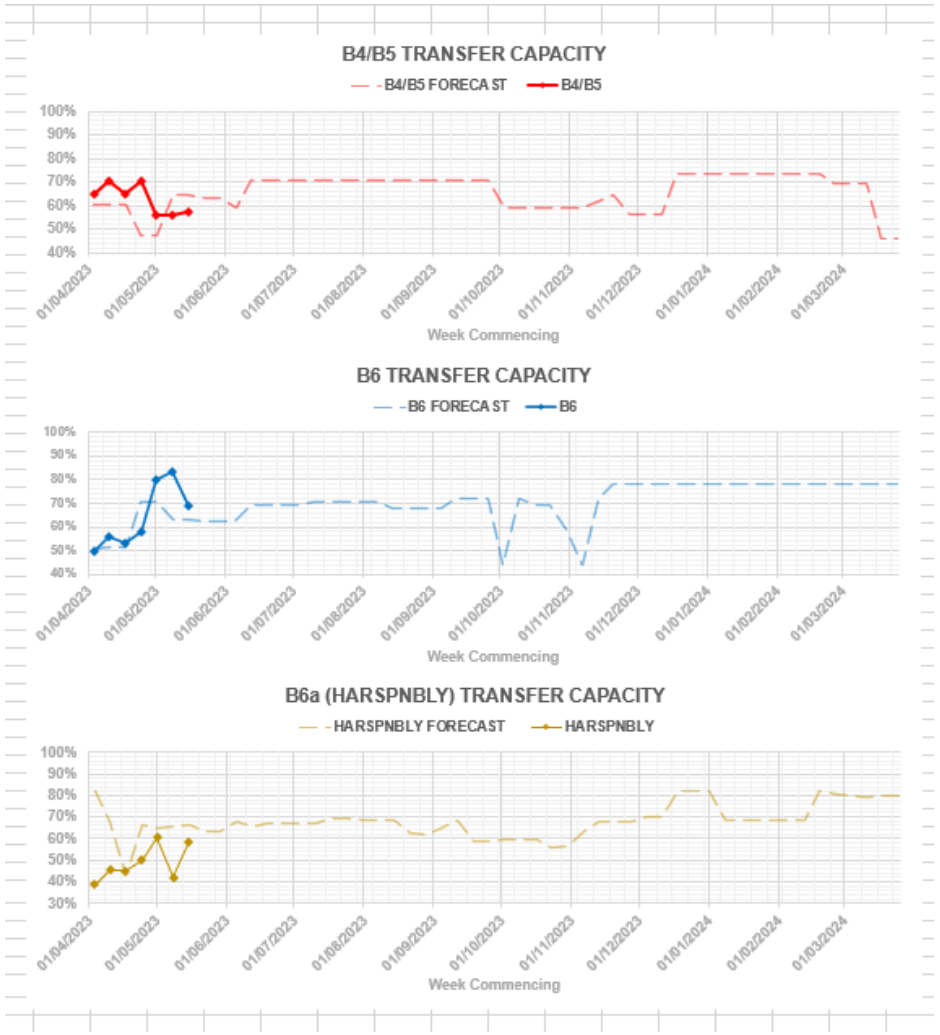
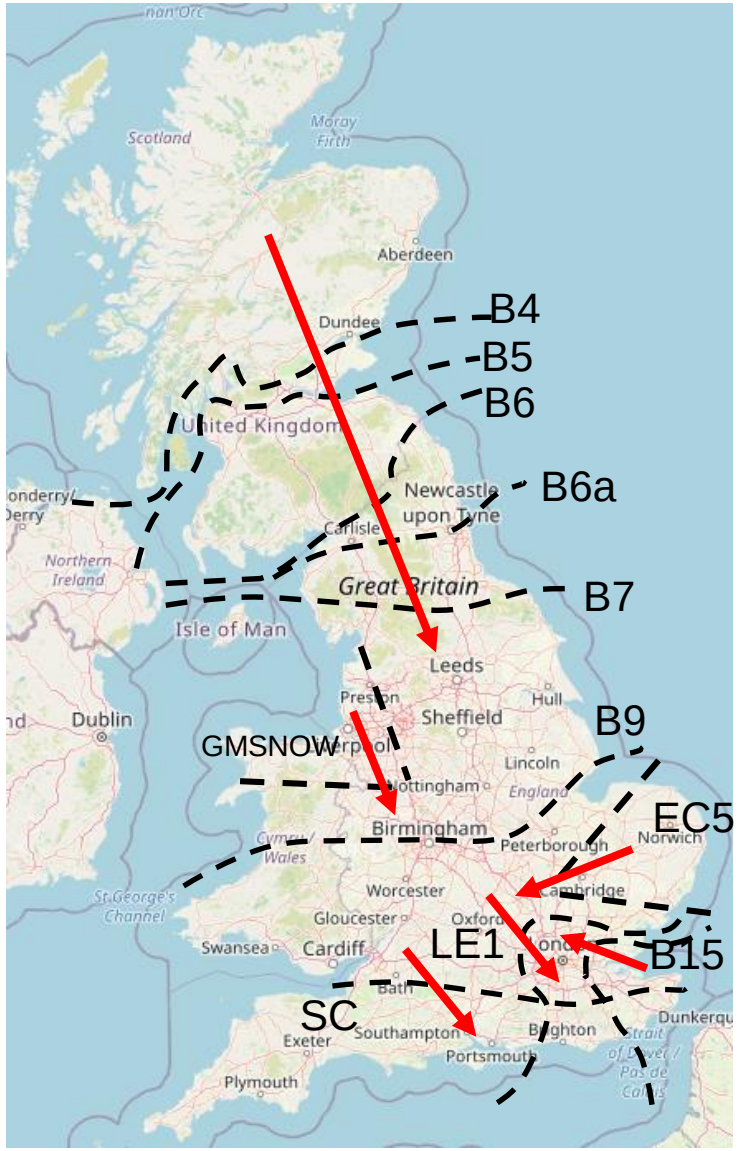
Transparency | Network Congestion

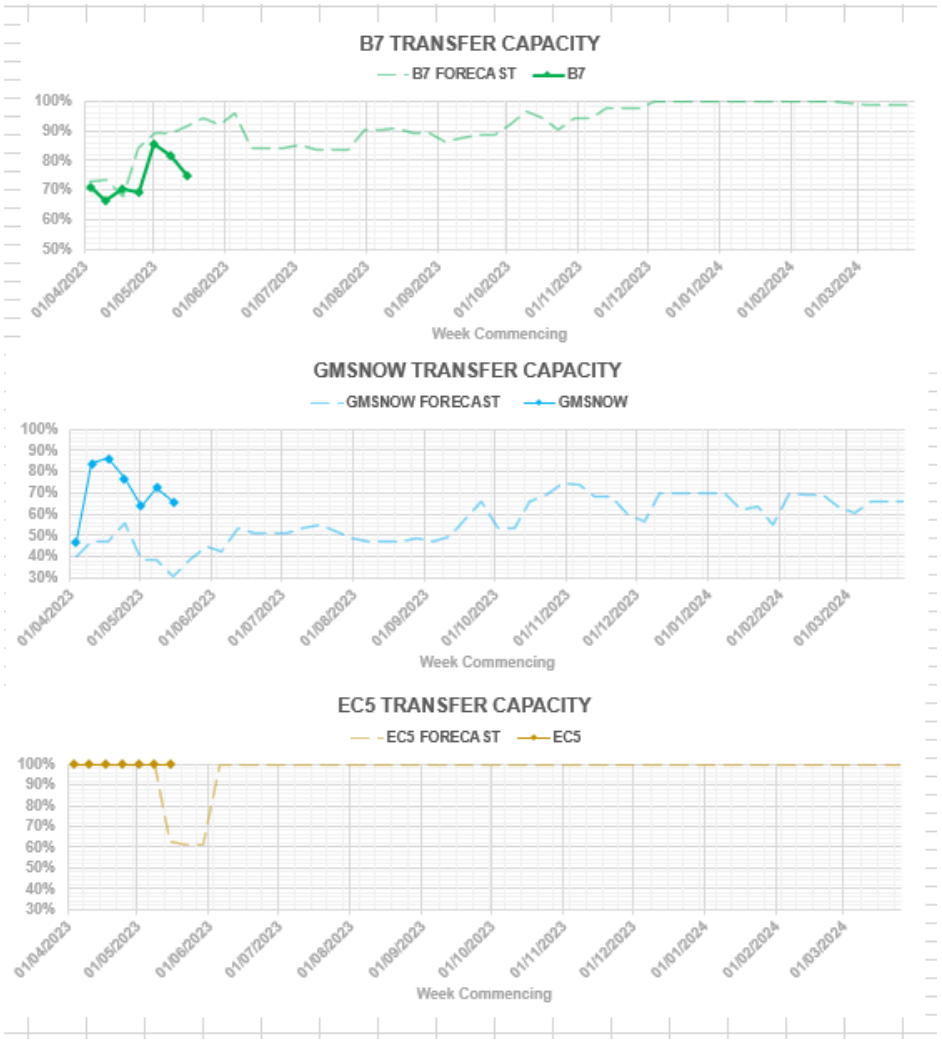


Boundary	Max. Capacity (MW)
B4/B5	3400
B6	6800
B6a	8000
B7	8325
GMSNOW	4700
B9	10600
EC5	5000
LE1	8500
B15	7500
SC	7300



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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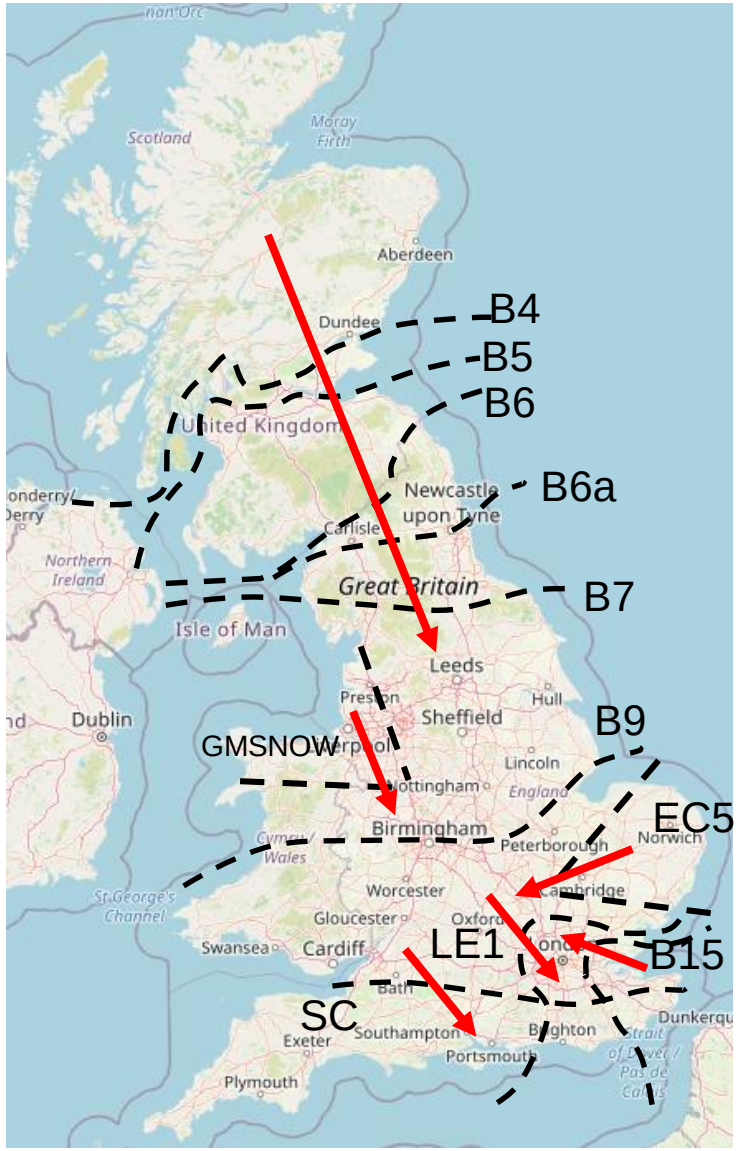

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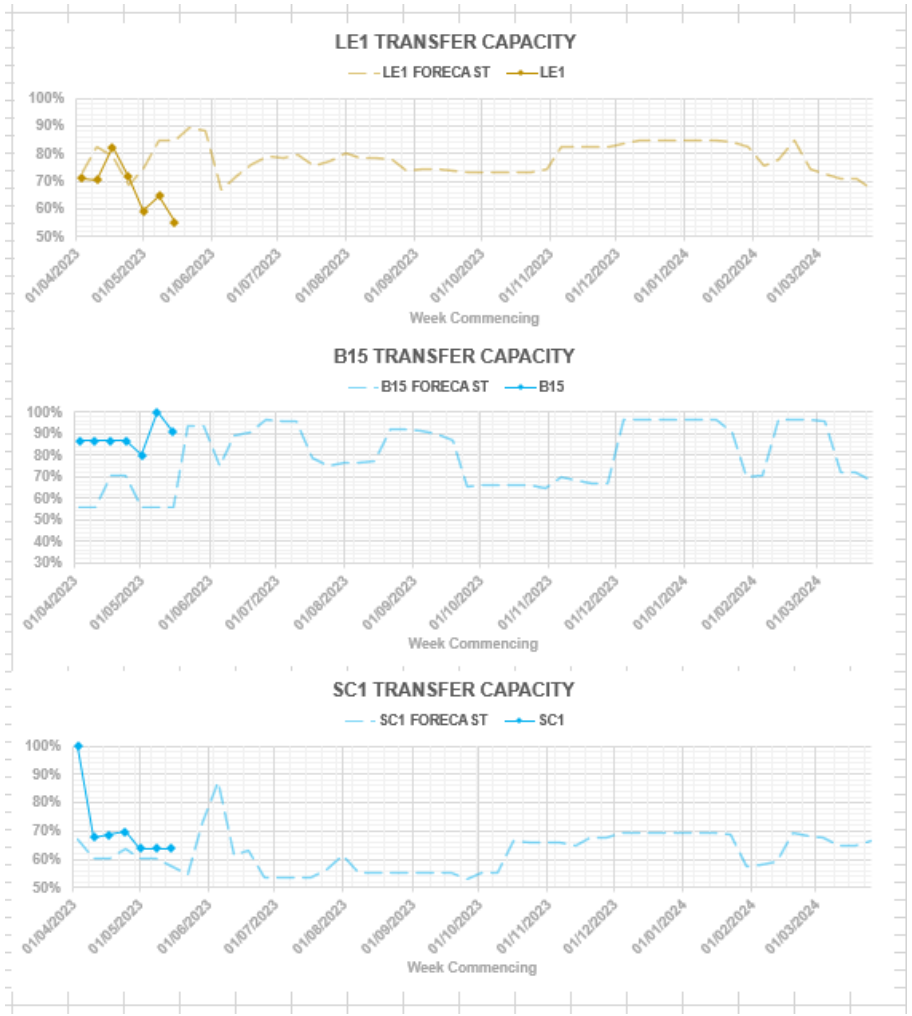

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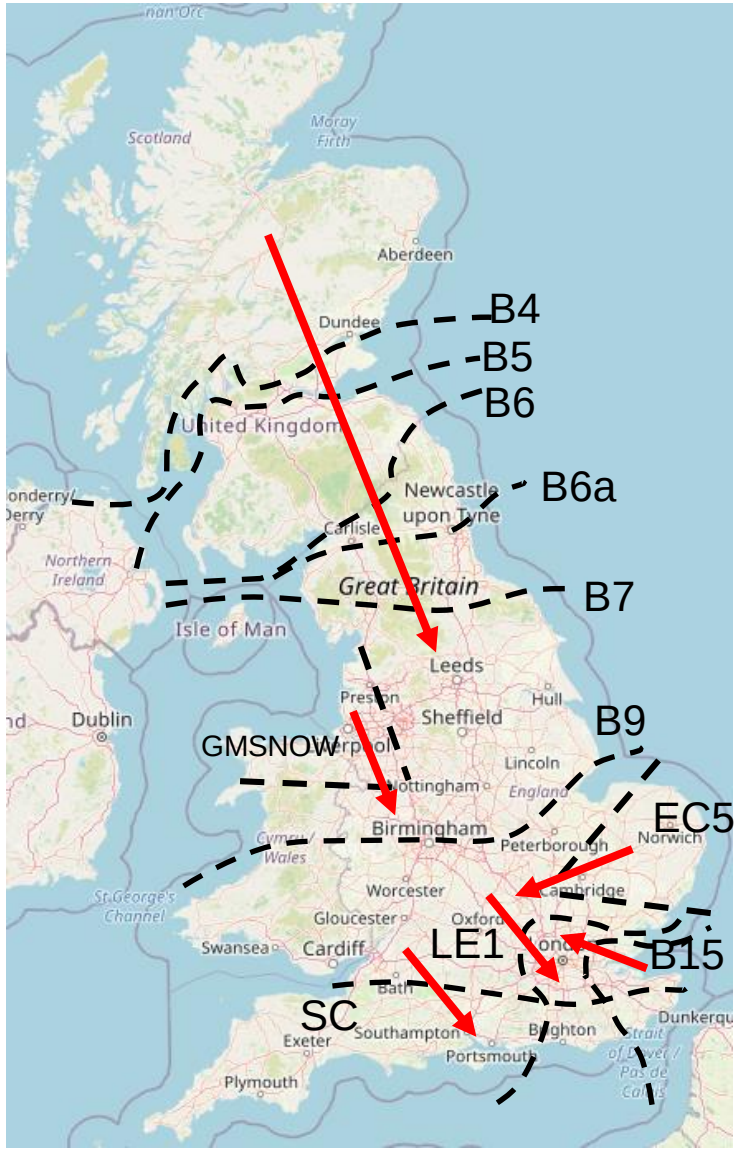

Day ahead flows and limits, and the 24-month constraint limit forecast are published on the ESO Data Portal:
https://data.nationalgrideso.com/data-groups/constraint-management

Advance Questions

Q: Please can you provide a reminder of the relationship between the Transparency Network Congestion slides data published each week at the OTF and the 24 months ahead constraints limit data published on the ESO Data Portal.

For example last week's OTF slides (12 month horizon) show that B6 max capacity is 5650MW and the maximum forecast on the OTF slides for B6 is c.80% availability which is approximately 4520MW (5650MW*80%). But the maximum SCOTEX (i.e. B6) capacity in the 24 months ahead constraints limit data for the same 12 month horizon is 5300MW which is c.94% of the OTF quoted max capacity of 5650MW. Similar discrepancies exist for numerous other boundaries.

Since at least the beginning of April the max capacity data on the Transparency Network Congestion OTF slides has been changing every week for most boundaries, sometimes by hundreds or even thousands of MWs. Why? Surely the max capacity should be fixed with only occasional updates to reflect circuit upgrades etc.

Also in the 24 months ahead constraints limit data on the ESO data portal numerous values are missing (with a default value of 99999MW inserted). Please can “real” forecast constraints limit data be supplied for all boundaries for each week of the 24 month horizon.

Finally can the Visio diagrams on the ESO Data portal be updated to show all the boundaries for which 24 months ahead constraints limit data is published.

A: Thank you for the question, it appears I have been putting the incorrect figures for the Max Capacity column. I take full ownership of this mistake and have corrected these is this week’s slides.

To confirm the relationship that the slides should and will now show. The values in the Max Capacity column the ‘theoretical’ maximum for that boundary, under and truly intact condition. The 12- and 24-month values are calculated with the planned asset outages applied to our studies. These are not intact conditions and will therefore will not equal the intact value. With regards to the there being discrepancies, we update the limits as the plan changes. So, at 24-months ahead, we have an outage plan, but by 12-months ahead, this will have changed due to unforeseen and unplanned events that require the work to be re-planned. It is not uncommon for there to be differences between 24-month, 12-month and even DA (Day Ahead) constraint limits.

This ties into the previous point, again, I have updated the Max Capacity value to what it should be, and we will only update these when there is a change to the boundary’s maximum capacity. As noted in your question, this isn’t a common occurrence, so they will stay this value for a while.

Advance Questions

Q: Are static Firm Frequency Response (FFR) activations (e.g. time of year, unit, volumes) saved in some dataset on NGESO data portal or ELEXON?

A: The delivery of Static FFR is via automatic relay and there is no real time metering visibility of the contracted units armed to deliver the service and therefore there are no instructions or immediate performance data available to publish.

We do collect 1Hz resolution performance data from contracted units ex post to determine any payment adjustments for poor performance. This data (like all of our performance monitoring data) is not published to the market.

We do publish second by second historic frequency data for the whole GB system on the ESO data portal which can be used to see in the past when frequency reached the activation point for Static FFR (49.7Hz) and explore any seasonality in these events.

There are also sites which publish real time frequency data which would enable a closer to real time view than the historic frequency data we publish which is published with a lag.

Advance Questions

Q: Historic Demand Data 2022 on the ESO data portal shows year end embedded solar capacity as 13861MW.

In contrast Historic Demand Data 2023 shows embedded solar capacity throughout 2023 so far at 13080MW.

Give that installed solar capacity is growing all the time why did the ESO revise down its estimate of embedded solar capacity by 800MW on 1/1/23? Or is it an error and the ESO's estimates of solar generation in 2023 are also incorrectly understated by circa 6%?

Further, when BMU T_LARK-1 starts to generate, will it be included in a separate SOLAR generation fuel type class, or will it be wrapped up into OTHER - in which case what is the threshold of metered solar Balancing Mechanism Units (BMUs) that needs to be reached before a new SOLAR fuel type class will be started?

A: Thank you for raising this – the downwards revision is an error, and we are investigating the cause and effects.

The ESO Registrations team have confirmed that Solar BMU will continue to be included under OTHER for the time being. There is no set threshold of metered BMUs which would trigger a new category but the team will be monitoring the situation.

For reference there are over 100 Battery BMU and less than 10 Solar BMU at present.

Questions from last week

Q: The EC5 transfer capacity is due to drop by 40% imminently in the 24 month constraint forecast and remain there until the end of May - are you still expecting this to take place?

A: Due to plan changes and other conflicting outages, the outages driving this reduction in limit have been removed from the plan. The capacity of EC5 will not be dropping as the 24-month constraint limits show.

Q: Question on Limited Frequency Sensitive Mode of Operation (LFSM) was "which plants?" rather than "what's LFSM?" Grid Code is very unclear on which categories of plant are caught by the requirement to provide LFSM. Can you clarifiy the *scope* of the LFSM requirement?

A: All plant which is caught by the requirements of the Grid Code (there are one or two exceptions based on historical context, connection dates and MW size) are required to have the capability to provide Frequency Response. There are two modes of operation – Limited Frequency Sensitive Mode of Operation (LFSM) which means that the plant automatically has to reduce output if the System Frequency exceeds 50.4Hz and Frequency Sensitive Mode (FSM). In FSM, the plant is in free governor action which essentially means the power output of the Generator automatically responds to changes in system frequency +/- a deadband of 0.015Hz. At any one time only about 10% of generation will be in FSM mode (which is selected based on price / capability – although there are minimum capability requirements under the Grid Code) and all other plant must be in LFSM mode. There is no other option – i.e. all plant running would either have to be in FSM mode or LFSM mode with the majority running in LFSM mode.

Questions from last week

Q: 'Sufficient interest' is mentioned a lot (e.g. virtual options for in-person events, which seem to be a perennially popular suggestion). However it's not clear how 'sufficient interest' is established. What's the process for this please?

A: When considering how to organise and manage stakeholder events the organisers consider the most effective way to engage the greatest proportion of their stakeholders. We rely on feedback to understand how well the event met the needs of those stakeholders.

We have shared the feedback on providing virtual options for in-person events with the Balancing Programme team. If you have further comments, feedback or questions please contact them direct at: .box.balancingprogramme@nationalgrideso.com.

Alternatively, to get involved and provide feedback direct to the Balancing Programme team please follow this link to sign up for the Balancing Programme Stakeholder Focus Groups.

Q: BSUoS II and SF Runs March 2023 BSUoS has reduced significantly between runs. E.g. 24hr avg. 1st March, reducing by £1.50 from £5.44 to £3.94/MWh. Is there a reason for this or is it an issue with my data?

A: ESO will investigate this one and report back for the next OTF. Generally speaking though, both costs and chargeable volumes can move between II and SF runs as forecast data is used for some components at the II stage so there can be shifts in the resultant tariff under the old variable tariff methodology. Generally these shifts are relatively small so I will investigate what happened on this date. After further investigation it was found that the ancillary service contract costs forecast at the II stage were much higher than what we actually had at the SF stage of billing for this date.

Questions from last week

Q: Is it potentially a problem that NG ESO is entering into contracts for critical info (e.g. inertial monitoring) that apparently preclude real-time transparency? Could future procurement exercises take a harder line to prevent this happening?

A: Thank you for the feedback. This is something we consider in our procurement activities and will continue to consider in the future.

Q: I understand the resources you have for Inertia provision. It is your impressive performance in running Synchronous output at low levels that has been noted by various groups. Especially when the CCGTs got down to 1.3GW on Jan 30. So can you give as an idea of how you managed that?

A: Thank you for the question –we are gathering our internal resources to organise the deep dive into our inertia contracts and we will come back to you on the dates in the future.

Q: What progress is being made on selling the coal that was purchased for the Winter Contingency contracts but was not burnt. How much needs to be sold, how much is it expected to be sold for and how will the revenues from the sale of this coal feed into BSUoS? Will they be used to retrospectively reduce BSUoS costs incurred in W-22?

A: Any unused coal purchased for the Winter Contingency contracts will be sold. Any revenues from this will be made public and used to reduce BSUoS costs incurred in winter 22/23.

Questions we are still working on

Q: Hi, apologies if this is covered elsewhere, on 21 December 2022 the ESO answered a question at the OTF on demand reduction over the winter period at that point (estimating there had been approximately 6.5% decrease in demand over Autumn), as we move into summer could the ESO provide a similar review of the whole winter period, did the decrease in demand remain constant throughout winter, how much demand reduction was there in total and has the trend changed at all as we have moved into warmer weather? Thanks

Update on questions asked and answered in 26 April forum

Q: BMRS doesn't show "battery" as a technology type, but there's > 1 GW battery capacity in the UK already. We understand this depends on National Grid. Could you please add this technology as separate from others?

A: Thank you for raising this issue which currently affects over 100 registered battery BMU. Our registration team will be raising this issue with Elexon since both Elexon and the ESO register generators in accordance with the BSC (Balancing and Settlement Code) procedures. Separately the ESO team are also in discussion with the control room about arranging to add Battery as a fuel type to our internal systems to help inform dispatch decisions.

Q: For info I have raised the issue on batteries as a fuel type with Elexon. They said it is an easy change if NGESO can said the data to them.

A: Thanks again, as in the response to the earlier question the ESO Registration team will be taking this forward with Elexon.

Update 17 May 2023: Changes are being made to the ESO Balancing Mechanism systems to classify battery units separately from other storage types. We now expect the internal changes to be made on 24 May 2023 and the new Battery zone will appear in the published System Operating Plan (SOP) data from that date. We don't currently have details on how this will roll out across any other datasets published on the data portal. If you are concerned about how this change may impact a dataset you currently use (i.e: includes fuel/technology categories) please raise your queries to: .box.openData.ESO@nationalgridESO.com and the data portal team will ensure they reach the correct ESO team.

slido

Audience Q&A Session

ⓘ 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