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ESO Operational Transparency Forum

06 Oct 2021

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.**

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 and outlook
- Costs for last week
- Constraints

Focus Areas

Decision Making Process for Response Efficiencies

Questions outstanding from last week

Q: Yesterday day afternoon a number of periods had DISBSAD volumes published for them on BMRS after they had finished. These volumes also didn't seem to be published in advance on the ESO data portal - are grid are aware? It can risk trading parties thinking the system is long when in fact it's short

A:

DISBSAD volumes are normally published after the settlement period is complete with Trades data published at Gate Closure for the SP for which the gate has closed for example trades data for SP 25 will be published at 11:07.

Other BSAD data is published after the end of a Settlement Period eg data for SP 22 will be published at 11:07 , this data is published after the SP because the instruction could be ceased at anytime within the SP and so the final volume/cost is not known until the SP completes.

This data is submitted to the BMRS portal and this is where parties should be viewing the data. The ESO data portal does not publish within day data but publishes a summary of the data after the day in question.

Future forum topics

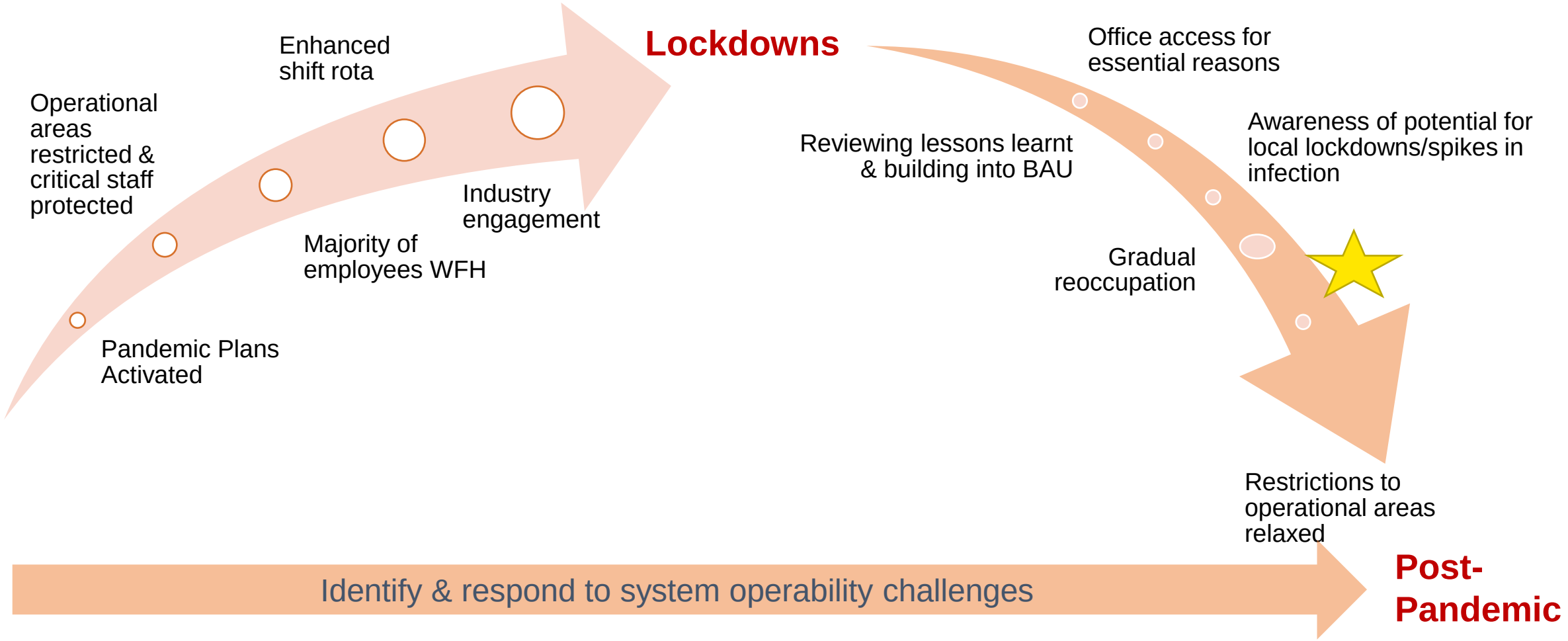
While we want to remain flexible to provide insight on operational challenges when they happen, we appreciate you want to know when we will cover topics.

We have the following deep dives planned:

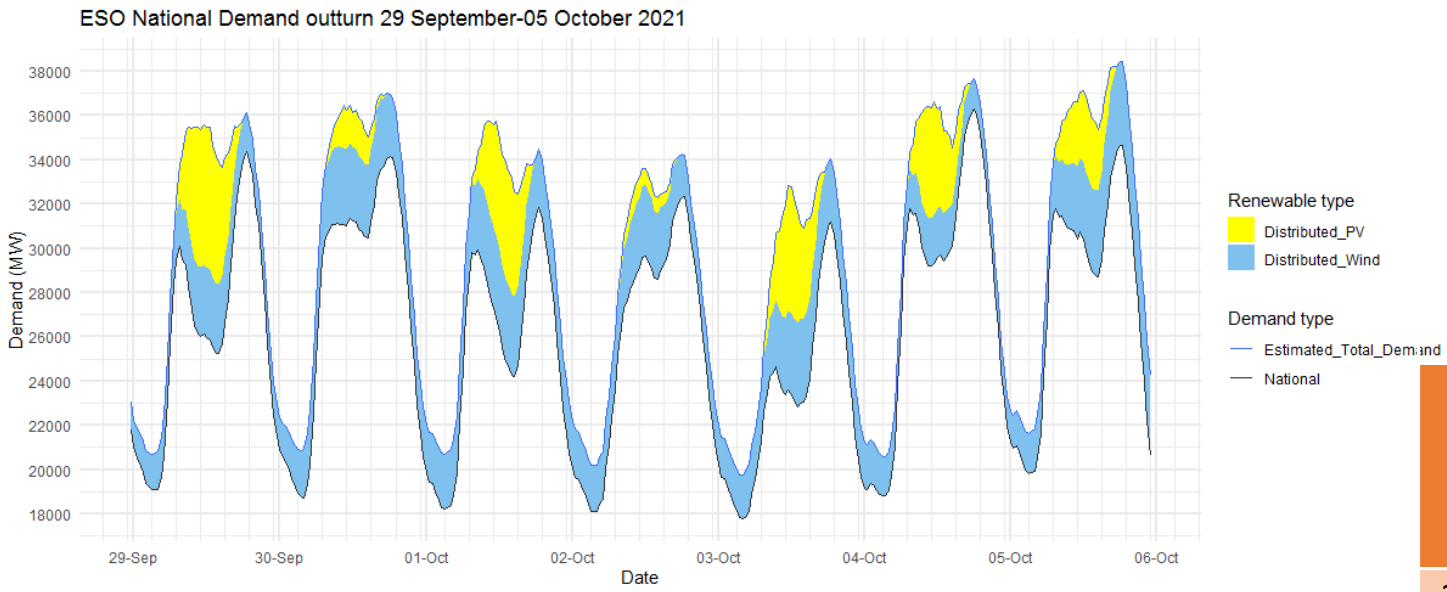
ESO Ambition to Facilitate Electric Vehicles – 13th October

Carbon Intensity Calculations – Delayed due to presenter availability – 20th October

Protecting critical staff to maintain critical operations



Demand | Last 7 days outturn

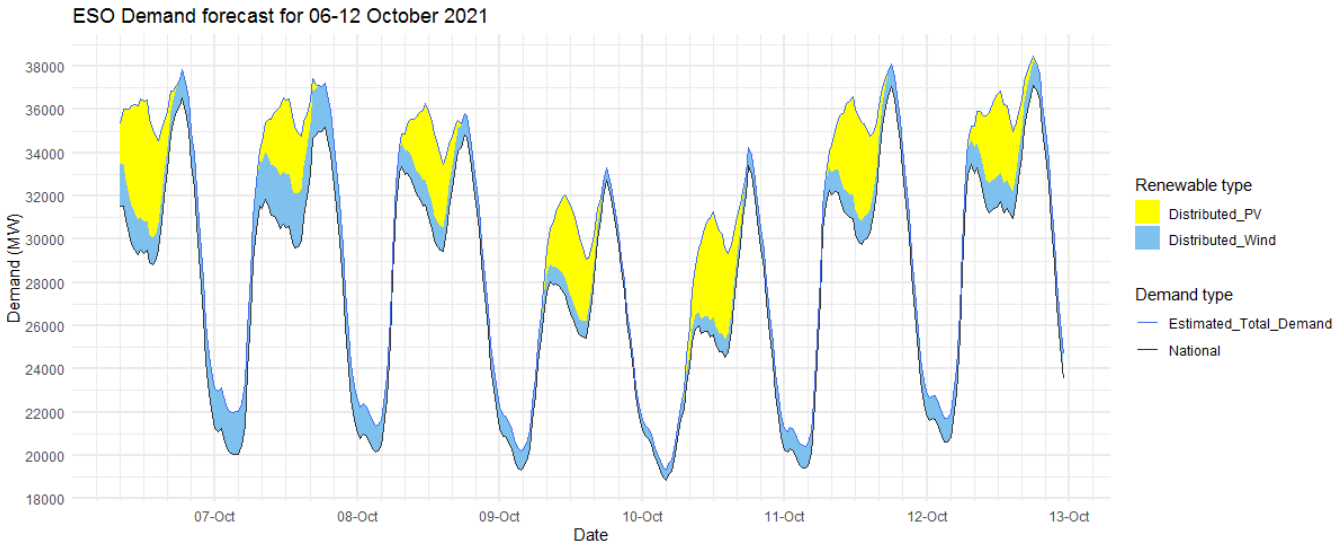


The black line (National Demand) is the measure of portion of total GB customer demand that is supplied by the transmission network.

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

		FORECAST (Wed 29		OUTTURN	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)	National Demand (GW)	Dist. wind (GW)
29 Sep	Evening Peak	34.9	1.7	34.4	1.8
30 Sep	Overnight Min	18.8	2.2	18.7	2.3
30 Sep	Evening Peak	34.0	2.8	34.2	2.8
01 Oct	Overnight Min	18.2	2.7	18.2	2.5
01 Oct	Evening Peak	32.6	2.7	31.8	2.6
02 Oct	Overnight Min	18.1	2.3	18.1	2.1
02 Oct	Evening Peak	30.2	2.9	32.3	1.9
03 Oct	Overnight Min	16.3	3.0	17.8	2.0
03 Oct	Evening Peak	30.3	3.3	31.2	2.9
04 Oct	Overnight Min	17.7	2.8	18.8	1.8
04 Oct	Evening Peak	35.8	2.0	36.3	1.4
05 Oct	Overnight Min	20.0	1.7	19.8	1.8

Demand | Week Ahead



		FORECAST (Wed 06 Oct)	
Date	Forecasting Point	National Demand (GW)	Dist. wind (GW)
06 Oct 2021	Evening Peak	36.6	1.3
07 Oct 2021	Overnight Min	20.0	1.9
07 Oct 2021	Evening Peak	35.2	2.0
08 Oct 2021	Overnight Min	20.2	1.2
08 Oct 2021	Evening Peak	34.8	1.0
09 Oct 2021	Overnight Min	19.3	0.9
09 Oct 2021	Evening Peak	32.7	0.6
10 Oct 2021	Overnight Min	18.8	0.5
10 Oct 2021	Evening Peak	33.4	0.9
11 Oct 2021	Overnight Min	19.4	1.0
11 Oct 2021	Evening Peak	37.1	1.0
12 Oct 2021	Overnight Min	20.6	1.1
12 Oct 2021	Evening Peak	37.1	1.2

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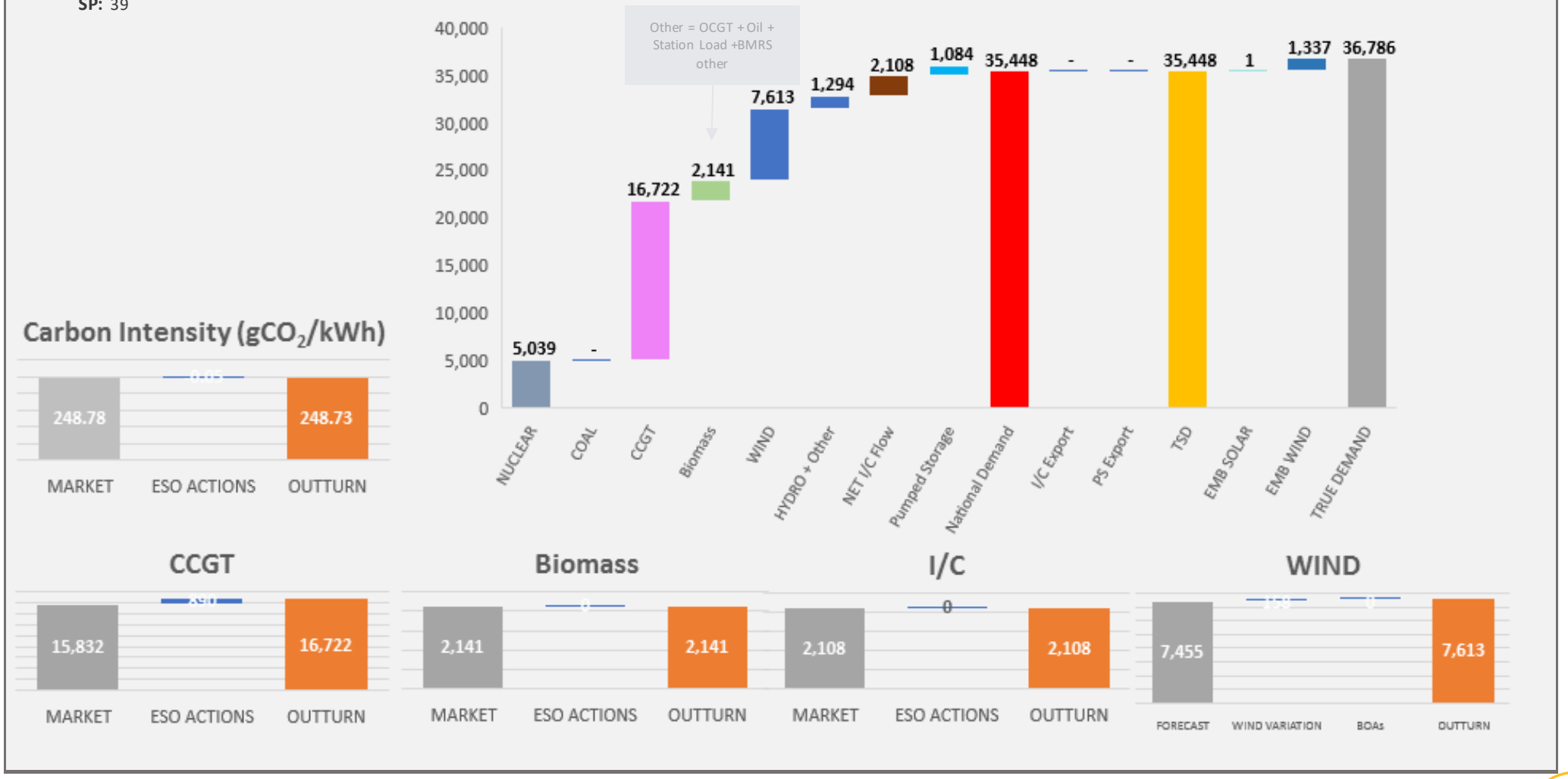
ESO Actions | Tuesday 28 September Peak

Date: 28/09/2021

SP: 39

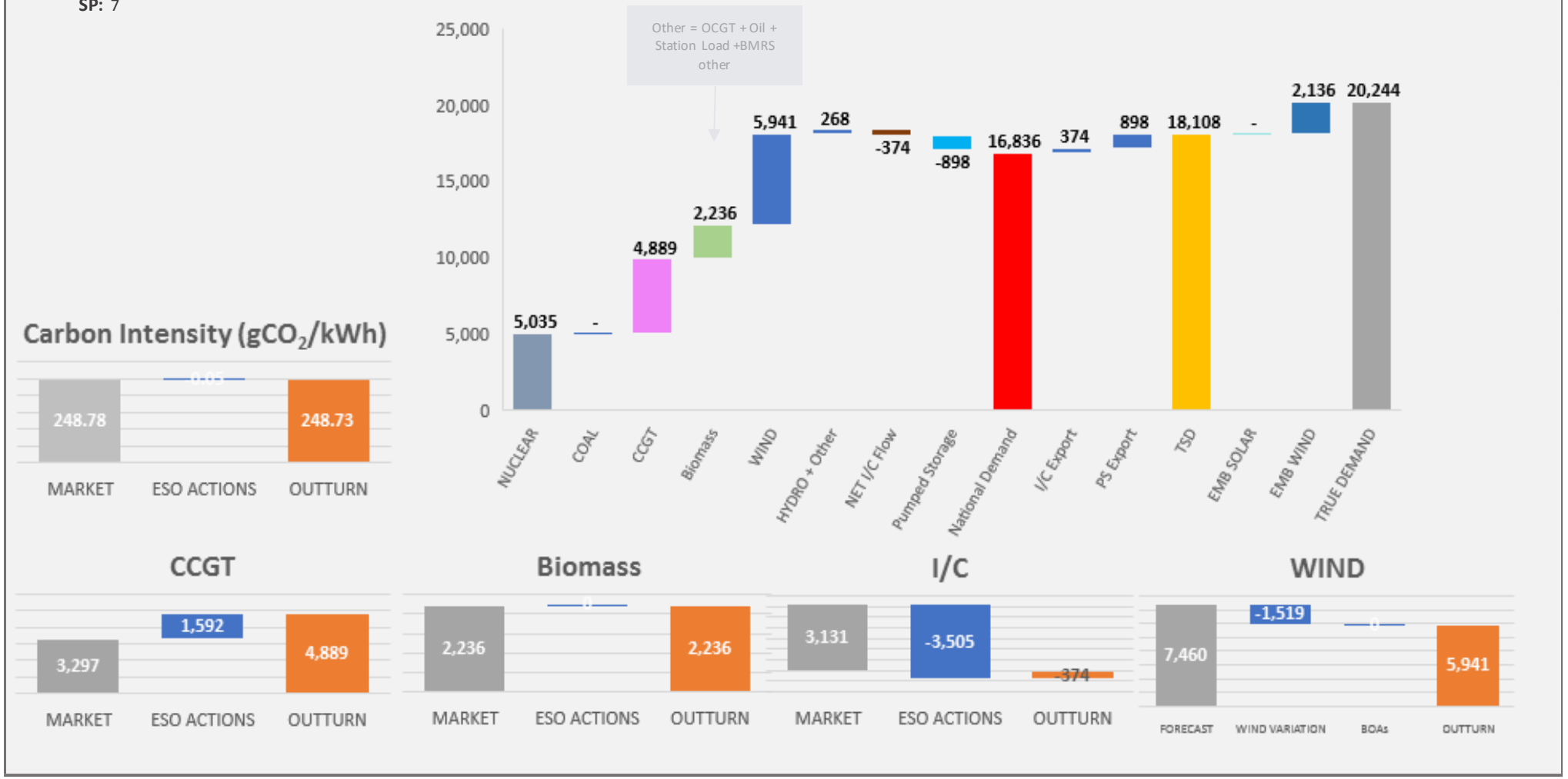


Carbon Intensity data on data portal: https://data.nationalgrideso.com/carbon-intensity1/carbon-intensity-of-balancing-actions

ESO Actions | Monday 27 September Minimum

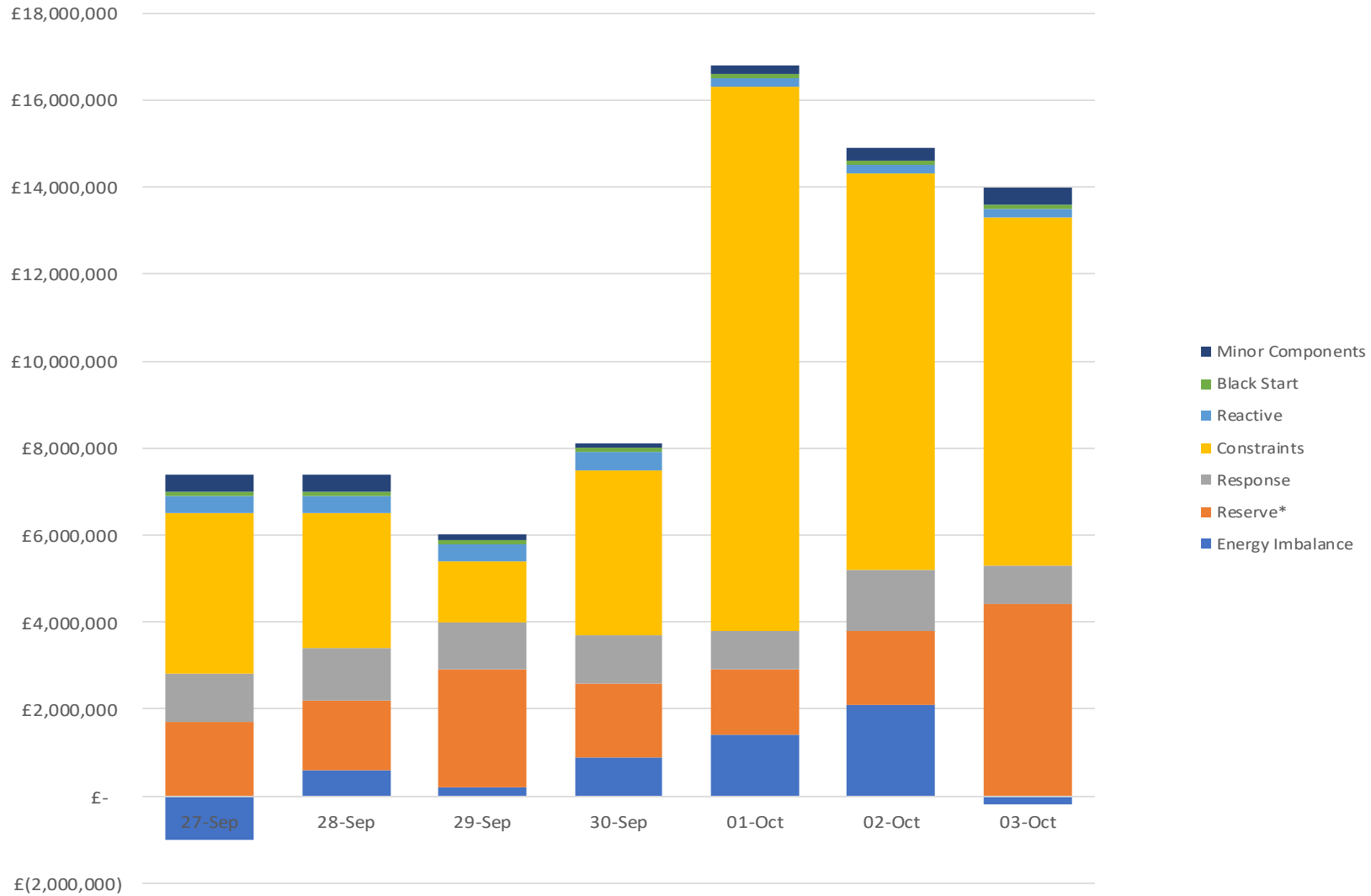
Date: 27/09/2021

SP: 7



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

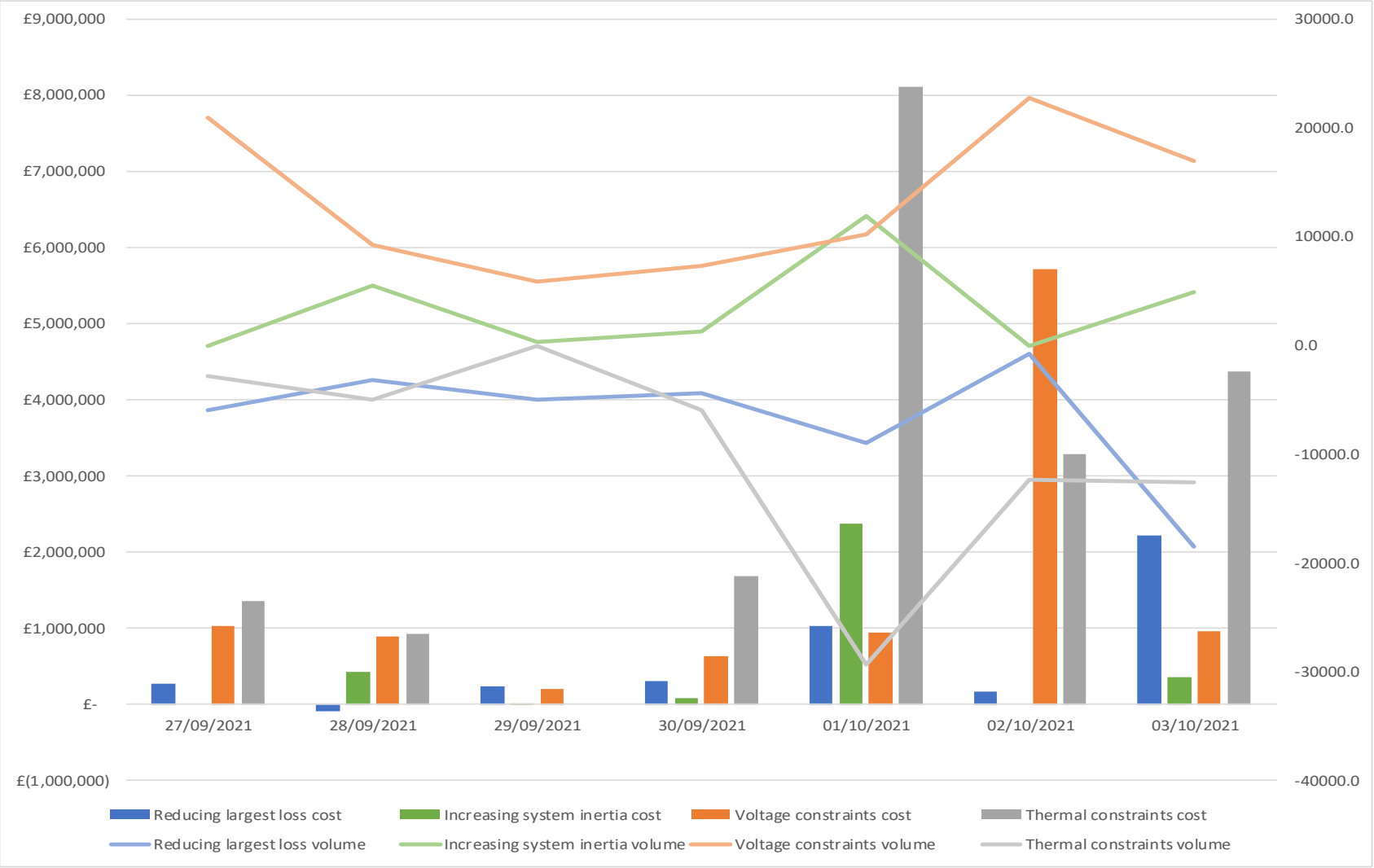
Transparency | Costs for the last week



Constraints

Constraints costs was the key driver of balancing spend for the week. Increased wind levels from Friday onwards meant that additional actions were required to manage thermal constraints. Increased wind generation displaced conventional generation meaning greater levels of intervention to ensure the voltage and inertia requirements were met.

Transparency | Constraint cost breakdown



Thermal
Large volumes of action required to manage thermal constraints, particularly in Scotland.

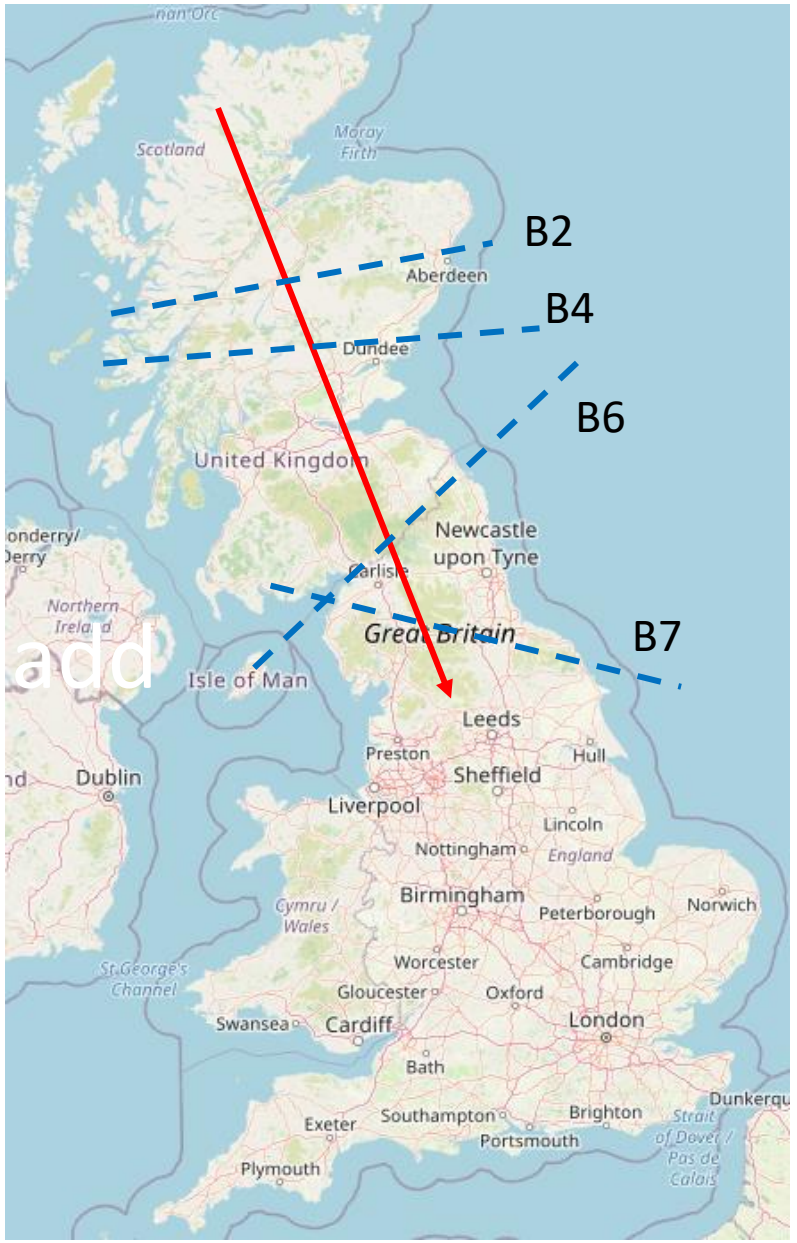
Voltage
Some action required to synchronise generation to meet our voltage requirements throughout the week

Managing largest loss for RoCoF
Action required to manage largest loss on interconnectors throughout the week. Varies due to varied inertia levels on the system and interconnector flows.

Increasing inertia
Intervention required to increase minimum inertia level on all days with high wind levels where conventional generation was displaced by wind generation.

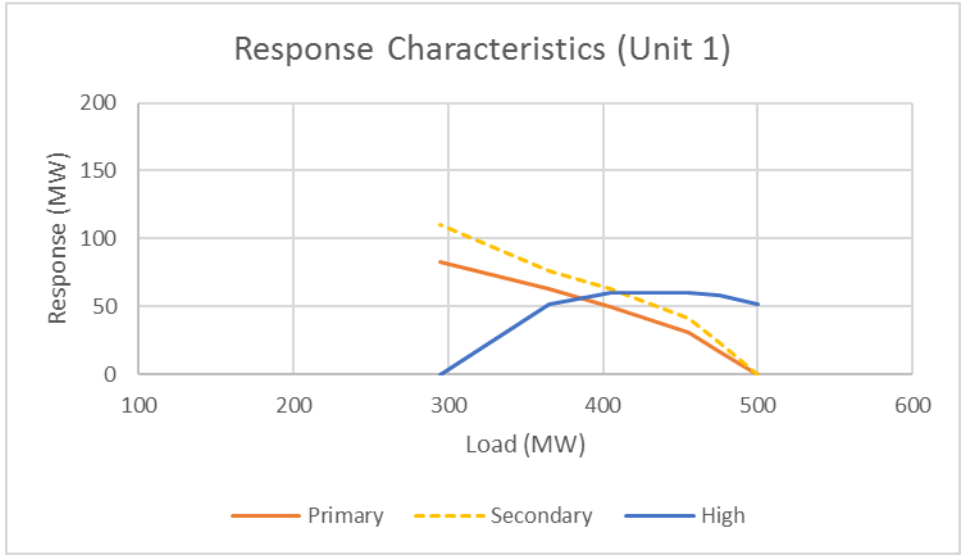
https://data.nationalgrideso.com/balancing/constraint-breakdown

Transparency | Constraint Capacity



Response Optimisation

Unit 1



	Bid Price	Bid Vol	Net Cost
Unit 1	+110	100	+14,470

100 MW bid → 400 MW load
→ 52 MW Primary
→ 65 MW Secondary
→ 59 MW High

Response efficiency **52%**

Bid price = +£110/MWh
P,S,H response prices = 2.00, 2.00, 4.00 (£/MW/h)

Action cost:
= -100*110 + 52*2 + 65*2 + 59*4
= -11,000 + 104 + 130 + 236
= -10,530 (Cash to ESO)

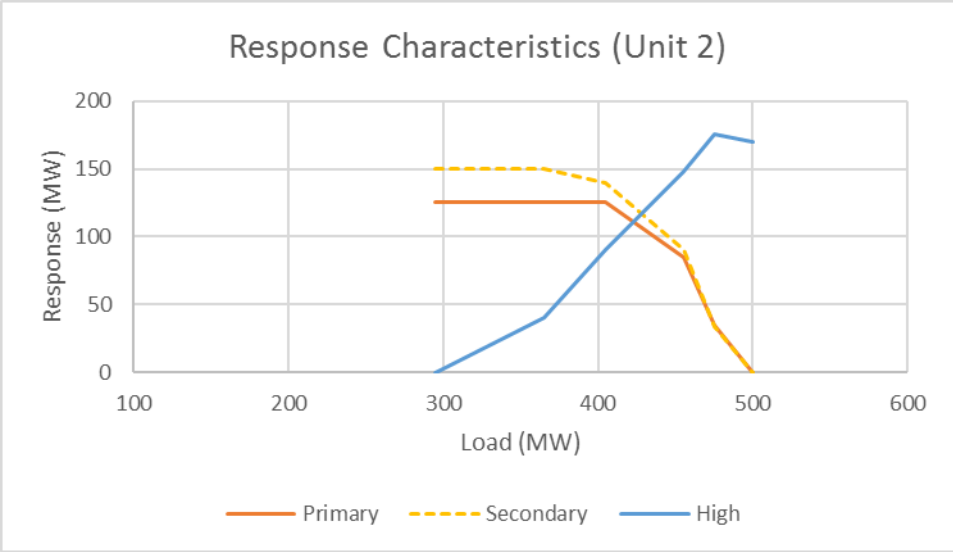
Replacement energy @ £250/MWh:
= +100*250
= +25,000 (Cash from ESO)

Net cost:
= +14,470 (Cash from ESO)

Unit 2

61 MW bid → 459 MW load
→ 52 MW Primary
→ 53 MW Secondary
→ 166 MW High

Response efficiency **85%**



	Bid Price	Bid Vol	Net Cost
Unit 1	+110	100	+14,470
Unit 2	+110	61	+ 9,414

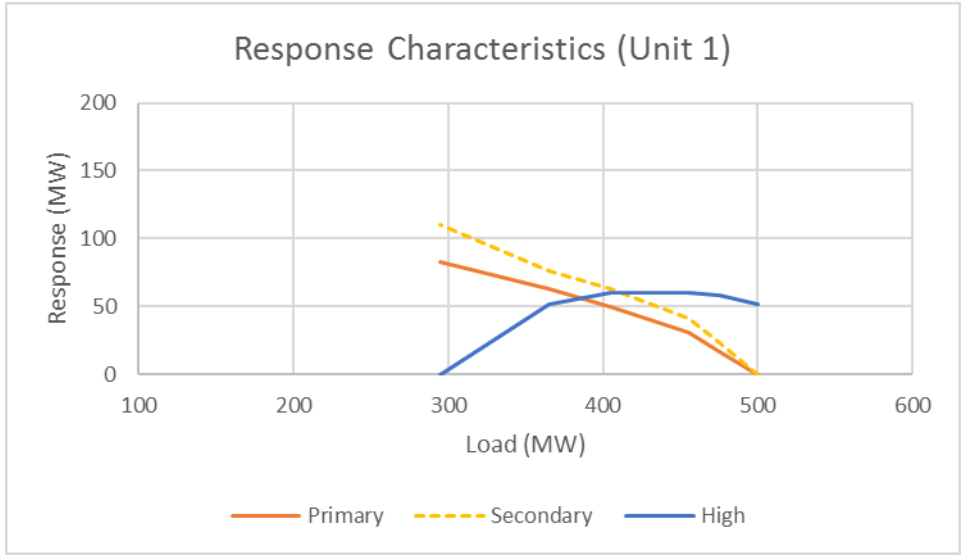
Bid price = +£110/MWh
P,S,H response prices = 2.00, 2.00, 4.00 (£/MW/h)

Action cost:
= -61*110 + 52*2 + 53*2 + 166*4
= - 6,710 + 104 + 106 + 664
= - 5,836 (Cash to ESO)

Replacement energy @ £250/MWh:
= +61*250
= +15,250 (Cash from ESO)

Net cost:
= + 9,414 (Cash from ESO)
→ £5,056 cheaper than Unit 1

Unit 1*: Improved Bid Price



	Bid Price	Bid Vol	Net Cost
Unit 1	+110	100	+14,470
Unit 2	+110	61	+ 9,414
Unit 1*	+161	100	+ 9,370

100 MW bid ➔ 400 MW load
➔ 52 MW Primary
➔ 65 MW Secondary
➔ 59 MW High

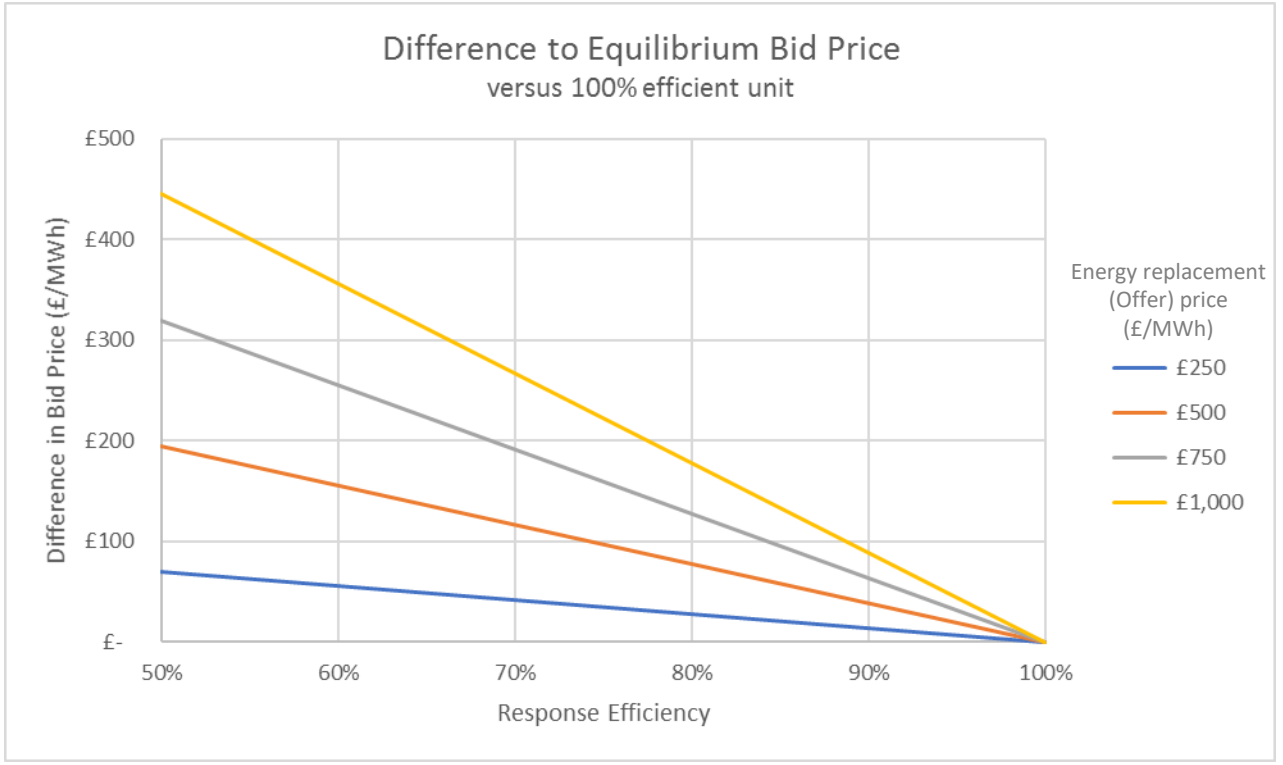
Bid price = +£161/MWh
P,S,H response prices = 2.00, 2.00, 4.00 (£/MW/h)

Action cost:
= -100*161 + 52*2 + 65*2 + 59*4
= -16,100 + 104 + 130 + 236
= -15,630 (Cash to ESO)

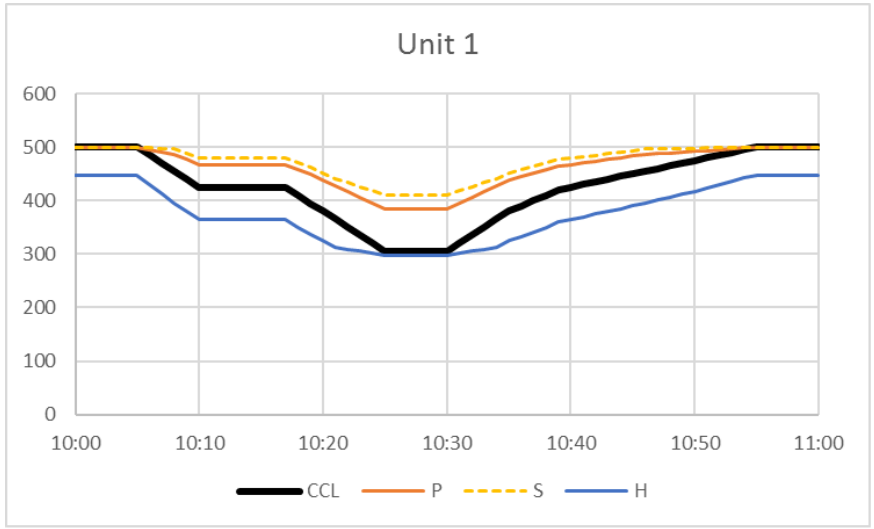
Replacement energy @ £250/MWh:
= +100*250
= +25,000 (Cash from ESO)

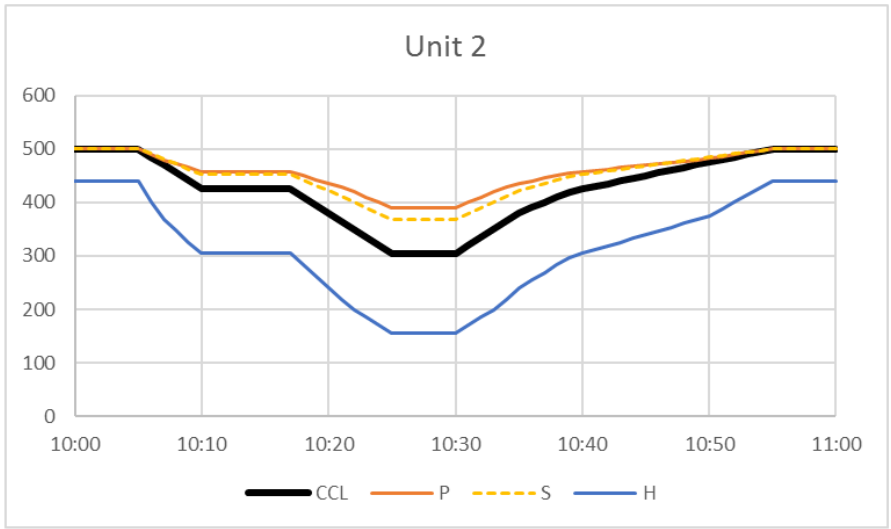
Net cost:
= + 9,370 (Cash from ESO)

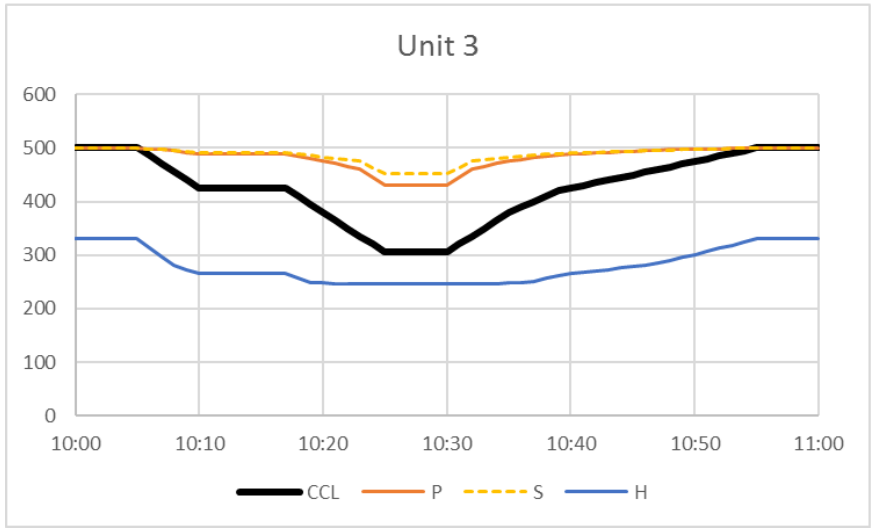
How much better does the bid price of the less efficient unit have to be to be?

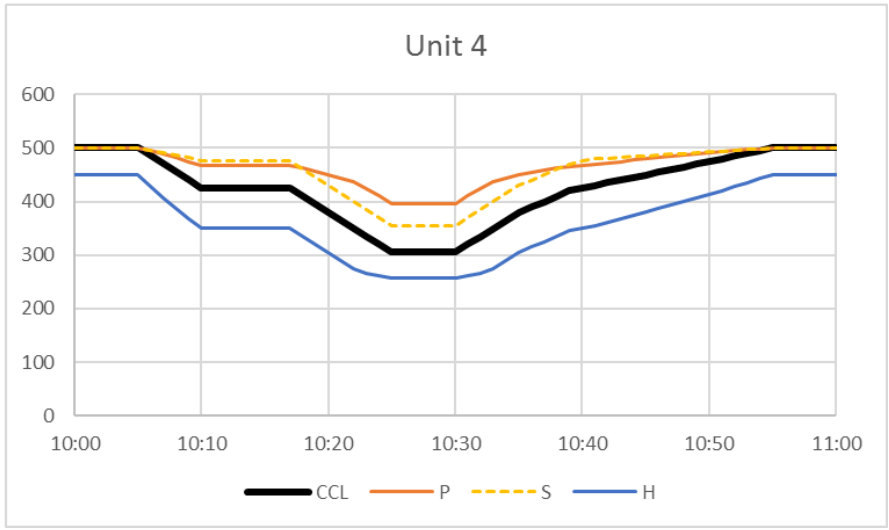


Stylised example over time





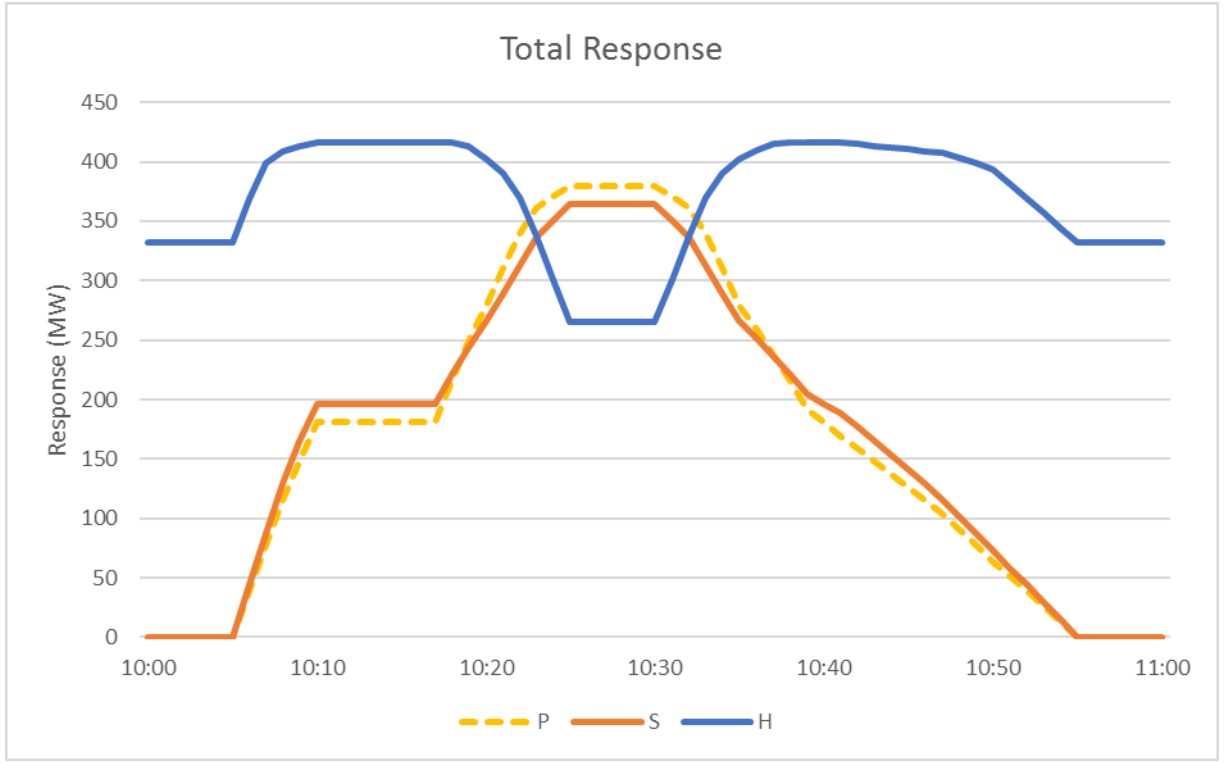




Marginal response requirement is influenced by position and capability of other units

CCL = Capped Committed Level
= *min*(MEL, FPN + BOA)

Stylised example over time - Total



Marginal response requirement is influenced by position and capability of other units

Q&A

After the webinar, you will receive a link to a survey. We welcome feedback to understand what we are doing well and how we can improve the event ongoing.

Please ask any questions via Slido (code #OTF) and we will try to answer as many as possible now. If we are unable to answer your question today, then we will take it away and answer it at a later webinar.

Please continue to use your normal communication channels with ESO.

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

slido

Audience Q&A Session

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

Q&A

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