Supporting Information

nationalgridESO

Question from OTF: Clearing of DM for delivery 8th May 2022

Q: Can you confirm, did DM clear at £0 on May 8th? If so, was this in error or driven by any fundamental?

Order	1				2				Total Family Welfare (£)
Block Type	C88 (Looped Family)				C88 (Looped Family)				
Block Code	22308				22308				
Product	DMH				DML				
EFA	1	2	3	4	1	2	3	4	
Offer Price (£/MW/h)	0.10	0.10	0.10	0.10	1.10	1.10	1.10	1.10	
Clearing Price (£/MW/h)	9.00	9.00	0.00	0.00	5.10	5.10	0.00	0.00	
Welfare (£/MW/h)	8.90	8.90	-0.10	-0.10	4.00	4.00	-1.10	-1.10	
Volume (MW)	40	40	40	40	40	40	40	40	
Hours	4	4	4	4	4	4	4	4	
Total Welfare (£)	1424	1424	-16	-16	640	640	-176	-176	3744

Post Webinar Q&A

Q: Could you summarize the main variables that you use to determine the DCL and DCH demand forecast?

The main variables are inertia, demand, non-DC response including PSH, EFR and static services, as well as the largest loss to be secured as per FRCR 2022 policy.

Could you do the same for DM and DR?

DR and DM volume requirements are set at 80MW with 20MW overholding whilst we learn about the performance of the services and the behavior of the system with these services in place. The requirements for pre-fault control are based on their performance in replacing the existing services. Key drivers going forward will be things like inertia, accuracy of balancing, forecast accuracy of generation and demand.

Q: How do you define the angle of the required volume and the overholding volume curves?

The angle of the requirements is an approximation not based on actual forecast of price stacks. This methodology is under review and may change in the future. The overholding curve is currently implemented as 5% of required volume for DC and 25% for DM DR, the price steps down from 22P over 10 equal price/volume steps.

Post Webinar Q&A

Q: How do you build the MFR stack forecast? Is it published anywhere? If not, could you do that?

Currently we do not build a stack for forecast we estimate the cost from the short-term historic outturns, the underlying assumption is that the volume procured is relatively stable day to day by EFA. The forecast is not published anywhere.

Q: Do you plan to switch to co-optimized in view of your results of the market simulation? If so, will you keep complex orders (e.g. C01, C02, C88)?

We are exploring options to introduce co-optimisation into the enduring auction platform. Based on the feedback we received from DC provider engagement, some market participants prefer complex orders because these orders provide more flexibility, and some participants prefer simpler bid structures. There is a trade-off between the flexibility of orders and the complexity of the auction algorithm. At this stage, we are developing the enduring auction platform, and we will assess these functionalities and explore new options.

As the simulation study was a one round study, we excluded complex orders (C02, curtailable C88, and multi-period orders) from our simulation study primarily for computational reasons, therefore the simulation algorithm used in this study is completely independent from the enduring auction algorithm.

Post Webinar Q&A

Q: Could you tell us how much MFR volume approximately corresponds to 1 MW of DC/DM/DR?

DC – DCL varies with system conditions such as the loss size and system inertia, recent values have been 1.5 - 4.3. DCH is 1:1

DM – the ratios used have been determined by simulation under assumed system conditions and for launch have been set to 1.89 DML and 3.04 DMH

DR - the ratios used have been determined by simulation under assumed system conditions and for launch have been set to 1.68 DRL and 2.16 DMH

Q: Are the current linear orders for DM/DR indicative of how they will be in the long term, or shall we expect significant changes as it happened with DC (i.e. they are currently set to push participation in the markets)?

The format of the buy orders will likely remain the same, that is there will be a stepped requirement with an overholding requirement. The exact number of steps may change in the future. The pricing structure and volume requirement will also change in the future, with pricing reflecting the driving needs of the system.

Post Webinar Q&A

Q: How do you forecast RoCoF? Do you publish that? If not, could you do that? Where can we find more information about how NGESO uses RoCoF?

This forecast using a baseline volume of embedded generation set on both RoCoF and Vector Shift LoM protection which is offset by the volumes changed as part of the Accelerated Loss of Mains Change Programme (ALoMCP). The remaining capacity is dominated by renewable generation, so we model load factors per DNO area using weather variables to estimate (a) the total RoCoF loss per settlement period for the whole system and (b) the regional VS loss given its locational in nature. We then factor these into our loss calculations to determine the levels of response required. We do not currently plan to publish these forecasts; the models and assumptions are under continuous review, and it would not be trivial to extract this data from the models to publish at a meaningful frequency.

Q: When is the linear order for DC/DM/DR auction generated? Could you consider publishing it before the auction? It would assist with optimization, simplify modelling, and incentivize market entry.

The buy orders are currently produced between 13:30 and 14:30 for that day's auction to enable us to use the best system information available. We do not currently have plans to publish the buy order before the auction, but we do publish a day ahead forecast. The intent of a pay as clear auction is that it incentivises participants to bid at their short-run marginal cost, publishing the exact buy orders prior to the auction could support bidding strategies which result in an inefficient auction outcome.