

A landscape photograph of a mountain range with glowing yellow energy lines curving across the foreground. The sky is filled with dramatic, golden-hued clouds, suggesting a sunrise or sunset. The mountains are rugged and partially covered in snow. The glowing lines represent energy transmission, curving from the left towards the right side of the frame.

Phase 2 Frequency Response Auction Trial Initial Evaluation Report Response Letter

September 2020

nationalgridESO

Introduction

NGESO promised in the Response and Reserve Roadmap issued in December 2019 that we would share our initial findings and learnings with you in a project evaluation report. ESP Consulting was contracted to lead this independent assessment, which was conducted in April and May 2020. Their report can be found on our [website](#). Within this letter, we outline the project brief, process review and our response to the key recommendations that ESP Consulting has made.

Project brief

The Frequency Response Auction Trial is a two-year project which aims to test the hypothesis that closer to real-time procurement will lower barriers to entry for participants who have difficulties to forecast their availability to provide frequency response over longer time horizons. The trial procures a volume of frequency response as a weekly, pay-as-clear auction and we procure two frequency products: Low Frequency Static (LFS) and Dynamic Low High (DLH). We are testing our algorithm and working with EPEX SPOT on the auction platform. We expect this trial will promote competition and increase liquidity in the frequency response market, reduce overall balancing costs, and deliver value for end-users.

Project Progress

Market Liquidity

We are pleased with the progress of the Trial so far; market liquidity has increased significantly and all EFA blocks are generally now fully cleared (i.e. up to 100 MW) in the DLH market. In some EFA periods, the offered volume has been nearly double our procurement requirements. Because of this increasing market liquidity, the DLH market clearing price has dropped significantly from £8/MWh in late January to around £5/MWh in recent auctions. On average, the DLH auction price is now lower than the monthly FFR tender price for an equivalent bundle of services. Also, we are seeing a clear upward trend shown in LFS market liquidity since July. We therefore see that the Auction Trial is delivering procurement cost savings.

Lower Barriers

As part of the evaluation, we conducted a market survey of Auction Trial participants. One question we asked in the survey was, “from a score of 1-10, how would you rate the importance of monthly tenders and weekly auctions as your main route to market?”. Although there were more respondents selecting monthly tenders as their main route to market, with more volume currently being procured in monthly tender than weekly auction, weekly auctions got a higher overall score in terms of route to market. Demand-side response providers gave the weekly auctions especially high scores. The Auction Trial therefore is meeting its main objective of lowering barriers to entry for non-traditional providers.

Operational Process

According to the market survey feedback, participants indicated that the weekly auction operational processes worked well for them, and that it took them less time and effort to prepare for a single auction compared to a monthly tender. However, because the weekly auctions occur four times a month, 61.5% participants stated that the overall effort for the weekly auction is equal to or greater than the effort required for the monthly tender. We have

therefore implemented improvements to the users' experience of the weekly auction. We have published a simplified EPEXSPOT user guide, and we put an additional filter on auction dates on the "Trader Global View" screen to make it easier to track the active auction. We will continue to explore possibilities for further operational improvements.

Market Transparency

We publish the full market results for each auction, and we are pleased to see participants speak highly about the data transparency of the Auction Trial. In the market survey, participants gave an average score of 8.6 for the question: "On a scale of 1-10, please rate how well the auction process is working with respect to communication and transparency of auction results". We understand that participants are keen to see more documentation related to the weekly auction, especially an explanation of the functioning of the clearing algorithm. We therefore plan to publish additional supporting documentation.

Response to Recommendations

We believe that the Auction Trial is a good opportunity for both ESO and participants to learn about price formation in pay-as-clear auctions. The following points are our responses to the recommendations outlined in the evaluation report. We believe there is opportunity for us to further our learning with the trial, and to remove barriers to entry for participants.

20MW Unit Cap Removal

The biggest barrier to entry mentioned by participants in the market survey is the 20MW unit cap. The intention of this cap at the beginning of the Auction Trial was to ensure sufficient diversity of participating units (location/ technology type/ reliability pattern etc.) to fulfil the total procurement volume. The weekly auction now has a sufficient level of participation, and we will therefore remove the 20MW unit cap from 25 September 2020.

LF/HF Procurement Separation

Another barrier to participation is the standardised product design of the DLH product which requires equal amounts of high-frequency and low-frequency response to be offered (P=S=H). Because some of our participants have asymmetric capabilities, one of the key improvements we will consider next is to trial the separate procurement of low-frequency and high-frequency services with a "linking by products" function. This will improve the market design by increasing flexibility for both ESO and market participants. Also, it will remove the barrier for participants who prefer to provide one-sided frequency services and for suppliers who desire to provide two-sided services but have asymmetric upward and downward capability. We are working with EPEXSPOT to design and develop this new function. Our progress will be shared with you through the ESO Auction Trial website.

Procurement Volume Review

We are aware that participants want us to increase the total volume of each product procured in the auction beyond 100 MW. We are planning to deliver the soft launch of our new product, Dynamic Containment, at the beginning of October this year. Our learnings from the Auction Trial have been fed into the development of Dynamic Containment and we anticipate further learning throughout the soft launch; our priority is to understand the impact of this new product on market liquidity and overall procurement cost before a final decision can be made.

Buy Order Methodology

ESP Consulting recommended in their evaluation report to implement a more elastic buy order by re-introducing the stepwise bid curve that we used at the beginning of the Auction Trial. We plan to follow ESP Consulting's recommendations on this, especially in this regard to the design of the curve.

HELENA algorithm

The HELENA clearing algorithm offers different possibilities for participants to construct their orders: for a given product, orders can be linked by time (i.e. multiple-period bids); and on a given EFA period, orders can be linked by blocks (e.g. parent and child blocks). Participants can also decide whether to make their orders curtailable or not. Our increased understanding of participant's preferences for these features and how their use impacts auction outcomes has been valuable and is important to us for the design of future auctions.

The Merit Order Rule is a constraint we included in the clearing algorithm to give certain simple orders higher priority than other orders with a more complex construction. The intention was to increase the transparency of auction outcomes by encouraging participants to use simpler bidding strategies. However, this feature didn't work as we expected. It has decreased overall market welfare and made the market results more difficult to understand. We will consider this learning in the design of future auctions. We will also include a more detailed explanation of the rule in additional supporting documentation that we plan to publish.

Residual Auction

As ESP Consulting mentioned in their report, the original design of the residual auction functionality does not fit well with our current design for frequency products. We have therefore decided to put the development of this functionality on hold.

Further Learnings

As the Auction Trial continues, we plan to further investigate a number of different topics. These topics include the interaction of different markets (for example weekly auction vs. day ahead auctions), how closer to real time procurement can result in more accurate procurement decisions, and how to make our buy price better reflect market conditions.

Conclusion

In summary, we believe the innovation project has so far helped us and participants learn about procurement closer-to-real-time and pay-as-clear auctions. This success, and the learnings we have taken from it, have informed our progress towards integrating day-ahead procurement into our operational environment, in line with our Forward Plan and ambitions to deliver carbon free operation and competition everywhere. Our next step in our learnings is to run day-ahead procurement for Dynamic Containment.

Finally, we would like to extend our appreciation to ESP Consulting for their work on the evaluation report and to our project partner EPEXSPOT for their continued support on the Auction Trial project. Also, we sincerely thank all participants of the market survey for their time and their valuable feedback. We look forward to continuing working with you as the Auction Trial progresses.