

ESO Technology Advisory Council Control Room of the Future sub-group

TAC Control Room of the Future

Date: 25/10/2023	Location: Virtual
Start: 10:00	End: 12:00

This document summarises the feedback received verbally and via the Chat function.

All material from the meeting can be found on the Technology Advisory Council website:

<https://www.nationalgrideso.com/who-we-are/stakeholder-groups/technology-advisory-council/documents>

Participants

Attendee	Organisation
Angela Wilks (Chair) (AW)	GBESO, Electricity National Control Centre, Operational Manager
Chris Dent (CD)	University of Edinburgh, Prof of Industrial Mathematics, Fellow Alan Turing Institute
Rob Proctor (RP)	Professor of Social Informatics at Warwick University and Alan Turing Institute faculty fellow
Steve Sinclair (SS)	Head of Data, Flexitricity
Lars Schewe (LS)	Reader in operational research at the School of Mathematics in Edinburgh, specialising in mathematical optimization with application specifically in energy systems
Samuel Nhavira (SN)	Transport for London, Power Supply Manager
Andrew Robbins (AR)	RWE

For specific agenda items

Attendee	Organisation
Bernie Dolan (BD)	ESO OBP Principal Product Manager
Colin Webb (CW)	ESO OBP Subject Matter Expert
Chi-Ho Lam (CL)	ESO OBP Product Manager
Joe Coles (JC)	ESO ENCC Future Design Strategy Manager
Mayank Jha (MJ)	Portfolio Manager, ESO Technology
Jean Hamman (JH)	ESO Energy & Strategy Lead for ENCC Future Design

Apologies

Attendee	Organisation
Jo Jo Hubbard	Co-founder & CEO at Electron
Nick Huntbatch	Head of Product, Electron
Naomi Baker	Senior Policy Manager at Energy UK

Agenda

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1. Welcome and introductions
2. Future Control Strategy Project overview
3. Wind BMU Deep Dive
 - Wind BMUs and Operational Challenges
 - Wind BMU PN accuracy
 - Current Scheduling and Dispatch process with respect to Wind Power Available
 - Wind BMUs and Frequency Response
 - Typical Operational Scenarios
 - Future Enhancements
4. OBP Wind in energy dispatch
5. Panel Discussion
6. Next meeting and calendar
7. AOB

Discussion and details

#	Topics discussed
1.	Welcome and introductions <ul style="list-style-type: none">The chair welcomed all members of the group for the first time. All present members gave an introduction.
2.	Minutes of last meeting and matters arising <ul style="list-style-type: none">No comments on the minutes from the last meeting were raised.
3.	Future Control Strategy Project overview <ul style="list-style-type: none">JC provided an overview of the Future Control Strategy project which is looking at how the ESO needs to evolve the Electricity National Control Centre (ENCC) in terms of people and processes to meet future requirements.RP requested a follow up more detailed discussion to expand on options to accomplish Control Room situational awareness on a moment by moment basis. JC agreed to follow up in the New Year.
4.	Wind BMU Deep Dive <ul style="list-style-type: none">AW provided an overview of current Control Room operations and how wind BMUs and their data are managed in energy dispatch advice.
4.	OBP Wind in energy dispatch <ul style="list-style-type: none">CW talked the panel through the current thinking for OBP to manage wind BMUs with a focus on an interim solution for wind dispatch before delivering longer term solutions.OBP will soon be delivering multi-dispatch capability for storage BMUs and sBMUs, this approach will then be applied to wind BMUs.OBP functionality will be extended to allow an optimiser to make decisions and send instructions to wind BMUs.The challenge for dispatching wind has been broken down into a downward instruction, a holding period and an upward instruction.
4.	Discussion <ul style="list-style-type: none">LS queried how ESO will monitor the performance of the optimiser system and suggested one idea would be to see what the optimiser does with an uncertain forecast and then run it at a later date giving it the accurate data and assess how much the performance of the optimiser changed between the data sets.CW advised the OBP optimiser will be initially used for issuing instructions in real time, measuring optimiser decisions with different data sets is not part of current plans, however validating optimiser decisions with data sets could be considered going forward as a means of measuring how an optimiser performs with uncertain data.LS advised that it is important for the ESO to monitor the OBP optimiser decisions and understand how optimiser decisions are impacted by data uncertainty.MJ asked the panel's views on how to improve the data uncertainty in wind BMU physical notifications (PN)?BD referenced the Grid Code Data Imbalance Charge which has always been set at £0, this is one option to penalise BMUs which submit PNs but then have MW outputs different to the PNs they have submitted. This is option would require significant stakeholder consultation before implementation.CW stated that bid offer acceptances (BOA) instructions to wind BMUs are issued from the PN and settlement uses PN data to settle. When wind BMUs have outputs different to their PNs this creates a significant challenge for the optimiser and for energy dispatch automation.

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- Panel discussion commented that wind BMUs need to improve forecasts and accuracy of PN submissions however it was opined that even with improved PN data there would remain uncertainty around wind PN data.
 - LS advised that there are mathematical tools to modify models to take into account uncertainty however they are more computationally expensive, the advice is at this stage to focus on improving wind PN data and put in place optimiser monitoring to understand how the optimiser performs with uncertain data. The monitoring will provide assurance for when the optimiser performs well with uncertain data and identify conditions with uncertain data when the optimiser performance drops.
 - CD queried the reliance on PN data from wind BMUs and the role that ESO wind output forecast data plays in the OBP design. An ESO forecast would apply a consistent methodology and would have the capability to produce forecasts with built in uncertainty treatment.
 - AR opined that wind BMUs won't necessarily have better forecasts. Windfarm operators may have better knowledge of what is happening on the site.
 - Discussion took place around processes for updating PN data if its deemed there will be a persistent error in the submitted data however it's quite often the case that by the time the updated PN data is submitted the weather / wind generation output has changed again.
 - SS referred to a concept called micro predictions, which the ESO is likely well placed to host a platform for, where people can submit their own forecast to a central repository. It's an interesting idea which is probably worth exploring. It might smooth over some of those inconsistency issues, and if everyone's anyone's supplying data to that system they can also in return get something back from it and so can be incentivised that way. The ESO is advised to consider researching options on micro predictions wrt forecasting wind generation output with stakeholders.
 - AR advised that between weather forecast updates, RWE use persistence forecasts blending from data with various confidence levels. The area of wind forecasts from weather updates is a fast moving and specialised area and contractors are used to deliver flexibility in wind models and deliver agile projects.
 - AR advised there's a lot of learning taking place in the wind generator industry. Wind generators are gaining increased understanding of the characteristics and capabilities of wind generators and the wind industry is starting to learn about the stresses. Delivering services or operating regimes which risk the life of an asset will likely have prices reflected accordingly.
 - AW commented it would be a useful exercise to compare industry and ESO windfarm models to understand the differences between the forecasts each model delivers.
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5. Next meeting and calendar

- The chair will send out another poll to ascertain the best time for the next meeting.

6. AOB

- CD advised he is working with the Global Power System Transformation Consortium (GPSTC) on their control room agenda. It's an international group of electricity system operators which National Grid, ESO is a member and is looking to drive the research and innovation required for the energy transition. JC confirmed he would seek out the recent publications and reach out to CD as required.

The chair closed the meeting by thanking members for their participation.

Decision Log

Note – this document contains current decisions and a rolling history of decisions. The complete log may be found in:

<https://nationalgridplc.sharepoint.com/sites/GRP-UK-National-Control-ESO-Technology-Advisory-Council>

Decisions: Made at last meeting

ID	Description	Owner	Date
1	Click or tap here to enter text.	I	Click or tap to enter a date.

Action Item Log

Action items: In progress and completed since last meeting

ID	Description	Owner	Due	Status	Date raised
1	Click or tap here to enter text.	Owner	Click or tap to enter a date.	Status	