ESO

ESO response to Statkraft

The ESO would like to thank Statkraft for the participation in the FRCR 2024 consultation process. We appreciate your comments and feedback. Please find our response to your valuable input below.

No	Question	Comments	ESO Response
1	Overall, do you agree that the FRCR 2024 represents appropriate development in determining the way that the ESO will balance cost and risk in maintaining security of supply while operating the system?	Somewhat disagree. The report states that "There would be no additional risks to the system as the residual risks for 49.2 Hz events would remain at 1-in-27 year and 1-in-30 year for 48.8 Hz events under different minimum inertia levels" (see 6.1.1 System residual risks vs. cost). However, the change in the likelihood of events during adverse conditions and due to the increasing penetration of non-synchronous technologies in the whole system has not been considered. We believe these could have a significant impact on these risk estimates. For example, we have already seen at least two incidents with multiple trips in each incident (9th Aug 2019 & 22nd Dec 2023) in the last 5 years.	Thank you for your comments. The focus of the FRCR policy is to conduct a cost-benefit analysis for effectively managing post-fault frequency stability. To ensure frequency stability, adjustments are made to the response requirement by operating at a lower minimum inertia requirement. The FRCR analysis takes into account the most up-to-date system conditions and incorporates the impact of new connections during the investigation period (2024-2026 for this year's FRCR). The alteration of baseline inertia and the associated system risks resulting from these new connections are considered in the FRCR analysis. While the likelihood of simultaneous events is reviewed in this year's FRCR, a more comprehensive review is planned for future FRCR assessments.
2	Do you agree that the FRCR 2024 has been prepared appropriately? Please elaborate.	Data, calculations and analysis used in the FRCR are not clear, shared and transparent. Therefore, we have questions about the costs presented.	Thanks for your feedback. For a more detailed description of the FRCR methodology, you can refer to the first version of the FRCR, available at this link:

		For example, under the different inertia level scenarios (see 6.1.1 System residual risks vs. cost) we believe there could be a significant overestimation of the costs of providing inertia. We have enclosed some calculations comparing the inertia costs (£/GWs/annum) in the FRCR to prices bid in Stability Pathfinder Phase 1 Tender (see enclosed document "Inertia Costs SPP1 vs FRCR.pdf") And we also believe that inertia costs in the market have fallen since then.	https://www.nationalgrideso.com/document/185856/download Regarding the inertia costs comparison presented in the "Inertia Costs SPP1 vs FRCR.pdf" document, there are a few points to clarify: • FRCR analysis considers various sources of inertia, including generation inertia, demand inertia, inertia from Stability Pathfinder units, and inertia from machines brought on for managing voltage. • If the calculated inertia does not meet the minimum requirement, additional units needs to be synchronised through Balancing Mechanism (BM) actions to increase the system inertia. • These calculations are performed for each Settlement Period. During periods of low inertia, such as overnight, meeting the minimum inertia requirement of 140 GVA.s or 120 GVA.s may require different volumes of actions. However, during high inertia periods such as evening peak, no actions are needed no matter the minimum inertia requirement is 140 GVA.s or 120 GVA.s. It is important to note that increasing inertia through BM actions may not be cost-effective. Therefore, we are exploring alternative methods of procuring inertia, such as the Stability Pathfinder and Stability Y-1 initiatives.
3	Recommendation: ***Maintain minimum inertia requirement at 120 GVA.s***	Agree	Thanks for your feedback.

4	Recommendation: ***Consider additional DC-Low requirement***	Agree	Thanks for your feedback.
5	Do you agree ESO to propose lower minimum inertia requirement before FRCR 2025	Disagree. Extensive analysis and monitoring of system performance needs to be done before reaching this decision. Also, we are unconvinced that 1-in-30 year and 1-in-27 year probabilities (see 6.1.1 System residual risks vs. cost) can be monitored in a one year timeframe. This appears quite short, so we suggest this is reviewed over a longer time.	This question might be misleading but in the report we mentioned - ***Subject to system conditions and operational readiness, we may propose operating at these lower inertia levels before completion of FRCR 2025. We will share our operational findings and analysis with industry through subsequent consultation before implementing the lower minimum inertia requirement.*** We will propose lower minimum inertia requirement before FRCR 2025 if necessary, through proper stakeholder engagement. For the residual risks, we convert the number of expected events per year to 1-in-x year risk, and changing the timeframe in the analysis does not affect this results. However, FRCR 2024 expands the horizon from one year to two years, this is driven by the changing system conditions during the transition to low-carbon systems.
6	Do you have any other comments?	There are reports available for industry and the Grid Code Panel to monitor the effectiveness of technical requirements in the Grid Code and Distribution Code – GC105 and GC151 which are published on the National Grid ESO website (https://www.nationalgrideso.com/industry-information/industry-data-and-reports/system-performance-reports).	Thanks for your comments. The generation and transmission fault rates used in the FRCR analysis are from CG105 & GC151 System Incidents Report. We review these statistics annually to make sure they are up to date and can represent the latest status of the system. Event on 22nd Dec 2023 belongs to the upper quantile simultaneous events in the FRCR analysis, the existing FRCR policy covers 95% of them (frequency drop was contained by

		However, we don't see any evidence that ESO has reviewed or considered this data in the FRCR. We note that FRCR was published on 11 April 2024. On the other hand, there was a major incident on 22nd Dec 2023 which involved 3 trips occurring in 11 seconds and a cumulative generation infeed loss of 1700MW or greater. However, ESO has not considered or recognised this significant event in the FRCR. We also note, there is no reference to "system strength" in the FRCR. Both within the ESO and internationally, system strength is becoming recognised as an important term and topic. Therefore, we would expect future FRCRs to recognise and address system strength as an important parameter in security of supply	49.2 Hz). We also aim to do a more comprehensive review for the simultaneous events for the future FRCRs. We agree that system strength is an important area, but it fall outside of the FRCR scope, and we have other workstreams to look after the wider system operability under low inertia system. We believe more information on this area will be published in future.