

Decision

Frequency Risk and Control Report 2025 Authority Decision

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The Authority¹ directs² the National Energy System Operator (NESO) to further develop the Frequency Risk and Control Report 2025³ (FRCR 2025). In accordance with Appendix H of the National Electricity Transmission System Security and Quality of Supply Standard (SQSS) sections H.19 and H.22⁴, we require the NESO to submit additional information for approval by 31 March 2026.

The reason for our decision is primarily due to concerns with the level of detail provided in the assumptions underpinning the NESO's recommendations.

¹ References to the "Authority", "Ofgem", "us", "we" and "our" are used interchangeably in this document. The Authority refers to GEMA, the Gas and Electricity Markets Authority. The Office of Gas and Electricity Markets (Ofgem) supports GEMA in its day-to-day work. This decision is made by or on behalf of GEMA.

² This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.

³ The FRCR 2025 is available on the NESO's website: [Frequency Risk and Control Report 2025 For Submission.pdf](#)

⁴ The National Electricity Transmission System Security and Quality of Supply Standard sets out the actions of the Authority upon receipt of the submission of the FRCR: [NETS Security and Quality of Supply Standards v2.10_0.pdf](#)

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Executive summary

The Frequency Risk and Control Report (FRCR 2025) explores how the NESO can improve the way it manages the electricity system to keep it stable and reliable. The NESO's FRCR report details their approach to maintaining the electricity system's frequency, security and resilience in an economic and efficient manner.

This year, in the fifth iteration of the FRCR, the NESO set out the following policy recommendations for system operation:

- Lower the minimum system inertia requirement
- Continue to ensure the system can manage Power Station failures without causing major frequency changes by holding appropriate backup power capabilities
- Further increase these backup power capabilities, to manage large frequency changes, using fast-acting solutions such as battery storage

The NESO asserts that these changes will make the system more economic and efficient whilst maintaining network safety and reliability. Ofgem, acting on behalf of consumers, in our role as the independent energy regulator, is required to approve changes to the FRCR.

Following our analysis of the FRCR, evidence from the FRCR supporting documents, our consideration of the industry consultation responses and our independent consultant review, we have not been able to form an opinion on the FRCR 2025 and request that the NESO provide additional information on its submission. The reason for our decision is primarily due to concerns with the level of detail provided in the assumptions underpinning the NESO's recommendations.

1. Introduction

The Frequency Risk and Control Report (FRCR) is an annual report that was introduced to the SQSS in 2020 following the 9 August 2019 frequency event that affected over one million customers.⁵ The FRCR sets out how the NESO assesses and manages frequency risks across Great Britain's transmission network, and defines what frequency risks the network is secured against.

The FRCR is developed by the NESO and publicly consulted on before the SQSS Panel vote on a recommendation to send the proposal to us for decision. We have approved the first four editions of the FRCR, including the 2023 edition which recommended to reduce minimum system inertia from 140GVA.s⁶ to 120GVA.s. This year's FRCR recommends a further minimum inertia reduction to 102GVA.s, resulting in a cost saving of approximately £96m over the year.

Upon completion of the FRCR 2025 report recommendations and analysis, the NESO issued an industry consultation on 3 March 2025 which received seven responses and closed on 7 April 2025. We received the final report on 16 May 2025. Due to the lack of industry engagement and the materiality of concerns raised, we undertook a further consultation to gather views on the NESO's FRCR 2025 policy recommendations.

We consulted⁷ on the FRCR 2025 from 18 August 2025 to 12 September 2025, receiving 15 responses. Views from stakeholders were requested on the FRCR 2025 and on wider system operability concerns. To aid our deliberations, Professor Keith Bell was commissioned to review the FRCR 2025 taking into consideration whether its methodology is sufficiently comprehensive and robust in managing frequency-related risks.

The outcome of this process is contained within this decision letter and the consultation responses are also published.

2. The FRCR 2025

The fifth edition of the FRCR (FRCR 2025) concentrates on three main areas of frequency management: reviewing the minimum system inertia requirement policy, assessing the costs and benefits of reducing inertia beyond current policy and holding additional reserve response controls. The focus of the FRCR is to set the optimal

⁵ [9 august 2019 power outage report.pdf](#)

⁶ GVA.s, refers to the unit of system inertia in electrical power systems. It represents the amount of stored energy in rotating machinery (like Power Stations) that helps stabilise the grid during disturbances.

⁷ [Frequency Risk and Control Report 2025 consultation.pdf](#)

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balance between risk and cost, ensuring the GB system is effectively and appropriately protected from frequency events for the following year. The FRCR aims to improve transparency across industry and stakeholders, setting out clear and objective criteria by which the NESO balances risk and cost to ensure the efficient security of supply for end consumers. The FRCR 2025 focuses on reducing the minimum inertia requirement and using frequency response controls to further reduce residual risks to provide better value for consumers.

At the current minimum inertia level of 120GVA.s, the NESO operates the system so that the risk of frequency dropping below 49.2Hz (calculated by NESO) is 1 in 23 years. The NESO's operational experience of power infeed losses since 9 August 2019 (including simultaneous losses) have shown the approach to be acceptable; fast acting response services have successfully enabled a reduction in the minimum level of system inertia. For the 2024 period, cost savings for consumers from reducing the minimum inertia requirement from 140GVA.s (as set out in the first FRCR) to 120GVA.s totalled over £200 million.⁸

The FRCR 2025 recommendation is to:

1. Reduce the minimum inertia requirement to 102GVA.s.
2. Secure all Balancing Mechanism Unit (BMU-only) events to keep resulting frequency deviations within 49.2Hz and 50.5Hz.
3. Do not apply additional controls to secure all BMU + Vector Shift (VS) and simultaneous events.⁹
4. Apply additional 200MW Dynamic Containment (DC-Low)¹⁰ control to increase system security and grow the market.

The FRCR 2025 findings show the costs and potential savings as estimated by the NESO across the different minimum inertia requirements when fully mitigating all BMU-only infeed and outfeed loss risks. The cost of securing BMU-only risks is shown as well as the additional cost of securing BMU+VS (outage), BMU+VS (intact) and simultaneous events in the last four years' FRCR reports. Holding additional DC-Low also yields the same level of risk mitigation of 49.2Hz events at the lower minimum inertia level.

⁸ The balancing cost savings from reducing the inertia requirements used counterfactual calculations to estimate costs if the minimum inertia remained at 140 GVA.s. [Frequency Risk and Control Report 2025 For Submission.pdf](#)

⁹ Current policy of securing all BMU-only events still presents the best value according to the NESO. The NESO concludes that securing against all BMU+VS and simultaneous events would double the spend on DC-Low and require a significant increase in DC-Low capacity - this is not currently available and would put the current market under significant pressure and increase operational risk. Therefore, the NESO does not see value in changing the current policy relating to securing all BMU+VS and simultaneous events as it does not provide value for consumers.

¹⁰ Dynamic Containment (DC) Low is a frequency response service which responds to under-frequency events in the electrical transmission system.

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Using frequency services (DC-Low) in 2025 instead of Balancing Mechanism control as in previous years, results in considerable cost savings for system wide controls and additional BMU+VS and simultaneous events. The NESO recommendation is that procuring system wide controls for BMU-only events continues to present the best cost-risk balance. Considering the high cost-effectiveness of DC-Low, there is potential to utilise DC-Low to address risks beyond BMU-only events (BMU+VS and simultaneous events) and improve overall system security.

3. NESO industry consultation

The NESO consulted on the FRCR 2025 from 3 March 2025 to 7 April 2025, receiving seven responses. The NESO acknowledged all comments to the consultation and offered the opportunity to arrange follow-up meetings with relevant specialists to address their concerns regarding the FRCR 2025 consultation responses.

During the consultation, there were concerns raised regarding the 102GVA.s policy recommendation relating to regional inertia and Rate of Change of Frequency (RoCoF) management. Requests were made for the NESO to undertake further exploration of Sub-Synchronous Oscillation (SSO) events, lower inertia operations, and a more comprehensive review and validation of assumptions, methodologies, and models. The NESO asserts these are out of the FRCR's immediate scope and the NESO has initiated the work with industry, through the Grid Forming Control expert group and other workstreams, to tackle the issues in the longer term. The NESO will continue monitoring and analysing regional operability issues following system events, and introduce mitigations as needed. Concerns with the BMU-only event and additional 200MW DC-Low response holding were addressed following the post consultation engagement.

4. SQSS Panel recommendation

The SQSS Panel voted by majority to recommend the FRCR 2025 and methodology be submitted to the Authority for approval on 16 May 2025. Of the seven votes, four were supportive of the recommendations with respect to minimum inertia levels and increased DC-Low provision. Three SQSS Panel members abstained from voting.

We note the reasons given for the abstentions following further engagement by the NESO with the panel members. We also note the commitments made by the NESO to improve the FRCR transparency and engagement.

5. Ofgem industry consultation

We consulted¹¹ on the FRCR 2025 from 18 August 2025 to 12 September 2025, receiving 15 responses. Views from stakeholders were requested on the FRCR 2025 and on wider system operability concerns. Around a third of respondents were in favour of the policy being adopted, with reference to the increasing maturity of fast-acting response services and the cost savings for consumers of adopting a lower minimum inertia threshold. Respondents who raised concerns on the NESO's approach, cited various recent system events and a desire for improved transparency from the NESO regarding system incident reporting¹² and modelling fidelity.

A common theme raised by respondents was the speed at which the NESO has proposed to move to 102GVA.s, allocating a five-week period for the reduction from 120GVA.s to 102GVA.s to take place. Broader concerns regarding the NESO's overall strategy of securing the network against frequency deviations were raised and the NESO was encouraged to consider these alongside the existing scope in future FRCRs.

6. Independent consultant review

To aid our deliberations, Professor Keith Bell was commissioned to review the FRCR 2025 taking into consideration whether its methodology is sufficiently comprehensive and robust in managing frequency-related risks. This included evaluating the quality of modelling, data, and assumptions underpinning its recommendations, and assessing the NESO's evidence that system frequency can be maintained under credible power infeed losses with 102GVA.s of inertia and fast frequency response. Our request also included obtaining a view on the NESO's claim of a 1 in 23 year risk of extreme frequency events and if other risks have been overlooked. Further improvements were also to be explored, such as assessing the impact of DC-Low on minimum system inertia requirements and any additional comments or observations to help inform our decision.

In this independent report, it states that 'the evidence in support of the assertion that reduction in system inertia would not unduly increase system risk is mostly centred on

¹¹ [Frequency Risk and Control Report 2025 consultation.pdf](#)

¹² [GC0181: Enhance the Effectiveness of System Incidents Reporting | National Energy System Operator](#)

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a reasonable set of factors but is not presented sufficiently clearly to give stakeholders confidence in the level of risk to which the system is being exposed.’

The report also recommends that the FRCR 2025 documentation be revised and re-published to provide clearer evidence of simulation validation and greater transparency in the estimation of probabilities and system parameters, particularly where conservative assumptions have been applied. Finally, the report calls for robust evidence on the effectiveness of DC-Low under a wide range of system conditions, to demonstrate its reliability in maintaining system stability.

Looking beyond the immediate FRCR 2025 revision, the report recommends a comprehensive strengthening of frequency risk management by the NESO. It calls for an updated review of Low Frequency Demand Disconnection (LFDD) to cover frequency risks, timely implementation of performance improvements, and investigations into generator, interconnector, and storage compliance with Grid Code ride-through requirements. Lessons from international system failures, particularly the Iberian Peninsula system collapse, should be captured, while NESO must ensure reliable real-time measurement of power flows and accurate data on distributed generation and storage.

The report also highlights the need for better access to operational data for system modellers, improvements in SQSS governance and clarity of licence framing. Deeper analysis of emerging risks such as low-voltage induced frequency deviation, phase angle jumps, and market-related behaviours linked to smart tariffs and Contracts for Difference (CfDs) are also recommended. Finally, it stresses the importance of managing risks from large load disconnections and reconnections, and leading a sector-wide discussion on what constitutes acceptable versus unacceptable risk.

7. Reasons for our decision

Following our analysis of the FRCR 2025, evidence from the FRCR supporting documents, our consideration of the industry consultation responses and our independent consultant review, we have not been able to form an opinion on the FRCR 2025 and request that the NESO provide additional information on its submission. The reason for our decision is primarily due to concerns with the level of detail provided in the assumptions underpinning the NESO’s recommendations.

Overall, we consider the FRCR 2025 has met the criteria by which the NESO balances cost and risk of frequency deviations (above 50.5Hz, or below 49.5Hz, 49.2Hz and 48.8Hz). The FRCR 2025 assesses the risk of a discrete list of single events, and a statistical summary of simultaneous events, leading to frequency deviations, and the cost of a mix of options available to the NESO to prevent, or reduce the likelihood of,

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such frequency deviations from occurring. However, the analysis set out in the FRCR 2025 does not sufficiently quantitatively demonstrate why the FRCR 2025 proposals represent an appropriate balance between the cost and residual likelihood of frequency deviations. We therefore consider that the implementation of FRCR 2025 and its proposals are not sufficiently detailed to allow us to determine its impact on the interest of consumers.

8. Direction

In this letter we have set out our decision to request additional information in support of the FRCR 2025 with the expectation that a revised implementation plan and a review of the DC-Low market is provided by the NESO by 31 March 2026. We also expect the NESO to provide a detailed outline of the scope of FRCR 2026 within the FRCR 2025 revised report. We expect stakeholder feedback gathered through our industry consultation to be addressed in the subsequent FRCR 2026, with respect to modelling assumptions, SQSS related ambiguity and cross-organisation interactions relating to frequency management.

After addressing the issues discussed above, and revising the FRCR 2025 report accordingly, the NESO should re-submit it to us for decision taking account of:

- clearer evidence of simulation validation and greater transparency in the estimation of probabilities
- detailed information on the modelling parameters and assumptions
- a review of the DC-Low market
- a revised implementation plan for inertia reduction
- a detailed outline of the scope of the FRCR 2026

In accordance with Standard Condition E7 of Annex E - Electricity System Operator Licence Conditions¹³ and the SQSS in force at the time, the Authority hereby directs that the recommendations of the FRCR 2025 should not be made at this time.

Martin Queen

Director for Engineering and Technology

Signed on behalf of the Authority and authorised for that purpose

¹³ [Annex E - Electricity System Operator Licence Conditions.pdf](#)