Fault Ride Through Overview Document

Introduction

This document provides an overview of EirGrid's proposed modification to the Grid Code in Ireland, to address the risk associated with the "Fault Ride Through" (FRT) capability of Large Energy Users (LEUs).

EirGrid has implemented and will continue to implement a range of operational protective measures to manage this issue. We forecast that these measures may soon become exhausted unless further action is taken. EirGrid's forecast depends on a range of conditions including the levels of increased utilisation of demand by customers and the timing and scale of solutions to address the issue.

The proposals outlined have been submitted to our regulator (the Commission for Regulation of Utilities (CRU)) for assessment. This follows significant engagement with industry and stakeholders on this issue and solutions.

Based on industry feedback, there will initially be an inability from most LEUs to comply with the proposed FRT requirements. Industry have indicated that they expect that levels of compliance will be in place from later this year helping to reduce the system risk. EirGrid will continue to work with industry to support this expedited delivery and we recognise the progress made in this regard.

In the interim, EirGrid requires mechanisms to manage the risk to the power system in the short term, pending the implementation of these solutions to achieve compliance with the Grid Code Modification.

As EirGrid transitions to a renewable led power system, we are balancing the energy trilemma of energy security, energy affordability and sustainability. As part of this, we're working to ensure system stability, power quality and security of supply for all users of the power system, and are actively working with large energy users to make advancements in resolving this challenge.

Background

EirGrid must balance electricity supply and demand at all times to keep Ireland's power system stable and secure.

Faults on the transmission system that can be caused by, for example, adverse weather conditions, can result in severe voltage dips that propagate across wide areas of the power system. These faults are normally isolated extremely quickly due to the response of high-speed transmission protection equipment, allowing the voltage to recover to normal operating range within 100 milli-seconds (ms).

These fault events are common in all power systems, and most users of the power system have the capability to 'ride-through', i.e. not trip-off, during these transient events with normal generation and consumption levels restored once the fault is cleared.

EirGrid has identified a risk to grid stability arising from the collective response of most data centres to fault events occurring on the transmission system. When a fault event occurs, most data centres, even those remote from the fault, automatically and near instantaneously significantly reduce

consumption from the grid and switch to their own, temporary, back-up sources of supply and do not return to their pre-fault level of demand for an extended period.

The collective performance by large energy users in not 'riding through' fault events, identified in Ireland and internationally, could impact grid stability.

Engagement with Industry

EirGrid has engaged extensively with industry over the past number of years on the FRT issue. The engagement initially focused on understanding the drivers of the issues from a data centre perspective, gathering individual data centre site protection setting data (to inform EirGrid's models), notifying data centres of performance issues observed during fault events, and communicating the broader power system challenges arising and need for solutions.

Commencing in 2024, and running through to the end of 2025, we engaged extensively with industry on the proposed Grid Code requirements for large demand facilities to remain connected during short-term disturbances. This process concluded with the development of the Grid Code Modification and Derogation and Compliance Framework.

EirGrid focused its recent industry webinars and bilateral industry meetings specifically on the proposed Derogation and Compliance Framework.

Through industry webinars and bilateral industry meetings, large energy user customers have provided feedback to EirGrid on earlier versions of the proposed Grid Code Modification and the Derogation and Compliance Framework and where possible EirGrid has made amendments.

We have also actively engaged with data centres with regards to potential demand increases in the short-term.

EirGrid recognises the engagement and feedback received to date from industry on this issue through bi-lateral and industry engagements, and acknowledges that advancements in resolving the FRT challenge continue to be made.

We also acknowledge the positive and proactive role that the industry has played in collaborating to address previous challenges on the transmission system.

About the Grid Code

The Grid Code is a technical document that forms the rules around operating, maintaining and developing the transmission system. It also sets out the procedures for overseeing the actions of all transmission system users.

The Grid Code ensures that all users are treated in a transparent and equitable manner. Given the changing nature of Ireland's power system, the Grid Code needs to be adaptable and responsive. As such, it is a living document that is constantly evolving. To date there has been around 350 proposed amendments to the Grid Code.

There is an established process to make Grid Code Modifications. At EirGrid, we are responsible for the development and maintenance of the Grid Code in Ireland.

The Grid Code Review Panel (GCRP) is a standing industry body whose purpose is to review and discuss the Grid Code. The GCRP regularly discusses the Grid Code's functionality and offers suggestions for updates and amendments.

Any Grid Code modification request must be approved by the CRU in Ireland.

International experience

Fault Ride Through is a global issue which is being proactively addressed at present and there is a growing level of focus among system operators worldwide on addressing this issue. For example, Texas and Finland are also introducing measures.

On 12th March, the Australian Energy Market Commission (AEMC) has released a draft rule proposing new technical standards for large data centres and similar facilities. It proposes that these facilities would need to meet specific disturbance ride-through requirements, staying connected during certain voltage and frequency disturbances and recovering power within defined timeframes. More here.

On 11 December 2025, ENTSO-E, the representative body for European TSOs, also published a recommendation paper entitled "ENTSO-E position on the need for national connection requirements to ensure EU power system stability" that recommended TSOs to take actions to update national technical connection requirements as soon as possible to support EU-wide power system stability needs, including around the sustainable integration of data centres in the energy system.

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

They established the Large Loads Task Force (LLTF) to better understand the interactions of emerging large loads such as Data Centres.

- NERC is working to identify gaps and mitigation of potential risks to support reliability including enhancements to existing planning and operations processes to support transmission planners and operators to mitigate risks (source here).
- They recently published a Draft Reliability Guideline identifying risk mitigation including considering the ride-through characteristics of data centres.

Actions taken

On the operational side, EirGrid has and will continue to implement a range of measures to help manage this issue, as we do to manage a range of challenges and conditions on the power system on a daily basis.

These measures have included managing interconnector flows and increasing the availability of reserve response, and inertia services, which serve to keep the grid stable.

In addition, there are a range of grid scale solutions that are being progressed, including synchronous condenser technology. EirGrid has procured system services to enable the delivery of this technology, to be rolled out in 2027. This may help to reduce the potential Rate of Change of Frequency (RoCoF) and frequency changes that may occur.

Why a Grid Code Modification is required

EirGrid and SONI complete a range of system studies on a regular basis to test multiple contingency events that could impact the security of the power system.

While operational measures have been taken by EirGrid to date and will continue to be implemented, further action is required based on our forecast. EirGrid's forecast depends on a range of conditions including the levels of increased utilisation of demand by customers and the timing and scale of solutions to address the issue.

We have engaged extensively with industry and are bringing forward a solution via the Grid Code Modification and associated Derogation and Compliance Framework to address the issue while industry is expediting a technical solution.

Proposed Grid Code Modification

The modification to Ireland's Grid Code would require all transmission connected LEUs in Ireland to be able to ride-through faults on the transmission system, remaining connected and recovering quickly to 90% of their pre-fault demand levels to correct the supply-demand imbalance.

These requirements are consistent with the broader framework that is already applied to other users of the power system, including conventional generation, wind, solar and interconnectors. Demand customers have historically had less stringent standards due to their inherent stability and diversity.

The proposed changes seek to enhance overall grid stability and reliability.

Derogation and Compliance Framework

Based on industry feedback, there will initially be an inability from most large energy users to comply with the proposed FRT requirements. Industry have indicated that they expect that levels of compliance will be in place from later this year helping to reduce the system risk. EirGrid will continue to work with industry to support this expedited delivery, and we acknowledge the progress made in this regard.

In the interim, EirGrid, requires mechanisms to manage the risk to the power system in the short term, pending the implementation of these solutions to achieve compliance with the Grid Code Modification.

This will be achieved through the Derogation and Compliance Framework, which requires those in receipt of a timebound derogation to provide a workplan towards compliance.

In so far as possible, EirGrid has evolved the proposed Framework in response to the feedback received, with the proposal presented representing best efforts to reflect the concerns of industry while also ensuring that EirGrid can continue to operate the power system securely while customers progress compliance.

Next Steps

EirGrid has submitted the Grid Code Modification, along with the proposed Derogation and Compliance Framework for assessment by our regulator, CRU. It is critical that this modification and associated compliance and derogation framework is put in place in a timely manner.

We will continue to engage with industry and stakeholders in a solutions-focused manner and acknowledge the progress made to date.

Industry have indicated that they expect that levels of compliance will be in place from later this year helping to reduce the system risk. EirGrid will continue to work with industry to support this expedited delivery, and we recognise the progress made in this regard.

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