

# Consultation on ESO Roles Guidance 2023-25

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## About SuperNode and Superconductors

SuperNode, headquartered in Dublin, Ireland, is a global technology development company that designs and delivers cutting-edge, superconducting cable systems for bulk electricity transmission.

Conventional transmission cables are limited in terms of current levels which in turn limit their power transfer capability. Networks based upon superconducting cable systems can move larger quantities of power over longer distances with smaller and less obtrusive infrastructure, without electrical losses and at significantly lower voltages. SuperNode's technology will connect electricity markets in a way that facilitates the integration of large-scale renewables and the achievement of a decarbonised pan-European energy system.

SuperNode was founded in 2018 by Dr. Eddie O'Connor and renewable energy developer Mainstream Renewable Power Ltd. SuperNode is jointly owned by Dr. O'Connor and Norwegian green investment group AKER Horizons.

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## Introduction

SuperNode’s response to this consultation seeks to edit the performance expectations, recommending a stronger stance on the promotion of cross border infrastructure in Market Design, Scenario Building as well as more actively promoting innovation in Network Investment.

SuperNode’s response structure lists the Section and SuperNode’s critiques, followed by the ESO’s current expectations, and SuperNode’s proposed expectations.

Some proposed expectations are proposed edits to a current expectation (highlighted in yellow), while there are also ‘Proposed **New** Expectations’ which would be added to guidance on top of current expectations (highlighted in green).

## Sections of interest to SuperNode

### Section 2a: Market Design

**SuperNode Insights:** ESO should be more ambitious in developing cross border markets. The benefits gained from interconnection and cross border infrastructure are already clear and these will only increase as more renewables are incorporated into the system. Progress towards removing barriers is not strong enough. Instead real progress in developing cross border infrastructure should be the expectation. The UK has signed an MoU with the North Seas Energy Cooperation (NSEC) and should utilise this to work together with its neighbours towards developing and optimising the offshore network in the North Sea basin, to everyone’s benefits.

- **Develop cross border markets**
  - **Current ‘Meets Expectation’:** *“Significant progress made toward removing barriers to interconnectors entering balancing markets”*
  - **Current ‘Exceeds Expectation’:** *“Interconnectors able to provide services to ESO as appropriate to allow system operability.”*
  - **Proposed ‘Meets Expectation’:** *‘Significant progress made on introducing and planning new interconnectors’ / Significant progress made in coordinating with European neighbours and their offshore plans.*
  - **Proposed ‘Exceeds Expectation’:** *‘Significant impact provided by interconnectors to GB market. / Clear long term plan developed with European neighbours on new interconnectors, multi-purpose interconnectors and coordinated meshed offshore grids in the North Sea.’*

### Section 3b: Operational Strategy and Insights

**SuperNode Insights:** Long term planning and coordinated scenario development must place a greater emphasis on collaboration with European neighbours. This is an essential aspect of optimising a renewable energy system. The benefits gained from a coordinated GB energy system similarly apply on a larger scale for a European energy system and any steps towards a coordinated energy system



should be extended beyond just the GB system. European collaboration must be a vital ingredient in any long term planning and scenario development.

- **Producing analytically robust scenarios and long term forecasts:**
  - **Current 'Meets Expectations':** *'Work collaboratively with other parties to improve industry data (where possible and relevant) to support the development of scenarios.'*
  - **Proposed New 'Meets Expectations':** *'Ensure due consideration is given in any long term forecast to cross border infrastructure and a coordinated European energy system and to work collaboratively with European neighbours to support the development of holistic and robust scenarios.'*
- **Ensuring coordinated scenario development.'**
  - **Current 'Meets Expectation':** *"Provides inputs and produces outputs which consolidate network planning, including across borders, where appropriate."*
  - **Current 'Exceeds Expectations':** *'Proactively brings together as many relevant industry parties as possible, both directly and through working with open data, to produce consistent factual data that can be used to identify pathways to achieving scenarios that meet decarbonisation targets, across the whole energy system.'*
  - **Proposed 'Meets Expectation':** *"Provides inputs and produces outputs which consolidate network planning. This should include across borders, recognising the benefits offered by increased cross border infrastructure in an increasingly renewable based energy system."*
  - **Proposed 'Exceeds Expectations':** *'Proactively brings together as many relevant industry parties as possible, including European neighbours, both directly and through working with open data, to produce consistent factual data that can be used to identify pathways to achieving scenarios that meet decarbonisation targets, across the whole energy system.'*

### Activity 3c: Optimal network investment

**SuperNode Insights:** ESO should do more to promote novel technologies and innovation. Ensuring a wide range of solutions are utilised and assessed fairly is a good start. However, there are novel transmission technologies that are not commercially available or not yet economically competitive that can have a significant impact on achieving ESO and wider Government objectives in the medium and long term. These technologies should be supported and be given opportunities to develop so that they can contribute as early and as much as possible. National Grid seems to be driving this more than ESO National Grid.

- **Identifying networks needs and solutions**
  - **Current 'Meets Expectations':** *'The ESO has ensured that a wider range of types of solutions, to transmission network needs are fully and equally assessed in all of its long-term network development work.'*
  - **Proposed New 'Meets' Expectations':** *'The ESO has recognised the long term need for innovation and novel technologies, that are not yet competitive or commercially available, and has facilitated opportunities for development and demonstration of innovative transmission technology, such as sandboxes and demonstration projects.'*

