

Ofgem: Open letter on future reform to the electricity connections process

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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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SuperNode strongly advocates for the benefits of anticipatory investment and long-term strategic planning in addressing the challenges posed by grid connection queue delays. As the UK strives to achieve its ambitious renewable energy targets, both in 2030 and out to 2050, the installation of renewable generation will continue to rise, necessitating the transfer of substantial amounts of renewable electricity. While short-term solutions like queue management can have a positive impact, it is crucial to recognise that the challenges of connection queues and transmission capacity constraints are likely to persist for decades to come.

To tackle these challenges effectively, it is imperative that Ofgem places high priority on exploring innovative grid technologies that can increase transmission capacity. Traditional transmission technology is currently limited in its capacity to transfer the massive amounts of power that will be required beyond 2030. One such technology with immense potential is superconducting cables, which have the capability to significantly increase transmission capacity. Unlike the state-of-the-art HVDC cables, which currently have a limit of 2GW and are projected to reach 3.5GW by 2050, superconducting cables can transmit up to 10GW through a single cable.

The development and deployment of transmission technologies like superconducting cables, with their increased capacities, would not only optimise anticipatory investment but also offer the key advantage of scalability. Instead of implementing multiple 2GW cable projects to meet present and future demand, a single 10GW cable can be deployed, providing excess capacity to accommodate long-term growth. By adopting these advanced technologies, the connection delays can be significantly improved compared to relying solely on conventional cables.

Moreover, the installation of transmission lines is a notoriously time-consuming process. However, the ability to deploy 10GW of capacity through a single project would reduce the number of projects needed, thereby easing the strain on the connection queues. Additionally, superconducting cables are much more space-efficient and require smaller rights-of-way and related infrastructure, such as large offshore platforms, because power can be transmitted at far lower voltage levels than conventional grid technology. This feature simplifies the permitting process, reduces costs, and minimizes the likelihood of public opposition. Consequently, it would alleviate pressure on the connection queues by streamlining the implementation of grid projects.

Thank you for the opportunity to respond to this open letter. SuperNode look forward to continuing engagement with Ofgem on this and other topics.