

IWEA response to the consultations on EirGrid and ESB Networks' proposal for the general application of technical requirements in accordance with Articles 13-28 of the Commission Regulation (EU) 2016/631 establishing a network code on requirements for grid connection of generators

Introduction

The Irish Wind Energy Association (IWEA) is committed to the promotion and education of wind energy issues and plays a leading role in the areas of conference organisation, lobbying and policy development on the island of Ireland. IWEA is committed to promoting the use of wind energy in Ireland and beyond as an economically viable and environmentally sound alternative to thermal or nuclear generation.

IWEA welcomes the opportunity to respond to the System Operators consultations on Network Codes. IWEA supports the work the System Operators have undertaken to implement the Network Codes in Ireland. Although IWEA is generally supportive of the principle of having a European wide set of network codes for generators, it is also important that some of the historical and geographic characteristics of the Irish transmission and distribution networks are taken into account in the implementation of the network codes in Ireland.

IWEA has serious concerns on the implementation of some of the reactive power requirements. Although the modern generation technologies have the capability to meet these reactive power requirements, IWEA is concerned that the requirements will impact on ESB Networks' planning standards for generator connections. The proposals in the ESB Networks and EirGrid's consultation on reactive power requirements for 38kV and MV connections will significantly impact on the capacity of renewable generation that can viably connect to the distribution system in the future. This has a huge bearing on the viability of many embedded generation sites, the cost of electricity to the Irish consumer and the ability of Ireland to decarbonise its energy system and meet national and EU renewable targets.

Detailed Response

Comments on Section 4.2.2.2. Reactive Power Capability at Maximum Capacity: U-Q/PMax Profiles & Section 4.2.2.2.1 Article 18.2.b(i); SPM: Parameters required for U-Q/Pax Profiles

The examples provided at the ESB Networks/EirGrid workshop highlight the potential impact of the network code changes. Under the existing ESB Network connection planning standards a 33MW generator can connect with up to 27km of 38kV cable before the voltage rise limit is exceeded. This would reduce to only 4km with the 1.1pu voltage limits proposed in the network codes. It appears there will likely be similar reductions for MV connections.

The practical impact of the proposed new voltage limits is that new generators connecting under the ECP-1 process could have more expensive grid connections. As most windfarm connections require dedicated shallow connections more than 5-10km, the change will likely impact on a high percentage of distribution applicants. Impacts could include requiring the generator to connect at a higher voltage, the requirements for larger conductors, greater levels of network reinforcement or the projects having to reduce the MEC to achieve a viable connection method. As the new RES support scheme will be auction based, these increased connection costs will result directly in higher costs for the Irish consumer.

There could also be a substantial impact on generators wanting to modify their connection agreements in the future. Windfarms will require a new connection agreement to repower the project or to extend the project with further wind or alternative technologies such as batteries or solar. If the new connection agreements are based on the new network codes voltage requirements, then many projects may receive connection offers with substantially reduced MECs. This would reduce the capacity of renewables connected to the system and goes against the recent future modelling of the system by DCCAE in the RESS consultation process.

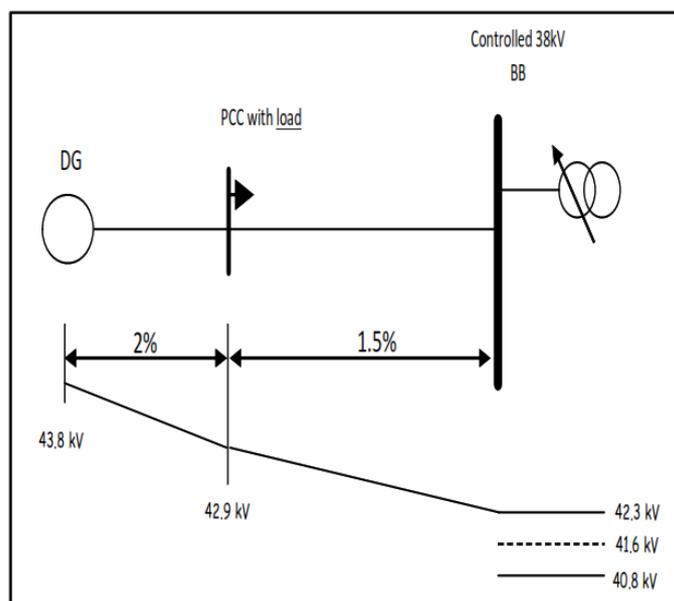
The IWEA are very surprised that the EU network codes for generators could have such a major impact on ESB Networks' planning standard for generator connections. We had understood that the new network codes would harmonise grid code requirements for generators only, i.e. 'behind the meter' requirements. The fact that the new network codes could make many existing and new distribution connections unviable is extremely concerning to the IWEA and its members.

The 1.1pu voltage limit does not appear to have any negative implications in other jurisdictions, for example Northern Ireland. The reasons that the 1.1pu limit will have such a major impact in Ireland does not appear to be just about how ESB Networks plan generator connections. All DNOs have to allow for voltage rise for the connection of embedded generation. However, in other jurisdictions there is sufficient headroom for voltage rise from generators without exceeding the 1.1pu voltage limit. It appears that in Ireland the issue is mainly due to the wide voltage range that ESB Networks allow for demand connections. This wide voltage range allows for the connection of greater demand capacity on Ireland's relatively long distribution network.

As Table 6a from the distribution code below shows, for the nominal voltage of 38kV, an operational voltage range of 35.6kV to 43.8kV is allowed. This is -6% and +15% from the nominal voltage. The sample 38kV connection diagram below also shows that ESB Networks usually have a voltage range of 40.8kV to 42.3kV at 38kV busbars, which is substantially higher than the nominal 38kV voltage. As mentioned above, the use of the wide voltage range, particularly at the upper end, is to allow for connection of demand on long distribution connections. It should be noted that 42.3kV, the higher end of the busbar voltage, is already above the 1.1pu. There appears to be similar issues for the medium voltages of 10kV and 20kV.

Description	Nominal Voltage	Normal Operating Range [kV] ^b	
		Lower bound	Upper bound
MV	10kV	9.6	11.3
MV	20kV	19.3	22.5
HV	38kV	35.6	43.8
110kV	110kV	99	123

Table 6a from Distribution Code



Sample 38kV Connection Method

The IWEA strongly oppose the implementation of the new 1.1pu voltage limit at 38kV and MV. The IWEA request that at 38kV the current limit of 1.15pu or 43.8kV is maintained and at MV the 1.125pu or 22.5kV is maintained. IWEA believes that there may be some technical solutions of how to address the impact of the change to voltage limits in the network codes. For example, changing the nominal voltage from 38kV to 40kV. However, considering the potential interactions of a technical solution to the overall operation and design of the distribution system we believe that ESB Networks are best placed to review and advise on technical solutions.

In the absence of a viable technical solution there should also be the opportunity for non-technical solutions. In the medium-term, changes should be made to the EU network code legislation to take into account the design and topology of the Irish electricity distribution system. There does appear to be jurisdiction exemptions made within the proposed network codes to take account of existing local circumstances. However, it would not be acceptable that the proposed network codes are adopted in the short term. This would result in multiple projects in ECP-1 receiving unviable connection offers. It may also result in some currently contracted generators having signed connection agreements with non-compliant connection methods. IWEA requests that ESB Networks clarify whether the intention of the Network Codes is to standardise generator capability only and not network planning standards.

If the network codes are intended to standardise network planning standards, then we ask that ESB Networks apply for a derogation from these sections of the network codes until either an enduring technical solution or a change to the network codes is achieved.

In summary, the IWEA are extremely concerned at the proposed new voltage limits in the network codes for 38kV and MV connections. If these changes are implemented, it will have a hugely negative impact on the capacity of renewables connected to the Irish system and the cost of electricity for the Irish consumer. Due to the design and topology of the Irish electricity distribution system, there does appear to be special circumstances that justify the existing voltage limits for network planning being maintained. The IWEA requests that in the short term there should be derogations requested from these sections of the network codes and in the medium term an enduring solution implemented.