

Irish Academy of Engineering

Response to EirGrid Consultation

18th May 2021

Introduction

EirGrid has recently issued its consultation document –“Shaping our Electricity Future”, aiming to elicit public responses to the potential choices facing Ireland’s electricity industry over the next decade and beyond as society transitions to a low carbon future.

The Academy welcomes this initiative and indeed congratulates EirGrid on the quality of its consultation documentation and the diverse range of options put forward for consideration.

EirGrid is an especially important component in the above transition but it must be understood that its role as transmission planner, system operator and market operator does not comprise the totality of the industry.

The recent Academy reports on the challenges facing Irish society as it decarbonises identify many challenges, the most important of these concern the social acceptability of the proposed changes in terms of both their physical and cost impacts.

The Academy again reiterates that a proper financial and economic analysis of the proposed energy transition is long outstanding. This analysis is not under the control of any industry players and must be commissioned and published by Government.

Options

EirGrid sets out four options for the future shape of the industry, these are:

1. **Generation Led:** Coordinate generation and transmission planning in order to optimise system investment.
2. **Developer Led:** Facilitate private investment in generation, by constructing the necessary transmission infrastructure where needed.
3. **Technology Led:** Invest at an early stage in new technology which might assist in meeting Government targets.
4. **Demand Led:** Constrain large users of electricity, such as data centres, to locate where system capacity is either available or easily provided.

The Academy acknowledges the relevance of these options but also is of the view that the future shape of the industry is going to be a combination of these approaches rather than a concise selection of one option over another.

Option 1, Generation Led, is really a reversion to the situation prior to the deregulation of Ireland's power system in the late 1990s. This involves the technical and financial optimisation of generation and transmission investment.

Following the deregulation of the power industry and the active encouragement of private investment in generation, this optimisation was abandoned in favour of giving private investors more freedom to locate plant, regardless of possible increased transmission investment. There were particularly good economic reasons for this approach as the new electricity market was introduced and constraints imposed on existing monopolies like ESB.

The transition to the new electricity industry is now taking place in a quite different world to that which pertained two decades ago. Today by far the most important potential barrier to change is the social unacceptability of major transmission infrastructure.

In this context, the Academy believes that the industry should commence a movement from Option 2 back to Option 1 so that the planned large amount of necessary renewable generation stands a better chance of being successfully connected to the power system.

Option 3 involves the early construction of new, large capacity, HVDC cabled connections from the West Coast (where significant renewable generation may be constructed) to the East Coast where the main load centres reside.

Irish Academy of Engineering

The EirGrid consultation document explains that while this significant investment might contribute to solving the problem of infrastructure acceptability, it will not of itself be sufficient to meet the targets laid down by Government.

The Academy believes that the West Coast of Ireland is indeed likely to become a major centre of off-shore wind generation but that this is highly unlikely to occur prior to 2030. In such circumstances it would, in the Academy's opinion, be wise to delay such investment until proven commercial grade generation technologies, suitable for Atlantic conditions, are available.

Option 3, in the opinion of the Academy, should not be ruled out in the long term but does not merit significant investment during the current decade.

Option 4: given the major role that data centres currently play in terms of both the amount and location of electricity demand and are forecasted to play in the future; the Academy believes that it is indeed wise to give serious consideration to this option.

However, its implementation, would in many respects require decisions by commercial entities and State agencies, not normally considered part of the electricity sector.

Given the critical role that information technology generally plays in the Irish economy, such data centre development deserves to be supported. However, these centres also contribute extensively to the problem of Irish Greenhouse Gas (GHG) emissions. While some data centre owners have made genuine efforts to reduce emissions through contracts with renewable energy producers, the Academy is not convinced that other offsetting schemes really achieve the results which the industry attributes to them.

Furthermore, the concentration of such centres in the Greater Dublin Area (GDA) is a direct contributor to the need for major transmission infrastructure development in the area.

The Academy is strongly of the opinion that data centres should not, in future, be permitted in the GDA, but should instead be encouraged to locate closer to renewable energy production centres along the West and South coasts and in the Midlands. Such locations are quite feasible given the availability of high capacity data connections in a number of locations in Ireland and availability of significant electrical connection capacity at industrial facilities, such as those previously used for synthetic fibre and textile production.

Finally, the Academy notes the considerable standby generation capacity available in many data centres and considers it essential that this be made available for grid operator dispatch, in the event of adequacy or resilience problems on the power network, thus reducing the requirement for additional gas or oil fired peaking generation.

Undergrounding of transmission circuits

EirGrid has recently decided to underground the proposed new 400kV circuit from Dunstown to Woodland.

The Academy understands that this decision was taken following an extensive consultative process as well as technical and financial reviews. It has no reason to question the rationale for the decision.

However, in the Academy view, this decision will inevitably lead to further demands for the undergrounding of future transmission infrastructure, for social and political reasons.

In such circumstances, the Academy believes that EirGrid should prepare and publish an analysis outlining the likely impact of such a change on investment requirements in the future and consider possible means of reducing these requirements.

It should also attempt to evaluate the potential third party impacts of extensive cabling in urban areas, such as is envisaged in Option 1. The installation of such cables is likely to prove highly disruptive for city traffic for a number of years.