Response to Consultation to Inform a Grid Development Policy for Offshore Wind in Ireland

Mainstream Renewable Power

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Offshore Wind Grid Development Consultation
Energy Division
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RE: Response to Consultation to Inform a Grid Development Policy for Offshore Wind in Ireland

Mainstream Renewable Power ("Mainstream"), an Irish company, is the world's leading developer of offshore wind. It has developed over 5GW of offshore wind capacity, including 25% of the UK's operational and under-construction offshore wind plant. It is currently developing one of Asia's largest offshore wind farms in Vietnam; and is working on further offshore wind energy opportunities across Europe, Asia Pacific and on both coasts of the United States of America (USA).

That global experience will help us to deliver the highest quality offshore wind projects in Ireland; benefitting both Irish electricity consumers and the Government of Ireland as it looks to meet its ambitious climate and energy targets.

Mainstream was keenly interested in Ireland's Climate Action Plan 2019; which identified that at least 3,500 MW of offshore wind generation capacity is needed by 2030 to meet Ireland's ambition to have 70% of consumed electricity generated by renewable technologies by that target date. We believe strongly that offshore wind is key part to achieving Ireland's strategic vision of a clean, low carbon energy sector by 2050; and welcome this consultation.

There are many regulatory and policy instruments that need to support grid development in general. It is Mainstream's opinion that the Strategic Environmental Assessment for Irish waters requires updating in order to facilitate a centralised, plan-led approach to achieve the Government's 2050 vision in the most long-term cost-effective, efficient and future-proofing manner. To this end, Mainstream have provided short responses to the 15 OWGDC queries below; and look forward to further industry consultation on these critical topics.

1) With respect to key driver (i), cost levels, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

To achieve the 2030 targets, Options 1 and 2, developer-led are the most efficient. The longer-term target of 2050 should be a plan-led option; with consideration given to how to incorporate further interconnectors into models 3 and 4 to take best advantage of Ireland's enormous wind resources.

We note the distinction made with "Relevant" projects. However, we would like to see all projects treated equitably in any policy- and decision- making to ensure that future auctions have the maximum level of competition available. Only such an approach would ensure the lowest energy price to consumers.

Given the lessons learned from the UK and Germany, there are social, environmental and cost benefits to an efficient plan-led approach with shared infrastructure to support long term (2050) targets. Further consideration should also be given to the use of interconnectors and co-location of other generation and storage technology (DS3 and otherwise) to provide a resilient future-proofed network to meet current and future system demand. This is best achieved with a central plan-led option.

2) With respect to key driver (ii), environmental impact, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

The model options 1 and 2 address the short-term goal. Environmental impact at the EIA level will address the cumulative and seascape/landscape issues; however, it is recognised that this approach is not optimal given the required point-to-point connections and number of export cables expected from forecasted projects in the development pipeline.

A plan-led approach with Strategic Environmental Assessment to address the wide range of environmental and social risks, together with a strategic approach to grid planning with anticipatory investment, will reduce the number of export cables to shore; and also address other wider concerns from stakeholders. It is likely that interconnectors will play a key role in future strategic planning; and we would welcome consideration of a model that incorporates interconnectors into the design model options to take best advantage of Ireland's enormous wind resources and to provide needed grid balancing services.

There are significant environmental challenges to be considered against the delivery of high-capacity transmission infrastructure necessary for modern offshore wind projects; and it is key to have planning and regulatory frameworks aligned across Departments with common objectives and identified risks and resourcing to deliver these. Environmental impact is reduced by facilitating singular, large-scale offshore wind projects in a given region as far as reasonably practical.

Under the plan-led options, the Government will be responsible for delivering any potential compensation identified under Article 6 (4) of the Habitats Directives. This will require a policy outlining a de minimis

impact level and sufficient resource to be allocated by Government to enable delivery of the compensation projects; similar to the current German model. Germany currently has a benthic policy, which could be considered as a helpful starting point to developing guidance and support to the Habitat Regulations. The Government would need to include into their assumptions, the cost, risk and liabilities of these environmental compensation projects being in place prior to construction commencement by the Developer.

3) With respect to key driver (iii), future proofing and technologies, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

We would favour a strategic, long-term approach to deliver (what is likely) a hybrid of the plan-led approach. This would consider interconnectors and onshore grid connection points with large-scale capacity for connection of offshore wind projects, identified through a robust strategic assessment process; whilst also considering life extensions (e.g. repowering) to suited Projects.

4) With respect to key driver (iv), required infrastructure, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

A plan-led approach considering interconnectors with longer offshore transmission asset lifetimes would be most suitable; as Project lifetimes are extended (as mentioned above). Life extensions and optimisation, if not considered, should be included into the base design assumptions; given that repowered sites will potentially retain transmission assets. Cost assumptions should consider that CAPEX on the transmission asset would have been fully depreciated; therefore, reducing the cost of energy during the repowered period and the LCOE over the lifetime of offshore wind farm project.

5) With respect to key driver (v), compatibility with Relevant Projects, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

All Projects being treated equal; and given planning and investment challenges to achieve the 2030 targets, Option 1 (the developer-led model) is the most efficient path forward. However, to achieve 2050 generation and decarbonisation targets (and likely related future targets beyond 2050), then the plan-led approach (including interconnectors) is the best way forward to achieve intergenerational equity in the long-term grid planning and decision-making processes.

6) With respect to key driver (vi), social acceptance, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

Social acceptance is a complex area; and it should be noted that social acceptance of grid infrastructure may be tied to the overall acceptance of Relevant projects and other projects in general which are close to shore with seascape and visual concerns identified by stakeholders. A volume, installation methods and impact of submarine export cables onto the shoreline and across into new and existing onshore grid connection points is another concern. A co-ordinated effort between Eirgrid and Government Departments is required to address this. The long-term planning and anticipatory investment to build shared infrastructure to achieve the vision will need to be well communicated, incentivised and resourced.

The short term 2030 targets are likely best approached with Options 1 and 2 with the Developer leading the engagement; and this can be more effective with the right level of community engagement. However, there is a benefit to co-ordinate onshore substation infrastructure by forecasting the demand for onshore infrastructure in known areas to avoid cumulative impacts to communities; and to avoid repeated works in particular communities which result in repeated construction works and environmental and social impacts. A hybrid model may be considered useful to address potential cumulative issues.

The longer term 2050 targets adopting a plan-led option for optimisation of the offshore network and use of interconnectors is a hybrid option not previously identified in the consultation.

Social acceptance in general in this context is reducing the cumulative impacts and social costs of the projects. This includes, but is not limited to:

- Location of new power lines in existing corridors.
- Connection to a single grid connection point for multiple projects.
- Keeping tariffs and impacts to consumers low.
- Meaningful consultation with affected parties/communities.
- Social benefits and costs fully considered as part of any EIA, feasibile cable routing and substation location studies.
- Strategic offshore environmental assessments undertaken by Government.
- Interconnectors and co-location of other technology to provide a resilient network to meet system demand.
- Creation of jobs and building local capacity.

7) With respect to key driver (vii), facilitating the timely development of offshore wind capacity to achieve the 2030 target, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

Options 1 and 2 will achieve the short-term target of 2030, given the need for planning and regulatory changes required for the other presented options in the consultation; including strategic environmental assessment.

8) Rank the key drivers in order of importance 1-7, which have the greatest impact on the choice of model.

1. Cost levels.
2. Future proofing of policies and technologies.
3. Facilitating the timely development of offshore wind capacity to achieve the 2030 target.
4. Required infrastructure.
5. Creation of indigenous jobs.
6. Environmental Impact.
7. Social Acceptance.
8. Compatibility with Relevant Projects.

9) How important is it for Ireland to develop an indigenous offshore wind energy industry? How best can an indigenous industry be developed?

It is incredibly important for Ireland to develop its own offshore wind industry; given its enormous natural wind resources. To accelerate that development, consideration should be given to an Irish "Offshore Wind Sector Deal" arrangement, similar to that developed between industry and government in the UK.

A Sector Deal for fixed and floating wind is a partnership between government and industry. It is a country-specific vision, a "heuristic" approach through which a collection of focussed parties delivers the government's direction to lower costs and support decarbonisation. The Sector Deal includes policies and commitments with professional processes and systems to foster innovation and learning; which helps build market capacity.

Under the Sector Deal, key partnerships with universities, institutions and the supply chain are supported as part of long-term policies and direction. This supports the importance of knowledge accumulation, interactive learning, the role of institutions in education and training and the role of science and R&D investment in new technologies, the promotion of offshore wind as a strategic industry; and support grants to building advanced manufacturing capability. The Sector Deal specifically brings all of the main

players together in grid discussions to resolve and plan for the future. Please see the link below for further details.
https://www.gov.uk/government/publications/offshore-wind-sector-deal

10) How should onshore and offshore grid connections be optimised? For example, should consideration be given to common hubs for adjacent projects?

We agree that consideration should be given to use of common grid connection hubs to provide the most long-term cost effective, socially acceptable and environmentally efficient option to large-scale offshore wind market development.

11) Are there any further considerations which might reduce the cost to the consumer?

Long term strategic interconnectors and co-location of other technologies (e.g. DS3) in planning design, to build resilience in the system and achieve decarbonisation objectives, should be considered. HVDC infrastructure costs are expected to come down drastically through learning and innovations in offshore arrangements; and in component technology development. IRENA in their October 2019 paper[1] have stated the following:

- That HVDC becomes cost effective at a grid connection length of between roughly 80 kilometres to 150 kilometres.
- That the major benefit of HVDC is that it makes it possible to install wind farms further from shore that have higher wind resources; leading to higher annual energy production with fewer planning constraints. HVDC infrastructure therefore can open up new markets where near-shore developments are not possible.

12) Currently, developer compensation is not provided for delayed delivery of grid connections to renewable generators connecting to the network. Should developer compensation arrangements be provided for delivery of offshore grid connections to renewable projects? Similarly, who is best placed to bear the outage risks under the various options?

This is a complicated question. The simple answer is yes, Developers should be compensated for delay in delivery of onshore/offshore grid connections; but the amount and type of compensation would need to be clarified in line with the liabilities and risks that the Developers are carrying at that particular stage of the Project.

Outage risk is connected to Eirgrid managing network capacity uncertainty and system resilience; which leads back to our earlier point on ensuring that the network design builds in system operation resilience.

[1] IRENA (2019) FUTURE OF WIND - Deployment, investment, technology, grid integration and socio-economic aspects

13) Are there any further drivers which should be considered when assessing a grid delivery model suitable for offshore wind development in Ireland?

The increasing electrification of the grid and the increased demand in energy use as a result; as highlighted in the '2018 Energy in Ireland' report.

14) Overall, which model, or model variant, is most appropriate as an enduring grid delivery model for offshore wind in the Irish context?

A long-term plan-led model is required to take best advantage of Ireland's enormous natural wind resources. In establishing a long-term market for export of energy to offshore markets, interconnectors also need to be considered in terms of system reliability, efficiency and cost impact.

15) It is accepted that a transition towards the chosen enduring grid delivery model will be required to leverage the development of the Relevant Projects in the short term. Taking into account the high-level roadmaps set out at Figures 5 and 6 above, what should this transition look like?

It would be beneficial to establish either a new Agency or Department within the DCCAE to help co-ordinate, identify and remove the barriers to deliver offshore wind capacity and the longer-term strategic plan-led infrastructure approach.

Additional resources will be needed to deliver the 2030 and 2050 targets from the wider group of Government stakeholders in order to facilitate the planning, regulatory and policy changes required including strategic assessment. The delivery of the goals of this new body will require a strongly incentivised approach to avoid market turbulence and loss of public confidence within the renewable generation sector as a whole.