

Letter of Support For WEI response to 'Shaping our Electricity Future'

11 June 2021

SuperNode welcomes the opportunity to engage with EirGrid and respond to the Shaping our Electricity Future Consultation.

SuperNode is a cutting-edge global technology development company that designs and delivers superconducting connection systems to connect renewable generation and increase grid interconnection in mature markets.

SuperNode was founded in 2018 by Eddie O'Connor with Mainstream Renewable Power, a leading global renewable energy company that develops, builds and operates wind and solar power plants in high growth markets worldwide, and of which Eddie is Founder and Executive Chairman.

Our superconducting transmission products will be the key enabling network technology for the huge growth in renewable energy over the next 30 years. SuperNode fully supports Wind Energy Ireland's response to this consultation. As a leader in Ireland's fight against climate change, wind energy creates jobs, invests in communities, and reduces CO₂ emissions.

In particular, we fully endorse Wind Energy Ireland's submission to the consultation relating to Baringa's 'Pathway to a zero-carbon power system in Ireland' study which is submitted as an accompanying appendix to Wind Energy Ireland's response.

The analysis shows that the emissions footprint of the electricity sector in Ireland can be reduced substantially beyond the 4 - 5 Mt of CO₂ objective of the Climate Action Plan 2019 by 2030, and it concludes that:

1. Government should **maintain the Climate Action Plan 2019 and Programme for Government renewable capacity targets** for onshore wind (8.2 GW) and offshore wind (5GW) for 2030, along with 5 GW of solar PV.
2. An **emissions target of less than 2 million tonnes of CO₂**:
 - Is very achievable by 2030;
 - Does not require a significant change in the approach currently underway to achieve 70% renewable electricity;
 - Can be met by implementing more of the existing technologies that are proven today; and
 - Can be achieved at a lower cost to the end consumer (saving approx. €150m per annum).
3. A **stretch target of a zero-carbon power system by 2030 is possible**:
 - It requires incremental investments in a suite of new technologies; and
 - It requires the introduction of a carbon price floor in I-SEM.

Given the ongoing development of the Climate Action Bill 2021 and the highly likely scenario that the electricity sector will be required to do even more to accomplish our national policy aims, we believe

the final SOEF Roadmap should look beyond just achieving 70% renewables by 2030. Instead, it should focus on how to deliver the significant emissions reductions outlined above by 2030 and how to deliver a network capable of supporting a net-zero emissions energy system and economy beyond 2030. To enable this, we support the key considerations/targets included in the Wind Energy Ireland submission under each of the pillars of the roadmap as follows:

Transmission Network

1. We believe EirGrid need to focus on the capacity targets in the Climate Action Plan and Programme for Government (8.2 GW of onshore wind and 5 GW of offshore wind by 2030) rather than just achieving 70% RES-E by 2030. Network development needs to allow these targets to be delivered. The focus cannot be on delivering the bare minimum for 2030 as this should be seen as a point in the road in terms of the net-zero 2050 target. These capacities will be needed for further decarbonisation and the grid should be planned to achieve these capacity targets. To help deliver this we propose that the System Operators establish a Grid Capacity Advisory Council (similar to the DS3 Advisory Council) as a mechanism for the System Operators, Regulators, industry and other stakeholders, including planning authorities and relevant Government Departments, to engage and work collaboratively on these matters.
2. We believe the focus should be on removing grid development costs as a barrier and that this should be seen instead as an investment which reduces the overall cost of renewable deployment. The cost of grid is relatively minor compared to the costs of onshore and offshore wind over the life of a RESS support scheme. Analysis carried out by Pöyry in 2019 in their 'Cheaper and Greener' report¹ shows that if RESS strike prices come in at €60/MWh then consumers in Ireland could benefit by around €2.5 billion through lower wholesale electricity prices (this is a net saving inclusive of any renewable support costs). A €10/MWh reduction in strike prices below this will save an additional ~€1.5 billion. Investment in the grid will drive reductions in the LCOEs of onshore and offshore wind by reducing constraint levels and allowing greater competition in RESS that will deliver much higher net savings to consumers than the cost of grid outlined in any of the scenarios in the consultation. The [Saving Money](#) report highlights policy measures to reduce the LCOE of onshore and offshore wind. Further to this, grid assets have a 50-year lifecycle and payback period so their cost is spread out over a very long period.
3. Social acceptance and deliverability need to play a greater role in the multi criteria analysis that is used in EirGrid's Framework for Grid Development. This would include progressing undergrounding options where feasible to expedite grid development and that these options should be developed and consulted on earlier in the six-step grid development process. Taking this approach would facilitate the progression of additional 'no regrets' options across all scenarios. While some ongoing projects, like the North-South Interconnector, and potential future projects, must be delivered through an overhead line as the only technically feasible option, others could be delivered underground and – where this is technically possible – should be considered as a favoured option.

4. EirGrid need to future-proof circuits and substations as much as possible, e.g. underground cables may be difficult to upgrade down the line so consideration should be given to maximise future use and substations should be planned for future expansion with additional bays and voltage levels, particularly GIS stations.² MaREI's 'Our Climate Neutral Future – Zero by 50'³ shows that significant increases in electricity demand from 29 TWh today to 84-122 TWh by 2050 will be required and that the majority of this demand will be met by wind energy. Significant increases in renewable capacities will be required beyond 2030 and it is extremely unlikely that there will be any grid infrastructure stranded and not utilised.

System Operations

1. The electricity system must be capable of operating at any one time with zero carbon system services by 2030 (i.e. 100% SNSP). A roadmap needs to be set out to deliver this including the ability for the power system to operate without a 'minimum generation units online' constraint on the system. Ireland can and should aim to become the first synchronous power system in the world capable of running in a safe secure and stable manner with no conventional fossil fuel plant operating on the system. The system services framework and product design must be developed with a target of a zero-carbon system services model by 2030 and to get to this, more clarity is needed for investors in new zero-carbon technologies on future system service needs, investment frameworks and procurement timelines.
2. The TSOs need to start measuring and reporting on energy market and non-energy market (non-energy action) emissions and the cost of the constrained run. The TSOs often position units away from the energy market schedule in order to meet system service requirements or due to network constraints. These are known as non-energy actions. The recommendation is for the TSOs to model electricity system CO₂ emissions to compare energy market emissions and actual electricity generation emissions to calculate the non-energy market emissions contribution. Or in other words, the emissions solely related to actions that are required to ensure the electricity system remains stable. As new low carbon system service and other flexible technologies come on the system it will be important to track and measure how these are being utilised and their impact on power sector emissions. Right now this is not being measured and so it cannot be managed.

Electricity Markets

1. The market design needs to be developed for the 2030 context with 70%+ RES-E and a system capable of operating at 100% SNSP for multiple hours of the year. This means bringing together multiple stakeholders such as the System Operators, Market Operator, the Regulatory Authorities, Government as well as industry to work on these issues. This also means full implementation of the Article 12 and Article 13 of the Electricity Regulation as well as the introduction of measures such as SIDC to allow more efficient use of the interconnectors and frameworks to incentivise build out of system support technologies such as synchronous condensers and storage. Constraint and curtailment risk also needs to be managed. WEI have a [position paper](#) on this which proposes that increased certainty is provided by introducing a contract-for-difference (CfD) on curtailment, constraint and oversupply factors within the RESS auction terms and conditions.

2. The consultation discusses aligning the electricity market with system operational limits i.e. introducing the SNSP limit in the ex-ante market. WEI does not agree with this proposal and have [submitted a letter to the RAs](#) in this regard. The proposal is not compliant with Article 13 of the CEP, it discriminates against wind generation and places the risk of dispatch down on the generator rather than the party best placed to manage this, the TSO. The TSOs are best placed to develop and introduce the solutions such as DS3 or network solutions to minimise dispatch down.

TSO Resourcing

To deliver all this it is essential that the TSOs have the resources to progress parallel workstreams in terms of grid development, renewable connections, system operations and electricity markets. We have concerns that without additional resourcing on the part of the TSOs it will not be possible to deliver all the necessary changes over the coming decade.

It is our view that existing TSO resources are already stretched to deliver their current work activities and this problem will only be exacerbated with a growing remit in areas like offshore connections and grid infrastructure, electrification and data centre growth. The lack of progress in areas such as FlexTech is evidence that if resources are not properly assigned to a project or initiative then the work will not progress and what the SOEF roadmap is proposing is multiple new workstreams on top of the TSOs existing activities.

We request that as part of the final SOEF roadmap that a clear strategy or plan is provided in relation to how the TSOs plan to resource and support the various work areas outlined in the roadmap.

In conclusion, SuperNode recommends that the proposals put forward by Wind Energy Ireland in their detailed submission should be incorporated into the final Shaping Our Electricity Future Roadmap, to put us on a path to fully decarbonising the electricity sector as soon as possible.

We would like to thank EirGrid for the opportunity to engage on this matter and look forward to continuing our work with you in future.

Yours sincerely,

SuperNode