



ELECTRICITY
ASSOCIATION
OF IRELAND

SUBMISSION TO EIRGRID ON SHAPING OUR ELECTRICITY FUTURE (SOEF) CONSULTATION

ELECTRICITY ASSOCIATION OF IRELAND



STATUS: FINAL SUBMISSION

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A decarbonised future powered by electricity

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Executive Summary

EAI welcomes the opportunity to engage and participate in the first iteration of EirGrid Group's initiative on Shaping our Electricity Future (SOEF). Our members across the island took part in industry workshops hosted by EirGrid and SONI on the morning and afternoon of both the 22nd of April 2021, 2nd of June and other bilateral engagements before the consultation closed on 14th of June 2021.

Notwithstanding the outcome of SOEF, the focus of EirGrid Group must continue to be delivery of much-needed grid infrastructure and network reinforcement. The situation today, where the grid has not kept up with demand for generation connections, has put significant pressure on the underlying connections policy. The priority for EirGrid group should be to address internal constraints, rather than seeking to manage them. We would have concerns with the proposals in this initiative which merely seek to manage away some of these constraints, at least in the short term. We are on a pathway to net-zero by 2050 (and earlier for the electricity sector¹) and need to develop all our resource options (including onshore). If these longer-term objectives are considered, there is a concern that the need to develop the transmission network onshore has not been avoided, but merely postponed.

With regard to the approaches outlined in the consultation, it is difficult to ascertain a one-size-fits all approach to Grid development. The high-level nature of the approaches outlined, and the costs associated with them do not lend themselves to any in-depth scrutiny and therefore are not a basis that could be used to choose a preferred approach. The economic criteria used to assess the four approaches is limited, noting that this only includes additional grid investment costs. This investment should be viewed in the wider context of the overall cost of renewable

¹ 2035 proposed in IEA pathways to Net Zero - <https://iea.blob.core.windows.net/assets/4719e321-6d3d-41a2-bd6b-461ad2f850a8/NetZeroBy2050-ARoadmapfortheGlobalEnergySector.pdf>



deployment. The cost of grid is relatively low compared to the costs of onshore and offshore wind over the life of a RESS support scheme.

It is noted that these approaches are not mutually exclusive and the final approach or pathway to 2030 will be a blend of all four. However, the industry needs to act now, and strive to deliver the targets set in National Policies (e.g., In Ireland, the Climate Action Plan and Programme for Government targets).

Given the climate emergency and clear government targets for onshore and offshore in Ireland, we must find ways to maximise use of the existing grid. In parallel, we need to identify the correct reinforcements, prioritising where appropriate and accelerating their progress through the TSOs' grid delivery frameworks.

The TSOs have presented opportunities that make use of the existing grid and facilitate renewable projects where there is existing capacity. We need to take these opportunities and remove barriers where possible to facilitate greater penetrations of renewable energy onto the system. For example, we are fortunate that in Ireland the offshore resource targeting a pre-2030 delivery is along the East and South coasts, where EirGrid have identified capacity.

Both the grid and system have arguably failed to keep pace with a developer led approach that has delivered approx. 5 GWs of renewable capacity (contributing to international obligations and national policy). To deliver the additional approx. 10GWs that will be needed to achieve the 70% RES-E target by 2030 and deliver value to consumers while maintaining a secure resilient system, the chosen approach must balance preferred developer locations with the grid's ability to cater for such investments along with installing new system enabling technologies (e.g., synchronous condensers) and the strategic location of new demand (e.g., long-term electricity storage and hydrogen electrolyzers). Removal of constraints is essential to the continued success of this approach and must be the focus of the EirGrid Group, irrespective of the outcome of SOEF.



GRID

EirGrid Group and Grid Delivery to date

EirGrid Group views this initiative as one of the most important in its relatively short history since it was established in 2006 and is eager to communicate with all the relevant stakeholders, including the public. The consultation is also notable in that it addresses all three aspects of the group's activities relating to grid delivery, system operation and markets. It is possible that EirGrid group see some scope for a greater coordination and optimisation across these functions to deliver 70*30 in a timely and cost-effective manner.

EirGrid Group's primary statutory function is to operate and maintain the existing transmission grid and, if necessary, to develop the system including exploring opportunities for interconnection with other systems. Notable achievements since its inception include integration of record levels of non-synchronous generation for a synchronous island system (43% of total consumption in 2021 was from renewable sources) and the construction of the East West Interconnector (EWIC) which went live in 2012. The delivery of major transmission infrastructure on the island and implementation of the new market systems to increase opportunities for trading have proved challenging.

How the group is structured, licensed and incentivised to deliver on energy policy objectives is outside the scope of this consultation, but may deserve some scrutiny and analysis elsewhere, in the context of the ongoing rapid evolution of energy policy on the island.

Grid 25

In 2007, EirGrid published its plans for a €4bn investment in the grid by 2025 involving projects in the Northwest, West, South and the North-South interconnector. However, the ambition of Grid 25 has failed to materialise. Whilst there are several reasons why infrastructure delivery has proved difficult, public attitudes have featured prominently in the energy policy discourse.



It is important that this experience is considered, but it should not dominate the debate on our 2030 and 2050 pathway. We cannot avoid onshore grid and must continue to engage the public, securing support for the energy transition. EirGrid's current Grid Development Framework includes social acceptance and deliverability criteria, which has been seen on recent projects to promote technologies that are more likely to be accepted.

It is noted that the north-south interconnector awaits the final green light in Northern Ireland, and all going well construction could begin by the end of this year with delivery at some point in 2024. The interconnector is urgently required as a central part of the all-island energy system envisaged in 2005. The continued absence prolongs the risk of the island splitting into two separate systems and all the inefficiencies that this would entail. It is absolutely needed for the achievement of 70 by 30 ambition across the island. It is also vital for Security of Supply of supply across the island, in the context of anticipated demand growth in both jurisdictions.

The current approach to grid delivery

EAI notes the steps that have been taken by EirGrid group to engage with the public before infrastructure is developed, which recently informed a decision to move the location of the Celtic interconnector point to a more expensive location, and also shaped the proposal for a 400kwv underground line between Kildare and Meath which is currently under consultation. A key underlying objective of the SOEF initiative is to communicate the necessity of new infrastructure to deliver zero carbon electricity and a net zero economy in Ireland by the year 2050 in order to ensure the public's support for EirGrid's approach over the coming decade. Given the strategic nature of the final roadmap, it is recommended that EirGrid identify and deliver capacity at strategic transmission nodes. Again, this strategy will take cognisance of the greater 2050 ambition and a low regret approach. It is the stated intention of EirGrid Group to progress the 15 projects of the 47 potential projects that are common to each approach and to use SOEF to prioritise additional projects based on cost, and the location of new Generation and Demand over the coming decade. This is welcomed.



Notwithstanding the outcome of SOEF, the focus of EirGrid Group must be delivery of much-needed grid infrastructure and network reinforcement, incorporating the lessons of the past, and building a public resource for which we can all feel pride, ownership and responsibility. We have concerns that the approach to SOEF might imply wires to be a last resort. The chosen grid connection approach must be conducive to considering both the use of flexibility tools and new grid as appropriate.

The Four Approaches in SOEF

In the Public Consultation, EirGrid seeks views on the most appropriate pathway to 70*30, or which approach or indeed blend of approaches will deliver the additional approximate 10GW of Renewable electricity in a timely and cost-effective manner.

Regarding the approaches outlined in the consultation, it is difficult to ascertain a one-size-fits all approach to Grid development. The high-level nature of the approaches outlined, and the costs associated with them do not lend themselves to any in-depth scrutiny and therefore are not a basis that could be used to choose a preferred approach. It is noted that these approaches are not mutually exclusive and the final approach or pathway to 2030 will be a blend of all four. The full cost of developing an electricity system capable of operating with 70% RES-E and 95% SNSP is the most appropriate metric to deliver policy. The most efficient new grid development approach will not necessarily deliver the most economical total system development.

Whilst the developer led approach has delivered approximately 5 GWs of renewable capacity needed to meet the 40% RES-E targets, grid development/investment has failed to match the progress achieved in renewable electricity deployment and will need to improve significantly over the next decade to achieve the targets in the Climate Action Plan and Programme for Government (8.2 GW of onshore wind and 5 GW of offshore wind by 2030). The chosen approach must still enable developers to have choice in location and they should have insight on the cost of their grid location in advance.



Connection policy (ECP)

It is imperative that any impediments to delivering between 1 and 2GW's of new connections per year are removed. It is also crucial that there is a high-level grid development plan that is subject to regular review and is credible in terms of delivery. It is regrettable that the GRID 25 plan was ultimately not delivered and that major infrastructure deficits persist on the all-island system. A situation where the grid has not kept up with demand for capacity connections, has put significant pressure on the underlying connections policy.

An appropriate grid connection policy for offshore wind, that works with onshore connection policy, needs to be implemented to ensure there is an ongoing pipeline of offshore wind projects progressing through the various stages of development. It takes circa 10 years to develop an offshore project, meaning that all pre-2030 projects (Phase 1 and Phase 2) are already advancing early-stage investigations. Early engagement with EirGrid, in parallel with the development of a suitable offshore connection policy, will allow these projects to progress through the initial stages, mitigating the risk of gaps appearing in the offshore delivery pipeline.

Grid following funding

In principle, EAI sees merit in moving to a grid following funding model. This approach would go some way to allaying the connection risk for projects that have secured both a valid planning permission and a route to market. Investors should know at the time of making investment decisions what the cost of grid connection in areas they are locating in is so they can factor this into funding needs.

Operations

System challenges

From conservative beginnings, the group has gradually adopted a more progressive and ambitious approach to the integration of non-synchronous renewable energy, predominantly



onshore wind on our synchronous islanded system. Today 75% SNSP is being trialled with ambitions to achieve 85% by 2025 and closer to 100% by 2030. This has been achieved by a combination of incentives and enforcement, mainly targeted at the “conventional” power generators. Not wishing to downplay EirGrid’s achievements here, we are perhaps at a crossroads now where the “lowest hanging fruit” is gone. At a time of unprecedented demand for electricity, predicted to grow by 40% to 50TWh by 2030, the challenge of relying to at least 2030 on a similar capacity as today of conventional generation which will operate less in future, in terms of MWs and MWhs³, while shifting these products and services to lower carbon sources and adding renewable capacity at a rate of 1GWs per annum is considerable².

Some of this demand will deliver a net carbon dividend by replacing traditional fossil energy use (EV’s replacing ICE’s and Heat pumps substituting for oil and gas boilers) and will be located across the homes and businesses of Ireland. Other demand, for example from data centres, will be new demand and will be located on the transmission grid around urban areas, primarily Dublin. There will also be times when we are producing more electricity than we can usefully consume or export, and we will want to minimise instances where we need to curtail electricity production from renewable sources.

In the shorter term, we are now exiting out of a period of a high incidence of amber system alerts and capacity margins (Generation vs load) are anticipated to remain tight for the foreseeable future. The RAs are looking to locate capacity in constrained parts of the system via LCCs in the forthcoming T-3 CRM for delivery in 2024/25 and via locational scalars in DS3 products. Clear investment signals for both capacity and system services are needed as early as possible. It is unclear to date if the T-3 auction to be held in January 2022 will clear new capacity needed to mitigate security of supply concerns. The TSO in collaboration with RAs will need to clarify investment signals for this auction this summer (2021).

² <https://eaireland.com/our-zero-e-mission-future-report-published-today/>



For the longer term, the CRM design review process needs to begin in 2021 to give developers clarity on the process for which they will be participating in 2027 and to allow new projects compatible with the future design to commence the planning and permitting process. To enable the 2030 system operation, participants need:

- Timely signals to respond and provide service solutions, under both capacity and system services markets, to enable system operation;
- Certainty on the procurement process for these services and;
- Clarity on whether locational signals of services will persist.

Resilience and security of electricity supply to consumers is a key requirement today and will remain a key requirement of a decarbonised electricity sector. Providers of system resilience and security must be rewarded. The objectives of the two respective revenue streams of capacity and system services must not be blurred however as that would risk under delivery of diverse sources of capacity and flexibility,

Constraint management

The paragraphs above attempt to briefly highlight the main transmission system challenges facing EirGrid Group. The existing transmission system is a finite resource, access to which can be constrained by the absence of wires locally or system wide issues such as SNSP5. The absence of wires can be mitigated by configuring the system on a more granular basis, according to designated zones or nodes. Though the EU is looking seriously at these options, the current approach is to treat the island as a single zone, and to provide signals within this zone for the location of generation and demand. Interconnection with other zones can also help to reveal internal constraints and this has been traditionally the focus of EU policy.

The priority for EirGrid group should be to address internal constraints, rather than seeking to manage them. We would have concerns with the proposals in this initiative which merely seek



to manage some of these constraints, for example incorporating the SNSP constraint in the DAM schedule.

Markets

High Level view on Markets

Given the rapid ongoing system changes, and increasingly ambitious climate policy, it is both timely and necessary to review market functioning. However, a radical new market design is not desirable or necessary before 2030. In the meantime, the focus should be to implement the reforms that are already there, such as those in the CEP, and achieving better alignment between existing revenue streams to meet policy objectives over the decade.

SEM has recently undertaken major market reform to bring it in line with the European Target Model and improve price signals to meet desired policy objectives. EAI welcomes discussion on how these price signals can be improved further in the context of evolving policy objectives across Capacity Mechanisms (CRM), Scarcity Pricing Mechanisms (ASP in T&SC), RES financing (RESS mechanism) and Ancillary Services (DS3 and future system services). Whilst the TSO's technical analysis is a welcome contribution to this discussion, it is not the role of the TSO to determine what market changes will be required and how these are to be implemented. If it is deemed necessary to initiate such a process now, and to prepare industry for future changes, then this process should be led by the RAs in close consultation with industry and the TSO. At a minimum, market participants need to know will the roadmap provide regulatory certainty around how the system and market is expected to progress. Implementation of such a roadmap should be led by RAs.

SOEF section on Markets

The stated objective of the Markets section is to attract the third party investment needed to help TSO operate a high-RES system, 95% SNSP and 100% RES-E at times in 2030 other



dispatchable RES technologies such as Hydro and Biomass are included in the mix. EirGrid estimate an investment requirement in the range between €40-45bn, €700mn per annum for system services/DS3 alone and this is not an exhaustive list of costs. In the short term, EirGrid is already predicting that DS3 expenditure is on course to breach the existing €235mn expenditure cap in 2022, and possibly by the end of this year.

EirGrid are committed to aiming for 100% SNSP over the decade and to being bound contractually with investors to implementing a process that will address grid/system risk and ensure that this risk can pass from investors to customers via the TSO, once these limitations have been addressed. In the meantime, EirGrid is proposing to manage its own risks by introducing some of these limits into the market. For example, EirGrid argues that the SNSP limit of the day (70% today) should be reflected in the market until 100% SNSP becomes possible. Electricity market design, including the EU target model, have tended to assume away constraints, based on the theory that these constraints would be reflected in prices and would provide a signal for investors to address the underlying constraint. The EirGrid approach would appear to mark a departure away from this approach and could give rise to a number of unintended consequences. SNSP limits also impact existing investments retrospectively e.g., by not getting as much scheduling ex ante as they might have reasonably built in, in their initial business cases. EAI cannot therefore support the proposals.

In relation to the network tariffs component of this review, EAI is supportive of the role of tariffs as active drivers of system change. A review of supplier-based charges should not be limited to capacity and imperfections but should look at total consumer costs including grid charges and the PSO levy. Legacy charging structures were designed for consumers who are not engaged in the electricity market and have been applied with little respect to the time of year or time of day of consumption and are applied with zero recognition of when indigenous zero carbon power is available. To allow better utilisation of variable renewable generation these charging structures need to be redesigned for the low carbon future and to empower consumers to be



active participants in that future. Care must be taken however to bring customers along the journey recognising that not all customers will be able to, or want to, engage as much as other customers. If legacy charging structures are not aligned with a future low carbon system, then investors will need to recover the system charges through the DS3 programme in addition to recovering their initial investment. In addition, it will delay the deployment of currently available technology which could deliver carbon reductions now.

Conclusion

Ireland is on a pathway to net-zero by 2050 and needs to be in a position to deploy all of its available resource options to decarbonize electricity generation significantly before then. EAI welcomes this Eirgrid initiative as a timely contribution on the need for new infrastructure and investment in order to deliver zero carbon electricity and a net zero economy in Ireland.

The focus of EirGrid Group must continue to be the reduction in network and system constraints via the delivery of much needed grid infrastructure and network reinforcement. The group's approach must balance preferred developer locations with the grid's ability to cater for such investments along with installing new system enabling technologies (e.g., synchronous condensers) and strategic location of new demand (e.g., long-term electricity storage and hydrogen electrolyzers).

EAI looks forward to publication of a final roadmap outlining a low regrets strategy to achievement of these objectives, which can increase certainty to investors. EAI also looks forward to further engagement with Eirgrid Group on the issues raised in this consultation, and indeed in relation to future iterations of the SOEF.

The Electricity Association of Ireland, June 2021



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