FuturEnergy

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Submitted by email to: CallforEvidence@decc.gov.ie

Date: 20th Sept 2022

RE: FuturEnergy Ireland submission to consultation "Call for Expert Evidence – Climate Action Plan 2023"

Dear Sir / Madam,

By way of introduction, FuturEnergy Ireland (FEI) is a new joint venture company owned on a 50:50 basis by Coillte and ESB. This collaboration combines the State's strongest assets and expertise in onshore renewable energy development. We are one of the largest dedicated developers of onshore wind in Ireland and our mission is to maximise the potential of our national resources and accelerate Ireland's transformation to a low carbon energy economy.

FEI would like to commend DECC for undertaking this important consultation process. The rapid transition to a renewable zero carbon power system is a critical means of tackling the triple crises of energy security, energy costs and climate change. This consultation process and the outcomes that emerge from it will be a determining factor in whether Ireland succeeds in these efforts.

FEI is an active member of both Wind Energy Ireland (WEI) and Energy Storage Ireland and our professional team actively participate in expert committees across both organisations. FEI supports and endorses the recommendations proposed by WEI & ESI in their separate submissions.

In particular:

[redacted]

FEI, together with its development partners on certain joint projects, have had over 500MW of capacity in the planning system for more than 18 months. We would contend that this is at least 12 months longer than is reasonable. These delays have knock-on effects for the deployment of our overall development pipeline. As such, we would estimate that this delay has already resulted in 500MW less renewables on the system in each year from 2025 to 2030. This already means that there are approximately 3-3.5Mt of CO2e emissions that will occur over the decade that could have been avoided. This is as a direct consequence of planning delays for a single developer. We strongly support all measures put forward by WEI that would expedite the planning process. If this issue fails to be urgently addressed, then our cumulative sectoral emissions may already be out of reach as early as next year.

The overarching objective of national energy and climate policy is to limit cumulative emissions over the period to 2025 and 2030 in line with our legally binding commitments and to put us on a trajectory to a net zero economy by 2050. The targets being set are extremely ambitious and will require a radical change of pace to deliver. It is important to also recognise that timely delivery of these decarbonisation targets will also simultaneously address the separate ongoing energy security and energy cost crises.

Meeting these targets necessitates the deployment / connection of onshore and offshore wind and solar energy as early as possible in the decade. If we focus only on offshore wind, with the bulk of delivery likely post 2030, we will substantially miss all our legally binding emissions reduction targets.

We also need to deploy the technology solutions and the operational processes and systems needed to integrate this renewable energy at both a transmission system level and local distribution network level. This will require significant deployment of:

- Long Duration Energy Storage technologies (**LDES**) to help manage network constraints at a local level and curtailment and oversupply at a system level, while at the same time supporting system adequacy and security of supply with clean dispatchable capacity.
- Full zero carbon system services as soon as possible and not later than 2030.
- All of the reinforcement projects envisaged in SOEF 1.0 + additional projects to the extent possible.
    - Project Delivery Boards should be put in place to support timely project delivery.
    - Where 110kV underground cable projects are developed by the system operator to meet system needs, the cable should be installed to a 220kV standard so that the circuit can be more easily voltage uprated in future

when needed. This would minimise social impacts of increasing grid capacity in future and maximise use of grid routes.

- Widespread deployment of other technology solutions to sweat the network we have, including dynamic line rating, power flow controllers, and intertrip / special protection schemes or grid booster schemes similar to those being deployed in GB and Germany respectively.

The electricity sector also has a critical and rapidly growing role in supporting our climate action ambitions in heat and transport. Most credible pathways to a net zero energy system by 2050 consist of the following core elements:

- Decarbonise the power system;
- Directly electrify everything that can be directly electrified;
- Indirect electrification of many existing energy demands where direct electrification isn't technically viable.

The MAREI report "Our Climate Neutral Future[1]" commissioned by Wind Energy Ireland forecasts demand for electricity reaching 84TWh by 2050 as we seek to electrify much of the demand for heat and transport on our journey to net zero.

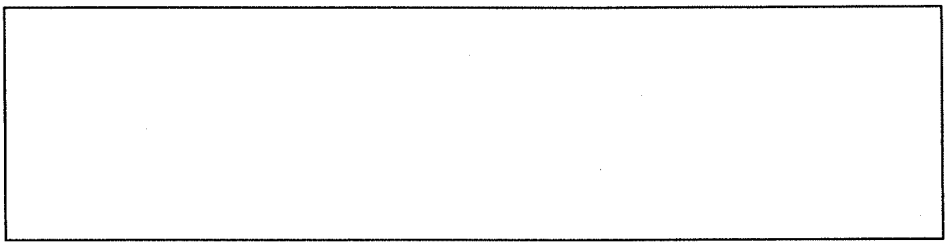
We need to recognise that significant new transmission infrastructure projects can take a very long time to deliver, and so planning needs to start now for a fully decarbonised, and much larger power system in the period 2030-2050. We would strongly suggest that there is a need for an Eirgrid Shaping Our Electricity Future (SOEF) Roadmap 2040 which caters for the levels of demand and distributed renewable generation and storage that we can reasonably expect will need to be accommodated over this time horizon.

Separate to the appropriate and timely development of our transmission and distribution grids, our future zero carbon power system can be broken down into several key building blocks.

[1] https://www.marei.ie/our-climate-neutral-future-zeroby50/

- The technologies that provide the variable in the volumes required.
- The technologies that will ensure system frequency and voltage at 100% SNSP, 0MW minimum conventional generation.
- The technologies that will support to simultaneously manage system oversupply and local network constraints while supporting capacity adequacy.
- The provision of of energy and generation capacity to support occasional periods of extended low wind and solar output.

All of these deployments require efficient and appropriate market investment signals. In designing these market systems / frameworks, we need to consider the inherent technical and economic characteristics of these essential technologies.



In particular:

- Renewable Energy Technologies: Onshore and Offshore wind and solar technologies are unable to respond economically to short term hourly price signals after they are built. The availability of energy from these technologies and the underlying cost of making this energy available to the system will be the same irrespective of the wholesale market price. Therefore, there is very limited economic merit in exposing these technologies to these price signals. Long term auctions with appropriate risk allocation in particular in relation to constraint, curtailment and oversupply will result in much more efficient auction outcomes.

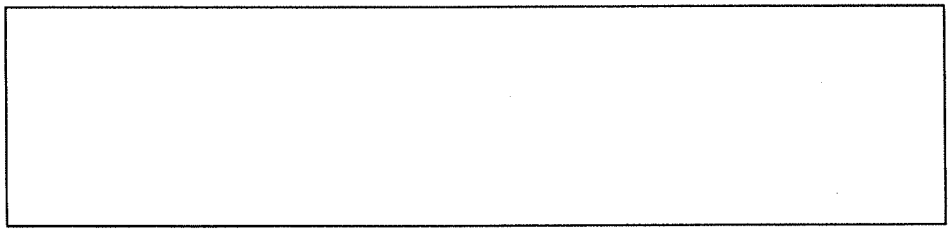
- Flexibility Services: Some technology solutions such as demand side response have limited capital costs and likely more material marginal operating costs and can potentially be deployed under modestly evolved energy, capacity and system service markets, and this flexibility will have a net system value. However, it is extremely unlikely that these technologies can provide energy time shifting services at the scale and in the locations, required to support the level of decarbonisation we are targeting. Large scale long duration storage technologies will likely have very significant capex and relatively low marginal operating costs (excluding energy market charges) and as such investment in these technologies would likely be more efficient if they were provided with a much higher degree of revenue certainty. For storage technologies however, it is also important to preserve short

term energy market price signals to ensure that deployed technologies operate efficiently on the system once built.

- An efficient technology Mix: There is a value in having a complimentary blend of wind and solar assets on the system given the negative correlation of the profiles of each technology. The value of this at a system level is not directly factored into an auction bid submission. Therefore this system value needs to be incorporated into the auction clearing process. This is already partially addressed with the current evaluation correction factor in the RESS design but there is the potential for a more sophisticated approach that would result in a more efficient clearing process that would maximise system value vs. system cost. This same approach could be used to provide appropriate and efficient locational signals for renewable generation and storage technologies. This is described in more detail below and in Appendix A of this submission (ESI Position paper on a Storage Services Procurement Framework)

- Strategic Reserves: In order to ensure adequate supply of power during unusual weather events involving extended periods of low wind and solar availability, we will likely need to maintain a sufficient volume of peaking capacity and strategic fuel reserves (green or brown to be determined). This plant will likely have extremely low capacity factors and so the majority of the remuneration for these types of technology will need to come from an appropriately developed capacity market.

- Appropriate Risk Allocations: This will be critical if we are to avoid a situation where consumers pay for high constraint, curtailment and oversupply levels by allocating these risks in renewable auctions, locking in high prices for the tenor of the contracts, and then pay again to enable the deployment of flexibility solutions to solve these problems. These issues need to be considered holistically at a system level.



There have been a number of interesting developments recently in the GB market. The Department for Business Energy and Industrial Strategy (BEIS) in GB are currently undertaking an extremely comprehensive "Review of Electricity Market Arrangements". GB has stated ambitions to decarbonise their power system on similar timelines to those proposed in Ireland, with an aim to reach 100% renewable electricity by 2035. As such they are seeing many of the same market design issues that we are. Their recently published consultation noted:

- The reformed electricity market will need to *"unlock unprecedented levels of investment across the full range of low carbon technologies, including low carbon generation, electricity storage, and flexible demand from consumers"*
- *"It is unlikely that the significant investment needed to decarbonise the power sector will be delivered cost-effectively by our market arrangements in their current form. In particular, they are unlikely to bring forward low carbon flexibility at the pace required;"*
- *"The most cost-effective route to a net zero power sector by 2035 will require changes to markets to optimise both investment and dispatch (where and when to produce and use electricity) as current market arrangements are based on the needs of fossil fuel generation rather than renewables."*
- In terms of options for delivering mass low carbon power: *"The majority of our options involve long-term contracts with the government, as this seems likely to be the best way of delivering the volumes of investment we require at least cost".*
- In terms of delivering required system flexibility: *"Much of the incentive for flexibility should come through more accurate market signals, delivered through options set out in the wholesale market chapter. Such market signals could deliver much of the flexibility needed for our 2035 commitment, but challenges around investor certainty, for example, may mean a mechanism to de-risk investment on an enduring basis could also be required. Options under consideration include a (reformed) Capacity Market, a multi-technology revenue cap and floor, and a supplier obligation, including a 'Clean Peak Standard'."*
- In terms of ensuring capacity adequacy and avoiding the kinds of issues we're seeing on the system in Ireland today: *"Our core options under consideration take a centralised approach to procuring capacity adequacy. These include reforming the Capacity Market to better support firm low carbon technologies, a centralised reliability option scheme, and a strategic reserve. We are not minded to pursue decentralised approaches to ensuring capacity adequacy, because it is a system outcome that the government will always value more highly than any individual market participant."*

In addition BEIS published a "call for evidence" consultation on Large Scale Long Duration Energy Storage (LLES) in July 2021. They recently published a Government response[2] to the submissions received. In this they *"concluded that LLES:*

- *has an important role to play in achieving net zero, helping to integrate renewables, maximising their use, contributing to security of supply, and helping manage constraints in certain areas;*
- *provides low carbon flexibility, replacing some unabated gas generation;*
- *diversifies our technology mix and provides optionality for meeting our ambitious 2035 power sector decarbonisation targets; and*
- *faces significant barriers to deployment under the current market framework due to their high upfront costs and a lack of forecastable revenue streams.*

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1096002/large-scale-long-duration-electricity-storage-govt-response.pdf

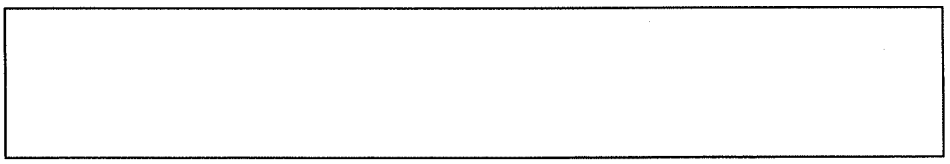
Considering these conclusions and as outlined in the British Energy Security Strategy, we will ensure the deployment of sufficient LLES to balance the overall system by developing appropriate policy to enable investment by 2024."

In Australia they are even more advanced. AEMO in New South Wales are currently tendering Long Term Energy Service contracts including 600MW of LDES with 14-40year contracts available. [3] [4] The award criteria proposed under this procurement includes consideration to the holistic system value of storage. The aim is to deliver 2GW of LDES in this region by 2029.

While Ireland may be more limited than GB in terms of its ongoing obligations to comply with EU Regulations and the need to integrate fully with EU systems in advance of the Celtic Interconnector "go live", there will likely be significant learning opportunities available by following the reform process as it evolves in GB. We will also need to consider how our interconnector capacity will interact with a reformed GB market.

In the context of the potential need for new and innovative market frameworks to support our decarbonisation ambitions, our team, together with Industry Colleagues in Energy Storage Ireland have been giving particular thought to the development of a storage services procurement framework that addresses many of the challenges identified by BEIS in their review. This paper is attached separately as Appendix A to this submission and sets out a problem statement, high level principles and an initial suggested high level design that would enable appropriate and efficient investment in storage technologies at scale in Ireland. This approach considers the holistic system value against the cost of new technology deployments in a manner not dissimilar to the approach AEMO in Australia are taking. The upcoming DECC consultation on energy storage policy presents an opportunity to kickstart a similar discussion as what has occurred in GB and Australia. This will require the engagement and support from key stakeholders including EirGrid. With EirGrid's support, Ireland should aim to have a first LDES auction not later than Q1 2025. A roadmap to such a scheme should be published as soon as possible to act as an investment signal to storage developers, incentivising early planning applications.

We would note that this approach could also be adapted to support the appropriate clearing of future RESS auctions in a future RESS scheme with more appropriate risk allocations, in particular for constraint, curtailment and oversupply. We would be very happy to discuss these proposals in more detail should this be of interest.



[3] https://aemoservices.com.au/-/media/services/files/publications/iio-report/2021/iio-report-2021.pdf?la=en
[4] https://aemoservices.com.au/tenders/tender-pack

FEI has long been an advocate of a regional approach to onshore wind target setting and to the development of regional spatial strategies to inform local plan making. In this regard FEI broadly welcomed Action 102 in the Climate Action Plan 2021, Annex of Actions and in particular the references to 'regional renewable energy strategies' and 'targets for onshore renewable electricity development to inform spatial plans'. These are critical to resolve challenges and issues arising at the county development plan making level, which are evident in the recent plan making cycle and have resulted in numerous interventions by the Office of the Planning Regulator.

FEI has concerns that the proposed output of same in Action 102 is not sufficiently meaningful and a clearer and more specific commitment to delivering these initiatives is required in Climate Action Plan 2023.

For example, Action 102 commits to "Publishing a roadmap for the development of the Regional Renewable Electricity Strategies". This must mature in the next CAP to a commitment to publishing the final Regional Renewable Electricity Strategies including spatial designations for renewables for each of the Southern, Northern & Western and Midlands & Eastern Regional Assemblies. This is required urgently in 2023 if the targets for onshore wind and solar generation are to be seen as credible.

Similarly, the commitment to "Publish a framework to set out targets for onshore renewable electricity development to inform spatial plans" needs to mature to the "publication of on-shore regional wind targets (MW)". This is also required urgently in 2023 and will inform the Regional Strategies. This MW target setting should also consider allowances for attrition at the various stages of project development.

By empowering locally elected representatives who sit on the Regional Assemblies to play their part in the process we facilitate greater democratic participation in setting regional strategic planning objectives for energy. This policy framework may well need the support of section 28 guidelines incorporating 'Specific Planning Policy Requirements'.

We would like to thank DECC again for the opportunity to respond to this important consultation and look forward to working together as it evolves and is implemented.

Yours Sincerely,

Sent digitally – no signature necessary

[redacted]

[redacted]FuturEnergy Ireland

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