

Bord na Móna

Review of Large Energy Users Connection Policy

Consultation Response

19 March 2024



1. Introduction

Bord na Móna (**BnM**) welcomes the opportunity to respond to the Commission for Regulation of Utilities (**CRU**) consultation on the Review of Large Energy Users (LEU) connection policy. Ireland has extremely ambitious targets to grow the proportion of renewable electricity used and to reduce the sectoral carbon emissions from the electricity sector. In parallel, Ireland has become an attractive location for industry and there is a desire for LEUs to establish operations in Ireland bringing significant economy benefits for the Irish economy. It is acknowledged that this growth may also add to the difficulty in realising our energy and climate targets. In that context, this consultation is timely, and we hope the outcome from it will provide guidance on how our climate targets and continued economic growth can be balanced.

BnM has a vision for how further LEU development can be facilitated while respecting our climate objectives. We are developing a number of energy parks that can host demand customers with large energy requirements on a single site co-located with an array of electricity generation and storage assets. Our energy parks can provide LEUs with bulk renewable electricity from wind and solar generation, dispatchable generation as required, and by locating them outside of constrained areas of the electricity network more efficiently utilise the available grid resource. We believe energy parks are the way forward as they facilitate LEUs in being part of the solution to the achieving our climate targets rather than a hindrance.

Our view is that to facilitate further LEU development and do so in a way that does not impose costs on other customer cohorts there are some key areas that the policy should focus on:

- **Location should be central to the future LEU connection policy.** In BnM's view as one of the largest RES-E developers in the country the pace of grid infrastructure investment and delivery is the primary barriers to achieving our 2030 RES-E targets. Locating LEU demand outside of Dublin will help to alleviate constraints on the system and should be required in most circumstances. Vast quantities of renewable electricity are lost each year due to dispatch down and future LEUs can bring value to the system by reducing these volumes while also minimising investment costs needed to support their own connection.
- **LEUs should be required to meet their own renewable electricity demand.** Large volumes of new demand impose additional costs on the electricity system requiring more generation assets. LEUs should be required to contribute directly to providing these by providing additional RES-E and dispatchable generation. Exactly matching volumes of RES-E generation to annual demand is an ambitious target in itself that may be difficult to achieve. The volume and type of dispatchable generation required is more complicated.
- **Policy clarity is key to supporting continued economic growth.** Delivering any large-scale project in Ireland takes many years from inception to operation. Developing a LEU demand site in conjunction with renewable generation and potentially other assets will be complex. Stakeholders looking to deliver these projects need certainty on relevant policy requirements at the beginning of the development process.

At the end of this consultation process our primary hope is that there is clear and enduring guidance for LEUs looking to develop in Ireland over the coming decade. Developing an energy park is a multiyear process with many different facets including the construction of enabling infrastructure, development of energy assets and a demand customer own facility. To complete this lengthy

process, we need clear guidance on policy requirements to begin development and enter the planning system.

We have provided detailed responses to the questions where we believe our input is valuable but would like to take this opportunity to emphasise some key points that are important to consider in developing this policy:

- **The ability of a demand customer to achieve real-time net zero emissions is fundamentally dependent on the carbon intensity of the electricity grid.** Annual matching of renewable electricity demand and supply can be achieved via variable renewable generation such as wind or solar. Real-time matching however will require dispatchable zero carbon assets. The quantum of these assets required will depend on their availability requirements which is linked to the carbon intensity of the grid. BnM does not believe that an LEU customer can achieve a real-time carbon intensity substantially different from the national grid in a cost-effective manner.
- **Timing is key to managing the emissions impact of LEUs.** The new policy for LEU connections will impact predominantly on projects entering operation towards the end of the decade. This is important due to the trajectory of carbon emissions from the electricity sector. If Ireland is to abide by the sectoral emission budgets then drastic reductions in annual emissions from the electricity sector will be required by the end of the decade. This is important point as the cumulative impact of a LEU on the emissions ceiling will differ hugely if it enters operation in 2024 when average carbon intensity is 300g per kwh compared to later in the decade when it will need to be sub 100g per kwh.
- **The approach to quantifying net zero operation is uncertain.** Requirements for an LEU to achieve net-zero operation at any temporal scale are not clearly defined and may be difficult for the LEU customer to achieve. Annual matching is the simplest approach but even that raises substantial issues. The variable output of wind and solar farms is an obvious issue and is subject to annual fluctuations. A “bad” wind year may mean that a windfarm sized to match a demand customers output would not for an atypical year. Even more challenging however is that as Ireland operates a central dispatch system the generation assets linked to a demand customer will be subject to dispatch down for reasons of constraints, curtailment and over-supply. All of these are difficult to estimate with any precision for the future and dependent on external factors outside of the demand customer’s control. These issues become more pronounced as the temporal scale on which the matching occurs decreases.

BnM has tried to resolve these questions in the design of our energy parks, but it is difficult to do so with certainty. While the end goal for LEUs of real-time net zero operation is laudable it is a difficult policy objective to operationalise.

BnM hope that you find our contributions helpful and would be happy to discuss any of the concepts raised in this consultation response at your convenience.

2. Response to Questions

Category of LEU to which this policy applies

1. Comments are invited from interested parties on the categories of LEU in electricity and gas to which this policy should apply (e.g. for electricity is DG10, DTS-T is appropriate, should DG6-DG9 be included, should the definition focus on capacity or usage, should a combination of criteria be applied?).

BnM does not have strong views on which categories of customer this connection policy should apply to. We would note that the industrial sector has ambitious targets for decarbonisation and ensuring new developments are contributing is important in achieving them.

Transition period

3. Comments are invited from interested parties on the proposed use of a transition period/glide path in relation to (i) the changing requirements at time of connection on the transition to zero real time emissions, and (ii) once connected, the changing requirements as the project transitions closer to real time zero e.g. from non-firm connection to firm connection linked to milestones.

BnM would agree with CRU's assessment that real-time net zero operation is not achievable for LEUs in Ireland currently. As mentioned already we believe it is highly extremely challenging for any single demand customer to operate at a substantially lower carbon intensity than the national grid on an enduring basis. We believe that most LEUs are going to approach real time net zero operation in parallel with the broader electricity system. Utilising demand flexibility and/or zero carbon dispatchable generation LEUs maybe be able to achieve net zero operations sooner than the national grid but not radically so.

Changing requirements as the LEU gets closer to net zero operations is not optimal BnM's opinion. When developing any project, including the construction of a LEU facility and its' grid connection it is better to know with certainty what is required at the project initiation stage. Changing requirements throughout the lifetime of the facility raises issues about the correct design of the overall energy park and potential for stranded assets. For a projects specific requirement, we believe that this would probably need to be assessed on an application-by-application basis, but high-level design requirements could be provided such as:

- Provision of bulk renewable electricity from solar and wind farms to match the demand profile of the LEU.
- Dispatchable generation of some form, whether storage or renewable thermal. The capacity required here warrants further consultation.

These requirements are relatively simple to implement and allow the LEU customer to meaningfully contribute to decarbonisation while providing certainty.

Measuring performance

7. Comments are invited on the approaches used to account for net zero emissions. This could include timestamped GOs or renewable certificates. Please provide reasons and rationale for any views provided.

The CRU proposals for how to track renewable generation seem practicable. The current GO system would allow for assessment of a demand sites consumption relative to generation output at a monthly or greater temporal granularity. In time when hourly matching and net zero performance becomes more feasible modifications will be required.

8. Should the end target/goal be real time zero emissions? Do respondents have other suggestions as to how this can be demonstrated? Please provide reasons and rationale for any views provided.

In considering this question BnM believes it important to carefully consider the balance between ambition and what can be practically achieved. The difficulty in achieving full temporally matched zero emissions operations for any single demand site is highly dependent on the overall electricity system. While obvious it is important to emphasize how the challenge in achieving real time zero emissions differs when the grids average RES-E proportion is 98% rather than 60%. In our view it is probably impossible, based on the operational expectations of most LEUs, for them to operate in real-time at an emissions intensity substantially different from the national grid.

Even achieving annual zero emissions operation is difficult for an LEU to achieve. Entering a CPPA with a wind or solar farm is the most straight forward approach to demonstrating that additional renewable electricity had been generated to match demand. That said, the annual output of a variable RES-E generation site will make this difficult to ensure, there are years where wind yields are uncharacteristically low. Similarly, there are numerous external factors that are outside the control of the generator or demand customer, which could impact on a RES-E sites output. For example, levels of dispatch down, accurately estimating future levels of constraint, curtailment and over-supply for a given RES-E generator is not possible. So even trying to assess what quantum of CPPA capacity is required to annually match a site demand profile is complex.

In our view the overarching objective of this connection policy should be to facilitate the connection of in way that delivers parallel decarbonisation benefits for the electricity system as a whole. They can make a positive contribution in a number of ways including optimum locations, to providing investment in RES-E and dispatchable generation and by providing system or flexibility services. In our view the outcome of this review process should be guidance on what new LEUs are required to bring to the system to be facilitated in receiving a connection while acknowledging that each development will have its own operational requirements.

9. Comments are invited on the use of a glide path to implement the basis on which net zero emissions are determined. This could entail starting with measuring net zero performance on an annual basis and moving closer to more real time arrangements in incremental steps.

In our view introducing a glide path at this stage is not practicable. In time, as systems improve it may warrant further consideration but at this stage the focus should be on providing policy clarity for LEUs..

10. Comments are invited on the use of self-reporting based on best available data/methodology and transitioning to a more robust formal framework over time when it becomes available.

While a formal framework for assessing the carbon intensity of a customer's electricity would be useful, our view is that it is not a priority at this stage as the decision to grant a connection offer and investment decisions will be made ahead of operational data being available.

11. Comments are invited on the requirement for indigenous sources of renewable energy e.g. renewable electricity feeding into the Irish system and for gas secure sufficient renewable gas credits feeding into Irish system.

Given how national RES-E and carbon emissions are monitored and recorded we believe it is necessary that the renewable electricity and gas used be indigenously produced.

Location of LEUs

15. Should new LEUs be located close to areas of renewable generation and/or storage or within energy parks? Please provide reasons and rationale for any views provided.

The location of LEUs is central to managing their potential impact on overall system costs. Depending on where on the network an LEU is located, they can increase or decrease required network investment. Given that insufficient network investment is one of the key barriers to Ireland achieving its decarbonisation goals, we believe that LEUs should be required or mandated to locate in areas where they reduce network investment requirements. LEUs should be situated in areas where there is potential for further RES-E generation to be developed and /or where network constraints for RES-E generators are currently or are predicted to be high. Large demand customers can substitute for grid investment in these locations by consuming the electricity generated in their proximity thereby reducing the overall costs for the electricity system and it would be inefficient for Ireland not to utilise this opportunity.

16. What type of measures to facilitate this approach could be introduced to encourage new LEUs to locate close to renewable generation.

Optimally LEUs would have economic incentives to locate in the locations highlighted above. This economic signal could and probably should be provided via use-of-system-charges. In principle these charges should be cost reflective with the demand customer paying charges proportionate to the costs they are imposing on the network. LEU customers looking to connect in areas where import is constrained such as Dublin would face higher charges and those looking to connect in areas where export is constrained facing lower charges. However, this would require substantial reform of the current use-of-system charges system and may not be practical to implement in the near term. Mandatory requirements to locate close to their contracted generation and/or restrictions from connecting in certain areas could provide the same outcome in the short term.

17. Should there be any exemptions to locational requirements for certain LEUs? How could this be assessed? If so what type of connection conditions/requirements might these require?

A variety of businesses and industries can be classed as LEUs and without understanding their specific requirements BnM can understand that some exemptions may be necessary. However, we strongly believe any exemptions to a locational requirement for LEUs would need to be fully evidenced and based on more than just cost implications. As the current electricity market is structured an LEU connecting in Dublin imposes substantial costs on system which they do not fully internalise. The full costs are not paid for by the LEU customer directly and so do not form part of their assessment with regards to where they should locate. Locating in other areas of the country is possible for many LEUs but doing so may require investment in additional supporting infrastructure.

18. Comments are invited from interested parties on the level of proximity between LEUs and renewable generation? How should this be measured? Should this value apply across the board or be determined on a case-by-case basis?

BnM are promoting the idea of co-location of renewable generation and LEUs as we believe it is an efficient solution. Defining a specific distance requirement that produces the desired benefits can be difficult as it will depend on local network considerations. However, many of the network benefits from locating LEUs close to generation sites are achieved if they are located relatively close together and connected to the same node on the electrical network. This approach removes the need for defining distance metrics as the economics of the connection via co-location at the same node will either be viable or unviable.

20. If introduced on a mandatory basis should locational requirements be implemented using a glide path?

BnM does not see what benefit introducing a glide path for locational requirements would bring. The Dublin area is at capacity and outside of pressing needs further LEUs should not be facilitated in connecting there. LEU's that comply with the new connection policy will take years to develop and certainty now around the requirements is key.

Non-firm demand connections

21. Should non-firm LEU connections be introduced? If so, should these non-firm connections be made on an enduring basis? Please provide reasons and rationale for any views provided.

It is BnM's view that non-firm demand connections should only be introduced if there is clear demand for them from customers. Our own understanding of the LEU customer segment is that most require a constant or near constant electricity supply. This suggests that non-firm connections would not be desirable for these customers or would require substantial back-up generation. In this scenario operating back-up generation would be difficult while also trying to minimise carbon emissions. If there are LEUs for whom non-firm demand connections are useful then the policy should provide flexibility for those customers to request that type of connection.

As to whether non-firm connections should be enduring, or time limited the customers preference is likely to vary. Assuming a customer with flat demand profile, a non-firm connection is likely to

require investment in generation or storage assets to provide energy when import is not possible. Once this investment is made continued operation on a non-firm connection may be desirable. Whether that is optimal from a systems perspective is uncertain however and why we would question the overall value of introducing the non-firm connections beyond emergency measures.

23. If non-firm LEU connections are mandatory in certain parts of the system, should there be any exemptions for certain LEUs? If so what type of connection conditions/requirements might these require?

Connecting further LEUs on a firm basis in constrained areas of the grid is challenging and imposes substantial costs on the network. Outside of exceptional need BnM does not believe further LEUs should be offered connections in constrained areas. Exceptions may be needed where there is non-cost-based reason why an LEU cannot locate elsewhere.

On-site generation and storage

28. Comments are invited on the use of renewable generation and storage on-site. Should this be used to match LEUs demand on-site or to provide flexibility services to the system? Please provide reasons and rationale for any views provided.

As mentioned earlier BnM believes it is challenging for a demand site to operate at a substantially lower carbon intensity than the overall grid in real time. Greater value to the electricity system is likely to be realised by using the onsite generation and storage to support the overall system.

It is our view that this connection policy should define what assets an LEU is required to develop or contract to be granted a connection offer. The definition of specific operational requirements for those assets are beyond the scope of this connection policy. The optimal operational approach will naturally reflect economic signals provided by the different markets be they energy, flexibility or system services.

Demand flexibility

31. What should demand flexibility services provided by new LEUs be used for, system support, decarbonisation or both? Please provide reasons and rationale for any views provided.

BnM does not see why the flexibility services offered by LEUs should differ from those procured from other customer cohorts. The ongoing development of the Demand Side Strategy is important in this regard. In general, BnM believes that demand flexibility services can and should be used for both system support and decarbonisation purposes. As highlighted by the CRU there is often an overlap in achieving both objectives.

32. Should demand flexibility services be mandatory or voluntary for new LEUs? Please provide reasons and rationale for any views provided?

The electricity system that is needed for Ireland to reach net-zero is radically different to the current one. Flexibility can and is likely to play an important role in this future system and BnM believes a

market for flexibility services is required to achieve this. LEUs should participate in the flexibility market as any other customer cohort. Our view is that while participation should not be mandatory, the economic signals to encourage participation available to other customer cohorts should be open to LEUs. Mandating LEUs to provide flexibility services would impact price formation in the flexibility market and have a distorting effect for other participants.

33. Should LEU connections in certain parts of the network be required to provide demand flexibility services? Is this measure justified?

BnM does not believe that LEU connections should be facilitated in constrained areas of the network unless there is an over-riding need for them to be located there. If that need exists then the requirements to achieve that connection will likely be site and case specific.

34. If demand flexibility is voluntary for new LEUs, what type of incentives could be introduced to encourage the adoption of these services?

BnM believes that a market for demand flexibility and similar services will be required as part of the electricity system of the future. Flexibility will be required from many types and cohorts of customers and the markets should be designed to be attractive to all customers including LEUs.

36. Should timed/profiled connections be introduced? Please provide reasons and rationale for any views provided.

Similar to our response to question 21 timed/profiled connections should only be introduced if there is a definite demand for them in the market. From our own discussions with LEU operators, we do not believe there is significant demand for them.

Energy efficiency

37. Comments are invited from interested parties on the use of waste heat from LEU sites.

38. Comments are invited on the use of waste heat from LEUs to feed district heating networks or other processes.

39. Should provisions to use waste heat from new LEUs in suitable locations to feed district heating or other processes be mandatory or voluntary? Please provide reasons and rationale for any views provided.

BnM are answering these questions together. The use of waste heat from LEU sites for further purposes is something that we believe should be encouraged and facilitated. However, we do not believe it should be made mandatory. Ireland does not currently have large scale district heating infrastructure which would make finding demand for the waste heat difficult. Also, in BnM's view major benefits to the overall energy system could be realised by encouraging LEUs to locate outside of Dublin which makes the likelihood of their being a district heating network to tap into even smaller. Energy parks with a number of different industries located on them could use waste heat

but we believe this is something that will occur naturally as the waste heat from an LEU is an economically valuable resource.

Gas

40. Comments are invited from interested parties on the use of biomethane towards decarbonisation of LEU demand. Do respondents have a view on the volume of indigenous biomethane that can be produced annually? Do respondents have a view on the scalability of using biomethane towards the decarbonisation of LEU demand?

It is difficult to accurately predict the upper limit for biomethane production in Ireland as it can vary significantly depending on feedstock. Government policy is targeting 5.7 TWh of biomethane production by 2030, which appears achievable with respect to the available resource. In terms of identified uses for biomethane, it can help with decarbonisation in numerous areas from heating, to transport to power generation. A relative shortage of supply is likely in the near term, so it is important that the limited resource is used efficiently. In BnM's view utilising biomethane for baseload LEU electricity generation would not be optimal. Ireland has a huge wind resource which we believe should be the main source of renewable energy/electricity for LEUs. Biomethane should play a supporting role providing back-up or flexibility.

42. Comments are invited from interested parties on the use of green hydrogen towards decarbonisation of LEU demand and the timelines in which this might be viable. Please provide reasons and rationale for any views provided.

BnM welcomed the publication of the government's Hydrogen Strategy last year and the vision it set out for the Irish hydrogen industry. We would caution however that the development of the hydrogen industry in Ireland is not progressing at pace. The indicative timeline accompanying the strategy suggested pilot projects being developed towards the end of the decade, with larger scale projects to follow but likely developing in the next decade. We believe that the production of green hydrogen in Ireland could be accelerated but would require policy support to enable it. There are a number of pilot projects in development in Ireland that could be delivered over the coming years, and which would allow for more widespread green hydrogen production before 2030.

Assessment criteria

47. Comments are invited from interested parties on maintaining optionality in what provisions an LEU must meet as part of its net zero emissions requirements.

To re-iterate BnM does not believe that focusing on real-time net zero emissions operations is a practical metric to assess LEU performance on. This is due to the inter-linked nature of the customer's emission intensity and that of the national grid. In our view the focus should be on defining what assets an LEU should bring to the system to ensure it is not imposing additional costs or burdens on other parts of the system. The concept of offering a tiered connection offer, with a fully firm connection being the highest tier, could still be utilised. With differing requirements in terms of what the LEU must provide to achieve a firm connection in different locations.

Maintaining some optionality is sensible in BnM's view as the impacts of an LEU on the system may differ and room for innovation should be offered. What an LEU can offer to the system to offset its costs could vary widely and the policy should facilitate innovation in this space offering flexibility with regards to detailed implementation. However, as we have emphasised throughout or response guidance about what is required at a high level is required for development to progress.

48. Comments are invited on how a new LEUs location may inform what criteria it may need to meet.

Differing requirements for a connection offer is one way to provide a location signal to LEUs to locate in less constrained areas of the network. However, given the benefits, in terms of deferred network investment, we are not sure of the overall benefit of continuing to facilitate LEU connections in constrained areas.

Roles of other organisations

52. Comments are invited from interested parties on the roles of other organisations in the different approaches considered in this paper.

BnM agrees with the CRU's view that facilitating further development of LEUs in Ireland is a cross-cutting policy question which impacts on numerous government departments, agencies and different sectors of the economy. It is important that there is open engagement between different stakeholders to ensure an enduring solution is designed. Given the importance of this question to Ireland, the number of stakeholders impacted and the level of co-operation across stakeholders required creation of a taskforce similar to the Offshore Delivery Task force would be merited.