EirGrid Response to CRU/2024001 Consultation

Review of Large Energy Users connection policy

19 March 2024

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1. Executive Summary

EirGrid plc ("EirGrid") welcome the opportunity to respond to the Commission for Regulation of Utilities ("CRU") consultation paper *'Review of Large Energy Users connection policy'* (ref: CRU/2024001[1], the "Consultation").

EirGrid, as the electricity Transmission System Operator ("TSO"), recognise the national challenges faced in delivering on ambitious renewable energy targets and sectoral carbon emission reductions. EirGrid is committed to securing the transition to a clean energy future that will be delivered in line with government policy and with the support of the CRU. As a regulated entity, EirGrid must follow policy and direction as set out by the CRU, which itself works within the government policy context.

EirGrid note that the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy (July 2022)[2] clearly outlines the need to enable the twin transitions of digitalisation and decarbonisation by requiring Data Centre growth to be balanced in a more plan led fashion with clear consideration for security of supply, climate targets and the Climate Action Plan. This position is predicated on the rapid rate of change in the digital space, whereby digitalisation itself is a key enabler to addressing climate change and has the potential to be a key enabler of future economic growth for the country. As such, EirGrid is of the view that a new LEU connection policy should consider and enable the following:

- Acknowledge and underpin a transition period in the journey to Net Zero.
- Formally embrace the stated demand proposition in EirGrid's Shaping Our Electricity Future[3] ("SOEF"), that is, up to 50% growth in demand (by 2030) and a plan led approach for both demand and generation.
- Recognise the role of digitalisation as a key enabler for the sustainable energy transition, both nationally and in the EU context.
- Ensure that developers are rewarded who bring renewable generation or renewable fuel ready gas generation, including key system services required for the operation of the electricity system.
- Provide sufficient certainty at the connection point to the power system to allow developers to invest in what is required to support the power system and to remove the potential for speculation with connection assets.
- Allow developers to synchronise the timing of their project with planned grid development projects while allocating electricity demand in line with the

[1] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU2024001_Review_of_Large_Energy_Users_Connection_Policy_Consultation_1.PDF
[2] https://enterprise.gov.ie/en/publications/publication-files/government-statement-on-the-role-of-data-centres-in-irelands-enterprise-strategy.pdf
[3] https://www.eirgridgroup.com/site-files/library/EirGrid/Shaping-Our-Electricity-Future-Roadmap_Version-1.1_07.23.pdf

plan led approach outlined under the SOEF Roadmap and actual demand trajectory in the eco-system, with flexibility for appropriate additional demand.

- A transition period whereby LEUs are provided with the ability to verifiably match 100% of their demand (MW) with renewable energy sources, via solutions such as CPPAs, over a recurring one-year cycle.

Such an approach to LEU demand growth would support investment in the digital economy in Ireland and in turn would support the necessary investment in the significant renewable resources (and potentially other key infrastructure) to achieve the country's renewable and climate targets.

The challenge is ultimately one of timing and the correlation of demand growth with low carbon and renewable forms of generation. With the country's potential abundant renewable resources, including offshore wind, considerable progress can be made over this decade to achieving a decarbonised power system. During that timeframe, in many ways LEU demand will be a valuable and flexible demand opportunity to match to the country's renewable resources, fully aligning economic and climate ambitions for the State and decoupling economic growth from emissions. It is evident from the consultation that the CRU is considering the matter in these terms also.

In August 2023, EirGrid provided a response to the CRU Call for Evidence CRU/202357[4] 'Review of Large Energy Users connection policy' ("Cfe Response" [5]). EirGrid has expanded on the core messages detailed in that response (including the urgent request for clarity on treatment of existing data centre applications) under the relevant consultation sections below.

[4] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU202357_Review_of_Large_Energ_Users_Connection_Policy_Call_for_Evidence_Paper.pdf
[5] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU2024001q_Response_to_CRU202357_-_EirGrid_381761.PDF

2. Consultation Response

2.1 Category of LEU to which this policy applies (Q. 1-2)

In its Cfe Response, EirGrid again noted the importance of regulatory clarity being provided with respect to existing LEU connection applications being processed under the extant direction CRU/21/124[6]. While this CRU direction sought to address the impacts of data centres on security of electricity supply and grid capacity, a number of Government policies, targets and statements have since issued. EirGrid acknowledge the CRU's intention for the LEU connection policy being consulted on to apply to new LEU connection applications only. However, there are a number of applications currently being processed under CRU/21/124 which require consideration.

Regarding the processing of new LEU connections, EirGrid would re-iterate the position outlined in its Cfe Response that until the power system is fully decarbonised, the addition of LEU demand (and critically any demand) will lead to additional emissions. As such, the new policy should not be limited solely to transmission connected customers and DG10 customers.

EirGrid note that there are a number of methods to define an LEU, including connection voltage, connection capacity (MW) and applicant type. EirGrid would again stress the need for clear and effective LEU categorisation to ensure that too narrow of a definition not result in unintended consequences by way of inefficient delivery models (for example multiple smaller connection applicants with the same overall demand impact resulting in significant inefficiencies etc.).

2.2 Transition period (Q. 3-6)

EirGrid acknowledge and support the need for an appropriate transition period / glide path to allow LEUs to connect and transition to net zero emissions over a period of time. As noted previously, EirGrid's SOEF outlines a roadmap supporting up to 50% demand growth in the period to 2030 (including 300 MW of additional LEU demand), delivering a balance between demand in the form of economic growth, electrification and digitalisation and the delivery of a low carbon electricity system based on renewable technologies and low carbon system services.

[6] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU21124-CRU-Direction-to-the-System-Operators-related-to-Data-Centre-grid-connection-.pdf

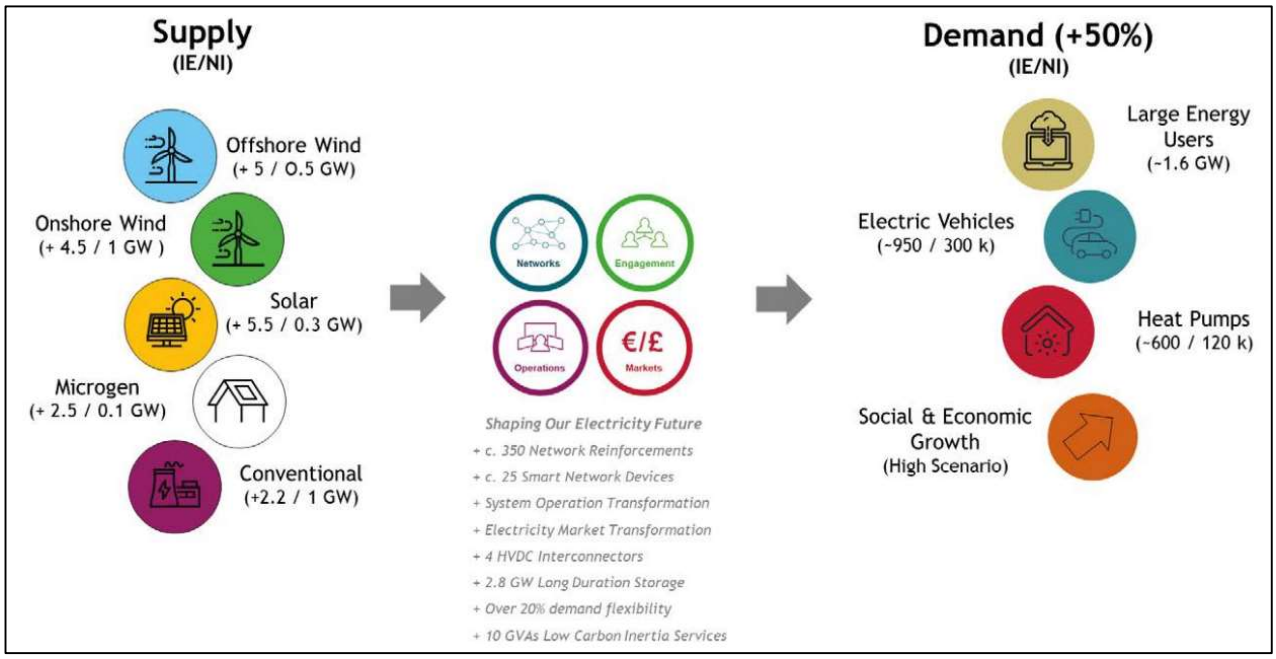

Figure 1: Whole of electricity system challenge from EirGrid's SOEF v1.1

In the interim period, until the projected quantities of renewable and low carbon generation are connected, all demand increases will increase emissions in the context of the country's climate targets. As such, it is crucial that clarity is provided with respect to Sectoral Emission Ceilings ("SEC"). As noted by the CRU in the Consultation, under relevant legislation, indicative targets for the electricity sector represents a 75% reduction in emissions between 2018 and 2030. However, the existing carbon budgets and SECs do not currently provide the level of specificity to prioritise one form of demand over another. An attempt to consider emission profiles, as one example of emissions monitoring, would be impossible given that the carbon budgets do not assign any allocations at a more granular level and hence consideration of one economic activity over another does not have a clear reference point. Furthermore, the SECs for electricity are absolute figures, unlike the renewable target which is proportional.

As such, there is a compelling case for an overarching policy framework which supports the demand proposition as set out in SOEF with policy signals which allocate demand growth across the various sectors contingent on how each sub-sector of the electricity system is performing against a forecast demand profile. Where a sector is not growing at the forecasted rate, this demand should be allocated elsewhere to avoid a situation where serious imbalances manifest and stranded assets are created in both the transmission system and in renewable generation plant.

A transition period would also allow developers time to synchronise the timing of their project with planned grid development projects while facilitating potential co-location with renewable generation, via CPPAs or other routes to market. Effective co-location of renewable generation with LEUs may also be facilitated by the ongoing

initiatives around strategic investments, Renewable Hubs[7] and the 'Renewable Acceleration Areas' envisaged under the Renewable Energy Directive. As the CRU will be aware, these will require further time for policy development and implementation with direction required from government and other stakeholders.

A glide path may also include existing LEU mechanisms such as Flexible Demand and 'Mandatory Demand Curtailment'. The inclusion of LEUs in the wholesale electricity markets through Demand Side Units ("DSUs") may also be a consideration along this glide path as a further source of enhanced flexibility.

2.3 Measuring performance (Q. 7-14)

EirGrid is of the view that during the transition period, LEUs be provided with the ability to verifiably match 100% of their demand (MW) with renewable energy sources, over a recurring one-year cycle through arrangements including CPPAs.

Regarding the potential benefits of tracking spatial aspects of renewable generation, EirGrid would note that this may benefit planning timeframes more so than operational timeframes. Generally, in periods where grid constraints are not present, there would be minimal additional benefit to ensuring energy demand is met locally as opposed to from another area of the grid located further away (for example, slight reduction in system transmission / distribution losses). As such, operational signals would likely result in a material benefit only during the subset of periods where grid constraints arise.

The main benefits would arise in periods where renewable generation would otherwise be constrained due to local network reasons, whereby this generation could be consumed by local demand instead of being dispatched down. There would be a number of considerations however to ensure that demand could be met locally without incurring the constraint, including:

(i) the electrical connection points of the demand / generation in the area,

(ii) the current and future developed network capacity in the area and

(iii) the relationship between the profile of the demand site's consumption and generator site's generation over time (while this factor is an operational consideration, it would be contingent on effective planning considerations).

As such, it may be more beneficial to ensure that enhanced locational signals are in place (as opposed to a focus on real-time operations) as operational signals by themselves will not accrue material benefit outside of a constraint period.

EirGrid would further note that attempting to account for the amount of renewable energy used in charging storage resources, which would then be exported to the grid at a different time, could be very complex and would require a detailed review of an appropriate methodology. Different storage resources could charge over different

[7] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU2023131_Renewable_Hubs_Pilot_Decision_1.PDF

time periods and with different levels of renewables in each period. Furthermore, depending on the site configuration there is potential that a unit may charge from a combination of locally sourced renewable energy and energy sourced from the grid with the general fuel mix (including non-renewables). This would necessitate a discussion over whether the average fuel mix or the 'marginal' fuel mix should be considered for accounting. The interaction with the Renewable Energy Support Scheme ("RESS") 2 and RESS 3 terms and conditions for storage 'hybrids' is also a consideration.

2.4 Location of LEUs (Q. 15-20)

EirGrid acknowledge the Government Statement on the Role of Data Centres in Ireland's Enterprise Strategy which has stated a preference for data centre developments in locations where there is the potential to co-locate a renewable generation facility or advanced storage with the data centre and a preference for data centre developments that make efficient use of the electricity grid, using available capacity and alleviating constraints.

EirGrid's SOEF has embraced the Government's plan led philosophy by clearly stating that additional demand should and can be accommodated outside the Dublin region for the foreseeable future. EirGrid consider that future data centre growth in Ireland should be considered in a balanced regional development perspective with the requirements for such new data centres to be located in areas in conjunction with significant additional renewable generation which directly complements the increasing demand with a significantly larger amount of renewable generation.

EirGrid support the view that the ability to locate LEU demand in close proximity to renewable generation and / or storage can potentially alleviate pressure on the grid and help reduce constraints. This approach could also help reduce the need for additional network infrastructure investment. EirGrid has previously and consistently advised that policy makers should consider locational signalling as a key principle underpinning future renewable support schemes to encourage development of renewable generation in proximity to large energy users. EirGrid are currently working with the CRU on enhanced locational signalling for various generation technologies and system services as part of ECP-3[8].

As noted above, the development of policy relating to strategic investment, Renewable Hubs and Renewable Acceleration Areas will also be of relevance to future LEU connections.

2.5 Non-firm demand connections (Q. 21-27)

The non-firm connection approach for LEUs discussed in the Consultation appears to represent a deviation from the conception and approach which is currently applied to

[8] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU2023163_Electricity_Generation__System_Services_Connection_Policy_Consultation_Pape.PDF

generator connection policy[9], whereby firmness is based primarily on localised grid considerations (the level of constraints and other local grid issues etc.). The Consultation appears to propose a conception of firmness for demand connections which is based more on other system issues (including carbon intensity and system peaks etc.). As such, EirGrid would welcome clarity whether it is proposed that a separate firm access methodology is to be introduced for LEU connections.

EirGrid would note that while local and system issues may align in some cases and periods, running a demand project to resolve system issues may not resolve local issues and vice versa. As such, careful consideration and additional studies would be required to assess the justification for a connection being deemed non-firm (or partially firm) and on what basis and for what reasons (system vs local issues etc.).

EirGrid would further note that the relationship of the operation of non-firm demand connections to:

(i) participation in retail and wholesale electricity markets

(ii) local flexibility markets and

(iii) in the operational processes for the system operators

would also need to be considered.

The work that EirGrid and ESB Networks are undertaking via the Joint System Operator Programme ("JSOP") on the future TSO-DSO Operating Model will be a key consideration. EirGrid welcome and encourage further engagement with the system operators on these points.

2.6 On-site generation and storage (Q. 28-30)

EirGrid has provided its views on the importance of locational signals for LEUs (with respect to proximity to renewable generation) as well as the role demand flexibility services have to play in other response sections.

2.7 Demand flexibility (Q. 31-36)

EirGrid consider that the further development of demand flexibility and energy storage will be crucial for the delivery of the 2030 climate targets. In this regard, EirGrid is of the view that suppliers and implicit demand side response can play an important role in managing the various power system needs. EirGrid support the CRU's ambition of evolving the wholesale market arrangements in ways which would encourage more effective flexible demand. EirGrid believe that approaches to improving the performance of existing resources and developing new capability can be effective in helping to meet system needs.

[9] https://cruie-live-96ca64acab2247eca8a850a7e54b-5b34f62.divio-media.com/documents/CRU2023114_Firm_Access_detailed_methodology_decision.pdf

Encouraging the participation of LEUs in the wholesale electricity markets through DSUs could provide for growth in a useful source of demand flexibility. It will be important that this flexibility is reliable and available when required, and therefore there will need to be a focus not just on capability but also on monitoring availability and performance. While it is not currently possible to schedule and dispatch demand upwards, EirGrid believe that this functionality would be worth considering and potentially suitable to different types of LEUs. EirGrid note that there is a relationship between the proposal for upward dispatch of demand, the electrification of industrial and commercial heat and the development of hydrogen electrolysers.

Such demand flexibility could be used for multiple system needs in the wholesale markets, including:

(i) capacity adequacy and managing system peak events,

(ii) energy supply and demand balancing,

(iii) decreasing renewable curtailment and

(iv) a number of system services (for example, short term reserves for frequency regulation).

It could also be used for management of congestion, voltage, and other network issues in wholesale or local markets. EirGrid believe that the focus should be on ensuring that the relevant system needs are being met by this flexibility, and approaches to reduce the carbon impact of this can be undertaken within the mechanisms to meet system needs. For instance, incentives to reduce carbon emissions are implicitly built into energy markets through the impact of carbon costs and prices on the wholesale market bidding prices.

Regarding whether demand flexibility services for new LEU connections should be on a voluntary or mandatory basis, at present demand flexibility is voluntary in the wholesale market arrangements. Sites can decide to sign up to take part in a DSU, and then will be subject to Grid Code and Trading and Settlement Code operation requirements etc. Outside of DSUs, in general there are few requirements on demand sites (even very large ones) in the Grid Code or Trading and Settlement Code around how they would need to operate (although the TSO has introduced a number of operational requirements via connection agreements, for example the 'Flexible Demand' offering). By comparison, generators above certain sizes must operate in certain ways according to Grid Code obligations and must participate in the wholesale markets (at a minimum in the balancing market, and in many cases the capacity market also). There are different requirements for different sizes and in different codes. For example, generators above 10 MW Maximum Export Capacity ("MEC") must participate in the Single Electricity Market (the "SEM"), this representing the 'de-minimis' level. There is a question as to whether a similar 'de-minimis' concept for demand sites in order to make provision of demand flexibility services in the wholesale markets mandatory would be more useful than other approaches encouraging such sites to participate on a voluntary basis in order to gain

access to the available revenues for assisting to meet system needs. EirGrid is of the view that this concept would require further consideration and engagement.

EirGrid would further note that operational issues have arisen regarding the technical performance of data centres on the system. The collective response of data centres to system faults is exacerbating disturbances on the power system via disconnection and automatic reconnection of their demand. This behaviour is already presenting some technical challenges and, without mitigation measures, further connection of demand with these characteristics will potentially increase associated risks to the secure operation of the power system. EirGrid is of the view that the development of mandatory Grid Code / Distribution Code standards, including fault ride-through capability, will be required to ensure the SOs can securely accommodate the projected growth of demand in this area, and looks forward to working with the data centre industry on this important issue.

2.8 Energy efficiency (Q. 37-39)

EirGrid has no additional comments other than the views expressed throughout this response.

2.9 Gas (Q. 40-46)

EirGrid has no specific comments at this time but are happy to engage further on the Consultation topics.

2.10 Assessment criteria (Q. 47-51)

EirGrid acknowledge that specific criteria (location, firm access and other matters included in the connection agreement etc) relating to connection policy are within the remit of CRU, and the assessment and implementation of same are the responsibility of the SOs as part of the connection offer process. EirGrid support the view that other aspects such as monitoring of emissions, or renewable energy requirements are more appropriately covered by other state organisations with the vires and capability for doing so.

EirGrid has provided further detail on the importance of a transition period and location in other response sections above.

2.11 Roles of other organisations (Q. 52-54)

EirGrid, along with other relevant bodies, play an important and well-established role in the furtherance of climate targets and objectives, with roles outlined for example in the Climate Action and Low Carbon Development Act 2015 (as amended) (the "2015 Act")[10]. The 2015 Act outlines certain requirements relating to various policy objectives, including matters relating to the decarbonisation of the electricity

[10] Climate Action and Low Carbon Development Act (2021 Amendment)

sector and the role envisaged of the TSO in that respect. Reference is also made to the related objective of mitigating greenhouse gas emissions.

The connection of large volumes of renewables onto the grid, as detailed in the SOEF, all directly (and indirectly) contribute to the decarbonisation of the electricity sector. In this regard, EirGrid is acutely aware of the importance of decarbonisation of the electricity sector and the consequential impact it will have on reducing emissions in furtherance of achieving Ireland's climate targets. As such, EirGrid has, and will continue to, undertake its role as the designated TSO in helping to achieve those targets.

EirGrid would note that any additional requirements on the TSO not mandated by the 2015 Act, for example consideration of an 'expected emissions profile' for each LEU connection application, may not align with the existing functions of the TSO and in any case would likely require additional statutory functions. There are relevant bodies in Ireland who have a specific remit in undertaking assessments of emissions during the planning and environmental licensing processes. That analysis can be technical in nature and performed in accordance with the relevant applicable law, including, amongst others, the Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU.