ELECTRICITY ASSOCIATION OF IRELAND

Data Centres & Large Energy Users

Policy Paper

Electricity Association of Ireland

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A decarbonised future powered by electricity.

Electricity Association of Ireland
Registered Office: 6 Merrion Square North, Dublin 2, D02 FF95
Registered No.443598 VAT No. IE9682114C
T +353 1 524 1046 | E info@eaireland.com | @electricityAI
www.eaireland.com

1. Introduction

Ireland has established itself as a global hub for data centres, housing significant operations for major technology firms. This positioning is underpinned by several key advantages including Ireland's cool climate, its strategic geographic location between the United States and the rest of Europe, its business-friendly environment (including favourable corporate tax regime), it being one of two English speaking EU countries, and its well educated young and mobile workforce.

Consequently, the share of total electrical consumption in Ireland represented by data centres was equal to 21% in 2023[1] with projections indicating further growth. Alongside data centres, Large Energy Users (LEUs), such as those in pharmaceuticals and manufacturing, significantly contribute to Ireland's economy.

The Electricity Association of Ireland (EAI) recognises the significant role that data centres and LEUs play in supporting Ireland's economy, job creation, and energy transition. These sectors provide vital infrastructure for Ireland's position as a global technology and industrial hub and will play a key role in industrial policy for generations to come. While recognising that the increasing energy demand from this sector requires careful management to ensure alignment with grid capacity, decarbonisation targets, and overall system reliability, with the right policies, innovation, incentives, and market design, data centres and LEUs can become key enablers of Ireland's decarbonised future, while supporting economic growth.

2. The Significance of Data Centres and LEUs

- **Economic Benefits**: Data centres[2] provide significant economic benefits by driving investment, job creation, and technological innovation. They attract substantial capital expenditure in infrastructure, supporting industries such as construction, engineering, and energy. Additionally, data centres create high-skilled employment opportunities in IT,

[1] CRU202504 LEU connection policy proposed decision.pdf

[2] A data centre, as defined by Amazon, is "a physical location that stores computing machines and their related hardware equipment. It contains the computing infrastructure that IT systems require, such as servers, data storage drives, and network equipment. It is the physical facility that stores any company's digital data".

cybersecurity, and data management. Beyond direct employment, they contribute to local communities by stimulating demand for local businesses and investing in local infrastructure.

It was reported in 2022 that "Ireland's technology sector account(ed) for €52 billion (16%) of gross value added and employ(ed) 140,000 people – equivalent to 6 per cent of total national employment with 40 per cent growth over the last five years."[3]

- **Driving Demand for Renewable Energy**: Data centres and LEUs play a pivotal role in the island of Ireland's energy landscape, influencing economic development, infrastructure planning, and renewable energy integration. While the RESS auctions are the main route to market for renewable generation projects, these large energy consumers assist in supporting demand for renewable energy. Many LEUs and data centres engage in Corporate Power Purchase Agreements (CPPAs), which provide critical financial support and play a role in developing renewable energy projects, including wind, solar, and battery storage solutions.

  According to industry estimates, half of the new wind energy capacity developed between 2020 and 2023 was financed through CPPAs. This led to just over 500 GWh of renewable energy generation over this period. While this only met 16% of the new electricity demand from data centres between 2020 and 2023[4], this percentage is expected to increase with the signing of new CPPAs.

  However, it is worth noting that Ireland is committed to a target of 80% renewables by 2030. This target is at risk and there are significant challenges ahead in meeting it based on existing and projected demand and the volume of renewable generation coming through the planning process. Bringing more demand (especially baseload demand which is typical of data centre demand profiles) will mean that more renewable generation will be required to meet the 80% target.

[3] https://enterprise.gov.ie/en/publications/publication-files/government-statement-on-the-role-of-data-centres-in-irelands-enterprise-strategy.pdf

[4] FIE_Submission_to_CRU_202504.pdf

- **Commercial and Industrial Growth**: Our members supply energy to large energy users (LEUs) and data centres. Their presence fosters opportunities for innovation in energy solutions, including demand-side flexibility, energy efficiency initiatives, and bespoke power purchase agreements (PPAs). By requiring large-scale, reliable, and often renewable energy supplies, data centres incentivise investment in grid infrastructure, energy storage, and new generation capacity, enhancing the resilience and sustainability of Ireland's energy system.

- **Contribution to Network Tariffs**: LEUs make a contribution to network costs through connection charges and Use of System tariffs, associated with the size of their connection. For example, the Public Service Obligation Levy for the 2024/25 year was determined by the CRU in their decision paper (CRU202477[5], published 31/07/2024) to be €251.79 million. This levy is allocated across three categories of customers – Domestic, Small Commercial (MIC <30 kVA), and Medium/ Large Commercial (MIC >= 30kVA). Of the total PSO levy, Medium / Large Commercial energy users pay €137.58 (€1.57/kVA), an amount equivalent to 54% of the total pot. This significant contribution supports essential grid investments needed to accommodate rising demand and renewable energy integration, making them essential participants in the energy market.

3. Key Considerations

3.1. Climate Obligations and Renewable Integration

A primary concern regarding the expansion of data centres and LEUs is Ireland's ability to meet its legally binding climate obligations while accommodating increasing energy demand. Failure to meet emissions reduction targets could potentially result in a significant fine imposed by the European Union. Ireland is committed to achieving a fifty-one percent reduction in emissions by 2030 and the electricity sector has to play its part by decarbonising rapidly and with further increases in LEU and data centre demand there could be a risk that the delay the phasing out of fossil-fuel based electricity could be delayed.

[5] 2024-25_PSO_Final_Decision_Paper_CRU202477.pdf

This risk is realised if new renewable generation is not delivered to match anticipated connection of new demand. However, the CRU proposed connection policy[6] requires that any new data centre connection requires the provision of flexible generation, onsite or proximate to the data centre, that may participate in the energy market. This generation could be a combination of renewable variable generation, flexible synchronous generation, or battery storage.

The CRU's Policy requires data centres to self-report to the System Operator annually in relation to their use of renewable energy and their sites' emissions (which will be published). Future policy iterations may provide a transition to real-time requirements for net-zero energy use, as supporting networks and market systems facilitate this.

3.2. Grid and Infrastructure Requirements

The large energy requirements from data centres and LEUs can place pressure on the grid due to the scale of network capacity they require. Rapid growth in these sectors in recent years has resulted in network capacity being allocated at a faster pace that it could be built, contributing to capacity constraints. The proposed CRU Connection Policy requires System Operators (SOs) to consider location, in respect of constrained vs unconstrained regions, when assessing data centre connection applications alongside the publication of regular up-to-date locational information (existing and outlook) in relation to availability on the network and constraint. There is also a provision for case-by-case data centre demand flexibility requirements. These measures, alongside EirGrid's progressing work on the addition of 400kv transmission infrastructure, has the potential to alleviate the current constraints.

EAI recognises the importance of assessing the impact of large increases in data centre / LEU load in order for it to be accommodated without negatively impacting on other customers or on the SO's ability to plan and manage the network. However, it is equally important that SOs receive strong and timely policy signals to accelerate the delivery of critical transmission infrastructure. Without this, the system will continue to face growing constraints.

[6] CRU2024001_Review_of_Large_Energy_Users_Connection_Policy_Consultation

4. Further EAI Recommendations

The recommendations presented by the CRU represent a step in the right direction towards integrating data centres into the energy system. The EAI recommends the following measures to ensure a more efficient and sustainable integration of these facilities.

A. **A plan-led Approach:** Develop and implement a plan-led approach to help ensure that large scale demand-side requirements, such as data centres, are accommodated in an efficient and secure manner. This plan-led approach should consider the full range of national policy objectives that require network capacity, including new housing, electrification, and decarbonisation of society. Such a plan-led and event-driven approach would provide clarity to all stakeholders on how and when individual elements of the plan would be delivered. This approach will help to provide certainty to investors and other stakeholders including regulators, supply businesses, customers, and network operators and will help ensure that limited resources (contractors, equipment, sites etc.) are properly assigned in the most timely and efficient manner.

B. **EirGrid's Approach to LEUs**: The integration of data centres must be considered within a holistic evaluation of system needs, system services, and inertia volumes. This must be in conjunction with a comprehensive consideration of the connection policy, hybrid connections, and offshore wind. The nature of a data centre's operation must be carefully considered in the context of their specific critical requirements: non-interrupted operation and no loss of secure data storage, a stable electricity power supply, and the ability to optimise the ICT equipment under stable operating conditions (the primary ones being temperature control, usually cooling of the operational environment due to the heat generated by that equipment).

C. **Decarbonisation & Net Zero Pathway**: The EAI supports a phased decarbonisation approach for data centres and LEUs. It is necessary to continue facilitating and encouraging access to renewable energy through Corporate Power Purchase Agreements (CPPAs) and

innovative solutions such as hybrid connection policies for co-located renewable assets. As discussed in the EAI's *Decarbonising the Electricity Sector*[7] policy paper, data centres are acting as a facilitator of the development of Clean Electricity Technologies. A recent report by Google[8] focusses on five technologies they believe could play a critical role in grid decarbonisation of which carbon capture and storage, hydrogen, and long-duration energy storage have potential within Ireland. It is important we see the potential opportunities presented by LEUs and data centres in the transition to a decarbonised electricity sector.

D. **24/7 Matching of LEU Demand**: We support a pathway approach towards achieving hour-by-hour reporting of the marginal carbon intensity of the grid where possible. As Ireland transitions toward a low-carbon energy system, the concept of 24/7 matching of LEU demand with renewable energy generation (requiring technologies such as long-duration energy storage to facilitate this) presents a compelling opportunity. By aligning LEU energy consumption with real-time renewable availability, there is the possibility of Ireland positioning itself as a global testbed for 24/7 carbon-free energy solutions.

E. **Capacity Market**: The increasing energy demand from LEUs reinforces the importance of a robust Capacity Remuneration Mechanism (CRM) and grid infrastructure investment. The EAI emphasises the need to ensure the CRM reflects the growing system needs and supports procurement of the capacity needed to maintain supply security. The EAI's *Investment Framework for Decarbonised Dispatchable Generation*[9] highlights the view that the capacity market needs to be implemented differently to retain and repurpose essential existing capacity and deliver the new generation capacity required for security of supply.

F. **Grid Infrastructure**: EAI recognises that the electricity system in Ireland is undergoing a period of substantial development and change. The scale and speed of demand growth

[7] EAI Decarbonising the Electricity Sector
[8] The Corporate Role in Accelerating Advanced Clean Electricity Technologies - Google Sustainability
[9] EAI-Investment-Framework -for-Decarbonised-Dispatchable-Generation

in the LEU sector, and in particular from data centres, has created significant challenges for the electricity networks. This growth must be seen in the context of other demand drivers including requirements to meet decarbonisation targets, large scale electrification, and the growing need for new housing connections.

The network system operators have already enabled growth across all sectors, including significant growth in LEU / data centre connections. These connections, which can be difficult to predict, typically involve very large amounts of network capacity being allocated to a single customer. Given the long lead times required to deliver new network capacity, spare capacity has been fully absorbed in some locations, leading to capacity constraints and longer waiting times for other customers seeking connections.

These significant demands need to be accommodated within a holistic and integrated industrial and electricity policy, as committed to within the Programme for Government. In light of accelerated policy targets relating to housing, economic growth, and climate action, the system operators are scaling up resources and investment to deliver significant network capacity growth over the next five years and beyond. This ambitious delivery programme (PR6) is focused on areas where the need is greatest and where there is known load growth. It remains the case however, that this additional capacity could be absorbed relatively quickly by unforeseen data centre or LEU requirements.

In summary, strategic investments in transmission and distribution infrastructure is necessary to prevent congestion and enhance reliability. Without timely upgrades, bottlenecks in the network could hinder renewable energy deployment, leading to curtailment and inefficiencies that undermine Ireland's decarbonisation and energy security objectives.

G. **Irish and European Competitiveness**: The EAI recognises that the Irish economy must continue to grow and remain competitive on a global stage if we are to deliver on decarbonisation targets. To achieve this, there is a need for cost-benefit analyses to support policy and regulatory decisions, technology agnostic support for carbon reduction

(which would deliver price discovery and greater value to Irish citizens), and to address the high price and volatility in retail prices for industrial electricity (which are three times higher than those in other major world economies). Ireland needs to leverage the technologies that data centres facilitate (e.g., artificial intelligence) and the circular impact they have on the economy.

5. Conclusion

The EAI believes that data centres and LEUs are an integral part of Ireland's economic and energy future. With appropriate policies and market mechanisms (with regard to other national policies that need to be delivered) these users can be effectively integrated into the system, supporting grid stability, decarbonisation, and renewable investment. For our members, data centres and LEUs offer opportunities for renewable energy development, system services innovation, and tailored energy solutions. To achieve this, we recommend:

A. A strategic plan-led approach that is cognisant of all the other national policies that need to be supported and enabled by the electricity network.
B. A clear and transparent locational grid connection and reinforcement policy (of which the CRU has already made significant steps toward).
C. Network tariff policy to help support the development of hybrid connections and energy parks that can support co-location of energy and demand.
D. Market-based incentives for demand-side flexibility.
E. Improved consideration of the needs of the system in terms of system services to better support the demands of data centres and other demand growth.
F. A phased and pragmatic decarbonisation pathway, including CCPAs and hybrid solutions.
G. Continued investment in mechanisms to support decarbonised generation and grid infrastructure, including reasonable risk-based anticipatory investment.