Ireland

Q4 2024
Market Update

Digital Dashboard
Ireland's Digital Infrastructure

23 Campuses
- 19 Small Data Centres
- 9 Standalone Data Centres
- 64 Large Data Centres

Investment
- €15 Billion Invested
- €15 Billion pipeline
- (€8 - €10 Billion at risk)

Energy & Carbon
- 1,400 MW capacity
- 2.5% of Ireland's CO_2
- €97 Million Carbon Tax

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Market Trends
Ireland's Digital Infrastructure

Power and planning policies have been the main talking points for the data centre sector in 2024. The CRU decision on Large Energy Users connections policy for electricity and gas is eagerly anticipated. Will it provide clarity for the industry? WIll private wire legislation be introduced to enable data centres to pair directly with renewable projects? A looming general election to be held at the latest by Q1 2025 may pose further uncertainty.

The EU's EED Directive reporting requirement for data centres was pushed out until May 2025 to allow for more industry engagement at a European level.

In our view, the biggest Irish data centre news in recent months was the outright refusal by South Dublin County Council for planning for an expansion of the long-established Google data centre campus in Grange Castle. It was refused on the basis of grid impact, however, it is understood that EirGrid had contracted sufficient power capacity for the development.

Around 15 other projects across the country are paused due to either lack of power or planning approval. These projects represent and investment pipeline of €8 - €10 Billion.

Construction at various sites does continue however, including by Echelon, Vantage Data Centres, Microsoft, EdgeConneX, AWS, K2 and PureDC. Ongoing investment of around €2 Billion per year is projected for the coming 4-5 years.

Outside of the Dublin Metro, a number of projects have appeared in the news. AWS announced a partnership with BNM for a potential project in the midlands. Echelon's Arklow project received the go-ahead from EirGrid whereby it will partner with a large offshore wind project. The Ennis project remains in a cycle of planning delays. A project in Naas received an RFI from Kildare County Council requesting further details regarding its power plans and engagement with PPAs.

This Bitpower Market Update provides insights into the scale of Ireland's digital infrastructure in Q4 2024.

We discuss the concept of digital campuses as a measure of scale.

We present the construction investment pipeline highlighting risks.

We detail the power, energy and carbon impact in the national context.

The wider EMEA region is seeing a surge of project announcements including a €30 billion investment by AWS, not to include Ireland. Investments in Gigawatt campuses are becoming the norm in order to power the AI future. There have been zero announcements of AI-style campuses in Ireland.

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Scale & Topology
Ireland's Data Centres

Ireland's data centres range in size from very small (500 kW) to very large (50 MW), and everything in between.

There are 19 small private or telco data centres providing local services, internat, and broadband.

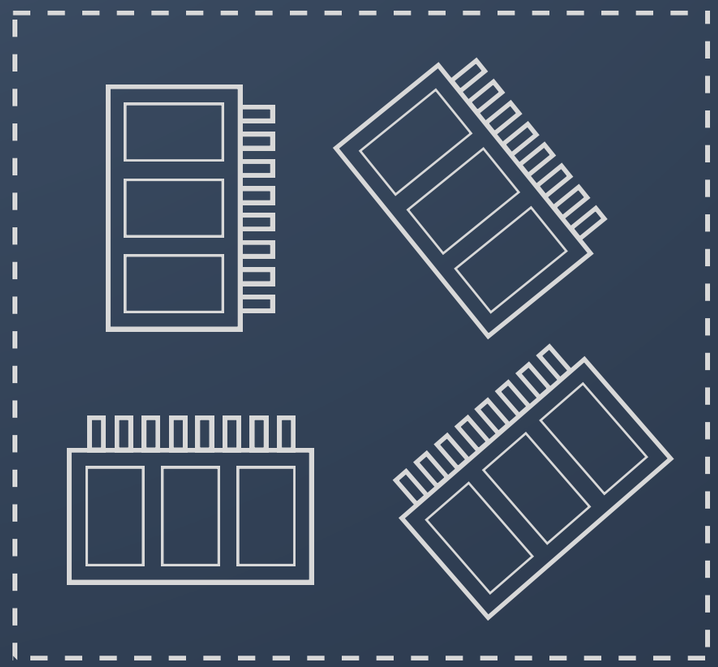
Small Local Data Centres **19**

Colo Standalone Data Centres **9**

Campus-Based Data Centres **64**

Colocation data centres are facilities that house servers and storage for multiple companies and public entities. There are 9 standalone colocation facilities in Ireland.

Most data centres are located in campuses with between two and five data centres. These comprise colocation, single-tenant, or self-build hyperscale facilities. 23 such campuses exist in various states of completion.



Campus

23 Campuses

Data proximity and latency requirements lead to data centres of all types being built close to one another. This leads to clusters of data centres. Dublin has a number of such clusters. Examples include Grange Castle, Ballycoolin, Tallaght, and Clonshaugh.

Cluster

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Investment Tracking
Construction of Data Centres

€15 Billion has been invested in building data centre facilities in Ireland. The four Hyperscale operators in Ireland (AWS, Microsoft, Meta and Google) represent €10 Billion of this investment.

€5 Billion has been by just nine other companies (K2 Data Centres, EdgeConneX, Echelon Data Centres, Equinix, Digital Realty, Keppel DC REIT, CyrusOne, Pure DC, and Vantage Data Centers).

These figures exclude IT fit-outs, which we estimate could be a further €30 Billion. They also exclude investments in land and planning that have not yet resulted in construction.

A future construction pipeline of €8 - €10 Billion exists, with a further €8 - €10 Billion at risk across at least 15 projects over the coming decade due to power constraints and planning delays.

Materialisation of the pipeline of expected investments will require significant investment by data centre developers in additional utility equipment to support the national grid in terms of flexibility. Investment in renewables either directly or through PPAs will also be required to unlock this planned investment.

Tech companies first set up operations in Ireland as far back as 1985, with Microsoft's first office in Dublin. Evolution of the data industry has seen data centres becoming the core delivery mechanism for their services.

Employment in ICT Services topped 164,900 according to latest (2022) figures from the Central Statistics Office. Hyperscales employ 17,000 people directly.

Company	Years in Ireland	Number of Employees
Microsoft	39	3,500
Google	21	5,000
AWS	20	6,500
Meta	16	2,000

€15 Billion
Invested to date

€8 - 10 Billion at Risk

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Power, Energy, CO_2

Impact of Data Centres

23 Campuses, 9 Standalone Data Centres and 19 Small Data Centres have the capacity to host well over 100,000 server racks. Each rack containins servers, switches, and storage. Demand on these computers depends on customer requirements. Every service we use on our smartphones, smart TVs, etc. depends on these servers. The use of internet, social media, e-shopping, e-health, etc all drive the demand for power use in data centres.

The total design capacity of operational data centres in Ireland in Q4 2024 is 1,400 MW. The IT power capacity of these facilities is 1,062 MW. Depending on stage of fit-out, utilisation of IT, and cooling requirements, the actual average annual draw of power would be around 50% of the total 1,400 MW. Some data centres would use more, some would use less at different times.

We estimate the total annual power consumption of Ireland's data centres using these assumptions to be about 6 TWh in 2024. Ireland's total annual electricity demand is 28 TWh. The CSO metered power consumption for data centres at 21% therefore ties in with our calculations.

Construction of 14 data centres across 6 campuses represents an additional capacity of 348 MW. Some of this will be powered from the grid and some from on-site generation, or a combination of both depending on grid requirements.

The carbon impact of electricity use in data centres depends on the carbon intensity of the electricity grid. The emissions intensity of power generation was 255 gCO2/kWh in 2023, according to the EPA. Applying this factor to 6 TWh equates to 1.53 million tonnes CO_2 (about 2.5% of Ireland's total carbon emissions).

Carbon taxes for electricity use are levied through the mechanism of the EU Emissions Trading Scheme (ETS). Credits are paid by electricity generators and passed on to customers. The costs of EU ETS credits vary according to the market. At the ETS prices for the past 12 months, data centre energy bills would include approximately €97 million in carbon taxes.

2.5% of CO_2

Energy bills contribute to RESS and Carbon Taxes. Tech companies have further commitments to procure renewable energy from projects outside of those supported by RESS. This is called "aditionality" as it supports projects that are not government subsidised.

Power Purchase Agreements (PPAs) will form a significant portion of data centre power procurement going forward. While there have been reports of individual deals over recent years, we have not tracked progress to date. AWS have committed to 800 MW of renewable projects and Microsoft to 900 MW. Others are acting too, with Keppel DC REIT, for example, already matching 97% of its demand with traceable unsubsidised renewable wind and solar.

€97 million Carbon Tax

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About Bitpower

Bitpower is a specialist data centre consultancy with a specific focus on power and sustainability. We bring local knowledge and experience to help our clients achieve their objectives. We work with data centre operators, developers, and investors to realise their projects.

Our experience spans over two decades in the industrial and regulatory ecosystem in Ireland. From optimising manufacturing facilities to working with National Authorities and the EU Commission on strategies and roadmaps for developing low carbon technologies, we have witnessed the evolution of sustainability solutions and policies.

We believe in fact-based analysis and strive to communicate complex issues in the simplest of forms.

We provide industry-leading analysis of the data hosting market in Ireland and track the scale and growth of the data industry on a quarterly basis for industry bodies. We actively participate in the growing debate about energy use and digitalisation.

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