

Hitachi ABB Power Grids response to the CRU proposed Direction to the System Operators related to Data Centre grid connection, consultation paper CRU/21/060.

Contents

- 1. Introduction 2
- 2. Innovation Opportunities 2
- 3. Mitigation Option - Connection Measures 3
- 4. Revisions 4

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1. Introduction

Hitachi ABB Power Grids is a global technology leader serving the energy and related sectors. We are committed to powering good for a sustainable energy future. Our aim is to bring affordable, clean energy and sustainable living to the world to make it fit for future generations. In Ireland we are the leading provider of data centre connections and power solutions.

We strongly believe that Ireland can lead the world in creating a secure, net zero-ready energy system for data centres. Our purpose is to help create a stronger, smarter, greener grid – for which digitisation and data are essential – and we welcome the opportunity to respond to the CRU consultation on Data Centre grid connections.

Dublin hosts many major tech headquarters for Europe, and the presence in Ireland has influenced the decision to invest in data centre solutions here in Ireland. It is welcome that CRU, is consulting on measures to ensure decarbonisation, local and regional security of electricity supply are achieved while also considering the importance of data centres to our economic development.

Digitalisation is important to the Irish economy and our recovery from the impacts of the Covid-19 pandemic over the coming years. Investment from Data Centre developers is estimated to be in the region of €7 billion in the next five years¹. In making its decision, we would recommend CRU includes a deep consideration of the benefits to the economy including wider job creation from digitalisation and data centres.

It is clear, however, from the EirGrid letter to CRU relating to Data Centre connections, that the scale of connections and challenges in constrained areas such as Dublin will need to be managed.

2. Innovation Opportunities

This does provide an opportunity for the Data Centre industry to innovate together with the Irish TSO, EirGrid, to identify the various technical solutions which can support security of supply and potentially provide flexibility services to the grid operators. This is a challenge for Ireland now, but it will in time be a global challenge that must be resolved.

We would recommend that a working group be established between EirGrid, Data Centre developers, and technology manufacturers to consider the challenges for both the transmission system operators and the Data Centre developers in order to identify the best technical solution for all parties.

Data Centre developers are focused on the question of sustainability and have values and strategic goals which are very aligned with the wider energy industry efforts to drive towards net zero carbon emissions. Data centres recognise the need to be flexible and to provide solutions to enable further grid integration while respecting the ultimate need to maintain security of supply.

Data Centre customers of Hitachi ABB Power Grids are investing in the design of sustainable back-up power solutions with low CO2 emissions, to remove the need for diesel generators. Back-up power solutions in the form of larger battery energy storage systems (BESS) are now ready to deploy and can be installed in combination with gas turbines, which can negate the need for back-up diesel generators. These BESS systems have fast response times and can meet high power requirements – as an example, Hitachi ABB Power Grids is delivering a **90 MW BESS** to be commissioned in Finland in 2022.

¹ Host in Ireland Biannual Report

In addition, hydrogen fuel cell technology is quickly becoming a viable option to further diversify the data centre power generation mix. Hitachi ABB Power Grids are collaborating with PowerCell to develop scalable, containerised MW-sized fuel cell systems. These fuel cell modules have a similar power output and physical footprint to diesel generators. An associated challenge for the fuel cell solution will be to deliver H2 to the fuel cells, which should also form part of the overall innovative solution landscape.

The working group could consider collaborative solutions for a collection of data centres, rather than individual solutions, which may be more effective and provide increased benefits to EirGrid and ESB Networks.

3. Mitigation Option - Connection Measures

As stated in the proposed decision from CRU in the consultation, the following mitigation approach is outlined.

(a) EirGrid and ESB Networks shall prioritise the processing of data centre connection applications based on:

- the location of each data centre applicant with respect to whether they are within a constrained or unconstrained region of the electricity system;
- the ability of each data centre applicant to bring onsite dispatchable generation (and/or storage) equal to or greater than their demand, which meets appropriate availability and other technical requirements as may be specified by EirGrid, in order to support security of supply; and
- the ability of each data centre applicant to provide flexibility in their demand by reducing consumption when requested to do so by the TSO in times of system constraint through the use of dispatchable on-site generation (and/or storage) which meets appropriate availability and other technical requirements as may be specified by EirGrid, in order to support security of supply;
- the ability of each data centre applicant to provide flexibility in their demand by reducing consumption when requested to do so by the TSO in times of system constraint, in order to support security of supply.

The above proposal is correctly recognising the importance of having sufficient flexibility in load demand management where required. Technical solutions are available.

In addition to the above it would be beneficial for Data Centre developers to understand what flexibility services the TSO would have an interest in, particularly if battery energy storage solutions (BESS) such as PowerStore² were to be installed.

System considerations where there are potential benefits from BESS includes use for short-term outages, demand management; flexibility in renewable power storage and dispatching; control systems for optimization of local energy mix; and the ability to support power grid during demand peaks. The benefits could include:

- Intermittent power storage, demand management, grid stabilisation
- Modular and scalable systems
- Capacity to absorb excess renewable power
- Fast-response voltage and frequency regulation delivering flexibility to the system
- Black-start and islanding capabilities

² <https://www.hitachiabb-powergrids.com/uk-ie/en/offering/solutions/grid-edge-solutions/our-offering/e-mesh/powerstore>

- Increased share of renewables usage
- Additional security of power supply and power quality
- Grid ancillary services, additional revenue streams for Data Centres

4. Revisions

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