



Gaelectric Holdings Plc.

Response Paper to:

National Infrastructure Commission call for evidence

Relating to; 4. Electricity Interconnection and Storage

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Public

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1 EXECUTIVE SUMMARY

Gaelectric Holdings Plc (“Gaelectric”) welcome the opportunity to respond to the National Infrastructure Commission’s (“NIC”) call for evidence relating the long-term infrastructure needs of the UK. Gaelectric’s response related specifically to the NICs 3rd stated challenge; namely “improving how electricity demand and supply are balanced”. Our focus in this response is primarily associated with the development of energy storage in the UK.

Our response focuses on the need to clarify the treatment of energy storage, and to explore potential for commercial and regulatory changes or incentives which would create a level playing field for energy storage. Gaelectric have previously engaged with Ofgem, National Grid and DECC relating to the need for energy storage and the barriers to entry that we perceive in our experience developing projects in the UK and Ireland.

Gaelectric are encouraged by the NIC, Ofgem and DECCs consideration of the need to understand the benefits of energy storage in an attempt to address the challenges in developing the business model for storage in the UK. Specifically we are following with particular interest the Flexibility Project launched by Ofgem in January 2015¹ and subsequently the report issued in December 2015 by Ofgem in relation to the Smart Grid Forum, specifically work-stream 6 which has identified a number of key enablers for energy storage and distributed generation².

There are a number of other workstreams ongoing which are encouraging the development and understanding of energy storage such as Smarter Network Storage Project which has identified a number of key challenges for energy storage in the UK.

Currently energy storage is not appropriately classified from a regulatory standpoint. Energy storage is neither a normal generator nor major load centre and should not therefore be treated as such. We believe that energy storage should have a distinct regulatory classification given its unique operating characteristics and benefit to the system.

The lack of direction in regard to the regulatory classification of energy storage has, in our opinion, led to inefficiency in the connection and operation for energy storage assets in the UK. Specifically Gaelectric have previously raised concern relating to double charging and commercial challenges to the operation of energy storage which prevent the emergence of a business model which remunerates energy storage for alleviating constraints and mitigates the need for T&D upgrades (either completely or by extending the life-span of existing infrastructure).

We believe a holistic approach is required to mitigate these concerns which encompasses direction for connection policy, review of ancillary service provision and their associated contractual arrangements and the treatment of the ownership model of energy storage assets.

It is clear that there is a considerable amount of work being undertaken at present to consider means to incentivise energy storage, which we fully support. We have been disappointed that over the last

¹ <https://www.ofgem.gov.uk/publications-and-updates/open-letter-facilitating-efficient-use-flexibility-sources-gb-electricity-system>

² <https://www.ofgem.gov.uk/electricity/distribution-networks/forums-seminars-and-working-groups/decc-ofgem-smart-grid-forum/workstream-six-ws6-commercial-and-regulatory-issues>

number of years these work programmes have resulted in no significant investment in energy storage at commercial scale due to the apparent barriers to entry within the market. By way of example, the capacity market was developed to incentivise plants to stay online and for new plants to develop in order to manage the capacity shortage that was envisaged over the coming decade. Notwithstanding this, Trafford power station aside, no significant new entrants and no new energy storage projects have been in a position to clear the auction. It is widely considered that clearing prices (£19.40/kW 2014, £18/kW 2015) are too low to support new investment. We believe it is now critical that the research and development programmes designed to develop storage will lead to commercial signals to carry that development into investable programmes.

In summary of our response, we make the following points;

- Energy Storage requires a distinct regulatory classification as opposed to being treated as generation or end-user.
- Double charging of levies which are imposed on energy storage should not continue.
- Energy storage should be able to access flexible grid connections and be remunerated for provision of T&D deferral services.
- Co-location of energy storage and Government supported renewables must be accommodated.
- Long term contracts for energy storage are required to create a level playing field with incumbent service providers.

1.1 Introduction to Gaelectric

Gaelectric is an independent wind, energy storage, solar and biomass developer operating within the Republic of Ireland, Northern Ireland, United Kingdom and North America. To date Gaelectric holds approximately 175MW of generating assets across 9 projects in Northern Ireland and the Republic of Ireland, and a further 40MW of 'shovel ready' projects with grid connections and full planning approvals in place. Gaelectric's near term pipeline on the island of Ireland is circa 320MW with the expectation that the company will have 400MW of wind projects generating power by the end of 2017.

Our energy storage division is currently developing Project CAES, Larne NI ("Project CAES"), a Compressed Air Energy Storage plant with a capability of 330MW of generation and 250MW of demand, both sources providing inertia to the system.

Compressed Air Energy Storage is a commercially proven technology which has been in operation since 1978 in Huntorf, Germany and since 1991 in Alabama, United States. CAES has a strong technical ability and Gaelectric have shown that it is capable of providing substantial performance and flexibility in energy and ancillary services markets, being particularly proficient in the fast frequency response products.

PMCA Consulting has carried out an independent economic impact assessment of the likely economic and socio-economic benefits in respect of the implementation of Project CAES in Larne, Co. Antrim.

The analysis found that system production cost savings from Project CAES to the SEM would range between £32m - £52m per annum, depending on the rate of progress regarding the adoption of renewable energies on the island of Ireland³.

Project CAES has been designated as a Project of Common Interest ("PCI") by the European Commission and further recommended for grant funding of up to €6.5 million under the Connecting Europe Facility⁴. The project is the only CAES PCI in Europe and the only electricity storage PCI on the island of Ireland, the UK and the Northern Seas Offshore Group of PCIs.

Gaelectric are further assessing the opportunity for the development of CAES in the UK with sites identified and analyses undertaken with respect to grid infrastructure and connection options. We continue to assess the commercial opportunity for such a project and hence look forward to engaging closely with all relevant stakeholders in addressing the barriers to entry for such a project.

Further to our development of Project CAES, Gaelectric and Tesla have announced the purchase and planned deployment of Tesla Energy's first battery power utility-scale project in Ireland, and we expect to develop MW scale demonstration project in 2016 in the Single Electricity Market (SEM) before expanding development throughout Ireland, the UK and Europe.

Both Project CAES and future battery installations will be designed in a manner which maximises ancillary service provision and can be utilised for flexible balancing of the system by TSOs, constraint management and the provision of capacity to the system.

³ <http://www.gaelectric.ie/wp-content/uploads/2015/09/107715-Gaelectric-FTI-Booklet.pdf>

⁴ <http://www.gaelectric.ie/energy-storage-projects/project-caes-larne-ni/>

2 CONSULTATION RESPONSE

1. *What changes may need to be made to the electricity market to ensure that supply and demand are balanced, whilst minimising cost to consumers, over the long-term?*

Gaelectric are of the view that more work is required to develop commercial incentives recommended in the assessment of projects such as the Smarter Network Storage Project and the Flexibility Project.

This includes the use of energy storage as a tool which can alleviate constraints and mitigate the need for costly T&D upgrades. We recommend therefore that assessment is made on the remuneration for energy storage assets which are connected to the system with a view to supporting T&D deferrals. The development of specific ancillary services is therefore integral. We echo the recommendations of the Smart Grid Forum (workstream 6) which identified that long term contracts for energy storage operators are required to create a “level playing field”.

In respect of the development of independent system operators, our concern mainly relates to the ability of system operators to contract with, and perhaps own, such assets and the regulatory barriers which exist for such activities.

In addition to the need for T&D deferrals, we believe that the flexibility of energy storage assets to provide fast acting balancing services should be strongly considered, and avenues to accommodate co-location of such assets with intermittent generation be explored.

Currently we understand that the co-location of renewable generation which is supported under a renewable support scheme is complicated by the potential impact of this co-location on the support provided to the renewable generator. The Smart Grid Forum also recommended that DECC and Ofgem produce guidance on the applicability of support renewables and storage to be co-located given the clear efficiency (in terms of both balancing and maximisation of capacity at grid connections).

2. *What are the barriers to the deployment of energy storage capacity?*

Regulatory Classification

Gaelectric have identified a number of barriers to entry to energy storage projects in the UK. Our primary concern relates to the regulatory classification of energy storage. Storage is neither normal generation nor a substantial load, and is not an end-user despite being treated as such.

The lack of clarification on the regulatory treatment of energy storage has resulted in the perverse treatment of the asset class in regard to charging, remuneration and contracting and ownership models.

The use of storage by Transmission/Distribution Network Operators is limited by the fact that storage is licenced as a generation activity as opposed to a storage specific licence. European Regulations prohibit DNOs from operating generation activities, however were storage to be licenced separately, this barrier would be removed.

Charging Methodology

Furthermore, under the current regime, the Balancing System Use of Service (BSUoS) charges represent a double charge (demand and generation) for energy storage. In addition, the Smart Grid Forum workstream 6 report stated the following;

“Electricity Storage may be double-charged for both import and export in terms of levies related to sustainability. A specific exemption for a single project has been issued by HMRC so that storage is exempt from paying the Climate Change Levy, but this approach needs to be standardised for all storage projects. Likewise there is double charging of the FiT obligation to suppliers (on entering storage and on leaving storage to the end user)”

And further;

“What is needed is the assurance that this ruling by HMRC is applicable to all future storage projects.”

Double charging in effect creates an undue barrier to entry when energy storage is compared to conventional generation. We believe this is as a result of the treatment of energy storage as an end-user rather than a distinct regulatory activity. We recommend that the recommendation made above is acted upon and that the double charging of energy storage is no longer applied.

T&D Deferral Opportunity

Energy storage has been shown to alleviate constraints on electricity systems and can result in significant T&D deferral by supporting infrastructure in two ways;

- a) By negating the requirement to build expensive infrastructure, or
- b) By extending the life-span of the existing infrastructure.

Gaelectric therefore make 2 recommendations. Firstly we believe that flexible connection policies should be extended to include and consider energy storage such that energy storage can avail of flexible connections for the provision of a T&D deferral service or indeed to mitigate the need for generator cycling and manage peak shaving activities.

Related to this is the need to ensure that commercial incentives exist to remunerate storage operators for providing T&D deferral services. Currently there is no accessible revenue stream available to storage for providing such a service despite their being a very clear system benefit of doing-so. We recommend consideration of both the flexible grid connection policy and commercial incentives for the provision of T&D deferral services.

Co-location with Government supported renewable energy

As outlined in response to Q1, Gaelectric have identified concerns in relation to the co-location of energy storage and renewable electricity in receipt of government supports. The joint operation of energy storage and such renewables creates a risk of adverse effects on the support scheme for the renewable generator despite that this would often result in the more efficient use of grid capacity, minimising imbalances and providing ancillary services in key areas of the system.

Ancillary Services Provision

It is a widely agreed position that new investment requires long term contracts in order for it to be able to compete on a level playing field with incumbent generation. This position is clearly understood by the Government given the use of 15 year contracts for capacity contracts and Renewable Obligation and Contract for Difference contracts.

Currently the ancillary service market, contracts are typically short term in nature and do not therefore support new investment. This issue is exacerbated by the fact that the capacity market has not created an incentive to support new energy storage and is widely considered as a market which will not support significant new capacity as will be required by the UK.

We recommend consideration of longer term contracts and transparent procurement of all ancillary services in the UK.

3 CONCLUSION

Gaelectric welcome the investigation by the NIC relating to energy storage and its assessment of the barriers to entry for such technology. We were encourage by Amber Rudd's comments of 18th November which she stated;

"We are also looking at removing other regulations that are holding back smart solutions, such as demand side response and storage."

The Smart Grid Forum has in its workstream 6 recommendations paper, made a number of wide ranging proposals which aim to break down the barriers to the development of energy storage and which assesses commercial incentives which can be progressed to create a level playing field for energy storage in the market. Gaelectric support such endeavours.

In our response we have highlighted a number of key areas which require immediate review including but not limited to;

- A requirement for appropriate regulatory classification of energy storage activities
- The need to ensure that double charging in levies is eradicated for energy storage
- The requirement to ensure that energy storage can access flexible grid connections which further compensate the technology for supporting T&D deferral.
- The need to support the co-location of energy storage and government supported renewables such that balancing requirements are reduced, system service provision is enhanced and the most is being made of grid capacity.
- Our assessment that long term contracts are required to ensure a level playing field in regard to ancillary service provision.

We look forward to engaging further with all relevant stakeholders in relation to the development of the business model for energy storage, primarily via the removal of barriers to entry which we have identified in this paper.

Should you have any queries in relation to this response, please do not hesitate to contact us.