



Building our industrial strategy

Summary

The Electricity Storage Network (ESN), as the UK industry group dedicated to electricity storage, welcomes the Green Paper on “Building our Industrial Strategy” and we are pleased to see the specific inclusion of electricity storage in the document. This follows the recent BEIS/Ofgem Call for Evidence, which included a significant and welcome discussion on electricity storage, though stopped short of wider industry considerations.

The ESN supports a strategy that a) specifically refers to the importance of our energy infrastructure to deliver clean, sustainable and low cost energy in order to support competitiveness of our businesses and industries that inevitably use energy; and b) also supports the role of industry to develop competitive energy / smart grid products and services for international markets. A home market place for our industry to make early sales is an important part of our positioning in export markets. To this end, we encourage Government to consider:

- Removal of current barriers to electricity storage deployment as quickly as possible and before other countries leave the UK behind.
- Production of a robust assessment of our future energy and energy system needs, highlighting necessary developments in supply chain and market / regulatory signals.
- Development of a research and innovation strategy for smart grids, including for short and long-duration storage, in collaboration with the industry.
- Support for thorough demonstration projects, assessing not only the technology but, as importantly, the commercial frameworks for investment and application.
- Placing smart grids, including electricity storage, high on the agenda for international trade missions.
- Ensuring adequate representation by UK officials and industry on the international policy and standards committees at which the requirements for product specifications are set.

The ESN is able and keen to support Government with any of the above, and to bring sectors of the electricity storage industry to the table. However, as a trade association we do not have the resource to initiate and maintain momentum, which is why we turn to Government to provide the necessary leadership as part of its wider Industrial Strategy.

Introduction

The ESN was established in 2008 as the UK industry group dedicated to electricity storage. It represents a broad range of members including electricity storage manufacturers and suppliers, developers of projects, users, electricity network operators, consultants, academic institutions, and research organisations. We strongly support UK companies to deliver solutions for the GB and SEM electricity systems and beyond. Our membership includes both British and foreign companies and organisations, and we recognise the international perspectives of the industry.

The ESN works on behalf of its members to respond to and address issues affecting the development and utilisation of electricity storage within the UK power system.

This response represents the view of the ESN as informed by our members and by our mission to promote the wider cause of electricity storage. It should not be taken as representing the specific views of individual member organisations.

Our response sets out an overview, followed by answers to the specific questions posed by the Call for Evidence as relevant to the electricity storage sector.

Overview

There is a connection between the “Call for Evidence for a Smart Flexible Energy System” and this Green Paper on “Building our Industrial Strategy” as both cover not only the current situation, but the aspiration to develop technology which will impact on the cost competitiveness and structure of our infrastructure, as well as developing a supply chain in the industry itself. As a group representing the electricity storage industry, we are pleased to see that electricity storage has prominence in both documents. We have invested much time and resources over many years to place storage on the energy agenda, and to ask for storage to be recognised as an activity in its own right. We see two areas of benefits for the United Kingdom. First, by introducing electricity storage onto the network we can see improvements in security of supply, reductions in cost for the operation of the whole system and hence reduced costs of electricity supply for domestic, commercial and industrial users, and faster and more efficient enabling of renewable and low carbon generation. Secondly, British industry can and should seize the opportunity to develop competitive energy / smart grids products and services, both to meet the home market and to supply markets overseas.

There has been some very pleasing progress in the deployment of electricity storage in the UK at large scale, as exemplified by UKPN’s Leighton Buzzard project and the more recent EFR projects, as well as at the industrial / commercial level, vehicle to grid projects and those in the home behind the meter. There is no doubt that electricity storage is now accepted as a technology ready for deployment – companies are established ready to invest in projects both in the UK and overseas. Our concern is that while the system benefits from these deployments, we need positive actions in order to realise the full potential of these projects in bringing intrinsic value to the UK economy. For example, we would wish to see more use made of British designed and manufactured energy storage systems and other technologies in storage projects and smart grid installations.

There are strong links between storage technologies and other sectors of the existing and developing energy infrastructure. Our ultimate vision is one where storage is so intertwined with other parts of the electricity industry that it does not require specialised knowledge, nor special considerations. We are not there yet. We are still in the early stages of deployment with many parties, each with their own concept for the application and benefits of storage. There are also many configurations for electricity storage, and so we advise that a “one size fits all” approach should not be adopted. A strategy that favours one application of storage, or one configuration is unlikely to benefit the whole industry. In particular, the Industrial Strategy should give full consideration to the contribution of short, medium, and long-duration electricity storage.

Ten Pillars

The green paper is set out along the lines of developing 10 pillars. We see that electricity storage has a role to play in many of these:

Investing in science, research and innovation: electricity storage is a knowledge intensive activity. Basic research into new and improved techniques is vital, the process of innovation to bring this research to commercial reality is also important. We welcome the description of energy storage as being one of the eight great technologies, and welcome the specific funding for high quality research in this area, and the identification of a new research institution to be a focal point for battery technology, energy storage and grid technology. The ESN has worked with many academic institutions, especially those who are academic members of the group, to link research with commercialisation. The Electricity Storage Network works closely with the academic led Energy Storage Research Network on areas of common interest.

Research is a worldwide activity: the UK is but one of many countries investing heavily in this topic and research and development funding must be wisely spent if it is to bring longer term benefits.

There is a need for development of a research and innovation strategy for smart grids, including for short and long-duration storage, in collaboration with the industry.

Upgrading infrastructure: there is little electricity storage within the energy sector at present. Many years ago, the Electric Power Research Institute suggested that a power system should hold at least 6% of its nominal generating capacity as electricity storage. The GB system’s pumped hydro resource is around 3% of nominal generating capacity. More recently, reports by Imperial College and others indicate that infrastructure should now include a minimum of 2 GW of new storage. In 2014, the Electricity Storage Network proposed a target of 2000 MW of new storage by 2020. This is now within sight, and every effort should be made to achieve this, but the deployment needs to happen within the context of a wider strategy including short, medium, and long-duration considerations.

There is a need for removal of current barriers to electricity storage deployment as quickly as possible in order that we achieve deployment of 2GW of storage that is of all-round benefit to the system.

Improving Procurement: we believe that public procurement, especially for the Government and Crown Estates, should include more innovative approaches to the inclusion of clean and sustainable technologies. SME’s should be encouraged to propose novel approaches. Electricity storage could be included as an explicit consideration in all new builds on the government estate – these would act both as proving grounds and demonstration sites for the technology as well as stimulating industry to ramp up production to meet the demand. These actions should be cost neutral or better, as storage and renewable generation (such as

wind or solar) are complementary, distributed generation can reduce transmission and distribution losses and costs. We recommend the extension of the use of the Small Business Innovation Research (SBIR) funding mechanism as a means of linking procurement with innovation.

We have already input extensively into considerations around the role of the System Operator (SO) on the GB electricity grid. We have set out the role that the SO can play in facilitating markets for system services such as storage technologies, in order to secure long-term best value for the GB energy system and for the GB consumer. While much of this is in Ofgem's domain, it is an illustration of how procurement mechanisms can hit the win-win of both supporting the development of British businesses and getting best value for the consumer. The Government's Industrial Strategy could usefully scour all major procurement programmes for such opportunities.

The Industrial Strategy should review the opportunities under procurement mechanisms on the Government's own estate and in the running of wider infrastructure, to facilitate the development of British industry in the area of decarbonisation, smart grids, and electricity storage.

Delivering affordable energy and clean growth: the inclusion of electricity storage on our power system should reduce the whole of the power system's operating costs, which if correctly attributed throughout the system, will lead to a reduction in the overall energy costs for all users, including those wishing to export to other markets. For this to be done most effectively, there is a need for an assessment of our long-term energy and energy system needs.

There is a need to produce a robust assessment of our future energy and energy system needs, highlighting necessary developments in supply chain and market / regulatory signals.

Delivering growth across the whole country: the best locations for electricity storage are those where there are anomalies – often caused by location. Islands, remote areas and indeed city centres are good targets for placing storage. Often local communities, particularly community energy groups, are good candidate customers for storage and these could be considered in demonstration programmes.

Developing skills: all parts of industry need a source of people with skills and experience in the core subjects of science, mathematics, engineering as well as good communication capability in English. We also need foreign language skills to take advantage of export markets. As well as engineers and scientists, we need emphasis on practical skills and the development of technician and apprentice programmes is vital if these technologies are to be deployed efficiently. The skills gap should not be overlooked, and prompt action is needed to replace the significant tranche of skilled and trained personnel in the power industry who are expected to retire within the next 10 years.

Supporting business to start and grow: our membership includes companies such as Highview Power, REDT, Moixa and Swanbarton who are all leaders with worldwide reputations in their specialist fields of liquid air energy storage, vanadium flow battery technology, domestic storage and DC systems and peer to peer electricity storage and trading. All are SMEs and in common with other small companies in the industry, they need access to capital for investment as well as credit guarantees, support for innovation, and the opportunity to demonstrate their products in the home market. Many of the ESN's members have seen the opportunity that new technology brings and have invested heavily in these new concepts; their contribution to the UK economy should not be forgotten. However, a variety of policy and fiscal measures can impede these businesses from flourishing and from mass-scale deployment, for example: planning policy, business

rates, and the absence of tax credits. It is time for these impediments to be addressed as part of the Industrial Strategy.

The Industrial Strategy, together with the BEIS/Ofgem Spring Plan, should address impediments to the development of smart grid businesses such as planning policy, business rates, absence of tax credits.

Encouraging trade and inward investment: while we agree with the encouragement of free trade, we are concerned about the low level of support given by the UK Government to the development of standards in comparison to that provided by countries such as Germany, Japan and China. We recommend that BEIS and DIT investigate how support to BSI can be increased and the development of high-quality standards for the benefit of British Industry. Safety and excellence are important watchwords in this area.

There is a need to ensure adequate representation by UK officials and industry on the international policy and standards committees at which the requirements for product specifications are set.

In addition, we are concerned by the recent suggestions in the media that the decarbonisation and anti-climate change programmes are being deprioritised in international representation by the UK. We hope this is not an accurate reflection of Government policy, and would emphasise that the UK is in the position to set the agenda for trade deals on the theme of decarbonisation and smart grids, which represent inevitable market opportunities. We believe that low carbon generation of electricity is cost effective, but its cost effectiveness depends on an understanding of whole system costs, including system flexibility and electricity market operation.

The UK should place decarbonisation and smart grids products and services, including electricity storage, high on the agenda for international trade missions.

Cultivating world leading sectors: The UK has relatively open electricity markets, and so is a natural place for the development of smart grid technologies. Using this knowledge and experience, British companies should exploit their capability in electricity storage to seek out overseas markets – not only to sell products, but also to provide engineering and consultancy services including other clean technologies. This needs to be backed by an efficient financial services sector to provide a “one stop shop”. Actions in the past, such as the DTI’s Global Watch Programmes were successful in developing interest in emerging areas such as electricity storage. In order, not to be left behind by other countries, there are two important actions for the Industrial Strategy:

- There is a need for development of a research and innovation strategy for smart grids, including for short and long-duration storage, in collaboration with the industry.
- There is a need for support through demonstration projects, which take into account not only the technology but, as importantly, the commercial frameworks for investment and application.

Creating the right local institutions: we should be looking to increase the value added from electricity storage to the British economy. We should seek to invest in local industry where our knowledge is embedded in high value products.

We now turn to commenting on the specific questions in the green paper relevant to the ESN

27. What are the most important steps the Government should take to limit energy costs over the long-term?

The energy supply chains of most interest to consumers are for electricity, gas, liquid fuels and solid fuels. The priority applications for the use of energy are in heating, transport, lighting and machinery. Within the electricity sector, the raw energy cost is low, but the costs of delivery and system balancing are not, and it is these additional costs that distort the prices paid by consumers. A re-appraisal of the electricity markets is long overdue, and the appraisal needs to include the benefits of new technologies and smart techniques including localised and distributed electricity storage.

28. How can we move towards a position in which energy is supplied by competitive markets without the requirement for on-going subsidy?

While competitive markets may seem to provide a useful reference case, such markets do not necessarily deliver the lowest cost or the most efficient systems. The recent advances in renewable energy would not have been possible without market priming actions. Where subsidies are introduced, they should include a taper to ensure that actions do not create long term distortion. There need to be new opportunities such as consumers being able to purchase energy not only from licensed suppliers, but also from others, such as peer to peer trading and community energy. New tariff models, perhaps based on subscription models instead of absolute energy consumption could be used to take account of the true costs of operating the system. As we transition towards DSO taking over from DNO, we should consider how these entities should use new technologies such as storage, and techniques such as real time control of local networks.

29. How can the Government, business and researchers work together to develop the competitive opportunities from innovation in energy and our existing industrial strengths?

We should encourage the further establishment of demonstration centres, where new technologies can be installed, displayed and operated – providing learning experiences, and demonstration opportunities for not only the UK market, but also as a shop window for our exports.

Government should consider the role of SMEs in the energy industry – look at the funding opportunities for them, remove the considerable burdens of bureaucracy and simplify the arrangements for exporting, including export guarantees, access to low costs loans of modest size, and support for trade fairs and exhibitions both in the UK and overseas.

33. How can the Government and industry collaborate to enable growth in new sectors of the future that emerge around new technologies and new business models?

We propose that Government should be innovative in its approach to industrial collaboration. The benefits of electricity storage have been brought to the government's attention over the past twenty years, but the government has only recently begun to encourage it. Other countries have been more active in promoting technology advances, which have often led to technology cost reductions. It is less common to see innovative business models developed, especially in regulated markets. For our part, the Electricity Storage Network welcomes the opportunity to engage with government departments to examine these issues, and this close contact, at the precompetitive stage is a practical solution to the needs of collaboration.

Malmesbury
Wiltshire
SN16 0NX

Tel: 01666 841262