



Eaton's Response to the Ofgem Targeted Charging Review

May 2017

Executive Summary

- Eaton strongly believe that there are steps that Ofgem and the Government should undertake, that would further realize the Government's ambitions for a low carbon, flexible energy system. Energy storage is capable of meeting the energy demands of a modern Britain, utilizing readily available, reliable technology.
- The UK Government has recognised the potential for this technology, but while there are barriers to market, it will remain stagnant in development.
- Ofgem have correctly recognized that fairness should be at the heart of the UK energy market, to both the consumer and the actors on the market. Distortions, discrimination and barriers to market access should be reduced to improve the bankability of energy storage in the UK.
- This should include the end of double charging for storage assets and refining the definition of energy storage within UK regulations.
- Eaton's recently launched xStorage Home product will be provided to UK customers (pre-orders are now being taken) completely ready to use, with all required elements including cabling and installation by a certified electrical installer at a starting price of around £4,250 + VAT and installation for 4.2KWh power units.

Introduction

Eaton welcomes the opportunity to provide a response to Ofgem's Targeted Charging Review. We welcome the steps that Ofgem has taken in recent years to look at the grid in the UK, specifically around charging and ways to reform the system to allow competition and modernize the electricity supply and distribution networks in the UK.

In particular, Eaton welcomes that recognition from Ofgem that changes to the charges in the energy storage market need to be addressed to reduce the barriers to market and disadvantages that energy storage operators have faced.

The falling cost of battery storage creates a timely opportunity to increase the use of renewables, whilst strengthening the power grid and granting both industrial users and consumers better control over their energy usage and power bill. This opportunity, combined with the development of an associated storage industry, will be realized if an open and stable regulatory environment allows power users to be fairly compensated for the value of the public good they will deliver with their storage systems.

Eaton has been working with Ofgem in recent months to ensure that the energy storage market is given fair treatment in the energy market via representations to Ofgem, the Department for Business, Energy and Industrial Strategy and other industry stakeholders. Eaton sees the Targeted Charging Review and the proposed Significant Code Review as significant opportunity to reform the issues that have prevented further penetration of energy storage in the UK energy market, due to double charging and discriminatory treatment, which have hindered such development to date.

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Eaton has a 103 year heritage, engineering power management technologies for a wide range of energy intensive industries including; road transportation, aerospace, machinery, oil and gas and electrical infrastructure in buildings.

Eaton has been present in the UK since 1946 and directly employs around 4,300 people in 31 sites across the country in high-tech manufacturing, R&D and administrative functions. Eaton's key UK manufacturing and R&D sites are located in: Doncaster, Cwmbran, Luton, Titchfield, South Molton, Sutton Coldfield and Havant.

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Eaton had 2016 sales of \$19.7 billion, employs approximately 95,000 employees and sells products to customers in more than 175 countries.

Context: Energy storage in the UK

The cost of electrical power generated by solar has dropped 85% since 2010 and wind by 60% in the same period. But the inability to store the energy produced has skewed the market, with much of the energy generated lost if it is not used immediately; curtailment of wind power generation is an increasingly frequent and costly example of this trend.

Against this backdrop, the cost of battery-based energy storage is falling faster than most analysts had predicted. This means there are now major opportunities to install the technology at both grid level and behind the meter to enable businesses and households to maximize the potential of renewables, to decarbonize the grid and ultimately reduce power bills.

The policy and regulatory regime in the UK has recently been focused on research and development into the energy storage sector. Tenders for storage capacity have been large and closed in scope, focusing on grid level supply with little transparency or flexibility. This has led to

a “feast or famine” approach and has done very little to incentivize the private market to invest in distributed “behind the meter” solutions in private homes and businesses.

Part of this issue has been exacerbated due to “double charging” of energy storage as both a generation and transmission asset; an anomaly which has prevented this low carbon technology expanding significantly within the UK market. Ofgem have recognized that this is a key issue to realizing the potential for energy storage in the UK.

Thus, Eaton believes that there is a strong case for reducing the barriers of entry to the energy storage market, that are currently demotivating companies in the UK to further develop technology and penetrate the energy market.

Redefining “storage”

As we have communicated to Government and Ofgem previously, we believe that a proportion of the issues causing the lack of development of energy storage is due to the lack of clear definition of energy storage in the regulations in the UK or the EU.

In the UK, energy storage is not currently recognised as either an activity or an asset class. The absence of a regulatory definition of energy storage has led to its classification as a generation asset. Generation assets have a very broad definition in the Electricity Act 1989 as “the generation of electricity at a relevant place”, and EU Directive 2009/72/EC similarly refers to generation as “assets that produce electricity”.

The Electricity Order 2001 expands on these definitions by stating that the technology “generates or is capable of generating electricity”. Energy storage technologies can generate electricity so are undoubtedly described in the most literal sense by these broad definitions. However, energy storage cannot generate a net positive flow of electricity to the system, and classification as generation does not recognise the potential contribution of storage to moving electricity from periods of low demand to meet peak demands.¹

A report published in October 2016 by the Energy and Climate Change Committee also found that an unclear definition for energy storage is a potential barrier to success. Present definitions made it hard to make changes. All those who gave evidence in the enquiry, supported a proposal to create a separate asset class for grid-level storage.²

Current regulations for energy storage are historic, counter-productive and prescriptive to a technology that has the potential to harness low carbon energy and re-distribute at times of greatest requirement.

¹ Gisse et al, Regulatory barriers to energy storage deployment: the UK perspective, RESTLESS, 2016, <http://www.restless.org.uk/documents/briefing-paper-1>

² ECC Select Committee, The energy revolution and future challenges for UK energy and climate change policy, Oct 2016, pg 11, http://www.publications.parliament.uk/pa/cm201617/cmselect/cmenergy/705/705.pdf?utm_source=705&utm_medium=module&utm_campaign=modulereports

The previous Government was clear that decision makers “must move quickly on addressing regulatory barriers faced by energy storage: there must be a clear definition for storage, an end to double-charging, and a separate asset class for grid-level electricity storage established”.³

We would encourage Ofgem and Government to follow the same recommendation and define grid-level energy storage as a separate asset class. This would allow access to the market and remove the majority of access barriers that operators are facing. These barriers are drastically hindering the further deployment of battery storage and allow storage to fill the gap between generation capacity and demand by providing clean demand side response services.

Reflections on Ofgem’s proposals

Following discussions with stakeholders and assessment of the UK energy market, Eaton is of strong belief that there should be significant changes made to the way that energy storage is treated, charged and defined within the UK energy market. Our thoughts are aligned with that of the Renewable Energy Association and other stakeholders in the field. At present, the energy storage market lacks adequate competition to ensure that the principles of the UK Government's energy future is achieved.

The UK market is not conducive to the potential that energy storage holds. At present, there is not enough transparency in the UK energy market and in the awarding of contracts in the transmission network to encourage investment and promote competition. Eaton strongly believe that any changes to energy regulation and any review of charges should be predicated on the principles of transparency and fairness.

Eaton is firm in their understanding that energy storage has a different economic model from generation assets, whether traditional or renewables, in that storage assets only generate value through the services they provide such as arbitrage, frequency regulation, demand-response, while real generation assets (the main function of which is turning energy from gas, nuclear etc into power) primarily provide value arising from the sale of the power they generate. An additional central element of difference is that traditional generation assets spread cash outflows throughout their life time as they need to procure fuel and maintain their installations, while renewable generation assets and storage assets cash outflows are very front-loaded as the initial capital expenditure is not followed by fuel purchases.

The combination of reliance on regulated services instead of power generation as a main source of income and of front-loading of cash outflows (mostly “Capex” instead of mixed “Capex - Opex” model) significantly impairs the capacity of storage assets owners to obtain financing.

As it is characteristically different, economically it should be treated differently as well. Lack of transparency and short contract durations are key elements in reducing the bankability and

³ The energy revolution and future challenges for UK energy and climate change policy’, ECCC, Oct 2016,
https://www.publications.parliament.uk/pa/cm201617/cmselect/cmenergy/705/705.pdf?utm_source=705&utm_medium=module&utm_campaign=modulereports

capitalization of energy storage in the UK market. Without visibility of the viability of the asset, either behind the meter or in the ancillary market, the lack of transparency erodes investor confidence. Bankability of energy storage in the UK has thus been impacted by a lack of transparency, short duration contracts and the failure to fairly address the discriminatory nature of the double charging regime.

Ofgem have correctly recognized that fairness should be at the heart of the UK energy market, to both the consumer and the actors on the market. As Ofgem have recognized, energy storage is liable to pay both demand and generation residual charges, and transmission-connected storage pays BSUoS as both demand and generation. Eaton recognizes and is in agreement with Ofgem that this is a significant disadvantage to the operators of energy storage assets as competitors utilizing similar technology, do not face the same types of double charging. In order to secure a level playing-field, we think that storage should be liable to pay only the locational demand and generation charges, the generation residual charges, and one set of BSUoS charges.

From the point of the consumer, Ofgem should ensure in this review, that consumers who do not have the means to purchase energy storage solutions are not isolated. As some energy storage solutions are private, behind the meter assets this should not limit the potential for energy storage to provide a wider “good” to the greater public. The risk in the current market regulation is that residual charges would be diverted primarily to consumer bills, who can least afford behind the meter energy storage. This is not a solution that Eaton support. We would encourage Ofgem to uphold the principle of “fairness” and ensure that charges for energy storage and residual charges are fairly applied across the grid, keeping consumers at the heart of all considerations.

Eaton have been clear and have communicated their position about raising the awareness of bankability with regard to storage for some time now. Ofgem should consider how more flexible longer term contracts, mandatory bi-directional metering either behind the meter or on the grid would help to further realize the potential of the energy storage market that up holds the principles under which this review has been taken. This will allow a significant step to be made in achieving the Government’s low carbon, flexible energy system goals.

Conclusion

The technology that is deployable today is reliable, efficient and ready to meet the needs of a modern energy system. The UK is behind Germany and Norway in utilising this technology and in order to remain competitive in the global industrial market, must allow operators to utilise energy storage.

Eaton are in agreement with Ofgem proposals and the effect that they are likely to have on the energy storage market will allow for greater consumer choice, consumer protection from unfair competitive energy markets and a reduction of consumer energy bills.

While looking at the principles of fairness, reducing distortions and proportionality and practical considerations, Eaton believe that if Ofgem were to act upon the recommendations that have

been set out in this paper, a more modern, flexible and capable energy market could be achieved in the UK.

Redefining storage within the legislation and regulations would allow for a competitive market in battery storage at both the commercial and residential level, behind and in front of the meter. The UK Government has clearly recognised the potential for this technology, but while there are barriers to market, it will remain stagnant in development.

Eaton calls on the Ofgem and the Government to properly regulate the energy storage market and push this readily available technology, from research and development into deployment across the energy market.

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