

Energy Storage Market Report

Low Carbon Network Report

2nd September 2017

Version 1

Prepared for Business Growth Hub by Regen

Executive Summary

The electricity network has undergone a fundamental shift over the last few years. Many large and old power stations have closed and a big expansion in renewable energy, primarily wind and solar PV, has resulted in a more decentralised energy system. There is a growing need for flexibility, with the government stating that a smart and flexible approach could yield benefits of £17-40 billion up to 2050. Energy storage is one of the main sources of flexibility, poised for substantial growth.

There are several energy storage technologies available; Pumped hydro currently makes up the majority of the global energy storage capacity and leads the way in large scale energy storage. Lithium-Ion is gaining dominance at smaller scales of energy storage, due to a rapid reduction in cost, primarily from the scale of Electric Vehicle (EV) manufacturing.

The policy environment has struggled to keep pace with the rapid evolution of the energy storage market. Recent announcements have been mixed for the sector, but the general direction is positive.

The commercial model for energy storage involves stacking a number of revenue streams together to make a viable project. These income streams are often short term and can be subject to change. There is no direct subsidy support for energy storage and this is unlikely to change. Ranges of funding opportunities for those involved in energy storage are available from various sources; the £246 million Faraday Challenge¹ represents the most recent high-profile example (Figure 1).

¹ BEIS, 2017 <https://www.gov.uk/government/news/business-secretary-to-establish-uk-as-world-leader-in-battery-technology-as-part-of-modern-industrial-strategy>



Figure 1: Graphic from government on launch of the £246 million Faraday challenge. Source: BEIS

At the large scale, the Enhanced Frequency Response (EFR) and the Capacity Market (CM) auctions have brought forward a large number of potential projects across the UK. In the Manchester study area there were 11 bids in total (Figure 2) and four successfully winning CM contracts (two in Greater Manchester). These sites are all due to be commissioned before 2020, located in industrial areas within a reasonable distance of the nearest substation, and are due to be developed by the same company - UK Power Reserve (UK Energy Reserve Ltd.).

At the domestic and commercial/industrial scale, there have been some significant announcements and investments in energy storage. The market is still building momentum and there is limited deployment data available.

There are a number of leading energy storage case studies in the Manchester area, which are primed to benefit significantly from the growth of energy storage. These include:

- Eaton and Manchester City FC partnership - here
- Moixa opening offices in the city - here
- Upside Energy and their Virtual Power Plant - here

There is uncertainty about the future size of the energy storage market; predictions show a very rapid growth in the energy storage market, with an early focus on battery storage for electricity. The National Grid Future Energy Scenarios² and Regen scenario forecasts show similar growth, with a large range of outcomes depending on the scenario. The Regen high growth scenario for Great Britain shows 10-12 GW and 24-44 GWh of energy storage by 2030. Respondents to the recent Western Power Distribution consultation on energy storage³, agreed with this assessment.

The first wave (now until 2020) of connected storage assets appear to be focussing on frequency response, CM, Demand Side Response and potentially other grid and network services, with some commercial/industrial and domestic energy storage installations.

There are considerable opportunities in the energy storage market for Small and Medium Enterprises (SMEs). We analysed fourteen specific areas in the main report with the potential market value and opportunity for SME involvement. From the larger list the key opportunities for SME's include:

- Energy storage feasibility

² National Grid, 2017 <http://fes.nationalgrid.com>

³ WPD, 2017 <https://www.westernpower.co.uk/About-us/Our-Business/Our-network/Strategic-network-investment/Energy-Storage.aspx>

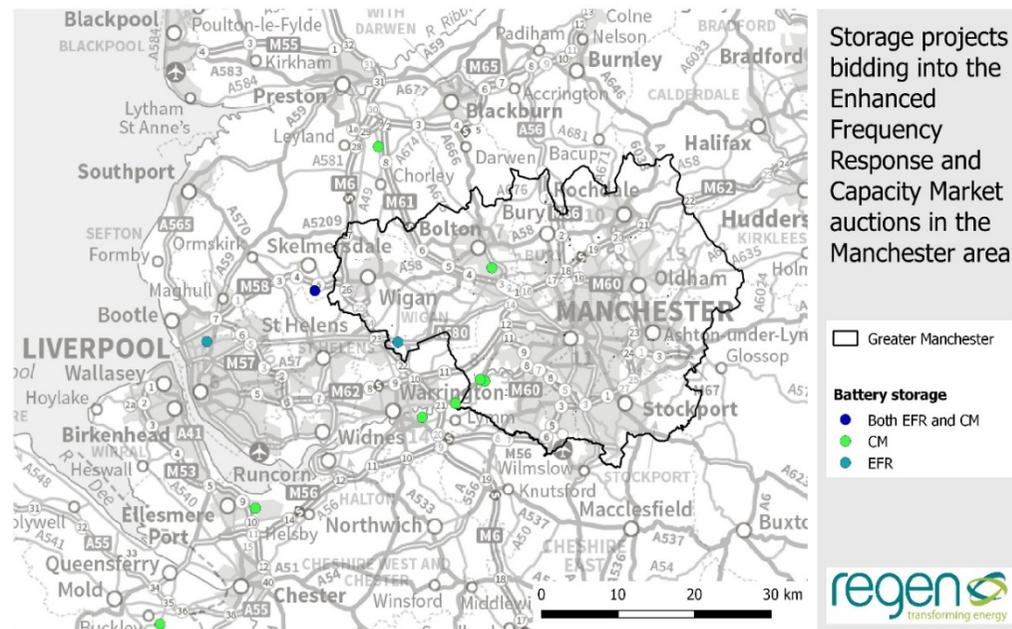


Figure 2: Energy storage projects bidding into Capacity Market (CM) and Enhanced Frequency Response (EFR) auctions in Greater Manchester and the study area

- Domestic energy storage installation (retrofit and new systems with generation)
- Control/communication systems.

However, competition - internationally and from large energy companies, as well as a lack of market access, currently make it a tough proposition for SME's.

Manchester is now known to be a hub for the energy storage market. SME's should be aware of this and develop the best opportunities in this rapidly growing sector. The predicted growth in the energy storage market means that even a small market share is a big opportunity.

For more information please contact your Low Carbon Sector Advisor.