Energy storage for peak shaving london

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Energy storage systems are increasingly becoming more common throughout the world as renewable energy becomes more widespread. A key part to making energy storage systems financially viable is energy arbitrage and peak shaving.

Here, we give you a rundown of everything you need to know about energy arbitrage and peak shaving within the storage market.

Energy arbitrage entails the purchasing of energy commodities at times of low pricing and selling it during periods of high pricing, aiming to yield profits. It relies on exploiting variations in energy prices over time or location to take advantage of market discrepancies. The objective of it is to enhance the utilisation of energy resources, including energy generation facilities, or energy storage systems, with the aim of maximising financial gains.

The first step of implementing energy arbitrage is identifying price discrepancies. Energy markets need to be monitored to identify when prices are low and high. This can be on an hourly, daily or seasonal basis. For battery energy storage systems, arbitrage usually occurs on the short-term time scale typically in intra-day or day-ahead markets.

Secondly, deploying the storage asset. Most commonly, this is in the form of a battery, but could also be pumped hydro, flow batteries or any other energy storage asset. Once online it can start to capitalise on pricing discrepancies, buying and storing energy at low prices and selling when the price increases.

Finally, optimising the arbitrage process through algorithms that implement trading strategies streamlining energy asset management and maximise market potential.

In order to reach profitability, there are a number of challenges players need to overcome.

Energy markets can be highly volatile making it challenging to predict and capitalise on price differentials effectively while simultaneously increasing potential profits in the enlarged price differentials. In addition to this, a rapidly growing energy storage market means increased competition within energy markets. This can lead to the potential of squeezed profit margins.

Moreover, getting a grid connection can cause significant delays to projects, having substantial impacts on the industry.

Furthermore, building and maintaining energy storage infrastructure requires significant upfront costs. This can deter potential investors as there is no guarantee of profits from energy arbitrage. To address this, some

counties have introduced cap and floor mechanisms that guarantee income to potential operators and investors.

Energy arbitrage and peak shaving are closely linked strategies within the sector of energy management. While they serve different purposes, they often complement each other and can be employed simultaneously by energy managers to optimise energy consumption and minimise costs.

Peak shaving strategically manages energy by reducing electricity consumption during periods of high demand. These periods often occur during certain times of the day, week, or year when electricity usage reaches its highest levels, typically due to factors such as extreme weather conditions, increased industrial activity, or high levels of residential consumption. In turn peak shaving contributes to maintaining grid stability, reliability and resilience.

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