

# ENERGY STORAGE INVESTMENT CASES

---



Can energy storage be a strategic investment under competition? These market dynamics serve as a motivation for this study to understand strategic investments in energy storage under competition, taking into account storage impact on the market price. Our work uses energy arbitrage as a test case with the intent to explore additional services in the future.



Should investors invest in energy storage technology? For those who decide to invest, limited and declining revenue prospects could lead to competing strategies of energy storage investment and operation, where investors opt for technologies with specific technical attributes in the competitive market.



Is there a realistic investment decision framework for energy storage technology? Therefore, in order to provide a more realistic investment decisions framework for energy storage technology, this study develops a sequential investment decision model based on real options theory, which can consider policy, technological innovation, and market uncertainties.



Can multiple energy storage investors invest in heterogeneous storage technologies? Our work studies the strategic investment behavior among multiple energy storage investors in CAISO. These investors can choose to invest in heterogeneous storage technologies. At the beginning of an investment horizon, each investor decides the invested energy and power capacities.



How to choose the best energy storage investment scheme? By solving for the investment threshold and investment opportunity value under various uncertainties and different strategies, the optimal investment scheme can be obtained. Finally, to verify the validity of the model, it is applied to investment decisions for energy storage participation in China's peaking auxiliary service market.

# ENERGY STORAGE INVESTMENT CASES

---



What are the factors affecting energy storage technology investment? In addition, there are also many uncertain factors in technological innovation and market related to energy storage technology investment. On the one hand, Technological innovations appear at random points in time and investors are unable to make decisions between adopting existing and new technologies.



In Q4 2023, renewable energy company Octopus Investments Australia, which is majority owned by the UK-based Octopus Group, acquired the Blackstone Battery Energy Storage System. With an expected enterprise a?|



Electrical energy storage (EES) has a critical role to play in future low-carbon electricity systems [14, 30]. To limit global warming to below 2 °C, generation from intermittent a?|



Top Energy Storage Use Cases across 10 Industries in 2023 & 2024 1. Utilities. Energy storage systems play a crucial role in balancing supply and demand, integrating renewable energy sources, and improving grid a?|

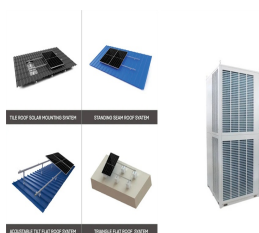


Ultimately, it is a combination of different factors that indicate energy storage arbitrage potential: price spread, available flexibility options for the analyzed study cases, and a?|

# ENERGY STORAGE INVESTMENT CASES



1 Department for Energy Security and Net Zero and Ofgem, "Long Duration Electricity Storage: Technical Decision Document", available here. 2 Department for Energy Security and Net Zero, Ofgem and Michael Shanks a?|



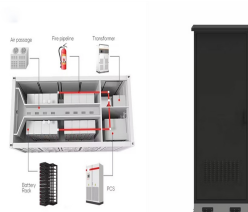
Sources of revenue for energy storage. Owners of energy storage systems can tap into diversified power market products to capture revenues. So-called "revenue stacking" from diverse sources is critical for the business a?|



Smart investors know it pays to look beneath the surface. On the face of it, the global renewables sector is on a high, buoyed by a record US\$1.8t investment in clean energy in 2023 1 which saw the biggest ever absolute increase in new a?|



Balducci et al. (2018b) demonstrated the breadth of benefits associated with energy storage by using an electro thermal life model to evaluate how energy storage could be used to defer investment in a 7.55 kilometre, 69 kilovolt (kV) a?|



Tamarindo's Energy Storage Report brings you a run-down of the 10 biggest challenges facing storage investors; Levels of global investment in energy storage are soaring. Projections from BloombergNEF indicate that in a?|



"1. Make long-term investments in fundamental and responsible energy storage technology research. 2. Target strategic, high-impact use cases for energy storage technologies. 3. Improve energy storage implementation a?|

# ENERGY STORAGE INVESTMENT CASES



Therefore, we should also look at the grid investment plans of each country. Figure 2 shows the size of the grid queues, which represent the total capacity of energy projects pending connection to the electricity grid, including a?)



We have modelled grid-scale battery economics in Europe, USA, LATAM, and APAC, and across a number of business cases and revenue streams a?? merchant wholesale and ancillary markets, long-term capacity a?)



Join our upcoming webinar on the Italian BESS investment case. Topic: "A new model" a?? how the MACSE mechanism is set to turbo charge Italian storage investment. Time & access: Wed 24th Apr 10:00 GMT (11:00 CET) a?)



Long-Duration Energy Storage (LDES) systems are modular large-scale energy storage solutions that can discharge over long periods of time, generally more than eight hours. These solutions are optimally adapted to a?)



Given the complexity of BESS investment, EY has ranked the attractiveness of the 10 top global battery investment markets. The ranking a?? which takes into account factors such as installed capacity and pipeline, as a?)