

# Shared energy storage control strategy

Can shared energy management systems be used by multiple consumers?

Abstract: With the advancement of technology in energy storage systems (ESS) coupled with PV, research on energy management systems is actively being conducted. However, due to the high investment costs associated with ESS, shared ESS used by multiple consumers has emerged as a current solution.

What is shared energy storage?

Shared energy storage involves multiple agents, objectives, and constraints. Its configuration and operation require careful coordination and decision-making, with attention to market dynamics, contract structuring, and revenue sharing .,

How can shared energy storage services be optimized?

A multi-agent model for distributed shared energy storage services is proposed. A tri-level model is designed for optimizing shared energy storage allocation. A hybrid solution combining analytical and heuristic methods is developed. A comparative analysis reveals shared energy storage's features and advantages.

How to constrain the capacity power of distributed shared energy storage?

To constrain the capacity power of the distributed shared energy storage, the big-M method is employed by multiplying  $U_{e s, i}^{p o s}(t)$  by a sufficiently large integer  $M$ . (5)  $P_{e s s, i}^{m i n} U_{e s, i}^{p o s} \leq P_{e s, i}^{m a x} \leq M U_{e s, i}^{p o s}$   $E_{e s s, i}^{m i n} U_{e s, i}^{p o s} \leq E_{e s, i}^{m a x} \leq M U_{e s, i}^{p o s}$

Does shared energy storage support the green energy transition?

This study proposes a shared energy storage strategy for renewable energy station clusters to address fossil fuel dependence and support the green energy transition. By leveraging the spatiotemporal complementarities of storage demands, the approach improves system performance and output tracking.

Can a shared battery energy storage system provide ancillary service?

This paper proposes a framework for using a shared battery energy storage system (BESS) to undertake the PFR obligations for multiple wind and photovoltaic (PV) power plants and provide commercial automatic generation control (AGC) service in the ancillary service market at the same time.

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With the rapid growth of intermittent renewable energy sources, it is critical to ensure that renewable power generators have the capability to perform primary frequency response (PFR). ...

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