

The impact of energy storage projects on the surrounding areas



Overview

Can energy storage technologies improve urban energy performance?

Summary of findings and limitations The case study's results, summarized in Table 7, demonstrated that the scope and economic potential of different energy storage technologies and configurations (single and hybrid) for improving the energy performance of an urban energy community depends on (and varies with) its built context (form and function).

Does urban context influence energy storage prospects?

Case study The case study intends to demonstrate the merits of the analytical framework and exhibit the influence of urban context on energy storage prospects. It evaluates and compares the techno-economic potential of ESSs (of single and hybrid types) for improving the performance of energy communities of different urban built types.

What is the economic potential of energy storage type?

Economic potential of energy storage type varies with the built context. Li-ion batteries are economically viable solution for self-sufficiency improvement. Reversible fuel cells are suitable as a long-term storage solution.

What is community energy storage?

In urban areas, community energy storage serves various purposes including increasing self-consumption, enabling the seamless integration of intermittent renewables, and providing economic incentives (Barabino et al., 2023; Koirala et al., 2018; Zhang et al., 2023).

How does battery storage affect the environment?

While battery storage facilitates the integration of intermittent renewables like solar and wind by providing grid stabilization and energy storage capabilities, its environmental benefits may be compromised by factors such as energy-intensive manufacturing processes and reliance on non-renewable resources.

Does community energy storage meet performance objectives?

Previous studies on community energy storage have largely focused on system design and operations to meet certain performance objectives such as maximum self-sufficiency (Dorahaki et al., 2023; Fan et al., 2022; Guo et al., 2021; Kang, et al., 2023, 2023; Tostado-Véliz et al., 2022).

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