

# The cost of electricity for the entire life cycle of energy storage





## Overview

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Large-scale deployment of intermittent renewable energy (namely wind energy and solar PV) may entail new challenges in power systems and more volatility in power prices in liberalized electricity markets. En.

What is a life cycle cost?

The life cycle cost (LCC) refers to the ratio of the total cost of the energy storage system to the cumulative transmission power throughout the life cycle, and measures the economy of the unit discharge power. The calculation process of the life cycle cost of electricity is shown in Figure 2.

Are mechanical energy storage systems cost-efficient?

The results indicated that mechanical energy storage systems, namely PHS and CAES, are still the most cost-efficient options for bulk energy storage. PHS and CAES approximately add 54 and 71 €/MWh respectively, to the cost of charging power. The project's environmental permitting costs and contingency may increase the costs, however.

What are energy related costs?

Energy related costs include all the costs undertaken to build energy storage banks or reservoirs, expressed per unit of stored or delivered energy (€/kWh). In this manner, cost of PCS and storage device are decoupled to estimate the contribution of each part more explicitly in TCC calculations.

What is the cheapest energy storage system?

In terms of TCC (total capital cost), underground CAES (with 890 €/kW) offers the most economical alternative for bulk energy storage, while SMES and SCES are the cheapest options in power quality applications. However, the cost data for these electro-magnetic EES systems are rather limited and for small-scale applications.



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Full Life-Cycle Cost Analysis of Energy Storage Systems

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