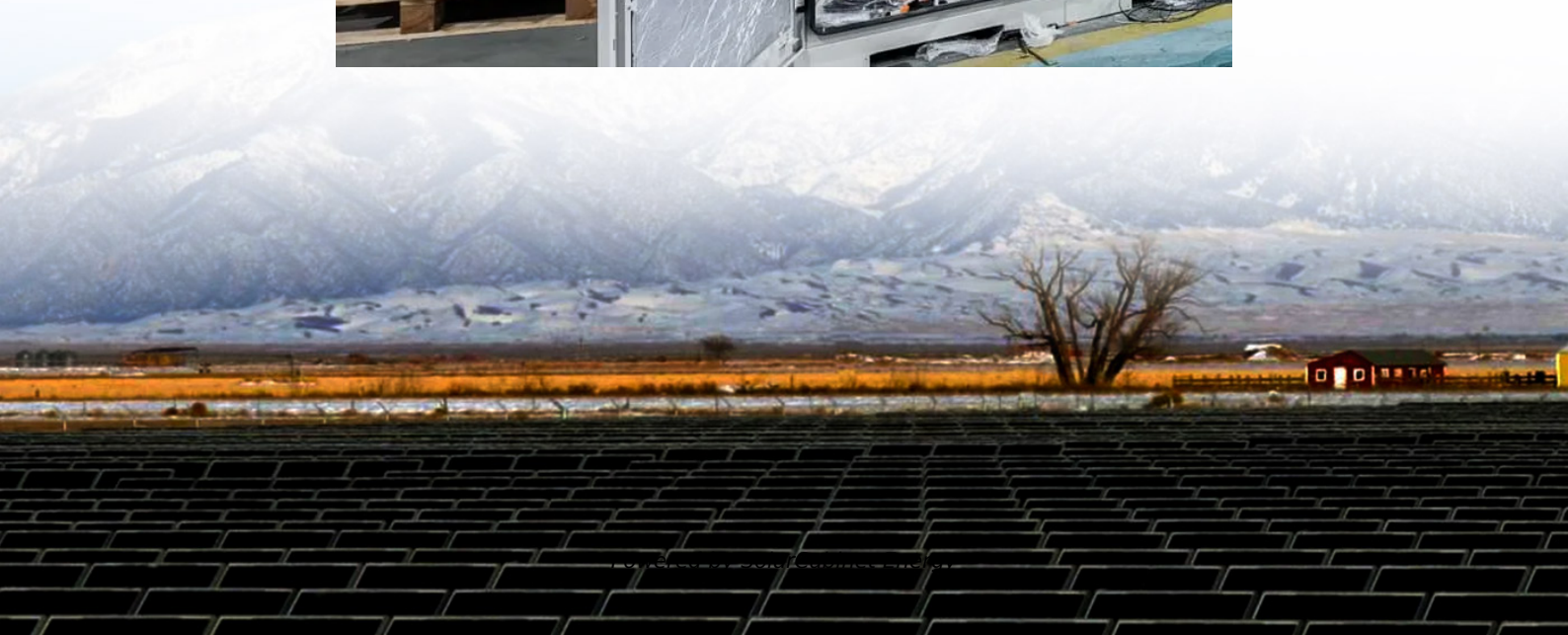


Analysis of the cost composition of base station energy storage





Overview

What are base year costs for utility-scale battery energy storage systems?

Base year costs for utility-scale battery energy storage systems (BESSs) are based on a bottom-up cost model using the data and methodology for utility-scale BESS in (Ramasamy et al., 2023). The bottom-up BESS model accounts for major components, including the LIB pack, the inverter, and the balance of system (BOS) needed for the installation.

Are mechanical energy storage systems a cost-efficient option for bulk energy storage?

In the calculation of LCC, the effect of uncertainties is different and can affect the results by 5–17% in most of the examined cases. The results indicated that mechanical energy storage systems, namely PHS and CAES, are still the most cost-efficient options for bulk energy storage.

Which energy storage technologies are included in the 2020 cost and performance assessment?

The 2020 Cost and Performance Assessment provided installed costs for six energy storage technologies: lithium-ion (Li-ion) batteries, lead-acid batteries, vanadium redox flow batteries, pumped storage hydro, compressed-air energy storage, and hydrogen energy storage.

How much does a compressed air energy storage system cost?

The current cost of compressed air energy storage systems is between US\$500-1,000/kWh. Supercapacitor energy storage cost: Supercapacitor is a high-power density energy storage device, and its cost is mainly composed of hardware costs, including equipment such as capacitors and control systems.

Are recycling and decommissioning included in the cost and performance assessment?

Recycling and decommissioning are included as additional costs for Li-ion,



redox flow, and lead-acid technologies. The 2020 Cost and Performance Assessment analyzed energy storage systems from 2 to 10 hours. The 2022 Cost and Performance Assessment analyzes storage system at additional 24- and 100-hour durations.

Do battery storage technologies use financial assumptions?

The battery storage technologies do not calculate levelized cost of energy (LCOE) or levelized cost of storage (LCOS) and so do not use financial assumptions. Therefore, all parameters are the same for the research and development (R&D) and Markets & Policies Financials cases.



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[Utility-Scale Battery Storage . Electricity . 2024 . ATB . NREL](#)

The Storage Futures Study (Augustine and Blair, 2021) describes how a greater share of this cost reduction comes from the battery pack cost component with fewer cost reductions in BOS, ...



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