

## ContainerPower Energy Solutions

# Cost ratio of large energy storage containers



## Overview

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How important is understanding energy storage capabilities?

Understanding the capabilities of each energy storage is as important as understanding its costs.

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 has the energy storage industry changed over time?

The energy storage industry has expanded globally as costs continue to fall and opportunities in consumer, transportation, and grid applications are defined. As the rapid evolution of the industry continues, it has become increasingly important to understand how varying technologies compare in terms of cost and performance.

Will additional storage technologies be added?

Additional storage technologies will be added as representative cost and performance metrics are verified. The interactive figure below presents results on the total installed ESS cost ranges by technology, year, power capacity (MW), and duration (hr).

How much does a storage system cost?

The cost estimates provided were for systems with durations of 27 and 45 s . This work assumes an E/P ratio of 0.0124. The capital cost is \$ 401/kW or \$ 32,365/kWh at an E/P ratio of 0.0124. Note that assuming a maximum of 4.5 Wh/kg, for 45-s storage, the maximum power density is 360 W/kg.

What is LCoS in electrochemical energy storage?

Fig. 2. Comparative cost analysis of different electrochemical energy storage technologies. a, Levelized costs of storage (LCOS) for different project lifetimes (5 to 25 years) for Li-ion, LA, NaS, and VRF batteries. b, LCOS for different energy capacities (20 to 160 MWh) with the four batteries, and the power capacity is set to 20 MW.

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