Batteries' Role in the Energy Transition

Batteries are a key enabler of the energy transition, being crucial to electrifying transport and providing grid energy storage. In both cases, costs are required to fall to accelerate their adoption. Battery cost reduction ($/kWh) will be enabled by decreasing material costs, decreasing manufacturing costs, and increasing energy density (specific energy).

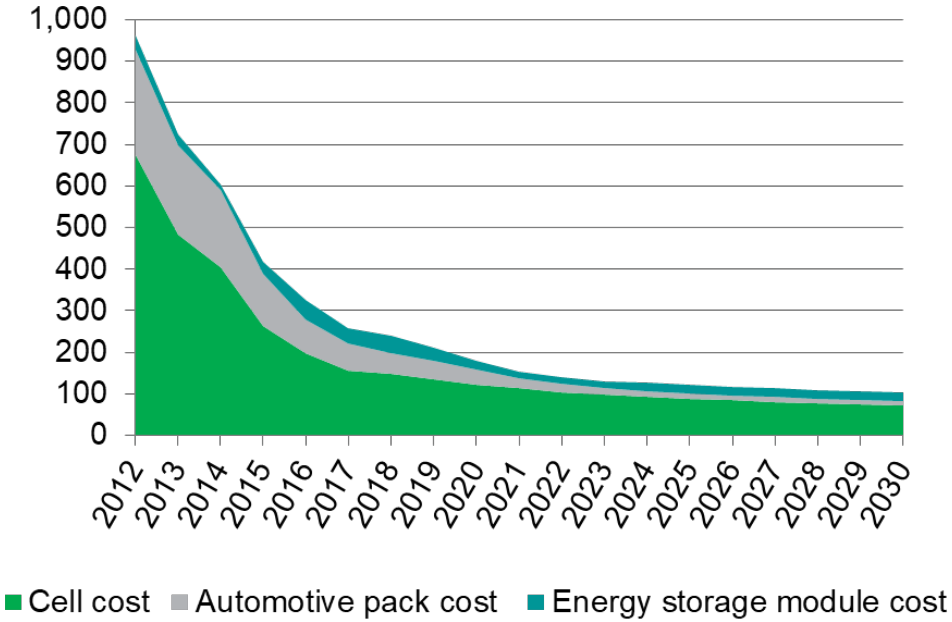
ihsmarkit.com/batteries

Automotive battery pack to reach below $100/kWh in 2026, with LFP being the cheapest technology

Average cell costs to fall below $100/kWh in 2023

Due to much smaller production volumes, energy storage modules will not reach below $100/kWh until the end of 2030

Li-ion battery cell versus automotive pack and energy storage module by weighted average cost ($/kWh)



Notes: weighted average is deduced based on IHS Markit's Battery Market Tracker; all costs are in real 2019 USD
Source: IHS Markit

Key metrics for battery cost reduction

Material costs

$

The cost of constituent materials in a conventional Li-ion battery cell, which is largely subject to fluctuations in the prices of metals that are used as active materials for electrodes

Manufacturing cost

$

A major contributor to battery cell cost as well as the main driver for cost reduction, benefiting from increased manufacturing scale (plant size), improved yield rate, and production efficiency

Energy density

kWh

The evolution of battery technology enables end-market users to store more energy at a given mass or volume; future development of which depends upon technology advancements

Source: IHS Markit