

Are battery storage Investments economically viable?

It is important to examine the economic viability of battery storage investments. Here the authors introduced the Levelized Cost of Energy Storage metric to estimate the breakeven cost for energy storage and found that behind-the-meter storage installations will be financially advantageous in both Germany and California.

Will energy storage prices continue to decline?

Turnkey prices for front-of-the-meter energy storage systems are expected to continue falling, but the rate of decline will not be as steep as it has been in the past, according to a new report from GTM Research. The report predicts that storage system prices will decline at an annual rate of 8% through 2022.

How much does energy storage cost?

Assuming  $N = 365$  charging/discharging events, a 10-year useful life of the energy storage component, a 5% cost of capital, a 5% round-trip efficiency loss, and a battery storage capacity degradation rate of 1% annually, the corresponding levelized cost figures are  $LCOEC = \$0.067$  per kWh and  $LCOPC = \$0.206$  per kW for 2019.

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.

Can stationary energy storage improve grid reliability?

Although once considered the missing link for high levels of grid-tied renewable electricity, stationary energy storage is no longer seen as a barrier, but rather a real opportunity to identify the most cost-effective technologies for increasing grid reliability, resilience, and demand management.

What is the levelized cost of energy storage (LCOEs) metric?

The Levelized Cost of Energy Storage (LCOES) metric examined in this paper captures the unit cost of storing energy, subject to the system not charging, or discharging, power beyond its rated capacity at any point in time.

# GTM RESEARCH ENERGY STORAGE COSTS



Apart from the above-mentioned reason, there is also the issue of exactly how meaningful a reduction of around \$0.20 per watt in module prices (from \$0.62 per watt at the end of 2012 to \$0.42 per



The economics of commercial energy storage in the US. Source: GTM Research. Commercial energy storage economics are attractive today in seven US states, but according to GTM Research's latest report, that number is to increase to 19 states by 2021, as storage costs fall. "In this report, we wanted to provide an outlook for demand-charge-based ???



Much of the price decrease is due to the falling costs of lithium-ion batteries; from 2010 to 2016 battery costs for electric vehicles (similar to the technology used for storage) fell 73 percent. A recent GTM Research report estimates that the price of energy storage systems will fall 8 percent annually through 2022.



the use of intelligent energy storage management systems (ESMS). GTM Research estimates that the U.S. market for energy storage management systems will grow tenfold through 2019, creating a significant opportunity for players in the space. ???



? Financing and transaction costs - at current interest rates, these can be around 20% of total project costs. 1) Total battery energy storage project costs average \$580k/MW. 68% of battery project costs range between \$400k/MW and \$700k/MW. When exclusively considering two-hour sites the median of battery project costs are \$650k/MW.



According to GTM Research, 21 U.S. states now have 20 megawatts of energy storage projects proposed, in construction or deployed. In fact, 10 U.S. states have pipelines greater than 100 megawatts.

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Marcos Gonzales Harsha, with guidance and support from the Energy Storage Subcommittee of the Research Technology Investment Committee, co-chaired by Alex Fitzsimmons, Deputy Assistant Potential for future battery technology cost reductions 19 Figure . 2018 global lead???acid battery deployment by application (% GWh)



As part of the U.S. Department of Energy's (DOE's) Energy Storage Grand Challenge (ESGC), this report summarizes published literature on the current and projected markets for the global deployment of seven energy storage technologies in the ???



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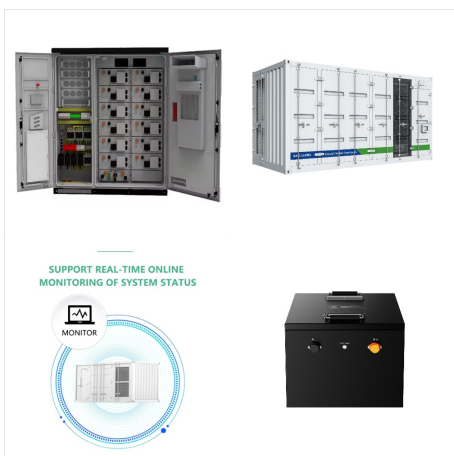
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According to GTM Research and the Energy Storage Association's newly released U.S. Energy Storage Monitor 2017 Year in Review, 100 megawatt-hours of grid-connected energy storage were deployed



Today, grid-scale energy storage balance-of-system costs average \$670 per kilowatt. These costs include hardware like inverters and containers, soft costs like customer acquisition and



The Winners Are Set to Be Announced for the Energy Storage Awards! Energy Storage Awards, 21 November 2024, Hilton London Bankside GTM Research has said. GTM: Front-of-meter cost declines will slow as industry grows 6x over by 2022 of design and engineering will be among the key drivers in bringing down balance-of-system hardware and

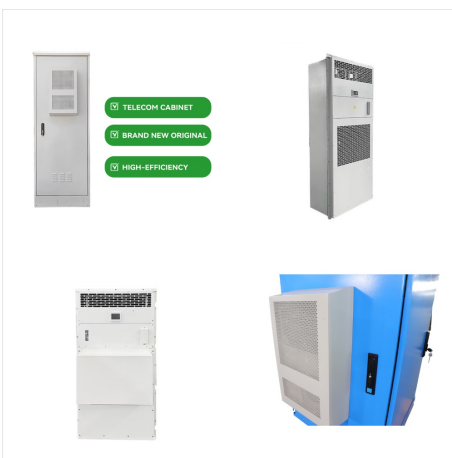
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GTM Focus is a free-to-attend 90-minute virtual series covering the most pressing challenges and opportunities in clean energy. Wood Mackenzie's Energy Storage research team will connect with



According to the latest report from GTM Research, Grid-Scale Energy Storage Balance of Systems 2015-2020: Architectures, Costs and Players, costs will fall 41 percent over the next five years.



The cost of installing energy storage systems is expected to decline 41 percent over the next five years as key components get cheaper, according to a report by GTM Research.. Balance-of-system costs, including hardware, labor and customer acquisition, will fall below \$400 a kW by 2020, from an average of \$670 per kW now for grid-scale storage systems, GTM said ???

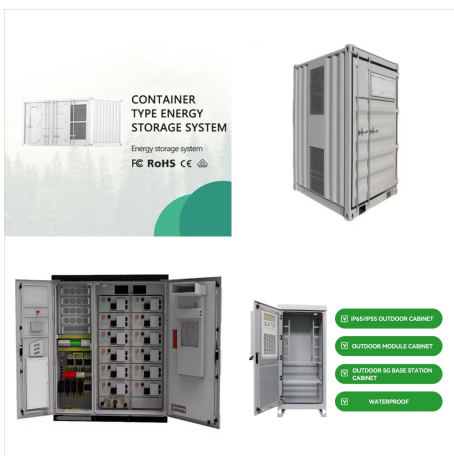
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By 2021, commercial storage economics will be favorable for certain utility tariffs with demand charges as low as \$11 per kilowatt per month. Large commercial customers in 17 U.S. states



"As energy storage costs come down and demand charges go up, the combination of the two will make for better or more favorable economic returns for C&I storage," Ravi Manghani, GTM Research



Cost and Performance Assessment provides the levelized cost of storage (LCOS). The two metrics determine the average price that a unit of energy output would need to be sold at to cover all project costs inclusive of taxes, financing, operations and maintenance, and others.