

Will Spain be a Bess hotbed?

LCP Delta and Santander have combined their expertise to analyse the opportunity for investment in battery energy storage systems (BESS) in Spain. With a high degree of solar generation in 2030, coupled with limited levels of interconnection, the Spanish market looks set to be a BESS hotbed once policy conditions adapt.

How much does a Bess 2H cost?

During most of the years, this difference is between EUR40 and EUR50 per MWh. Two configurations analysed: 100 MW BESS with 2 hours and 4 hours of storage capacity. For the BESS 2h, market net revenues begin with around 9 MEUR in 2024 and decrease to 3.4 MEUR in 2038.

How much money does a Bess project get?

The six new BESS projects were amongst 1.9GWh of energy storage projects awarded grant funding in a recent tender called PERTE (Spanish strategic projects for the economic recovery and transition, in English) and will receive a total of EUR37.5 million (US\$41 million) in funding towards their deployment.

How does Spain support the development of energy storage?

To support this growth, Spain has implemented several policies and regulations that encourage the development of energy storage. The Energy Storage Strategy 2030, promoted by the Ministry for the Ecological Transition and the Demographic Challenge, is one of the key initiatives. This strategy aims to achieve a storage capacity of 20 GW by 2030.

Why is energy storage a problem in Spain?

Despite having a clear strategy and ambitious goals in the sector of energy storage in Spain, subsidies and direct aid specific to these technologies remain limited. This creates a significant barrier for companies and individuals interested in investing in energy storage solutions.

Does Spain need more battery storage?

This means that Spanish storage faces limited competition from cross-border flexibility. The Spanish Government have recognised the need for storage and set a target of 22GW by 2030. We expect this to be predominantly battery storage.



138,000 MWh per year and 429,000 MWh per year, with peak demands of approximately 30 MW and 105 MW, respectively. 2. Where BESS is cost-effective, the value of combined PV plus BESS is greater than the value of standalone PV plus the value of standalone BESS. Replacing diesel for backup generation with PV+BESS can add over \$6,000 per one



The report adopts a two-pronged approach to estimate the cost of Li-ion based MW scale battery storage systems in India. The report takes the case of solar projects in Nevada, which are coming online in 2021, with 12-13% solar energy used to charge the battery, and PPA prices in the range of \$0.032-\$0.037/kWh.



Its latest report did not, however, provide actual BESS pricing figures as previous ones did. In February, it said that the prices paid by US buyers of a 20-foot DC container from China in 2024 would fall 18% to US\$148 per kWh, down from US\$180 per kWh in 2023.



The cost of a 1 MWh BESS can range from \$500,000 to \$1.5 million or more, depending on these factors. 2. Operating and Maintenance Costs. The operating and maintenance costs of a 1 MWh BESS include the cost of electricity for charging the batteries, the cost of cooling and other ancillary systems, and the cost of maintenance and repair services.



The disbursement of funds will extend up to 2030-31 in 5 tranches. The cost of BESS system is anticipated to be in the range of ??? 2.40 to ??? 2.20 Crore/MWh during the period 2023-26 for development of BESS capacity of 4,000 MWh, which translates into Capital Cost of ??? 9,400 Crores with a Budget support of ??? 3,760 Crores.



Battery energy storage systems (BESS) provide an advanced technological solution that allows renewable forms of energy to be stored and distributed when consumers need power. A BESS is typically used in electricity grids, electric vehicles, solar power installations and smart homes, relying on one or more batteries with stored electrical energy.



Instead, we have focused on general cost trends - so you will find data on the following: Total project costs. How containerised BESS costs change over time. Grid connection costs. Balance of Plant (BOP) costs. Operation and maintenance (O& M) costs. And the time taken for projects to progress from construction to commercial operations.



The results show that under the current empirical estimation of the installation cost and lifetime (approximately 138??73 ???/MWh, 10??15 years), the battery wear cost resulting from degradation would prevent BESS from being profitable for energy arbitrage in most of the European electricity markets.



This study shows that battery electricity storage systems offer enormous deployment and cost-reduction potential. By 2030, total installed costs could fall between 50% and 60% (and battery cell costs by even more), driven by optimisation of manufacturing facilities, combined with better combinations and reduced use of materials.





However, industry estimates suggest that the cost of a 1 MW lithium-ion battery storage system can range from \$300 to \$600 per kWh, depending on the factors mentioned above. For a more accurate estimate of ???



Currently, the cost of battery-based energy storage in India is INR 10.18/kWh, as discovered in a SECI auction for 500 MW/1000 MWh BESS. The government has launched viability gap funding and Production-Linked ???



Energy Capacity (MWh) indicates the total amount of energy a BESS can store and subsequently deliver over time. It defines the duration for which the system can supply power before recharging is necessary. For instance, a BESS with an energy capacity of 20 MWh can provide 10 MW of power continuously for 2 hours (since  $10 \text{ MW} \times 2 \text{ hours} = 20 \text{ MWh}$ ).



Future Years: In the 2024 ATB, the FOM costs and the VOM costs remain constant at the values listed above for all scenarios. Capacity Factor. The cost and performance of the battery systems are based on an assumption of approximately one cycle per day. Therefore, a 4-hour device has an expected capacity factor of 16.7% ( $4/24 = 0.167$ ), and a 2-hour device has an expected ???



The consultancy and market intelligence firm provided the update in a long-form article by Dan Shreve, VP of market intelligence, which will be published in the next edition (38) of PV Tech Power, Solar Media's quarterly journal for the downstream solar and storage industries, later this month.. It means the price for a BESS DC container ??? comprising lithium iron ???



A Goldman Sachs report from February 2024 indicates an average price of \$115 per kWh for EV batteries. However, these figures primarily relate to battery cells. Total project costs are influenced by factors such as location, development, construction, installation, and economies of scale. In my model, I've used a CAPEX estimate of 180kEUR/MW.



Deloitte's analysis of BESS project revenues in Spain. | Image: Deloitte cost of ???150,000 (\$163,000)/MWh of capacity would start generating positive returns with intraday electricity price spreads of between ???40/MWh and ???45/MWh, estimated the accountant. In the case of standalone projects, the capex of the 35 projects that have



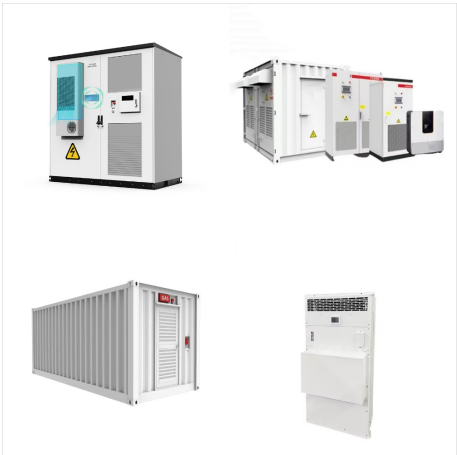
In this Energy Storage News article, CEA forecasts an 18% price decline for containerized Battery Energy Storage System (BESS) solutions in the US by 2024, with 20-foot DC container costs reducing to an average of \$148/kWh. This trend of decreasing prices is attributed to automation advancements,



This in part reflects greater BESS capacity on the system as well as a less pronounced impact of solar. It also reflects fully saturated GB ancillary service markets. Day-ahead price spreads capturable by 2 hour duration BESS recovered from below 40 ?/MWh in Feb to around 70 ?/MWh in Aug. BESS revenues have also been supported by:



The document discusses the potential market for battery energy storage systems (BESS) in Spain. Key drivers of the BESS market in Spain include the growing solar and wind power markets, which are expected to reach 39.2 GW and ???

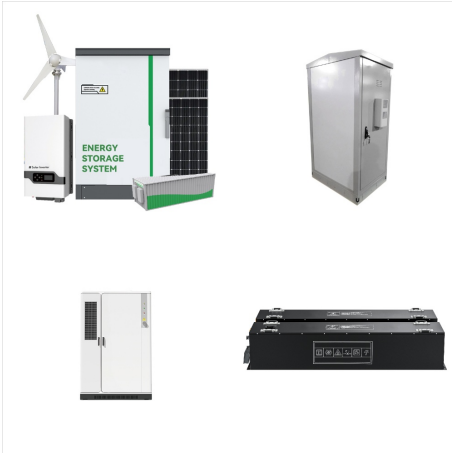


However, industry estimates suggest that the cost of a 1 MW lithium-ion battery storage system can range from \$300 to \$600 per kWh, depending on the factors mentioned above. For a more accurate estimate of the costs associated with a 1 MW battery storage system, it's essential to consider site-specific factors and consult with experienced



(BESS) is an electrochemical device that charges (or collects energy) from in the costs of battery technology, have enabled BESS to play an . increasing role in the power system in recent years. As prices for BESS Energy (MWh) Power (MW) Year Installed. 0 50 100 150 200 250





Cost total(\$) = Cost pcs(\$) + Cost storage(\$) When, the unit costs of the subsystems are known, and the storage capacity in kW is known, it is possible to rewrite the total cost in terms of the power rating:  
 Cost system (\$/kW) = Cost total(\$) / P(kW) Energy Storage Systems Cost Update by Sandia NL 2011  
 Cost Analysis: BESS - Capital Costs



Projected Utility-Scale BESS Costs: Table 1.  
 Capital Cost Components for Utility-Scale Storage (4-Hour Duration, 240-MWh) Model Component  
 \$/kWh \$/kW: Lithium-ion Battery: 192: 768: Battery Central Inverter FOM costs are ???



5 ? A further 10 thermal storage sites will receive  
 ???6.48 million and add 88.35 MW/591.27 MWh of capacity to Spain's grid. All the projects will be operational in either 2025 or 2026. The ???



This harmonized LCOS methodology predicts second-life BESS costs at 234???278 (\$/MWh) for a 15-year project period, costlier than the harmonized results for a new BESS at 211 (\$/MWh). Despite having a higher LCOS, the upfront costs for second-life BESS are 64.3???78.9% of new systems" costs. Results for second-life BESS are highly sensitive to



The Crimson BESS project in California, the largest that was commissioned in 2022 anywhere in the world at 350MW/1,400MWh. Image: Axiom Infrastructure / Canadian Solar Inc. The result was a 270% increase in lithium carbonate costs from Q3 2021 to Q4 2022. The removal of China's New Energy Vehicle incentive in 2023, lingering range



The market energy storage in Spain, particularly in relation to the BESS systems (Battery Energy Storage Systems), is undergoing a dynamic and accelerated evolution. This transformation is driven by the growing need to ???



Carbon intensity rates: Hard coal = 0.83 tCO<sub>2</sub>eq/MWh of generated electricity. Fossil gas = 0.37 tCO<sub>2</sub>eq/MWh of generated electricity; Variable Operating and Maintenance costs for both hard coal and fossil gas = ???2/MWh (converted to ?/MWh for the UK). Wind and Solar Levelised Cost of Electricity (LCOE)