

# BESS cost breakdown in New Zealand 2030





## Overview

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per kilowatt-hour (kWh) stored. As of recent data, the average cost of a BESS is approximately \$400-\$600 per kWh due to economies of scale. For instance, utility-scale projects benefit from bulk purchasing and reduced per-unit costs compared to residential installations. Costs can vary depending on

The US National Renewable Energy Laboratory (NREL) has updated its long-term lithium-ion battery energy storage system (BESS) costs through to 2050, with costs potentially halving over this decade. The national laboratory provided the analysis in its 'Cost Projections for Utility-Scale Battery

Small-scale lithium-ion residential battery systems in the German market suggest that between 2014 and 2020, battery energy storage systems (BESS) prices fell by 71%, to USD 776/kWh. With their rapid cost declines, the role of BESS for stationary and transport applications is gaining prominence.

The long-term lithium-ion battery energy storage system (BESS) costs could halve over this decade, as per the "Cost Projections for Utility-Scale Battery Storage: 2023 Update" report by US National Renewable Energy Laboratory (NREL). The report forecasts the future capital expenditure (capex) costs.

The cheapest version of the new technology is estimated to cost about NZ\$8000. The Waikato Battery Team's system would add financial value to manufacturers of batteries, to people doing quality control on purchased batteries, and to other battery researchers at universities and industry. The



The price arbitrage opportunity which can be realised by running a BESS (either alone or co-located with generation like a solar farm), coupled with decreasing building costs, presents a compelling business case. There are benefits both at the large 'grid scale' end of town and for consumers using. Will Bess costs fall this year?

The most important takeaway is that the NREL estimates that BESS costs will start to fall this year in its 'low' and 'mid' cost projections, with an increase over the next few years forecast in its 'high' scenario, visualised in the graph above.

How much will Bess cost fall in 2022?

This broadly matches up with recent analysis by BloombergNEF which found that BESS costs have fallen 2% in the last six months, as well as anecdotal evidence of reductions after spikes in 2022. Compared to 2022, the national laboratory says the BESS costs will fall 47%, 32% and 16% by 2030 in its low, mid and high cost projections, respectively.

Will Bess become a cog in New Zealand's energy landscape?

We expect that BESS will also become an increasingly important cog in New Zealand's broader energy landscape and that we will see utility-scale solar projects incorporating batteries as a means of providing dispatchable generation during peak demand and enhancing grid stability.

Why is Bess important in New Zealand?

The uptake of BESS in New Zealand is particularly important given that it can help to solve one of New Zealand's biggest energy challenges - meeting peak demand. In recent years, there have been ongoing concerns as to the reliability of New Zealand's energy supply following blackouts in 2021.

When is the first Bess project commissioned in New Zealand?

Whilst amendments were first made to New Zealand's Electricity Industry Participation Code 2010 (the Code) in 2018 to facilitate grid-scale BESS, the first significant (35MW) BESS project was not commissioned until March 2024.

How does a Bess project make money?

There are two key direct revenue streams for a standalone BESS project: energy arbitrage and ancillary services. Energy arbitrage involves purchasing



electricity to charge the batteries when wholesale prices are low and supplying that energy back to the grid when wholesale prices are higher.



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### [BESS costs could fall 47% by 2030, says NREL](#)

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### [How much does it cost to build a battery energy](#)

...

How much does it cost to build a battery in 2024? Modo Energy's industry survey reveals key Capex, O& M, and connection cost benchmarks for BESS projects.



### **Applying levelized cost of storage methodology to utility-scale ...**

One barrier to adoption is the lack of meaningful cost estimates of second-life BESS. Thus, this study develops a model for estimating the Levelized Cost of Storage (LCOS) ...



### [White paper BATTERY ENERGY STORAGE SYSTEMS ...](#)

The majority of newly installed large-scale electricity storage systems in recent years utilise lithium-ion chemistries for increased grid



resiliency and sustainability. The capacity of lithium ...



Battery Energy Storage System Market Size

The Battery Energy Storage System (BESS) Market is expected to reach USD 76.69 billion in 2025 and grow at a CAGR of 17.56% to reach USD 172.17 billion by 2030. Contemporary Amperex Technology Co. Ltd. (CATL), ...

BESS in North America\_Whitepaper\_Final Draft

As costs continue to fall and utilities become more comfortable with the technology, BESS will be increasingly competitive as a source of new capacity--replacing traditional gas peakers. Joint ...



UK BESS Outlook 2025: Key Developments to Watch

This legislation could impact how BESS projects are developed and approved, potentially leading to new compliance requirements for operators. Clean Power 2030 and ...





### 4-hour duration BESS in Australia's NEM to be more profitable

4-hour BESS in 2026 to earn an average of AU\$263,000/MW It is important to highlight that the capital expenditure (CAPEX) for 4-hour batteries is expected to decrease by ...



### [Updated May 2020 Battery Energy Storage Overview](#)

will be on stationary electro-chemical batteries. This covers battery costs and growth in overall BESS capacity. Lithium-ion (li-ion) batteries have become the dominant form for new BESS ...

### [Cost Projections for Utility-Scale Battery Storage](#)

Figure ES-1 shows the low, mid, and high cost projections developed in this work (on a normalized basis) relative to the published values. Figure ES-2 shows the overall capital cost ...



### Declining battery costs to boost adoption of battery energy

The decline in battery costs over the past decade leading up to 2021 helped reduce the cost of energy storage and adoption of BESS projects globally. While the prices ...



### **BESS in Germany 2025 and Beyond:**

Energy storage is vital for integrating renewable energy, ensuring reliability of power supply, and reducing greenhouse gas emissions. BESS stands out for its affordability, driven by ...

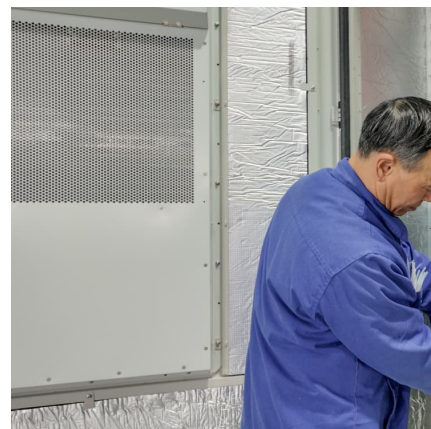


### [Residential Battery Storage , Electricity , 2024 , ATB](#)

We assume residential BESS component costs decline by an additional 25% from 2030 to 2050, similar to the assumption used in the ATB utility-scale BESS cost projections in the 2022 ATB (Cole and Frazier, 2020).

### **NREL Study Forecasts Significant Decline in BESS Costs by 2030**

A noteworthy finding is that the National Renewable Energy Laboratory (NREL) estimates a decline in BESS costs commencing this year in its low and mid-cost projections, ...





### cost of bess per mwh

performance values and provide current cost ranges; 2) increase fidelity of the individual cost elements comprising a technology; 3) provide cost ranges and estimates for storage cost ...

### Growing Markets for Grid-Connected Battery Storage ...

To maintain reliability over the coming decades, India's grid requires substantial new capabilities. Planners already recognize the important role that BESS can play in cost-effectively meeting grid needs: the Central ...

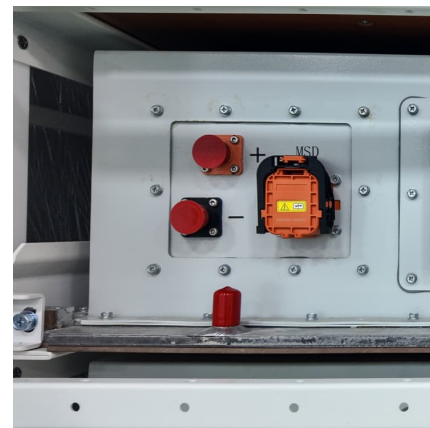


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### BEC 2050: A deep dive into 2030 energy targets for New ...

This deep-dive offers a perspective on New Zealand's energy targets based on two story-lines. They are neither right nor wrong, and are by no means the only two scenarios for New ...





### What is the Cost of BESS per MW? Trends and 2025 Forecast

The cost per MW of a BESS is set by a number of factors, including battery chemistry, installation complexity, balance of system (BOS) materials, and government ...

### Big opportunities for BESS in 2025

Downward pricing will feed through to reduced levelised cost of storage (LCoS), with new BESS projects, due online in 2025 and the next few years able to capitalise on much cheaper batteries. However, older assets face ...



### Commercial Battery Storage , Electricity , 2023 , ATB , NREL

Current Year (2022): The Current Year (2022) cost breakdown is taken from (Ramasamy et al., 2022) and is in 2021 USD. Within the ATB Data spreadsheet, costs are separated into energy ...

### [Battery Energy Storage Systems Report](#)

This information was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, ...



### New Zealand bess cost breakdown

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### [US-made battery storage to be cost-competitive with ...](#)

Rosamond Central BESS, located in Kern County, California. The US BESS market looks set to benefit greatly from both upstream and downstream tax credit incentives under the Inflation Reduction Act. Image: ...



### NREL STUDY FORECASTS SIGNIFICANT DECLINE IN BESS COSTS BY 2030

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### bess cost breakdown



Base year costs for commercial and industrial BESS are based on NREL's bottom-up BESS cost model using the data and methodology of (Ramasamy et al., 2022 This cost breakdown is ...



### Energy storage costs

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 ...

### Utility-Scale Battery Storage , Electricity , 2021 , ATB

In this way, the cost projections capture the rapid projected decline in battery costs and account for component costs decreasing at different rates in the future. Figure 3 shows the resulting utility-scale BESS future cost projections for the ...



### Enabling renewable energy with battery energy

We expect utility-scale BESS, which already accounts for the bulk of new annual capacity, to grow around 29 percent per year for the rest of this decade--the fastest of the three segments. The 450 to 620 gigawatt-hours ...



### Utility-Scale Battery Storage , Electricity , 2022 , ATB , NREL

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### [New Zealand welcomes first big battery to national grid](#)

New Zealand's transition to a renewable energy future has taken a significant step forward with the nation's first grid-scale battery energy storage project now offering injectable reserves to

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