



## The Shifting Dynamics of Energy Storage Procurement

*A recent Ascend Analytics webinar found the relationship between renewables/energy storage developers and offtakers in California is quickly changing.*

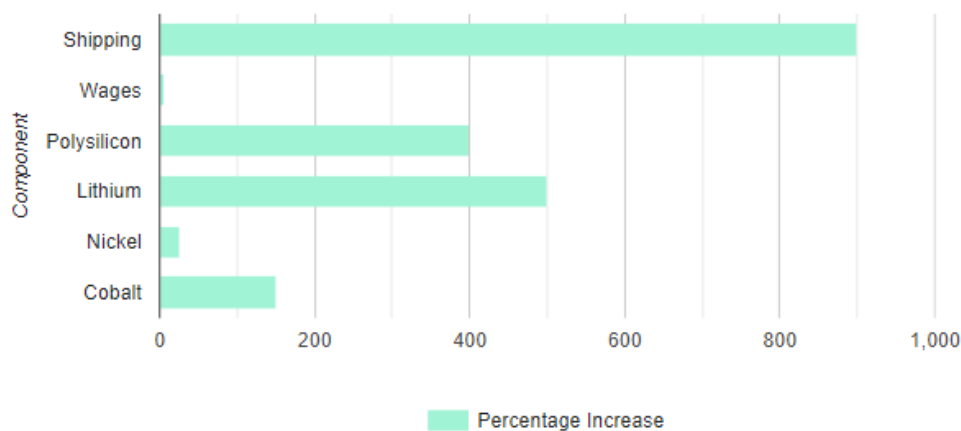


Mounting pressure on supply chains will see the Californian market for energy storage – by far the largest in the US – undergo fundamental change over the next five years, energy markets software service company Ascend Analytics advised February 17th 2022.

At an online webinar it hosted on the medium-term outlook for the procurement of renewable energy and energy storage in the CAISO region, the Boulder, CO-based company highlighted how the accelerating supply/demand imbalance for lithium-ion battery technology was turning the relationship between clients and suppliers on its head.

### Rising Prices

As demand for lithium, cobalt, and nickel threatens to outstrip global capacity to mine the minerals by multiple factors over the next five years, the price of those commodities has already shot up. Cobalt became 150% more expensive over the course of 2021, while the price of lithium rose by almost 500% (see bar chart).



Increase in renewable and battery supply chain prices in 2021. Source: Ascend Analytics.

### **CPUC Procurement Order**

At the same time, the large Californian utilities and community choice aggregators (CCAs) are expected to meet the requirements of a procurement order that the California Public Utilities Commission (CPUC) approved last year for a further 11.5GW of clean energy – 1GW of it long-duration storage – by the end of 2026.

California is therefore beginning to shift from a buyer's market to a seller's market.

### **Disequilibrium**

"There's going to be a lag between this boom in demand and the ability to supply that," explained David Millar, Ascend's Managing Director for Resource Planning and Procurement Services.

"This disequilibrium is going to endure through 2025, and prices are going to have to go up."

Ascend forecasts that the supply/demand imbalance will see the annual revenue requirement for battery storage projects in California with a discharge duration of four hours increase to slightly below USD250/kw-yr in 2023 before falling back to around USD150/kw-yr by 2030.

### **Pressure on PPAs**

The extraordinary surge in supply chain costs – including the prices charged by battery-cell manufacturers – has put immense pressure on many of the power purchase agreements (PPAs) that storage developers in California have signed over the past two years.

"We have been seeing a lot of projects either being delayed or backing out of offers – and losing bid deposits – because there is no way for them to control these costs," Millar confirmed.

While more flexibility on the terms of PPAs – with clauses in the contracts to make provision for appropriate indexing – may help to some degree, hedging against huge surges in commodity prices will prove difficult, if not impossible.

### **Impact on Rate Payers**

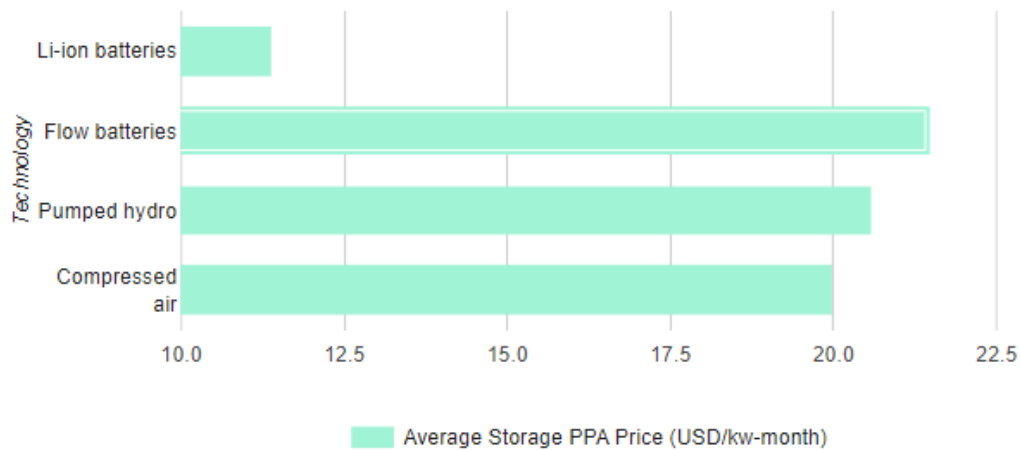
Utilities, CCAs, and other offtakers are certainly not going to sign open checks for developers to pass on any such hike in their costs. This is because the utilities and CCAs would need back-to-back assurances from CPUC that they could make commensurate adjustments to the tariffs they are allowed to charge their rate payers.

To what extent CPUC will be prepared to oblige electricity consumers to pay higher tariffs in the interest of advancing state policy on renewable energy remains to be seen. However, the utilities would undoubtedly challenge any CPUC ruling that obliged them to absorb all – or the lion's share – of the additional costs involved.

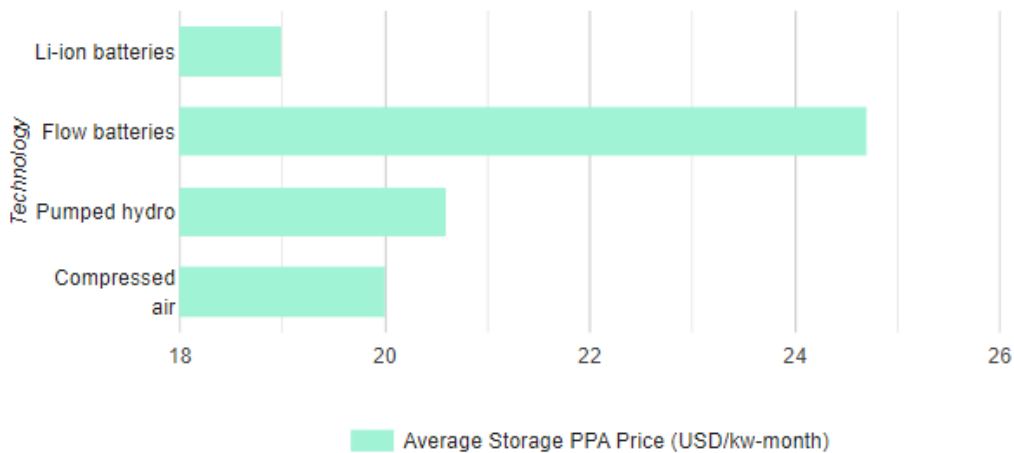
### **Alternative Technologies**

It also seems inevitable that energy storage developers in the CAISO region will have to start looking more urgently at alternatives to lithium-ion batteries, as demand from giant auto-makers around the world will soon account for almost 90% of the technology's available capacity.

Ascend pointed out that alternative technologies such as flow batteries, compressed air, and pumped hydro are potentially competitive options for storage with a duration of eight hours or more – they are currently only 6%-30% more expensive than lithium-ion equivalents in this application against a much larger premium of 77%-90% for four-hour storage (see bar charts).



Average Storage PPA Price (USD/kw-month) for 4 hours duration (average prices across multiple RFOs).  
Source: Ascend Analytics.



Average Storage PPA Price (USD/kw-month) for 8 hours duration (average prices across multiple RFOs).  
Source: Ascend Analytics.

### CC Power RFO

It was nevertheless notable that most of the top ten bids in the recent California Community Power (CC Power) RFO for long-duration energy storage were all based on lithium-ion and that the selected winner – [Rev Renewables](#) – is contracted for 69MW of eight-hour storage using lithium-ion batteries.

Andrew Cavenagh, Volatility, 03-01-22