Lack of CAISO Market Price Volatility is Discouraging Energy Storage

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A drop off in price volatility is bad news for energy storage resources.

The current operation of California's transmission system appears to be suppressing price volatility in the state's power market in a development that is discouraging the deployment of energy storage systems.

A recent analysis by Ascend Analytics shows that there has been a dramatic decline in such volatility in the California Independent System Operator (CAISO) region between 2017 and 2021, despite a 36% increase in solar generating capacity that has taken place over that time – a trend that would normally be expected to generate greater variation in price movements over 24-hour periods.

Disappearing Volatility
"What we've seen with price volatility is that it's fallen off a cliff," confirmed Dr. Brent Nelson, Director of Market Intelligence at Ascend Analytics. "If we look at 2021, virtually all that volatility seen before the onset of the Covid pandemic in 2020 has disappeared."

Over-Procurement
At the same time, however, spreads between real-time and day-ahead prices around sunrise and sunset have actually widened – a strong indication that there is over-procurement on the part of the system operator in the day-ahead market.

While such over-procurement (of predominantly fossil-fuelled dispatchable generation) reflects an understandable caution on the behalf of the system operator to ensure grid stability and reliability, Nelson said the practice was obscuring important market signals that would otherwise indicate the value of storage and show where additional energy storage capacity was needed.

Choke Points
He added that this was particularly critical in California, where the geography – mainly mountains – created a number of natural 'choke' points in the transmission system.

There is also the issue of recoverable start-up costs and bid cost recovery payments for thermal plants, which have been rising since 2017 but which are not visible to the wholesale market – and so obscure some of the potential value that energy storage facilities could provide.

New Clean Capacity

These unintended consequences of CAISO's current market policy will be a further issue for the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) to address, as they consider what actions will be necessary to ensure the state meets its target (under CPUC's Mid-Term Reliability Order of June 2021) of bringing a further 11.5GW of clean generating capacity online between 2023 and 2026.

As energy storage of one form or another will have to account for the overwhelming majority of that capacity, the two regulators will want to remove any potential impediments to its deployment as a matter of urgency.

Until then, the resource adequacy (RA) value of storage will have to rise to compensate for the suppressed volatility.