

THE ECONOMICS OF HYBRID STORAGE

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Hybrid storage – the process that leverages the flexibility of behind-the-meter resources to support grid services – is dramatically less expensive than other generation or storage options, plus it has other benefits. On the price side, Enbala has found that our hybrid storage solution typically costs as much as six times less than peaker plants and more than a third less than utility-scale storage options. By the numbers, that means utilities would spend some \$900 per kW for a peaker, \$500 per kW for utility-scale battery storage and \$150 per kW for Enbala.



System efficiency for a peaking plant varies by load and heat rate, but, for fossil-fuel-based plants, it typically runs around 33 percent and has remained virtually unchanged for four decades, according to the U.S. Environmental Protection Agency.

Battery system efficiency falls due to conversions, which often is only 85 percent to 90 percent or less of the stored energy being returned under ideal conditions. While this may seem relatively efficient, it can make a big difference. In seven to 10 storage cycles, the entire capacity of the storage system will be lost. What's more, when energy is returned to the AC grid with an inverter, the voltage provided by the inverter is assumed to match the grid voltage. This condition isn't typical, so return efficiencies often are less than 70 percent. Where storage/return cycles occur frequently, the cost of loss is large.

Enbala's platform doesn't have these issues. There's no conversion or heat rate, so system efficiency is high. In fact, it's nearly 100 percent efficient.

Ramping capability with Enbala can be fast or slow, as needed. This flexibility matches the capabilities of various power plant resources and exceeds the always-fast ramp rate of battery energy storage. What's more, Enbala's platform can be used continuously; it's always available to provide grid support, and that support can last for hours. Battery storage options offer limited operational longevity, and they may only be available for energy shifting in time spans measured in minutes.

Enbala also leverages decentralized resources, which puts the solution close to the problem when you're trying to support the grid against voltage swings on feeder lines.

Plus, Enbala can be used for a full suite of grid-supportive services. These include energy, capacity, regulation, demand reduction, renewable firming and distribution-system support. Even peakers can't do that. They're mostly used for energy, capacity and regulation. And, remember, peakers cost six times more per kilowatt than the Enbala solution.

Topics: Distributed energy resource management, Solar, battery storage