

Energy storage for demand response philippines bin

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As a country of more than 7,000 islands with a lagging power system and some of the highest electricity prices in Asia, one might expect the Philippines to be a hotspot for energy storage.

Although widespread deployment of energy storage in the Philippines is yet to come, there are some significant drivers, both on and off-grid, that are already attracting energy storage players to this emerging market.

As a tropical archipelago with few fossil fuel resources, the Philippines faces unique energy challenges. According to the Philippines Department of Energy (DOE) 49% of installed capacity relied on imported oil and coal in 2011, leaving Filipinos highly exposed to international price volatility. This is especially true in rural islands, where microgrids are powered primarily through diesel generators.

The Philippines is also expected to undergo significant demand growth. By 2030, projected demand is expected to be 29.3 GW, a 60% increase from 2012, according to a KPMG report from 2013.

Filipinos are also concerned about the effects of climate change. Because the Philippines is densely populated near coastlines and is highly reliant on agriculture, it faces some of the most serious consequences of climate change. This reality has driven the Philippines to search for clean energy solutions that are resilient to extreme climate events.

In this context, the Philippines are actively promoting an energy reform agenda that aims to ensure energy security, improve energy prices, and develop sustainability. Since 2008, favorable policies for renewable energy have driven growth in solar and wind deployments. As intermittent renewables begin to take up a greater share of power generation, the grid is likely to require energy storage technology to ensure grid reliability.

Several potential applications for energy storage stand out in the Philippines, particularly in grid-side storage, island storage, and behind-the-meter applications. At this time, lithium-ion batteries are the primary advanced energy storage technology in use, though lead acid batteries -- mostly imported from China -- have been used in off-grid storage applications for at least a decade.

Frequency regulation is in its early stages in the Philippines. A local subsidiary of energy giant AES Corporation announced plans in July 2015 to deploy 200-250 MW of battery energy storage in the Philippines. This announcement came on the heels of a resolution made by the Energy Regulatory Commission (ERC) allowing battery energy storage systems to provide ancillary services.

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The Philippines is also shifting toward renewables in power generation. In April 2014, the ERC revised its solar target from 50 MW to 500 MW, and raised its solar feed-in tariff cap accordingly. As of June 2015, that cap was already maxed out, and industry advocates are pushing for a further revision. This suggests that the Philippines solar market is picking up speed. The rise of renewable energy as a significant part of the Philippines' energy mix will necessitate further energy storage deployments to ensure the stability of the electric grid

Although the Philippines achieved 86% electrification in 2013, that rate falls to 65% in rural areas. According to the National Electrification Administration, there is a market potential of 2.5 million unconnected households in the Philippines.

Additionally, electrified rural island communities often rely heavily on diesel generation, which is both expensive and sensitive to disruption. A study conducted by the Reiner Lemoine Institute in 2014 estimated that a hybrid system comprised of 6.7 MW of solar PV plus a 1 MW lead acid battery system and an existing diesel generator could achieve savings of \$0.073 per kWh, serving over 100,000 inhabitants.

Another study from German development organization GIZ estimated that, given the deployments of off-grid diesel generation in the Philippines, the expected potential revenue from battery sales in off-grid diesel hybrid applications will be around \$27 million in 2030.

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