

Costa rica gravity energy storage

Costa Rica has gotten 100 percent of its electricity from renewables for 100 days straight this year --thanks to hydro. But as the country strives to become fully carbon-free by 2021, it looks increasingly likely that energy storage will be needed, according to the Costa Rican Electricity Institute (ICE).

“With penetration of wind and solar, in the future we will need greater regulation capacity than that available from dams, which will probably have to be covered by new options such as pumped hydro and batteries,” said Alberto Ramírez, head of ICE’s generation business.

ICE uses this, along with the Dengo and Sandillal dams that occupy the same waterway and together form the 363-megawatt ARDESA complex, to offset a lack of production from three seasonal plants during the dry months.

As well as being seasonal, with generation dropping by about 25 percent in the summer, the dams are highly dependent on weather patterns, and some observers have questioned how Costa Rica’s hydro reserves will fare in the face of global warming.

Although 2015 has been a good year for rain, it follows two years of drought. Said Ramírez: “In 2014 we had a particularly dry year, so we needed significant thermal generation at the height of summer.”

For now, said Ramírez: “Rather than storage technologies, we are looking at backup sources within our electrical generation systems. In the future we expect to continue relying on seasonal and year-round dams and on thermal generation.”

Indeed, earlier this year Costa Ricans enjoyed a 12 percent cut in electricity rates. ICE predicted costs would fall further in the second quarter. However, with the viability of future hydro reserves open to question, it remains to be seen how long this bonanza will continue.

Furthermore, if Costa Rica really wants to abandon fossil fuels by 2021, then it will have to do something about vehicles. They currently account for 70 percent of all petroleum used on the country, and about 40 percent of carbon emissions, according to reports.

Transport is beyond ICE’s purview, and so far there has only been muted response to initiatives such as encouraging purchases of newer, more efficient vehicles or getting taxi drivers to switch to hybrid cars.

Electric trains have been considered as a possible way of getting vehicles off the road, but they would put an extra stress on the grid. Until now, building new dams would have been the obvious solution.

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