How a data center company uses stranded renewable energy

“Decisions around where data centers get built have shifted dramatically over the last six months, with access to power now playing the most significant role in location scouting,” Joshi said. “The grid can’t keep pace with AI demands, so the industry is taking control with onsite power generation.”

Soluna, like other data center developers looking to rely on renewable energy, buys the excess power from wind, hydro, and solar plants that they can’t sell to the grid. By the end of the year, Soluna will have three facilities totaling 123 megawatts of capacity in Kentucky and Texas and seven projects in the works with upwards of 800 total megawatts.

Belizaire and I talked about how in Texas, where I report from, there’s plenty of curtailed energy from wind and solar farms because of the region’s transmission capacity. In West Texas, other data center developers are also taking advantage of the unused wind energy, far from major load centers like Dallas and Houston, by co-locating their giant warehouses full of advanced computers and high-powered cooling systems with the excess energy.

One data center developer using curtailed renewable power in Texas is IREN. The firm owns and operates facilities optimized for Bitcoin mining and AI. It developed a 7.5-gigawatt facility in Childress and broke ground on a 1.4-gigawatt data center in Sweetwater.

IREN purchases power through the state grid’s wholesale market

during periods of oversupply, said Kent Draper, the company’s chief commercial officer, and reduces its consumption when prices are high. It’s able to do that by turning off its computers and minimizing power demand from its data centers.

But curtailment is an issue all over the world, Belizaire said, from Oklahoma, North Dakota, South Dakota, California, and Arizona in the US, to Northern Ireland, Germany, Portugal, and Australia.

“Anywhere where you have large utility-scale renewable development that’s been built out, you’re going to find it,” Belizaire said.

In a March analysis, the US Energy Information Administration reported that solar and wind power curtailments are increasing in California. In 2024, the grid operator for most of California curtailed 3.4 million megawatt hours of utility-scale wind and solar output, a 29 percent increase from the amount of electricity curtailed in 2023.

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