

Drought takes toll on hydro generation in California

Debra Kahn, Environment & Energy Publishing, 6-25-14

Hydropower generation in California has dropped by half as a result of the state's gripping drought, according to a new analysis.

The state, which normally gets about 14 percent of its electricity from hydroelectric dams and turbines, saw its hydropower generation fall 48 percent in the first quarter of 2014 compared with the same period last year, according to an analysis from SNL Energy.

Statewide, California received just over half of the precipitation it normally gets by the end of April, and snowpack water content was at 20 percent of average, indicating scant resources for hydropower. That was borne out in SNL's analysis, which found California generated nearly 54 percent less hydro than it did in the first quarters of 2009-13.

As a result, wholesale electricity prices rose across the state. This was true particularly in Northern California, which gets more of its power from hydroelectricity. Compared with the same period in 2013, average hour-ahead power prices rose 42 percent in Northern California and 25 percent in Southern California to \$54.45 and \$53.60 per megawatt-hour respectively.

"I think it's fair to say the restrictions on hydro are causing a fairly dramatic impact with the relationship flipping and Northern California being more expensive," said SNL Associate Director Steve Piper. "It illustrates the hydro squeeze and its impact on the markets right now."

Hydro also takes hit outside the state

Across the West, hydropower dropped an average of 9 percent below the four-year average from 2009 to 2013. Washington state, which has the most hydropower resources in the West at 20,200 megawatts of capacity, saw its generation decline 4.3 percent from the four-year average.

In the first quarter of 2014, six of the nine states in the Western Electricity Coordinating Council region experienced declines in hydro generation compared with their average first-quarter net generation the past five years, the report said.

California's grid operator said last month that it expected hydro to decline but that natural gas and renewables could make up the difference.

"Hydro generally is a less expensive resource than what natural gas is, so it would be reasonable to expect a nudge upward in prices as we use and rely more on natural gas," said California Independent System Operator spokesman Steven Greenlee.

Another risk of dry conditions, though, is that wildfires could affect the use of major transmission lines during summer peak demand, creating grid reliability issues.

Small-scale hydropower generation of 30 MW and below is also declining, according to CAISO figures. On June 23, 2011, it produced 14,500 MW, compared with 8,431 MW a year ago and 5,810 MW on Monday.