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The last thing California needed: Drought adds to electricity woes as hydro power dries up

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CalMatters and the Sacramento Bee look at the challenges to the frayed complex power grid of stations, lines and transformers keeping the lights on for millions of Californians who mostly take it for granted. BY [BYRHONDA LYONS](#) | [SHARON OKADA](#)



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California's shaky power grid is on a collision course with [an epic drought](#) that's depleting a major source of supply: hydroelectricity.

The Western heatwave that began Wednesday has the manager of the state's grid, the California Independent System Operator, warning of [potential power shortages](#)

[through the weekend](#). Although the organization stopped short of predicting another round of rolling blackouts, it appealed to Californians to conserve energy to get the state through a tough week. The National Weather Service said temperatures are expected to reach 110 degrees Thursday.

“Conservation may be needed to stabilize the grid,” Marybel Batjer, the president of the Public Utilities Commission, told a legislative committee Wednesday. The Independent System Operator [issued a Flex Alert for Thursday](#), calling on Californians to save electricity.

Even if the state avoid blackouts this time, energy experts say slumping hydro supplies will complicate California’s efforts to keep the lights on during future heatwaves this year.

“As we get into late summer and fall, hydro’s going to be an issue,” said Severin Borenstein, a member of the board of directors of the Independent System Operator.

Already, California’s [hydro supplies are down 40%](#) compared with a year ago, according to BloombergNEF, an economics research arm of Bloomberg news.

The situation is certain to get worse as reservoirs wither in the coming months. Water levels at Lake Oroville, one of the largest reservoirs in the state, could sink so low this summer that the Edward Hyatt [Power Plant would have to shut down](#) — the first time that’s happened since the reservoir was built in the 1960s.

Oroville was [barely one-third full Wednesday](#) — and the water was just 60 feet above the level at which electricity generation would likely shut down.

Although natural gas-fired plants remain the single-largest source of electricity in California — generating 34% of the power in 2019, according to the California Energy Commission — hydro is a significant contributor in a non-drought year. In 2019 hydro was responsible for almost 17% of the state’s power, more than solar. But in a drought year, hydro practically disappears; it generated just 6% of the power in 2015.

The grid manager has already told power generators and transmission line operators to defer scheduled maintenance, and warned that shortages could pop up, especially late Thursday. If Flex Alerts are issued, consumers will be urged to turn thermostats up to 78 and avoid using heavy appliances in late afternoon and early evening.

If conditions worsen, more stringent conservation measures could kick in. The big utilities such as PG&E Corp. could cut power to their [“interruptible” customers](#) — those that pay discounted rates but agree to be taken offline in a pinch.

A heatwave comparable to this week’s [overwhelmed the power grid last August](#), producing two consecutive nights of rolling blackouts. They were the first power shortages to strike the grid since the 2001 energy crisis, when power traders were deliberately manipulating supplies.

A big part of the problem last year was the state’s heavy reliance on solar power, as temperatures remained hot even after the sun went down. Despite that, Gov. Gavin Newsom’s administration has refused to waver from the state’s goal of building a carbon-free power grid by 2045, as dictated by state law.

This year the big utilities are expected to have added [3,500 megawatts worth of new capacity](#) by August, including industrial-sized battery facilities to store solar energy for nighttime consumption.

That additional capacity should be enough to stave off blackouts — so long as California is able to import supplies in a pinch from nearby states. But if the [entire West is blanketed](#) in triple-digit temperatures — like this week — then imports will become scarce, just as they did last August, because other states will want the power that otherwise would flow to California.

“There will be strong competition for this uncommitted supply as the load centers in the desert Southwest will be bidding for the same uncommitted energy supply to meet their own demand under these extreme heat conditions,” said Dan Williams, an analyst with power consultant Customized Energy Solutions.

Imports play a critical role in California; they amounted to nearly 28% of all the power consumed in the state in 2019, according to the California Energy Commission.

Yet normally reliable suppliers like the hydro stations of the Pacific Northwest don’t have as much reserve power this year, as the drought takes its toll in that region. Those plants will generate enough electricity to supply local demands but there “might not be available during the late afternoon, early evening hours, when California needs it,” said Robert McCullough of McCullough Research, an electricity-consulting firm in Portland.

SACRAMENTO WILL AVOID BLACKOUTS, SMUD SAYS

One place with relatively little to worry about is Sacramento. SMUD isn’t part of the Independent System Operator grid and wouldn’t be subject to rolling blackouts.

As for its own supplies, the Sacramento Municipal Utility District doesn’t anticipate any problems with this week’s heatwave, said spokeswoman Lindsay VanLaningham.

“We don’t have concerns right now unless there’s a wildfire emergency or something major like that,” she said.

VanLaningham said SMUD’s own hydro power is expected to decline significantly. While it normally makes up as much as 20% of the utility’s supplies, this year it’s likely to fall to 7%.

“We’ve got our wind, we’ve got our solar, we’ve got our natural gas,” she said. “When our hydro dips, we produce more at our other locations.”

Nevertheless, she said SMUD wants Sacramento residents to conserve as much as possible. They should avoid using their stoves at peak-demand times, for instance.

Borenstein, the Independent System Operator board member, said adjusting thermostats just a few notches can make a major difference.

“Even a little bit of an adjustment in air conditioning, a few degrees, can make it massively easier to get through,” said Borenstein, a UC Berkeley energy economist.

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