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### How well CAISO will handle the summer's peak will be the real test

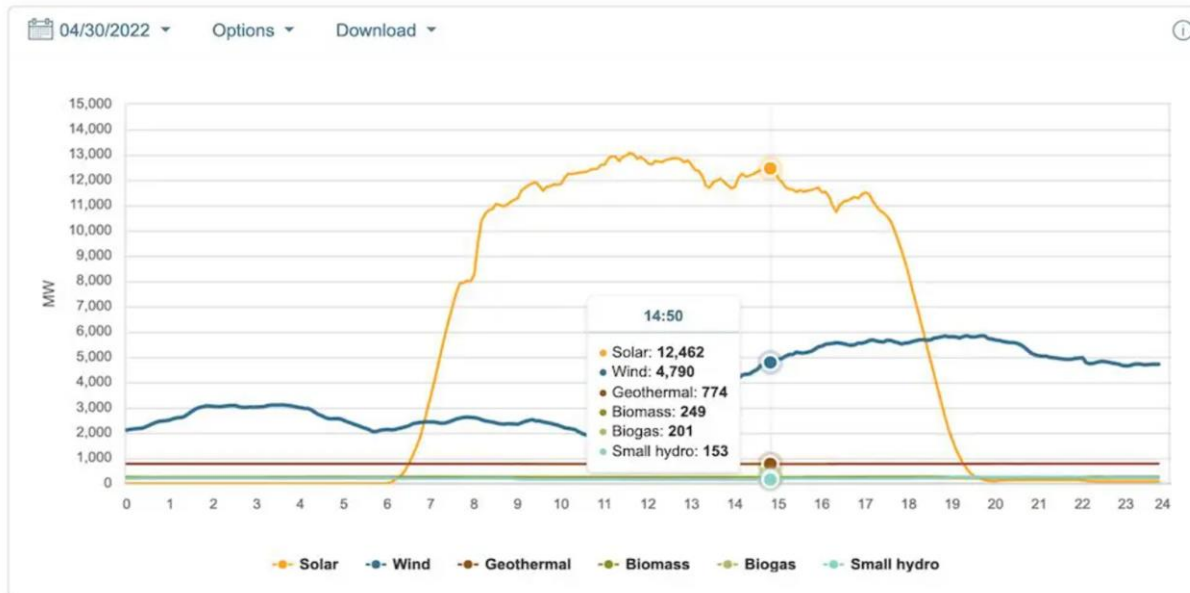
At 3:39pm on a sunny Sunday on 3 April 2022, the California Independent System Operator (CAISO) set a new record meeting the load on its network with 97.6% renewables beating a prior record of 96.4% set on 27 March 2022. At the time, CAISO's CEO Elliot Mainzer said: "While these all-time highs are for a brief time, they solidly demonstrate the advances being made to reliably achieve California's clean energy goals."

Less than two weeks later it reached a new milestone by supplying 100% of the state's electricity needs from renewable sources for a short period over a low-demand weekend. The feat lasted a mere 15 minutes between 2:45 and 3pm on Saturday 30 April, marking the first time ever that the world's fifth largest economy has been powered entirely by renewables in its electricity sector.

Increasingly, grids around the world are meeting more of their demand from renewable resources. Was this a big deal? It is symbolically important showing that grid operators can handle ever higher percentage of renewables. At the time, demand was low not only because it was a weekend but also because California was cool, hence there was little air conditioning load. With the demand around 18GW, renewables were supplying around 18.6GW requiring none of the 2GW from nuclear and roughly the same from gas-fired units. California has no coal-fired plants within its borders and at the time was importing virtually none from out of the state.

The renewable supply consisted of 12.4GW of solar plus 4.7GW of wind with some geothermal, small hydro, biogas and biomass as shown on the visual above.

### Look ma, all renewables even if for 15 minutes: Milestone reached on 30 April 2022



The challenge, of course, is not to reach 100% renewable input for 15 minutes but over an entire year. The state is aiming for 60% renewables by 2030 and 100% "carbon free" by 2045 while maintaining grid reliability and reasonable prices. That's a much taller order.

The CAISO currently has 26.4GW of renewable energy resources consisting of over 15GW of solar, nearly

8GW of wind with the balance from hydro, geothermal, and biofuels. The biggest source, solar, set a record of 13,628MW on the afternoon of 8 April and wind setting an all-time peak of 6,265MW on a windy day in early March. In anticipation of higher summer loads, California is adding another 600MW of solar and 200MW of wind as well as 1.3GW of new battery storage capacity, reaching 4,000MW by early summer.

Despite the new milestone, all is not well at CAISO. The summer is expected to be hot and dry with unusually low hydro generation due to a prolonged drought affecting the entire southwest US. How well CAISO handles the summer's gruelling air conditioning load in early evening hours in August to October – just when the sun goes down – will be carefully watched, not the 100% renewable milestone reached for 15 minutes on a sunny, cool and breezy weekend in the spring.

Responding to the pending crisis in mid May 2020, Governor Gavin Newsom (photo) said energy reliability is “an endless struggle” in California. No kidding.

CAISO resorted to embarrassing rolling blackouts on two consecutive evenings in August 2020 during the COVID-19 pandemic and a sweltering 110-degree heat wave. The state suffered even more serious shortages during its 2000-01 energy crisis, leading to the demise of the governor at the time. Newsome certainly does not want a repeat of that on his watch.

While the state gets increased amounts of electricity from renewable resources, solar in particular, it falls short between 4-9pm once the sun sets while air conditioners are still humming. Newsom does not wish to abandon the state's ambitious carbon neutrality targets but must address the daily feast and famine associated with the fluctuations in the solar output.

As reported on the 13 May issue of *The Sacramento Bee*, Newsom has proposed a \$5.2bn electricity reliability reserve by adding 5GW to the existing capacity over several years.

Not a minute too soon. CAISO has predicted a potential shortfall this summer, as much as 1.7GW, should there be a major heat wave. The shortfall could be even bigger under a worst case scenario.

<https://www.sacbee.com/news/politics-government/capitol-alert/article261421292.html>

Gavin Newsom: No power outages on my watch



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