

Statistics and Graphs for the 39 of 47 Days From March 8-April 23, 2024, Where Wind-Water-Solar (WWS) Supply Exceeded 100% of Demand on California's Main Grid for 0.25-9.25 Hours Per Day

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WWS = Wind (onshore here), Water (small and large hydro and geothermal) and Solar (utility PV and CSP).

Rooftop PV (which produces ~12% of California's electricity) is not directly included; however, it reduces demand on the grid during the day by powering homes directly, so is reflected in the demand curves.

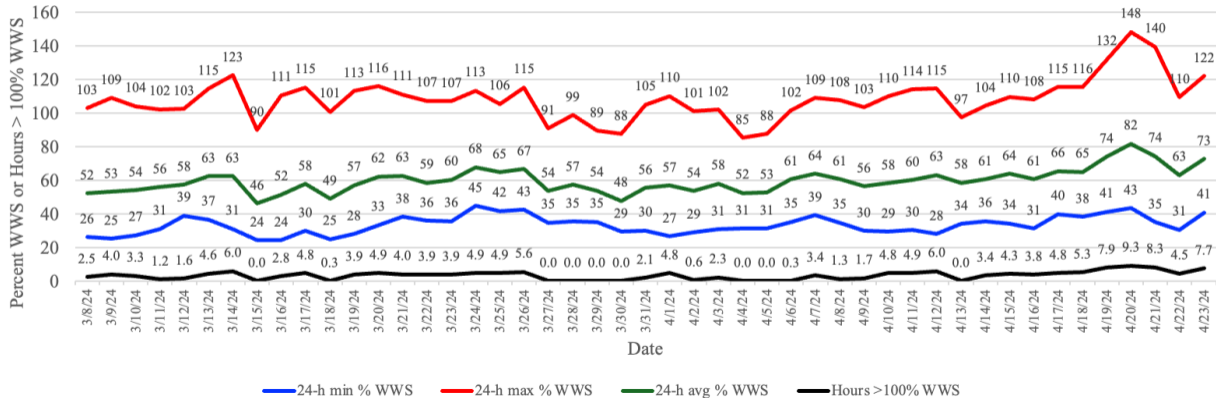
Summary stats: Max WWS relative to demand over 45 days and nights: 148.3%; Min WWS: 24.29%; Avg WWS: 59.8%; Avg/Max hours per day with WWS > 100% of demand: 3.36 h/9.25 h.

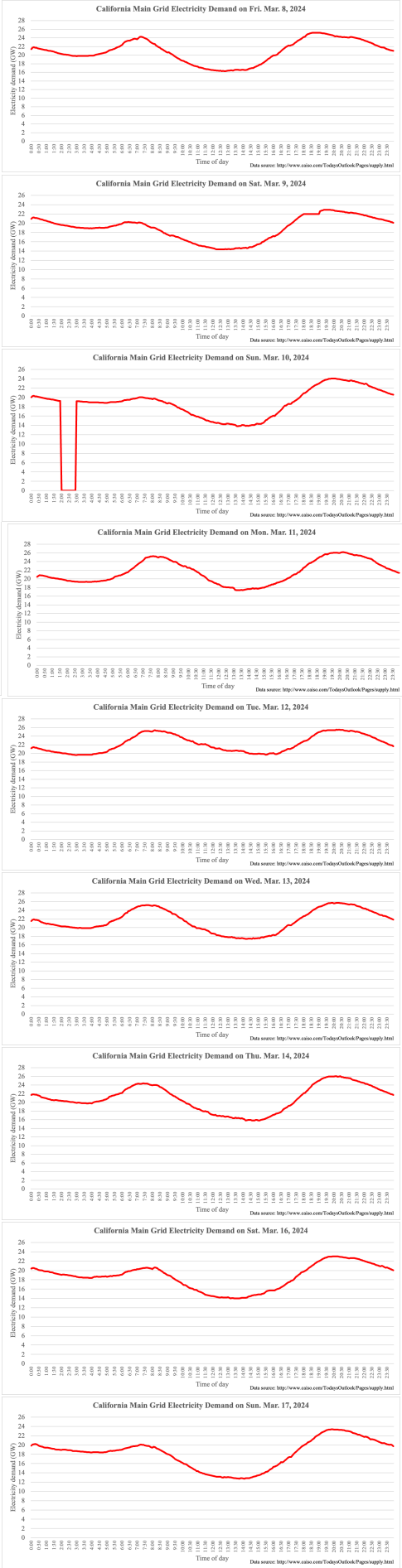
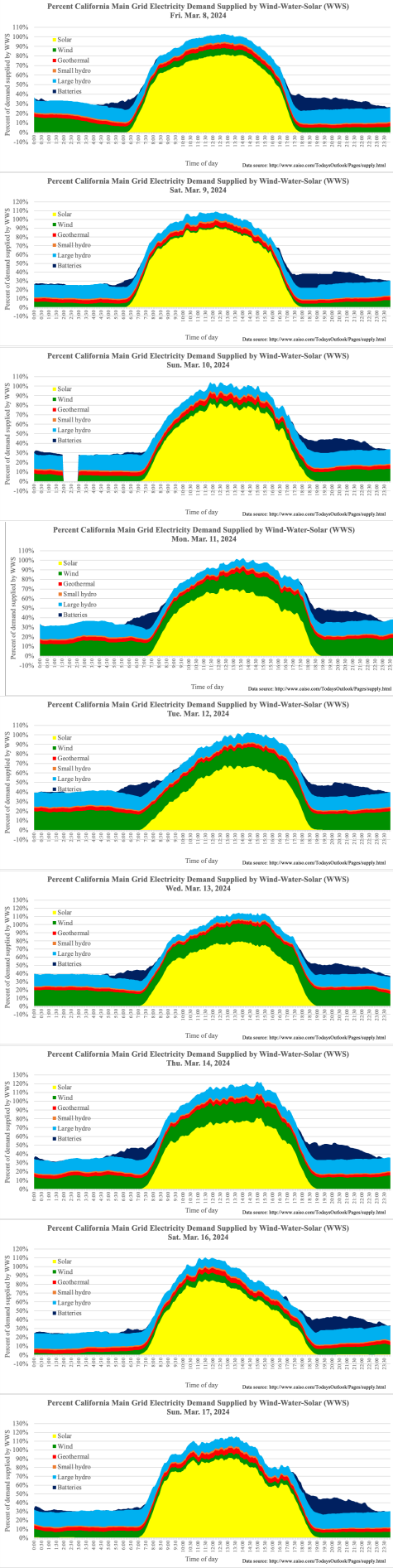
Data source: <http://www.aiso.com/TodaysOutlook/Pages/supply.html>

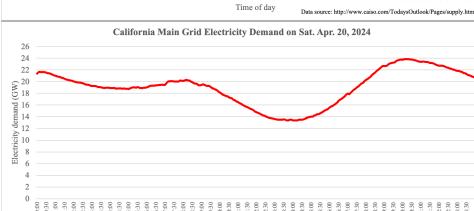
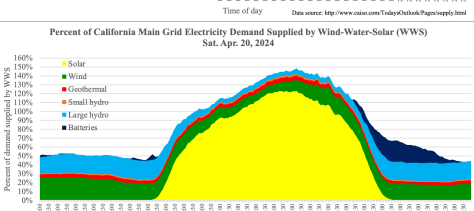
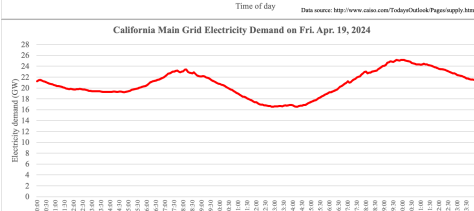
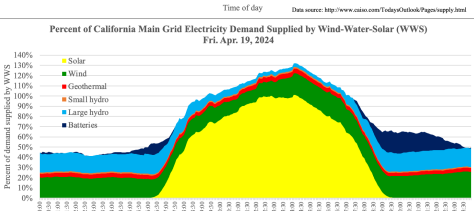
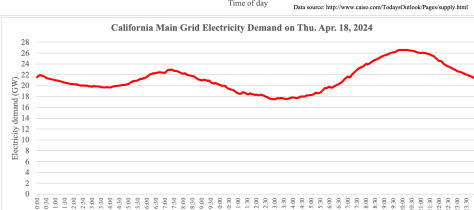
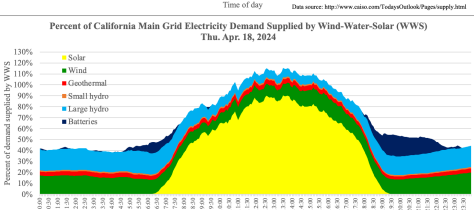
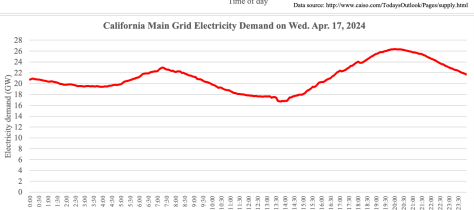
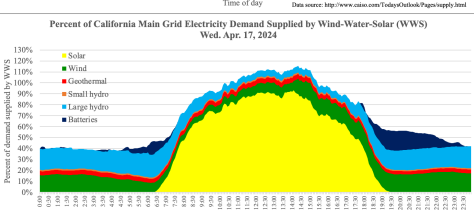
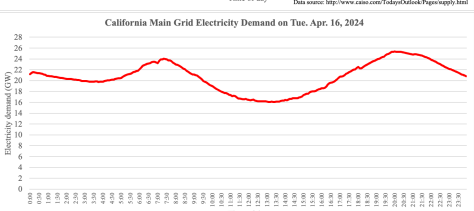
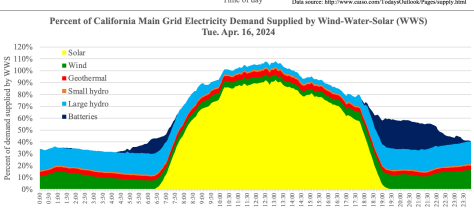
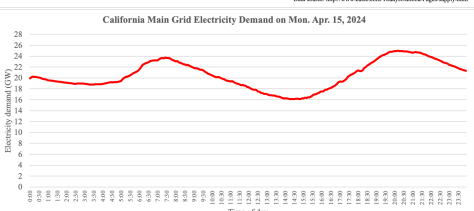
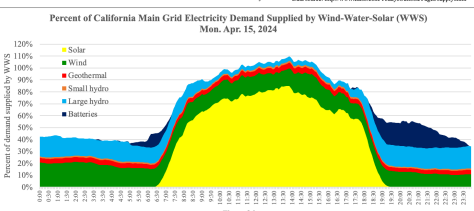
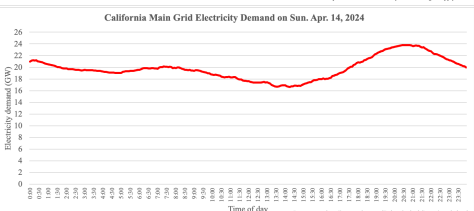
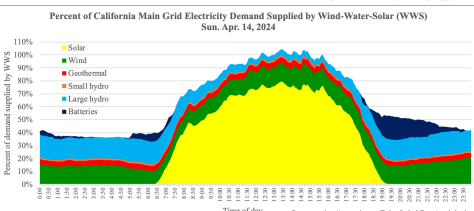
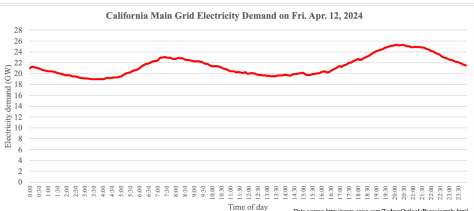
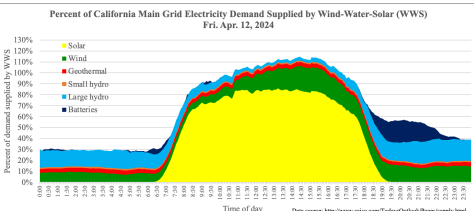
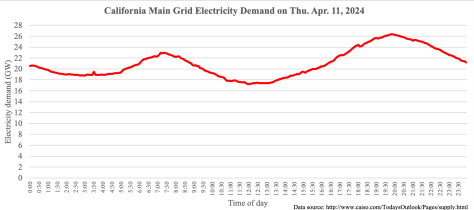
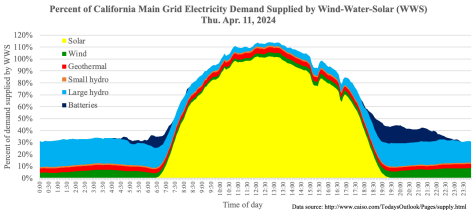
Please see

<https://web.stanford.edu/group/efmh/jacobson/WWSBook/Countries100Pct.pdf> for a rank of countries and U.S. states in terms of their penetration in the annual average on the grid. For states, the table also shows that 5 of the 12 states with the highest WWS penetrations are among the 10 states with lowest electricity prices. Ten of the 12 states with the highest WWS penetrations are among the 25 states with lowest prices. California prices are high because of high fossil gas prices and costs of wildfires, undergrounding transmission lines, the San Bruno and Aliso Canyon gas disasters, and the need to strengthen gas pipelines. WWS reduces California prices.

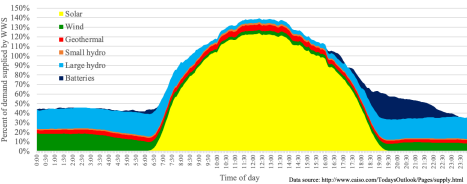
24-h Min, Max, and Avg Percent Wind-Water-Solar (WWS) and Hours >100% WWS on California Main Grid For 47-day Period During Mar-Apr, 2024, With WWS>100% of Demand for 39 days



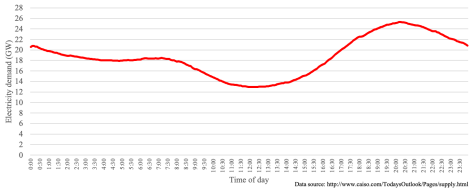




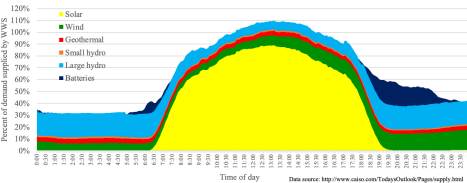
Percent of California Main Grid Electricity Demand Supplied by Wind-Water-Solar (WWS)
Sun. Apr. 21, 2024



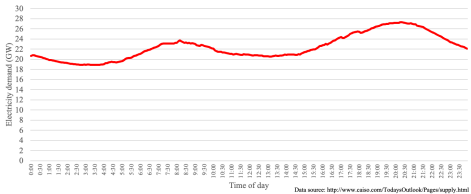
California Main Grid Electricity Demand on Sun. Apr. 21, 2024



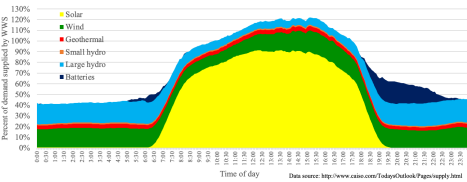
Percent of California Main Grid Electricity Demand Supplied by Wind-Water-Solar (WWS)
Mon. Apr. 22, 2024



California Main Grid Electricity Demand on Mon. Apr. 22, 2024



Percent of California Main Grid Electricity Demand Supplied by Wind-Water-Solar (WWS)
Tue. Apr. 23, 2024



California Main Grid Electricity Demand on Tue. Apr. 23, 2024

