CALIFORNIA UNPLUGGED
A CAUTIONARY TALE

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IN AUGUST 2020, THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR (CAISO) WAS FORCED TO IMPOSE ROLLING BLACKOUTS AND EMERGENCY ENERGY CONSERVATION MEASURES.

Why did the state with the largest economy in the U.S. and the fifth-largest economy in the world not have enough electricity during parts of five days? A preliminary report by three California agencies explained that there "was no single root cause of the outages but, rather, a series of factors that all contributed to the emergency." These are some of the causes of the electricity shortage:

UNUSUALLY HOT WEATHER
in California and the surrounding states that California relies on for electricity imports. Temperatures in California were 10-20 degrees above normal for several days.

RELIANCE ON WIND & SOLAR
CAISO gets almost 20 percent of its power from solar but lacked enough backup electricity when the sun went down.

SOME GAS-FIRED GENERATING UNITS
failed to produce electricity. During August 14 and 15, 1,400-2,000 MW of gas-fired generation were not available.

POOR PLANNING & COMMUNICATION
between the California Energy Commission, CAISO, and the Public Utility Commission. All three share responsibilities for the electricity system in California.

FAILURE TO PLAN ADEQUATE ELECTRICITY SUPPLIES
Participants in CAISO's day-ahead market failed to anticipate peak demand on several days and did not schedule enough electricity.

INSUFFICIENT ENERGY RESERVES
CAISO's 15 percent reserve margin is too small to assure that its electricity grid is reliable with large amounts of solar and wind power.

RELIANCE ON ELECTRICITY IMPORTS
California typically relies on electricity from other states for about one-fourth of its power. However, other states were dealing with their own hot weather problems.

California is helping to lead changes to the nation's electricity grids. For that reason, California should be a cautionary tale to other states and regions whose grids are changing as they retire coal, nuclear, and gas-fired power plants and replace them with renewable power. CAISO increased its reliance on solar and wind by six-fold in 10 years but didn't seem to have enough reliable electricity sources to backstop solar and wind.

California's experience suggests that decision makers in other states and regions should identify high impact, low frequency disruptions – in California's case, unusually hot weather - that could have severe consequences and take steps to make sure their grids are resilient to those disruptions. To help decisionmakers, FERC should establish a uniform definition of "resilience" and identify attributes that are necessary to ensure grid resilience. In addition, NERC should establish standards for resilience.

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