

# Heat wave brings record highs across southwestern US, stressing Texas' fragile power grid

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An extreme heat wave has brought record high temperatures to the American Southwest over the past week. The fact that it is occurring before the official start of summer in the northern hemisphere has been a special cause of alarm and is an indication of the worsening effects of human-induced global warming.

The heat wave is coinciding with an end to the federal moratorium on evictions, currently set to last through June 30. On September 1, 2020, the Centers for Disease Control issued an order banning some evictions; the order has been extended several times. If the moratorium is not extended again, 10 million evictions could start as early as next week. In the context of the extreme weather and the ongoing COVID-19 pandemic, the potential of such a large number of people being thrown out of their homes is a recipe for a major public health disaster.

Approximately 40 million people have been living through heat well over 100 degrees Fahrenheit (38 Celsius). Temperatures in Las Vegas, Nevada reached 117 degrees; Phoenix, Arizona hit 118 degrees; Denver saw three consecutive days of 100-degree weather, the earliest that such a streak has been recorded; and Death Valley, California recorded 129 degrees. Excessive heat warnings have been issued in California, Arizona, Nevada, Utah and Colorado. People have been cautioned not to walk on asphalt, sidewalks, and sand due to the danger of burns.

Heat waves are the deadliest type of weather phenomenon in the United States. According to the National Weather Service, between 1991 and 2020, an average of 138 people died each year due to heat. Fatalities by flood were the second leading cause, with an average of 85 deaths per year, while the average

number of deaths by tornado was third, at 69.

High use of air conditioning has caused stress to electrical grids. Officials in Texas and California have urged people to set thermostats to 78 degrees, and to avoid using major appliances.

While a number of states have placed moratoriums on utility shutoffs for nonpayment, many of these are set to expire this summer. California's ban runs through June 30. Even for people who are not evicted from their homes, losing utilities such as power and water could prove to be fatal.

The Electric Reliability Council of Texas (ERCOT), which oversaw the collapse of the state's power grid in February during an extreme cold spell, has not appreciably upgraded the system to withstand increased demand during the heat wave and the stress of the high temperature on infrastructure. Nonetheless, Governor Greg Abbott has praised the power authority, even as a number of power plants went offline just as the demand for electricity was reaching record levels.

Lower water levels in reservoirs across the western US could potentially affect drinking water and hydroelectric power for tens of millions. Water levels on Lake Mead, the reservoir behind Hoover Dam on the Colorado River at the Nevada-Arizona border, have reached their lowest levels ever. The Colorado River supplies water to 40 million people, while Hoover Dam generates electricity for approximately 25 million people. Officials in California have announced that if water levels in Lake Oroville continue to drop, the reservoir's hydroelectric plant at the Oroville Dam will have to shut down for the first time ever.

The heat wave was caused by a heat dome, which occurs when masses of hot air expand vertically into

the atmosphere. This in turn pushes warm air toward the ground, compressing the air and further heating it. The dome of high pressure then diverts weather systems around it.

The heat wave is reinforcing the effects of a drought that has also been occurring in the southwest. The drought, in turn, is exacerbating the effects of the heat wave, in a vicious circle. The drought has caused extremely low levels of moisture in the soil. The energy from the heat, instead of evaporating the water in the ground, is heating the atmosphere.

The extreme heat has also interacted with toxic air pollutants, causing poor air quality. Parts of Phoenix experienced their worst air quality since at least 1980. The South Coast Air Quality Management District, the air pollution control agency for Los Angeles, Orange, San Bernardino and Riverside counties in California, issued an ozone advisory due to the heat wave.

The heat wave has also created the perfect conditions for wildfires to develop. According to the National Interagency Fire Center, as of June 18, 33 large fires have burned 372,241 acres in 10 states. While fires can be started by natural phenomena, such as lightning strikes, as well as by human carelessness, the hot, dry conditions provide the fuel for ever larger disasters. The past several years have seen major fires throughout the west, resulting in many deaths and destruction of vast areas, and this year could very well see more of this.

Some local communities have started to set up cooling stations for people to escape the heat. However, these are intended only as temporary measures, and could quickly become inundated with people should mass evictions start.

At the other end of the spectrum, the oceans are heating up, creating the conditions for tropical storms and hurricanes which bring heavy rains. Since the official start of hurricane season this month, there have already been three named storms in the Atlantic, Caribbean and Gulf of Mexico regions. This weekend, Tropical Storm Claudette came ashore in Louisiana and traveled through the southeastern part of the country. Flooding and tornadoes caused by the storm were reported in Louisiana, Mississippi, Alabama, Florida and Georgia, resulting in at least 13 deaths. Forecasters said that Claudette could bring 5 to 10 inches of rain, with local totals of up to 15 inches.

Additionally, Tropical Storm Delores (part of the Pacific system of naming storms, which is separate from the Atlantic system) came ashore in western Mexico near the Michoacán-Colima border, where it was expected to bring 6 to 10 inches of rain.



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