KCC Wildfire Flash Estimate

August 2023 Lahaina Fire

Utilizing the high-resolution KCC US Wildfire Reference Model, KCC estimates the insured property losses from the Lahaina Fire to be around $3.2 billion.

Event Highlights

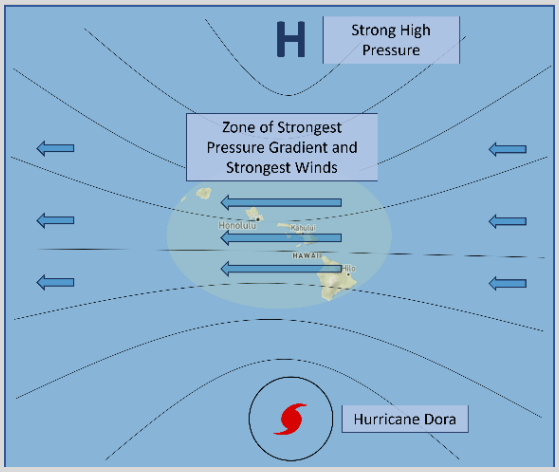
- On August 8, a devastating wildfire started near the historic town of Lahaina in Maui, HI and quickly spread due to high winds caused by a strong pressure gradient between a high pressure system to the north and Hurricane Dora passing to the south.
- Local authorities have reported that the fire is 85% contained as of 10pm local time on Monday, August 14, however no further fire spread is forecast.
- More than 2,200 structures have been damaged or destroyed in Lahaina in the most destructive wildfire in Hawaii history.
- There have been two wildfires in the past 20 years that started within 10 miles of the Lahaina fire: the Olowalu fire in 2007 burned 2,500 acres, and the Ma'Alaea Fire in 2016 burned 6,000 acres.

Technical Summary

Low humidity and drought in Maui primed the environment for the fast-spreading Lahaina fire, which began on Tuesday, August 8. Parts of Maui had been under moderate to severe drought ahead of the fire and humidity was unusually low (just 11 percent) at the time of the event. Maui has had below average precipitation through the spring and summer, which contributed to the drought conditions. Hawaii had also had a very wet season prior to the drought, which increased vegetation and created additional fuel, primarily nonnative fire-prone grasses and brush.

Hurricane Dora passing far to the south and a high pressure system to the north created a strong pressure gradient which contributed to the high winds that helped to quickly spread the fire. Wind gusts as high as 67mph were recorded on the island of Maui during the event. High winds also interacted with Maui terrain to produce strong downslope winds.

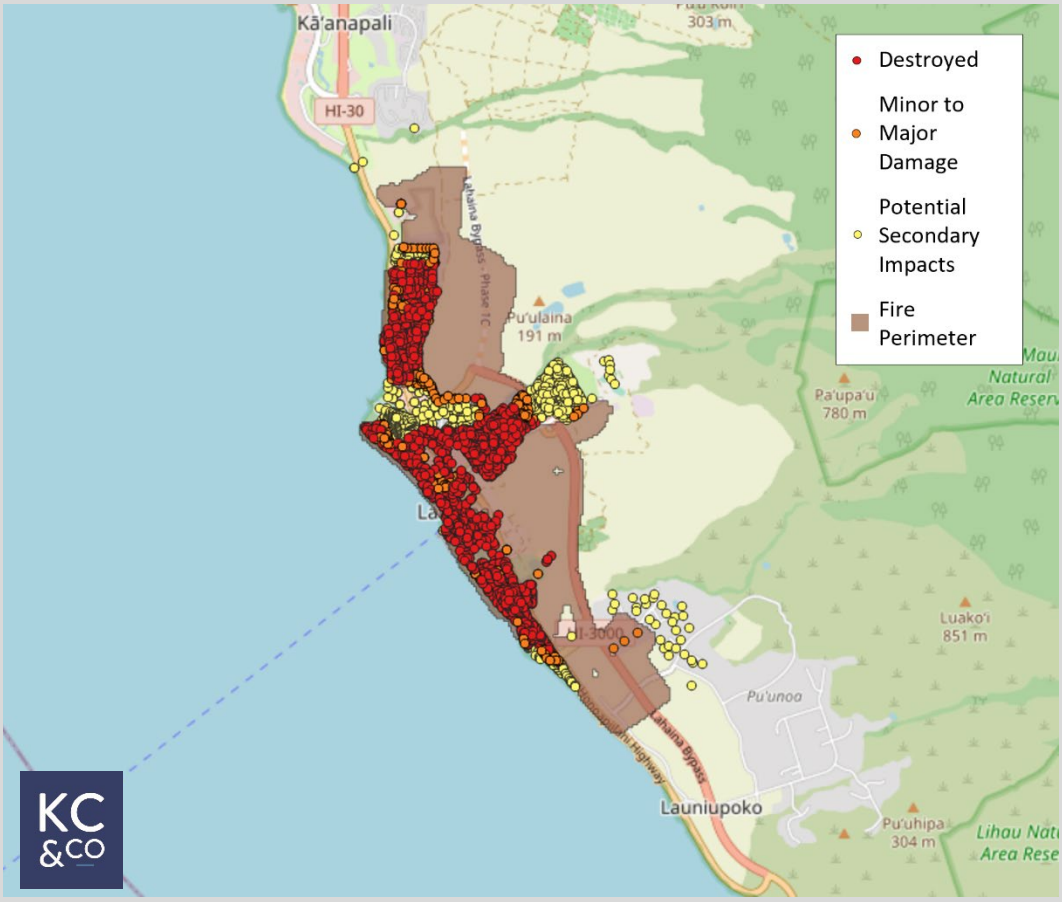
In addition to the fire that devastated Lahaina, several other fires broke out on the island of Maui on August 8, including the Upcountry/Kula fire and Pulehu/Kihei fire. These two fires produced minimal insured losses as they occurred in more rural areas. The exact cause of each fire remains under investigation.



Schematic showing the atmospheric conditions that led to high winds in Hawaii

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In Hawaii, the dry season is becoming hotter and drier due to climate change, which leaves the state more vulnerable to brush fires and wildfires.



KCC geo-spatial analysis of damaged or destroyed structures within the fire perimeter and buildings potentially impacted by branding and smoke adjacent to the perimeter

Impacts

The Lahaina fire burned approximately 2,170 acres and devastated the town of Lahaina in Maui, HI. Through an independent geo-spatial analysis of satellite and aerial imagery, KCC estimates that more than 2,200 structures fall within the fire perimeter, and over 3,000 total structures were impacted by the fire, including secondary impacts such as branding and smoke.

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The majority of damaged structures were residential buildings, though many commercial buildings were damaged as well. The high proportion of wood frame and older construction present in the Lahaina building inventory likely contributed to the high damageability rates observed in the fire.





Abandoned cars and destroyed buildings in Lahaina, HI (source: Governor Josh Green via X)





Aerial imagery of a damaged commercial area (left) and residential area (right) in Lahaina (source: NOAA)

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