But Seriously, Electric Utilities,

Climate change means the future will not look like the past

By John Benson

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1. Introduction

California and other Southwestern US states have had to deal with major wildfires for the last couple of decades now, and the frequency and severity of these have been increasing every year. The Southern California Fires last year brought this home.

2. 2024 California Wildfire Season

By the end of 2024, a total of 8,024 wildfires burned a cumulative 1,050,012 acres (424,925 ha) throughout the U.S. state of California. The total number of wildfires was slightly higher than the five-year average, while the total number of acres burned was lower. Wildfires destroyed a total of 1,716 structures and killed one person in the state in 2024. This season had the most burned acres since the 2021 wildfire season.[1]

The timing of "fire season" in California is variable, depending on the amount of prior winter and spring precipitation, the frequency and severity of weather such as heat waves and wind events, and moisture content in vegetation. Northern California typically sees wildfire activity between late spring and early fall, peaking in the summer with hotter and drier conditions. Occasional cold frontal passages can bring wind and lightning. The timing of fire season in Southern California is similar, peaking between late spring and fall. The severity and duration of peak activity in either part of the state is modulated in part by weather events: downslope/offshore wind events can lead to critical fire weather, while onshore flow and Pacific weather systems can bring conditions that slow wildfire growth.

By the end of spring 2024 (June 20), the total area burned by wildfires in California was nearly 90,000 acres (36,000 ha). This early spike in activity was primarily from wind-driven grass fires, more than 30 of which occurred on several days in mid-June with low humidity, high temperatures, and strong winds.

The first and only wildfire fatality of the year in California occurred on July 8, when the Mina Fire burned a home. This makes the 2024 season have the lowest number of wildfire deaths in a season since 2013.

During late July, the total area burned during the 2024 wildfire season saw significant growth due in part to long periods of hot, dry weather. These conditions allowed several fires to grow rapidly in size, such as the Park Fire, in Butte and Tehama counties, and the Borel Fire, in Sequoia National Forest. By July 29, more than 726,000 acres (294,000 ha) had burned across the state.

Fire activity decreased during August, but a long period of extreme heat across the Western United States during early September allowed numerous wildfires across the state to grow rapidly, such as the Line Fire, the Bridge Fire, and the Airport Fire in Southern California. Later in September, fire activity again decreased due to improved fire weather.

[1] Wikipedia article on "2024 California wildfires," https://en.wikipedia.org/wiki/2024_California_wildfires

While numerous storms in Northern California significantly slowed fire activity in November and December, dry conditions and multiple rounds of Santa Ana Winds led to multiple wildfires in Southern California, such as the Mountain and Franklin fires.

Reference 1 has a list of the 2024 California wildfires.

Over the last several years the area impacted by major wildfires has been expanding eastward. This is to be expected, as with the increasing temperatures and other forms of energy in the atmosphere, the conditions that spark (like lightning and dry vegetation) and rapidly expand (like drought and dry-wind-storms) wildfires have been becoming more intense and frequent everywhere. Even areas that previously had few significant wildfires are starting to see these become a significant threat. Electric utilities need to pay attention (see sext section).

3. Utilities Lagging on Wildfire Preparedness

Wildfires ignited by electric utility infrastructure pose a serious danger to communities across the United States. While the initial causes of the catastrophic fires which destroyed thousands of homes and other structures in the Los Angeles metropolitan area earlier this year remain under investigation, affected homeowners have filed suit against several utilities, arguing that electric infrastructure ignited the fires that went on to burn through their neighborhoods. These fires were unprecedented in the sense that they were among the most devastating wildfires in California history. However, the risk of utility-ignited fires has been widely recognized in California for years, and the state has created a legal and regulatory regime specifically designed to address the risk of wildfires ignited by electric infrastructure. In other regions across the United States, the situation is very different: states which have historically faced low catastrophic wildfire risk have seen their exposure to wildfires dramatically increase in recent years, creating an urgent need for new responses. These responses will include wildfire mitigation programs implemented by utilities and overseen by their regulators.[2]

Wildfire risk has continued to increase across North America as a result of a number of interrelated trends.

These include shifting weather conditions linked to climate change, which can cause fires to burn at higher intensity and spread more quickly across the landscape; historical fire suppression practices, which have allowed flammable dead and dry vegetation to build up in many forested areas, increasing fire intensity; and development and land use patterns that have led vulnerable structures to be located in or near areas where fires are likely to occur, increasing the risk of catastrophic fires that spread from structure to structure and destroy entire communities. As the potential danger of wildfires continues to increase, a wide range of stakeholders will need to find new approaches to measure and address their potential fire risk. In order to succeed, these approaches will need to reflect both the overall systemic challenges created by wildfire and the unique circumstances of specific regions and communities.

[2] Eric Macomber, I. Avery Bick, Michael Wara, and Michael Mastrandrea, Stanford Climate and Energy Policy Program (CEPP), "Wildfire: An Updated Look at Utility Risk and Mitigation," June 2025, https://drive.google.com/file/d/1qpGkLX8PTfcwh-7pRuYKUmIfdnL8eYRs/view

Author's comment: further to the above paragraph, see the reporting on a disaster in 2018, below.

At least 29 people have died as a result of the Camp Fire, a fast-moving Northern California wildfire that has become the state's most destructive on record, officials say.[3]

The remains of 14 additional people were found on Saturday and 6 more on Sunday, including 16 in Paradise and 4 in Concow, authorities announced.

Nine previous victims were found in Paradise, a town of 27,000 that was evacuated as a result of the fire.

"It looked like the gates of hell opened up, I swear," evacuee James Brown told the Record Searchlight.

The Camp Fire is now tied as the deadliest fire in California's history. It surpassed the death toll in last year's Tubbs Fire, which killed 22 people, according to CalFire. The 1933 Griffith Park fire, which also killed 29 people, is the other deadliest fire in California.

Author's comment: Per a Microsoft Bing query, the Camp Fire is now the deadliest fire in California History with 85 deaths. See the reference at the end of this comment, and reference 2 in that article. The Camp Fire was in Butte County, just north of Sacramento and just east of I-5.[4]

On Sunday, at least five search teams were working in Paradise and surrounding communities. The Associated Press reported that authorities had called in a mobile DNA lab and two teams of anthropologists to help identify victims.

The Camp Fire, which started early Thursday morning (Nov 8, 2018), had grown in size to 173 square miles by Sunday evening and was 25 percent contained. But Cal Fire spokesman Bill Murphy warned that gusty winds predicted into Monday morning could spark "explosive fire behavior."

"We're at a pivotal point now," said another Cal Fire official, David Clark.

Also on Sunday, the world's largest air tanker joined the fight against the Camp Fire. The Global Super-Tanker, a converted 747-400, can safely fly with more than 19,000 gallons of fire retardant or water, according to CBS News. That's roughly twice as much as the next largest tanker.

An estimated 6,453 homes and 260 commercial structures have already been destroyed by the fire, according to CalFire. This number did not increase on Saturday. Another 15,000 remained threatened in the area.

An estimated 80 to 90 percent of Paradise was wiped out by flames Thursday night, the town mayor told the Sacramento Bee.

The sheriff says they have taken 228 reports of people that are unaccounted for, but some of these people may be in shelters or have not reached out to loved ones.

See above author's comment.

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[3] Pam Wright and Ron Brackett, The Weather Channel, "At Least 29 Dead in Wildfire That Destroyed Northern California Town and Is Now the Most Destructive Fire in California History," Nov 12, 2018, https://weather.com/news/news/2018-11-09-northern-california-wildfire-camp-fire-paradise

[4] https://en.wikipedia.org/wiki/Camp_Fire_(2018)

Three firefighters have been injured, CalFire said Friday.

Back to Reference 2: *Electric utilities will play an important role in the society-wide process of adapting to increased wildfire risk, as well as the related process of building a more resilient electric system. In the near future, a massive amount of new electric infrastructure is needed, due to increasing demand for energy from sectors like data centers and the electrification of homes, businesses, and vehicles, as well as the related need for increased transmission capacity to meet demand by bringing electricity from sites where it can be generated at large scale to the areas where it is consumed. In order for this transition to take place, utilities will need to raise capital and enter into contract relationships to build infrastructure.*

However, wildfires complicate this core function of utilities, particularly for investor-owned utilities (IOUs). Because the economic damages from a single catastrophic wildfire can reach into the billions of dollars, the possibility that a utility could be found liable for a fire as a result of its infrastructure causing an initial ignition creates serious financial challenges for utilities. This makes IOUs riskier investments, which, in turn, makes it more difficult and expensive for them to access the capital needed to build infrastructure. Therefore, an approach to wildfire mitigation which reduces the likelihood of electric infrastructure igniting catastrophic fires is key not only to protecting the safety of homes and communities threatened by fires, but also to the future development of the energy system. Because the costs that utilities incur as a result of both wildfire liability and infrastructure projects like mitigation plans are ultimately passed on to their customers in rates, it is important that mitigation programs are conducted in a manner that is not only practical and timely, but also efficient and cost-effective.

4. Recent Developments in Utility-Ignited Wildfire

As recent fires like the highly destructive Maui wildfires of 2023 have made clear, catastrophic wildfires are by no means a problem that is unique to the state of California or limited to areas where the risk of catastrophic fire has historically been elevated. The following years have continued to see increasingly devastating fires in states and regions with relatively little recent catastrophic fire history; in 2025 alone, wildfires have occurred not only in California and the Western U.S. but also in Oklahoma (16), Minnesota (17), Nebraska (18), New Jersey (19), New York (20) and North Carolina (21). As catastrophic wildfires become a greater threat across more states, electric utilities' potential exposure to liability resulting from a fire ignited by their infrastructure is also rising, increasing the economic and strategic challenges that wildfire poses for utilities and the electric system.

California has a unique legal framework which holds IOUs legally responsible for property damage resulting from all wildfires ignited by their infrastructure, regardless of whether the ignition was caused negligently. This framework has historically been understood to make electric utilities liable for greater damages in the event of a fire than legal frameworks in other states would. However, in recent years, electric utilities operating in several other states without comparable legal frameworks have also been found liable for billions of dollars in damages resulting from utility-ignited wildfires. This may reflect a shifting, heightened expectation for the standard of care that electric utilities must display in order to avoid a finding of recklessness or negligence in the event of a fire—a change which could, in turn, affect the amount of potential risk exposure facing utilities.

In the event that an electric utility is found to have acted in a grossly or criminally negligent or reckless manner, it may also be held liable for additional punitive and non-economic damages beyond compensatory damages for the property destroyed, further raising potential risk exposure and making the risk of insolvency even higher. However, because few cases have been fully litigated, the standard of care that could demonstrate non-negligence on a utility's part remains unclear in many states.

One response to the challenges that growing wildfire risk and legal uncertainty have created for the electric system has been the advancement of legislation at the state level to create new liability standards that are more protective of electric utilities, including bills which would create a presumption of non-negligence for electric utilities that implement wildfire mitigation plans compliant with state regulatory requirements. Other approaches to limiting electric utilities' exposure to wildfire risk include the creation of public funds to reimburse participating utilities for wildfire damages that exceed a certain amount, a strategy which has been implemented at the state level in California and Utah. In collaboration with the Brookings Institution, members of the Climate and Energy Policy Program have proposed a federal wildfire backstop that could play a similar role at the national level. Whatever form these approaches take, utility liability frameworks should be designed in order to balance the need for utilities to remain financially stable with the need for utilities to take reasonable precautions to prevent their infrastructure from igniting catastrophic wildfires.

4.1. Increasing use of Public Safety Power Shutoffs (PSPS)

The fire season of 2024 saw the expanded use of public safety power shutoffs (PSPS), a utility wildfire mitigation tool which can prevent ignitions by preemptively deenergizing electric infrastructure in high fire-risk areas during dangerous conditions. For instance, Idaho Power, in Idaho, and Xcel Energy, in Colorado, each implemented these shutoffs for the first time in 2024. The increasing use of PSPS may be an example of shifting norms regarding the standard of care required of electric utilities for wildfire mitigation, as described above. Although litigation in the case is still in progress, an Oregon jury found in 2023 that PacifiCorp acted recklessly and with gross negligence during the 2020 Labor Day wildfires because it did not preemptively deenergize its infrastructure during high fire-risk conditions. Therefore, it's conceivable that utilities in some states may need to demonstrate that they have implemented plans to use wildfire mitigation tools, possibly including PSPS, in order to avoid a finding of negligence in the event of a fire linked to their infrastructure.

As wildfire risk continues to increase across much of the United States, electric utilities in states beyond those that have recently experienced catastrophic fires may be incentivized to create PSPS plans, both in order to prevent ignitions and in order to avoid a finding of liability in the event of an ignition. However, because PSPS events inherently reduce electric reliability and can cause negative consequences for customers whose power is shut off, particularly during extreme weather events and for customers using critical medical devices that require electricity, the fire-risk benefits of each individual use of PSPS should be weighed against these other potential risks.

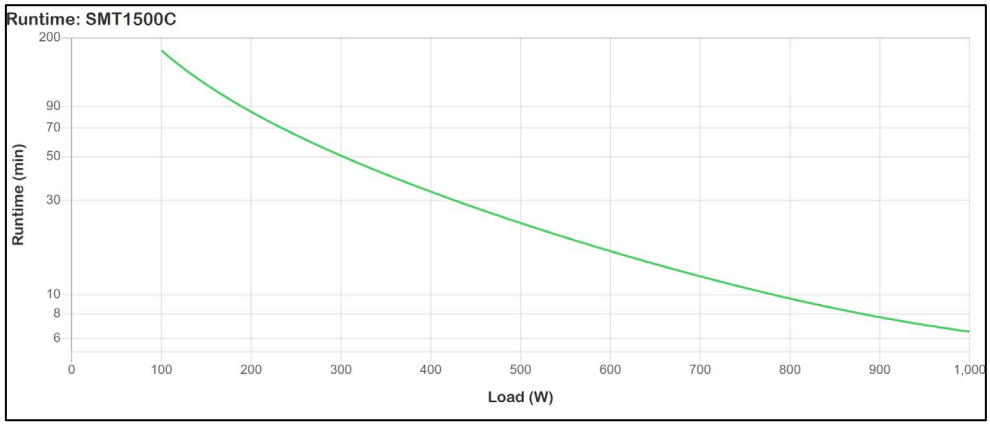
To facilitate this, PSPS plans should be carefully coordinated between utilities, regulators, and affected stakeholders, including both customers and local governments, to ensure that the use of PSPS does not interfere with emergency response or other critical uses. For the same reason, electric utilities' PSPS plans should also include programs to mitigate the potential negative impacts of PSPS events when they do occur, such as the provision of backup power for critical users and the use of integrated system protective-relay system settings to limit the duration and size of shutoffs. The latter measure aggressively disconnects faults, even when they involve lower ground-current flows than are currently used in times or places where they might spark a wildfire.

Final author's comment: Reference 2 is an excellent resource. Any reader that is seriously interested in utility measures to reduce their liability for wildfire ignitions should go through the link in this reference, download and read this document in its entirety.

Also, if, like me (second mountain home), you live in an area in California with serious wildfire risk, you should prepare for public safety power shutoffs (PSPS) and these can last anywhere from many hours to days. There are several ways you can prepare for these. I have used the first method below for my mountain home.

1. Outage-proofing: Any vital function should not be (solely) grid powered. When I'm at my mountain home, I do not watch the TV. Although I do use my (laptop) computer its internal battery lasts for many hours. I also listen to my favorite CDs, but I have a back-up (battery-powered) boom-box for these. I use a wood-burning stove for my heat in winter, and can also use this for cooking. I also have a full complement of kerosene lamps for lighting.

2. Backup Power: There are two potential sources for backup power:
    a. An electric vehicle (EV) with a large battery and battery-to-grid capabilities.
    b. An uninterruptable power supply. As a point of reference, an APC Smart-UPS SMT1500C has the load to run-time curve below, and costs $750. For longer durations and/or higher loads you will probably need to get into APC's larger commercial units and spend several thousand dollars.



    c. A portable or facility-installed generator (propane-fueled for my mountain home).
    d. Some combination of the above methods.