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Witnesses:	D. Schulte L. Westerling

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Mountain View Fire Cost Recovery Application

Before the California Public Utilities Commission

Liberty-04: External Factors

Tahoe Vista, California

June 20, 2025

Liberty-04: External Factors

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I.

Executive Summary

This chapter of testimony explains the external factors that contributed to the Mountain View Fire's rapid progression and destructiveness. External factors outside of Liberty's control drove the size and magnitude of the damages caused by the Mountain View Fire, including extreme winds that increased substantially shortly after ignition and propelled the fire's rapid spread during the initial 12-14 hours. After that initial period, the fire's progression began to slow with the arrival of precipitation and decreasing winds, but by that time virtually all of the damage had already occurred.

Climatological conditions comprise one of the external factors beyond Liberty's control that contributed to the size and severity of the damage caused by the Mountain View Fire. Climate change has magnified the risk of wildfires in California by causing an increase in temperatures, a long term drying trend that increases the flammability of fuels, and an increased frequency of precipitation extremes that promote fuel growth. Combined, these trends have led to substantially longer fire seasons, increasing the risk of fires igniting in receptive fuel beds during windier months and in critical fire conditions that cause fires to overwhelm suppression efforts. Precipitation in the area in the two weeks leading up to the fire and the onset of winter storms had led weather forecasters and utilities in the region to understand the fire season to be over. There also was no Red Flag Warning issued for November 17, 2020 and no elevated fire threat was forecasted. But low relative humidity and higher-than-forecast winds observed on the day of the fire's ignition dried out the predominant natural fuel types near the origin area, which were highly responsive to short term climactic conditions. These worse-than-predicted on-the-ground conditions facilitated the fire's ignition and propelled its rapid progression in the critical early hours when most of the damage occurred. Indeed, retrospective analysis of the observed weather conditions that day shows that only one other day in Walker, California, since 1979 saw a more extreme combination of low humidity and high winds. These meteorological conditions occurred against a decades-long drying trend in the Walker area. Until recently, large November fires like Mountain View Fire were rare in California. Indeed, large November fires have begun occurring primarily in only the last decade and no such fire had occurred in California east of the Sierra Nevada mountains until November 17, 2020, when two ignited on the same day.

The extreme wind conditions, particularly in the critical early hours following the ignition, comprise another external factor that contributed to the size and severity of the damage caused by the Mountain View Fire. Liberty's weather station data near the origin area confirm that the fire ignited in windy conditions. At the time of ignition, sustained winds measured just under 30 mph, with gusts close to 50 mph. In the afternoon and evening hours on November 17, wind speeds increased significantly, reaching peak sustained speeds of over 55 mph and gusts of 85 mph at times. Documentary evidence such as eyewitness photos and videos near the origin area around the time of ignition, the fire's fan-shaped burn scar, and early perimeter maps confirm that the Mountain View Fire was primarily driven by wind. Fire progression modeling demonstrates that a substantial amount of the damages caused by the Mountain View Fire could have been averted under milder wind conditions. This modeling shows that the Mountain View Fire would have spread much more slowly to the parcels damaged by the fire under less severe wind conditions, allowing emergency responders more time to stage defenses ahead of the fire, create more effective fire breaks, order aerial suppression, and call in more mutual aid support. For instance, analysis estimates that approximately $82.8 million in settlement payments to individual and subrogation plaintiffs could have been reduced or avoided under wind conditions 15 mph less than what occurred on November 17-18, 2020.

While this chapter focuses on the impacts of climate change and extreme wind conditions, this testimony is not intended to suggest that these are the only external factors that contributed to the size and severity of the damage caused by the Mountain View Fire.

II.

Climate Change and the Mountain View Fire

It is well established that climate change has resulted in longer wildfire seasons and increased frequency and size of the largest wildfires. Climate change causes wildfires to burn for substantially longer periods of time and increases the amount of land that burns at high fire severity, which is a measure of ecological damage and indicative of the potential for property loss. Wildfire risk has increased significantly more quickly than predicted; by the time the wildfire projections for California's Fourth Climate Change Assessment were finalized and publicized in 2018, the projections for the end of this century (2100) had already been exceeded in the observed record.

A warming climate exacerbates the risk of extreme events that drive wildfire risks in several ways. *First*, warmer temperatures enhance evapotranspiration, increasing atmospheric moisture demand that increases aridity in a region like California already climatologically prone to seasonally long dry periods. *Second*, precipitation is not increasing to an extent that would compensate for this increased evapotranspiration, but rather is becoming more variable, producing greater risks of both wet and dry extremes. This increased frequency of precipitation extremes increases the probability of a "wet-dry whiplash," where a wet winter/spring grows more fuel, followed by a dry autumn/winter that leads to greater fuel flammability during a wind event.[1] Moreover, autumn and winter precipitation is typically what reduces the risk of large wildfires, but increased variability and the lack of adequate autumn precipitation can greatly extend the fire season and increase the risk of fires igniting in receptive (dry) fuels during a time of year when California can experience high wind events. *Third*, increased duration of weather patterns may prolong wind events when they occur, increasing the challenge of managing wind-driven fire risks, limiting the operation of aerial and other forms of fire suppression, and leading to greater temperature and precipitation extremes. *Fourth*, critical fire weather conditions that produce extreme fire behavior are more likely to occur, making fire suppression less effective and requiring greater resources.

These climatological conditions contributed to the rapid spread and destructiveness of the Mountain View Fire that ignited in Walker, California on November 17, 2020. The Mountain View Fire occurred during anomalous conditions that were significantly more extreme than forecasted. The National Weather Service issued a High Wind Warning for the area but did not issue a Red Flag Warning. Based on a retrospective review, however, the observed on-the-ground conditions—primarily the worse than predicted winds—ultimately made November 17 a 99.99th percentile event, with the flammability of the primary natural fuel types involved in the fire highly responsive to short term climatic conditions. Notably, previous occasions with similarly extreme winds tended to occur during wetter conditions. Like much of the arid western United States, the area around Walker has also experienced a significant overall long term drying trend in recent decades, punctuated by greater precipitation extremes in recent years. Because of this drying trend and greater precipitation extremes, large November wildfires—which have historically been relatively rare events in California—are

[1] Dong, C., Williams, A.P., Abatzoglou, J.T., Lin, K., Okin, G.S., Gillespie, T.W., Long, D., Lin, Y.H., Hall, A. and MacDonald, G.M., 2022. The season for large fires in Southern California is projected to lengthen in a changing climate. Communications Earth & Environment, 3(1), at 22; Westerling, A.L., Cayan, D.R., Brown, T.J., Hall, B.L. and Riddle, L.G., 2004. Climate, Santa Ana winds and autumn wildfires in southern California. Eos, Transactions American Geophysical Union, 85(31), at 289-296.

becoming more frequent and more severe in recent years. The Mountain View Fire was the largest fire[2] that ignited in the month of November east of the Sierra Nevada in California since comprehensive modern satellite recordkeeping began in 1984. And because the land within the Mountain View Fire's footprint had not seen a large fire within the last decade, the flames spread rapidly once the fire ignited, driven by high winds and favorable fuel buildup.

A. Intensifying Climate Change Exacerbates Fire Risk and Makes Fire Suppression More Difficult

Climate change continues to progress globally as atmospheric greenhouse gas concentrations continue to rise. Rising concentrations of greenhouse gases such as carbon dioxide, methane, nitrous oxide, and water vapor directly increase temperatures at the surface as the atmosphere absorbs more infrared energy coming from the Earth, some of which is reradiated back towards the ground. Climate system feedbacks such as increased evapotranspiration (evaporation of water from soils and water bodies, and transpiration of water from plants), reductions in land snow and ice and sea ice cover, and changes in vegetation cover, continue to amplify warming.[3] Rising temperatures lead to more evaporation and increased atmospheric water vapor, which is also a greenhouse gas.

Because climate system feedbacks are not all evenly distributed across the Earth's surface, there is a strong tendency for greater warming at higher latitudes, especially due to changes in snow and ice cover, as well as factors such as changes in vegetation cover. This differential heating of the Earth's surface drives changes in atmospheric circulation that contribute to greater weather extremes, in the form of more persistent weather patterns and greater temperature and precipitation extremes.[4] Increased evaporation due to warmer temperatures also contributes to greater precipitation extremes, while leading to greater drying over arid and semi-arid land areas such as California and much of the western United

[2] As used in this chapter of testimony, a large fire is defined as any fire over 1,000 acres, as measured by the actual burned area indicated on satellite imagery. *See* Xu, Q., Westerling, A.L., Notohamiprodjo, A., Wiedinmyer, C., Picotte, J.J., Parks, S.A., Hurteau, M.D., Marlier, M.E., Kolden, C.A., Sam, J.A. and Baldwin, W.J., 2022. Wildfire burn severity and emissions inventory: an example implementation over California. *Environmental Research Letters*, *17*(8), p.085008.

[3] IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, at 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001

[4] Francis, J.A. and Vavrus, S.J., 2012. Evidence linking Arctic amplification to extreme weather in mid-latitudes. Geophysical research letters, 39(6).

States.[5] Overall drier conditions due to greater evapotranspiration, coupled with increased variability in precipitation, are expected and observed to amplify fire risks in California. Excess precipitation events promote production of fine fuels (*e.g.*, grasses, forbs, leaves, twigs, etc.—fuels with a high ratio of surface area to volume that dry quickly and ignite easily) and greater drying promotes subsequent flammability of fuels.[6]

Due to warmer temperatures and more variable precipitation, the fire season in California has been lengthening in recent decades[7] and is expected to continue to do so with intensifying climate change.[8] When increased variability in precipitation results in autumn and/or winter rains failing to sufficiently wet fuels to significantly reduce flammability, the potential fire season can extend much later into the year, and coincide for longer with the season when significant wind events are more likely

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5 Westerling, A.L., Hidalgo, H.G., Cayan, D.R. and Swetnam, T.W., 2006. Warming and earlier spring increase western US forest wildfire activity. *science*, *313*(5789), at 940-943.; Westerling, A.L., 2016. Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *371*(1696), at 20150178; Albano, C.M., Abatzoglou, J.T., McEvoy, D.J., Huntington, J.L., Morton, C.G., Dettinger, M.D. and Ott, T.J., 2022. A multidataset assessment of climatic drivers and uncertainties of recent trends in evaporative demand across the continental United States. Journal of Hydrometeorology, 23(4), at 505-519; Allan, R.P. and Douville, H., 2024. An even drier future for the arid lands. Proceedings of the National Academy of Sciences, 121(2), at e2320840121; Simpson, I.R., McKinnon, K.A., Kennedy, D., Lawrence, D.M., Lehner, F. and Seager, R., 2024. Observed humidity trends in dry regions contradict climate models. Proceedings of the National Academy of Sciences, 121(1), at e2302480120; Turco, M., Abatzoglou, J.T., Herrera, S., Zhuang, Y., Jerez, S., Lucas, D.D., AghaKouchak, A. and Cvijanovich, I., 2024, April. Nearly all of the increase in summer forest fires in California since 2001 is directly attributable to human-caused climate change. In EGU General Assembly Conference Abstracts (at 6133); Kumar, M., AghaKouchak, A., Abatzoglou, J.T. and Sadegh, M., 2025. Compounding effects of climate change and WUI expansion quadruple the likelihood of extreme-impact wildfires in California. npj Natural Hazards, 2(1), at 17.

6 Westerling et al. 2004; Westerling et al. 2016; Williams, A. P., Abatzoglou, J. T., Gershunov, A., Guzman-Morales, J., Bishop, D. A., Balch, J. K., & Lettenmaier, D. P. (2019). Observed impacts of anthropogenic climate change on wildfire in California. Earth's Future, 7, 892–910. https://doi.org/10.1029/2019EF001210; McEvoy, D.J., Pierce, D.W., Kalansky, J.F., Cayan, D.R. and Abatzoglou, J.T., 2020. Projected changes in reference evapotranspiration in California and Nevada: Implications for drought and wildland fire danger. Earth s Future, 8, e2020EF001736 [online]; Dong et al. 2022, Turco et al. 2024, Kumar et al. 2025.

7 Westerling et al. 2006; Westerling et al. 2016.

8 Dong et al. 2022.

to occur.[9] The combination of dry fuels and high winds can produce large, damaging wind-driven fires at a time of year when historically such events were rare.

Finally, extreme warm, dry, windy conditions—termed "critical fire weather"—can produce extreme fire behavior when fires ignite. Extreme fire behavior refers to characteristics such as rapid spread rates, spot ignition of fires ahead of a flaming front due to wind-blown embers, and phenomena such as "fire whirls" and strong convection columns (rising columns of heated gases, ash, particulates, and debris from a fire).[10] Fire progression is difficult to predict under these conditions, and fire suppression can be very difficult or ineffective. For example, aerial support operations can be hampered by high winds; embers can be carried greater distances; and fuels exposed to embers are more likely to ignite. As a result, fire lines/breaks need to be wider, and firefighters face greater risk working close to active burns. The confluence of the climate change effects described above (warming, drying, more variable precipitation, and fire seasons extending into windier months) mean that fires are less amenable to control with available fire suppression resources.

B. Climatological Factors Exacerbated the Mountain View Fire's Destructiveness

Against the backdrop of climate change-induced wildfire risk, the Mountain View Fire ignited on November 17, 2020 in Walker, California. Several climatological factors contributed to its rapid spread and destructiveness.

The Mountain View Fire ignited and spread during anomalous weather conditions that were more extreme than forecasted. Although the National Weather Service issued a High Wind Warning for the area for that day—forecasting winds of 10 to 15 mph with gusts up to 45 mph increasing to 20 to 30 mph with gusts up to 65 mph in the afternoon—it did not issue a Red Flag Warning or otherwise forecast fire weather conditions. On the day of the fire, minimum estimated relative humidity was 18.9%.[11] Humidities less than 30% are considered conducive to fires escaping control. While this level of relative humidity is not unusual for a climatologically arid location like Walker, the observed average wind speed for that day was in the 99th percentile for this location, as Figure 1 shows. These winds were significantly more extreme than predicted and drove the rapid spread of the fire, fanning flames and carrying burning embers ahead of the flames, complicating fire suppression. When relative humidity

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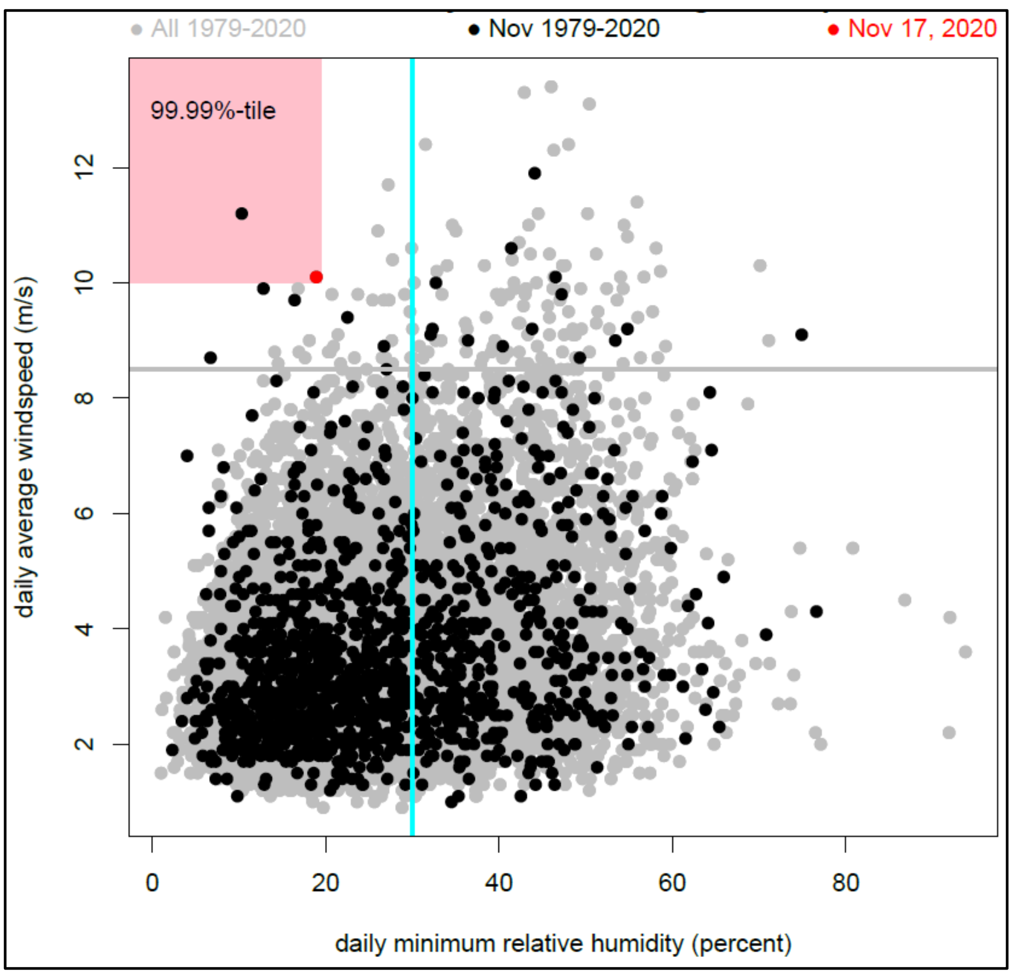
[9] Dong et al. 2022

[10] "Terminology", InciWeb, available at https://inciweb.wildfire.gov/terminology; Allaby and Park 2013.

[11] Data from Abatzoglou, J. T. (2013).

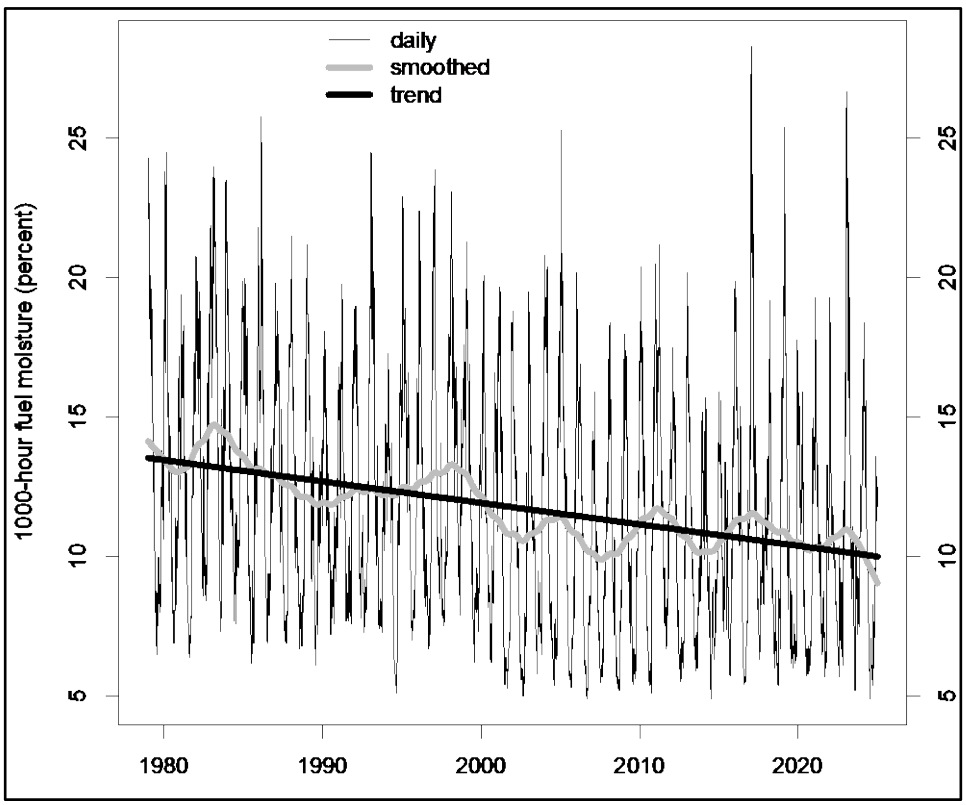
and daily average wind speed observed that day are combined, November 17, 2020 ranked in the 99.99th percentile for all days in Walker since 1979. In other words, only one other day out of more than 15,000 days since 1979 saw a combination of observed relative humidity and daily average wind speed more extreme and conducive to rapid wildfire spread than the day the Mountain View Fire ignited. This retrospective analysis shows that these observed conditions posed significantly more serious wildfire risks than anticipated based on forecasts. As illustrated in Figure 1, typically, on most days when wind speeds exceed the 99th percentile in the Walker area, relative humidity is above 30%. In addition, the flammability of dominant natural fuel types (grass and understory, brush, litter) in the area responded quickly to short term weather conditions, with fuel moistures declining rapidly in the presence of high winds.

Figure 1: Daily Minimum Relative Humidity and Average Wind Speeds in Walker, CA



Over the last four decades, Walker has also experienced a significant long-term drying trend in estimated fuel moistures (p-value < 2.2e-16), with 1,000-hour fuel moistures declining significantly since 1979, as Figure 2 shows. At the same time, three of the four wettest extremes have occurred since 2017. As explained above, greater evapotranspiration resulting from climate change has contributed to this long-term drying, which, in turn, has contributed to increased flammability of fuels. Precipitation extremes, also caused by climate change, exacerbate the risk of wildfires by promoting the growth and accumulation of fine fuels such as grasses, forbs, leaves and twigs that are especially vulnerable to quick drying, and rapid spread once a fire ignites. These types of fuels were predominant near the origin area, and helped drive the Mountain View Fire's rapid progression on a day when the combination of wind and low humidity made these fuels especially conducive to combustion.

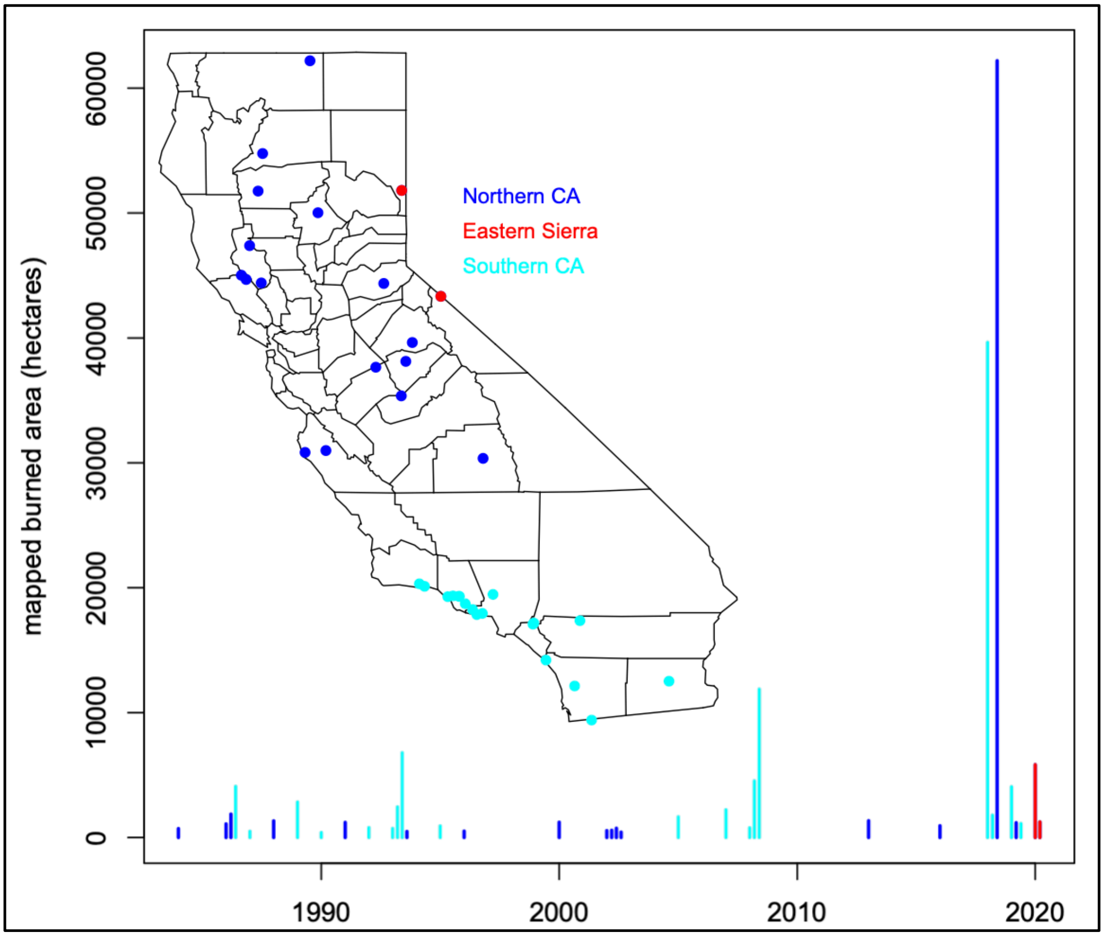
Figure 2: Declining Fuel Moisture Trend in Walker, California Since 1979[12]



[12] Data from Abatzoglou, J. T. (2013), Development of gridded surface meteorological data for ecological applications and modelling. Int. J. Climatol., 33: 121-131.

As Figure 3 demonstrates, the Mountain View Fire also occurred against the backdrop of a recent trend in the increase in frequency and size of large fires occurring outside of the traditional fire season. As discussed, warmer temperatures, a long-term fuel moisture drying trend, and more variable precipitation resulting from climate change have contributed to the occurrence of large and destructive fires outside the traditional fire season by increasing the risk that dry flammable fuels persist for longer during windier months. In California, over the last 40 years, large November fires accounted for less than 2% of the total number of large fires and less than 2% of area burned in all large fires. In other words, historically, large and destructive fires were extremely rare and highly unlikely to ignite in November in California. But 25% of all large November wildfires in the state have occurred since just 2016 (including the Mountain View Fire), accounting for nearly 60% of the total area burned in November fires over the last four decades. During that period, only two large November fires have occurred in California east of the Sierra Nevada mountains. Both these fires—the Mountain View Fire and the Laura 2 Fire—ignited on November 17, 2020. And the Mountain View Fire has been, by far, the largest of November fires in California east of the Sierras since comprehensive modern satellite recordkeeping began in 1984. Statewide, 2020 was the largest wildfire season in recorded California history at the time, burning approximately 4.2 million acres (more than 4 percent) of the State.

Figure 3: Increasing Trend in Area Burned in Large California Wildfires in November



In addition to extreme winds, dry fuel conditions, and a historically long fire season, another external factor that contributed to the rapid spread of the Mountain View Fire was the lack of recent fire history within much of the Mountain View Fire's footprint. Records show that the area within the Mountain View Fire's perimeter had not seen any large fires in at least a decade. Because of this lack of recent fire history, the fire encountered significant fuel build up that further contributed to the fire's intensity and destructiveness, as winds drove it northward and eastward from the origin area near Mountain View BBQ.

III.

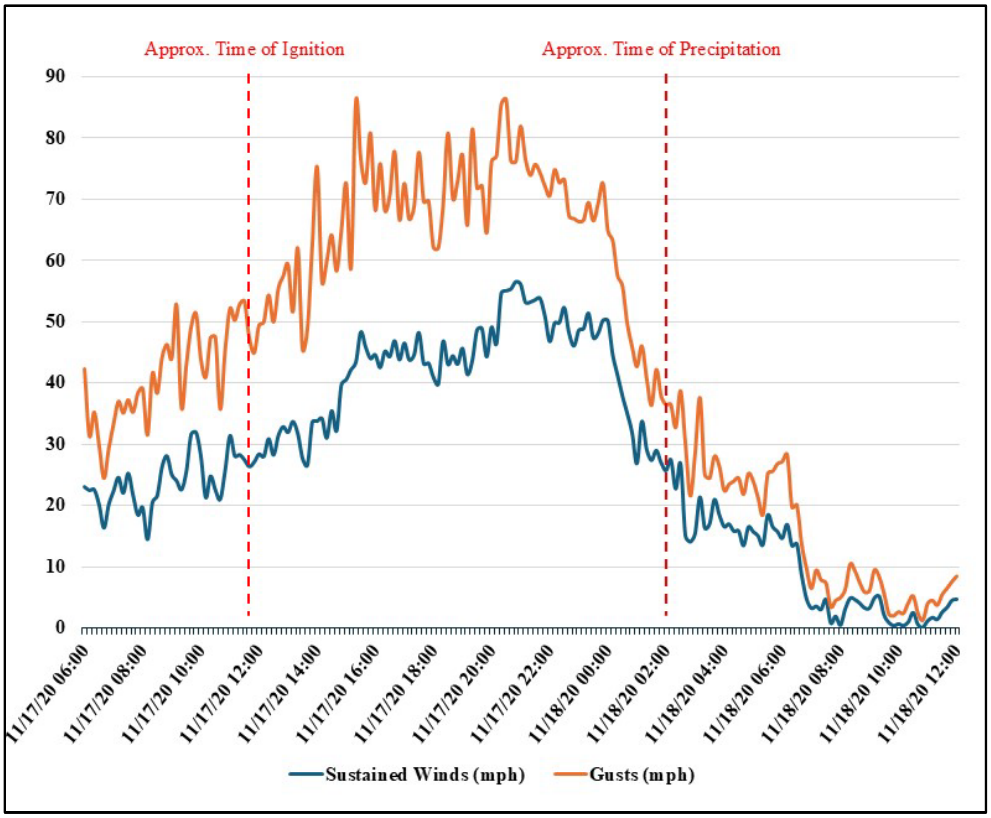
The Impact of Wind on the Spread and Destructiveness of the Mountain View Fire

The Mountain View Fire ignited in Walker, California, just before 12:00 p.m. on November 17, 2020. Data from Liberty's weather stations near the origin area and photos and videos taken around the time of ignition and after the fire consumed the origin area show that strong winds around the time of ignition propelled its initial spread northward. Wind speeds increased even more in the early hours of the fire's spread, at times gusting as high as 85 mph and driving its rapid growth. By the time winds began to subside and precipitation began to fall in the early morning hours of November 18, the fire had caused virtually all of the damage. In this crucial initial 12 hour window, fire suppression efforts were overpowered and forced to focus on prioritizing life safety over property defense. The fire's high rate of spread and persistent strong winds hampered the ability of first responders to contain its growth and limited the opportunity for more effective suppression strategies like aerial attacks, creating fire breaks, and advance staging of resources. Fire progression modeling shows that, under a scenario where wind speeds were 15 mph less, approximately $82.8 million in settlement payments to individual and subrogation claimants would likely have been significantly reduced or avoided. Because the fire's footprint contained large swaths of publicly-owned lands, a substantial portion of the damages claimed by public entities also likely could have been reduced or avoided.

A. Progression of the Mountain View Fire Was Driven by Strong Winds

Weather data and documentary evidence show that the Mountain View Fire was primarily driven by strong winds that significantly increased in the afternoon and evening of November 17 following the ignition of the fire. As described in *Liberty-03: Prudence of Operations*, Liberty had six weather stations on the Topaz 1261 Circuit at the time of the Mountain View Fire, as part of its effort to enhance situational awareness across its system. One of these stations—LIB06—was located approximately 2.5 miles to the northwest of the fire's origin area. The data from LIB06 show that the extreme wind conditions developed just as the fire ignited and began to spread, propelling its rapid progression and destructiveness particularly during the first 12 hours. At noon, around the time when the Mountain View Fire ignited, sustained winds measured 28.4 mph, with gusts up to 49.4 mph. At 3:00 p.m., sustained winds measured 40.6 mph, with gusts up to 72.7 mph. Shortly before 9:00 p.m., winds peaked at approximately 56 mph sustained, with gusts over 85 mph. Thus, the weather station data show that wind speeds increased substantially just as the fire ignited and reached their peak strength in the mid-afternoon and evening hours. These high winds persisted for the first 12-14 hours of the fire, subsiding to below 30 mph sustained and 40 mph gusts in the 1:00 a.m. hour on November 18, shortly before rain began to fall.

Figure 4: Wind Speeds Near Origin Area (November 17-18, 2020)



Photographs and videos taken from around the origin area shortly after the fire's ignition also show that the Mountain View Fire was driven primarily by wind. The general principles of wildland fire behavior dictates that the lower the wind speed, the more a fire spreads in a circle. On the other hand, a wind-driven fire spreads in a fan shape from its base and generally produces long, narrow leaf-shaped perimeters. Figure 5 shows an aerial view of the burn scar near the fire's origin area. The heel of the fire is marked with an orange oval, with the direction of fire spread indicated by the red arrow. The green-colored lines to either side of the red arrow indicate the fan-shaped flanks of the fire, based on the degree of fuel consumption in the field. This burn scar is consistent with the characteristics of a rapidly spreading wind-driven fire.

Figure 5: Annotated Photograph of Aerial View of Burn Scar near Origin Area

Figure 6 is a still from a video taken by an eyewitness to the fire approximately 10 minutes after the fire's ignition, with the witness's approximate location and perspective indicated in the second image. This still image shows that, within 10 minutes, the fire had traveled all the way across the field to the north of Highway 395, a distance of approximately 550 feet. This image also captures the flames' high intensity and the fire's narrow leading edge and extreme rate of spread. These characteristics are typical of a wind driven fire from a point source.

Figure 6: Still Image Taken from Eyewitness Video Showing Extreme Rate of Spread

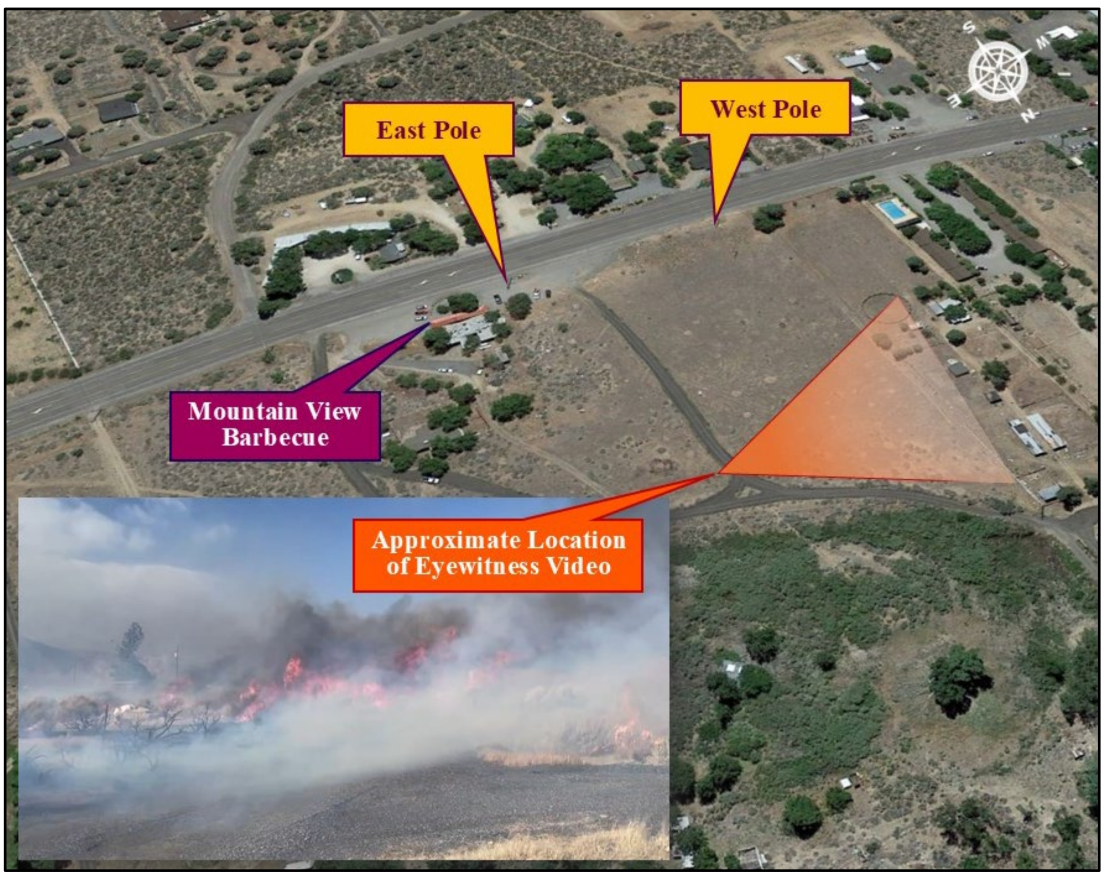
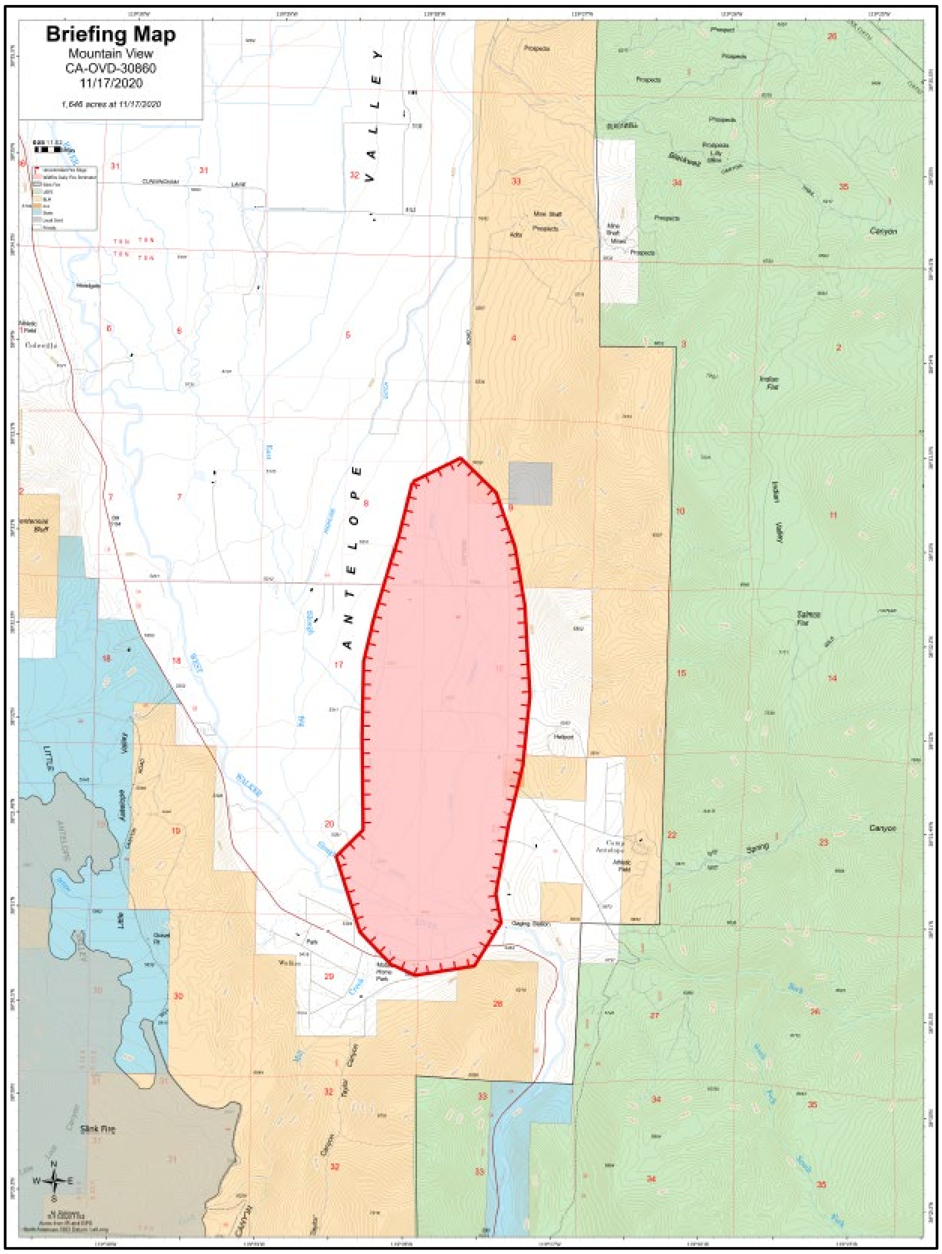


Figure 7 shows a preliminary perimeter map of the Mountain View Fire around 5:30pm on November 17. By then, the Mountain View Fire had already consumed approximately 1,650 acres, in a little over just five hours. This map shows that the fire spread rapidly northward from the origin area in the first few hours after ignition, resulting in an elliptical shape typical of wind-driven fires.

Figure 7: Perimeter Map of Mountain View Fire around 5:30 p.m. on November 17, 2020



B. Extreme Winds Exacerbated the Damage Caused by the Mountain View Fire

As discussed above, the Mountain View Fire was a wind-driven fire. It spread quickly within the first 12 hours after ignition, the crucial period when virtually all damage caused by the fire occurred. The extreme wind conditions that drove the fire's initial growth also exacerbated the damages the fire caused by limiting emergency responders' ability to control its spread and protect structures. Fire progression modeling shows that a significant portion of these damages could have been avoided or reduced if the winds were 15 mph less than the observed conditions.

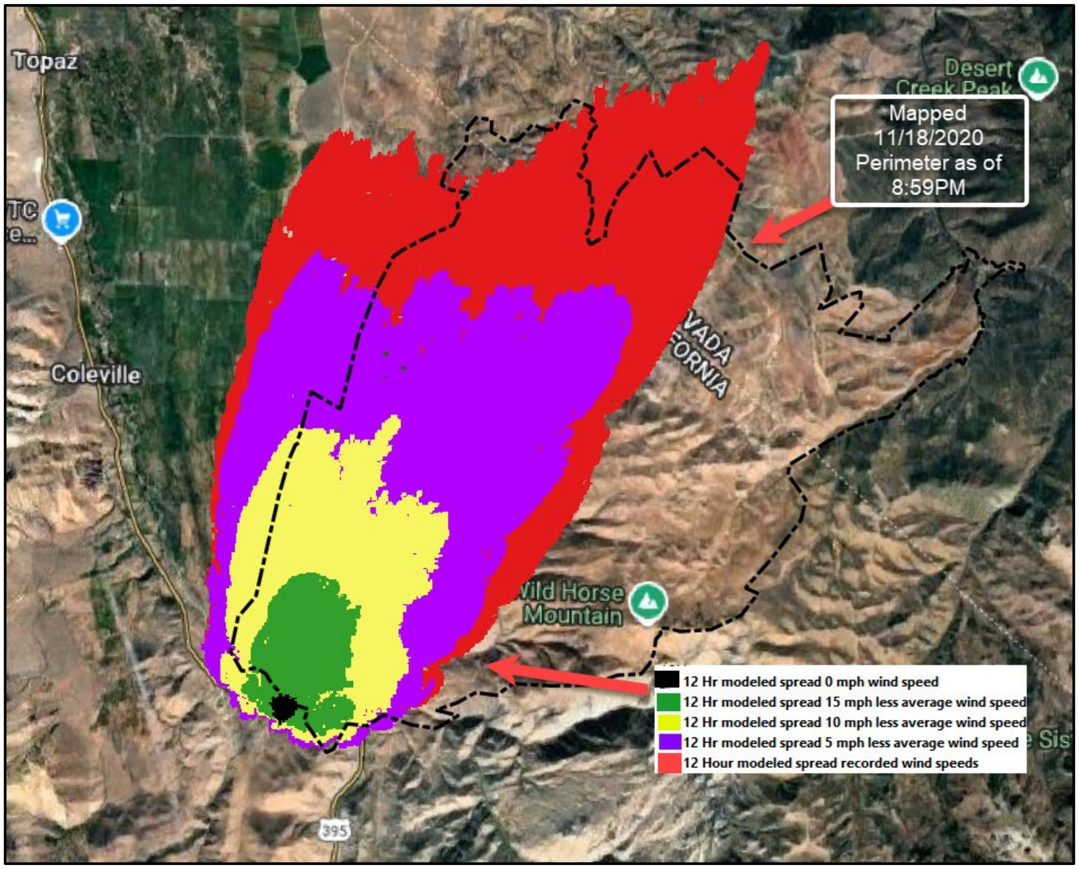
1. Almost All of the Damage Caused by the Mountain View Fire Occurred Within the First Twelve Hours Following Ignition

Based on weather data and modeling, sustained winds in and around the ignition site were approximately 30 mph when the fire ignited and began to spread. Real-Time Mesoscale Analysis (RTMA) data likewise show sustained wind speeds of around 30 mph at 20 feet above existing vegetation during the fire's spread. These wind conditions accelerated the fire's spread, increased flame lengths, and caused spotting downwind and ahead of the main fire head.

To assess the impact of these extreme wind conditions on the size and severity of the damage caused by the Mountain View Fire within the first 12 hours, I assessed the extent and speed of the fire's spread under different wind conditions using the baseline wind scenario established from RTMA data described above. I calibrated the baseline wind simulation using observed fire progression. I then ran the model under scenarios that reduced the 20-foot wind speed by 5 mph, 10 mph, 15 mph, and to no wind.

Figure 8 shows the modeled fire progression for the various wind scenarios at 12:00 a.m. on November 18, 2020.

Figure 8: Modeled Fire Progression as of 12:00 a.m. on November 18, 2020 Under Different Wind Scenarios



Under the baseline scenario based on observed wind speeds, it took just approximately 6-8 hours for the fire to reach all land parcels within or near the fire perimeter associated with damage claims against Liberty. With a 5 mph reduction in wind speed, the fire would have taken approximately 8-10 hours after ignition to reach these claimant parcels. With a 10 mph reduction in wind speed, it would have taken 12-14 hours to reach these claimant parcels. With 15 mph less wind, within the first 12 hours, the fire would not have reached parcels accounting for approximately 49% of settlement payments. Under those milder wind scenarios, as described in more detail below, the slower rate of the fire's spread would have increased the likelihood of more effective fire suppression. And with no wind, the model showed that the fire would have reached only two claimant parcels, and even those damages likely would have been avoided by fire suppression efforts.

2. With Lower Wind Speeds or Earlier Precipitation, the Mountain View Fire Would Have Been Contained to a Much Smaller Footprint

The wind conditions that led to the Mountain View Fire's rapid spread also hampered emergency responders' suppression efforts by limiting the opportunity for aerial suppression and forcing responders to focus on protecting life and safety rather than on defending properties and structures. This allowed the fire to cause much of its damage before precipitation began to fall and wind speeds decreased in the overnight hours of November 18.

The reduced wind scenarios of 15 mph and no wind would have significantly increased the likelihood that emergency response personnel would have contained the fire more effectively within the first 12 hours. After that point, subsiding winds and precipitation, which began to fall around the 2:00 a.m. hour, significantly mitigated the risk of rapid spread.[13] At these reduced wind speeds, long-range spotting and flame length would have all been substantially less impactful on fire spread. As a result, firefighters would have had more time to engage in active suppression along the fire's main front and create fire breaks where appropriate. They would have had greater opportunity to devote more resources to defending structures, instead of prioritizing—as they correctly did—life and safety. Moreover, in these reduced wind scenarios, emergency response personnel from agencies farther away could have had more time to arrive on scene and contribute additional firefighting resources in the early hours of the fire.

Observed wind speeds posed a barrier to the use of aerial firefighting resources. At observed wind speeds, it would have been extremely difficult, if not dangerous, for helicopters, air tankers, or other aerial resources to contribute effectively to fire suppression efforts. Indeed, no aerial suppression was used to fight the Mountain View Fire. At reduced wind scenarios of 15 mph, firefighters likely would have ordered aerial attacks, which would have been more effective when combined with the ground forces in combatting the fire's spread than from the ground alone, especially given the remoteness of the area within the fire's footprint.

These additional fire suppression efforts would have reduced the spread of the fire during the time period when almost all damage caused by the fire occurred.

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[13] The National Weather Service's RAWS station in Walker recorded over a quarter-inch of precipitation between approximately 2:00-7:00 a.m. on November 18, and a total of 0.47 inches of precipitation within the second 12-hour period after the fire's ignition.

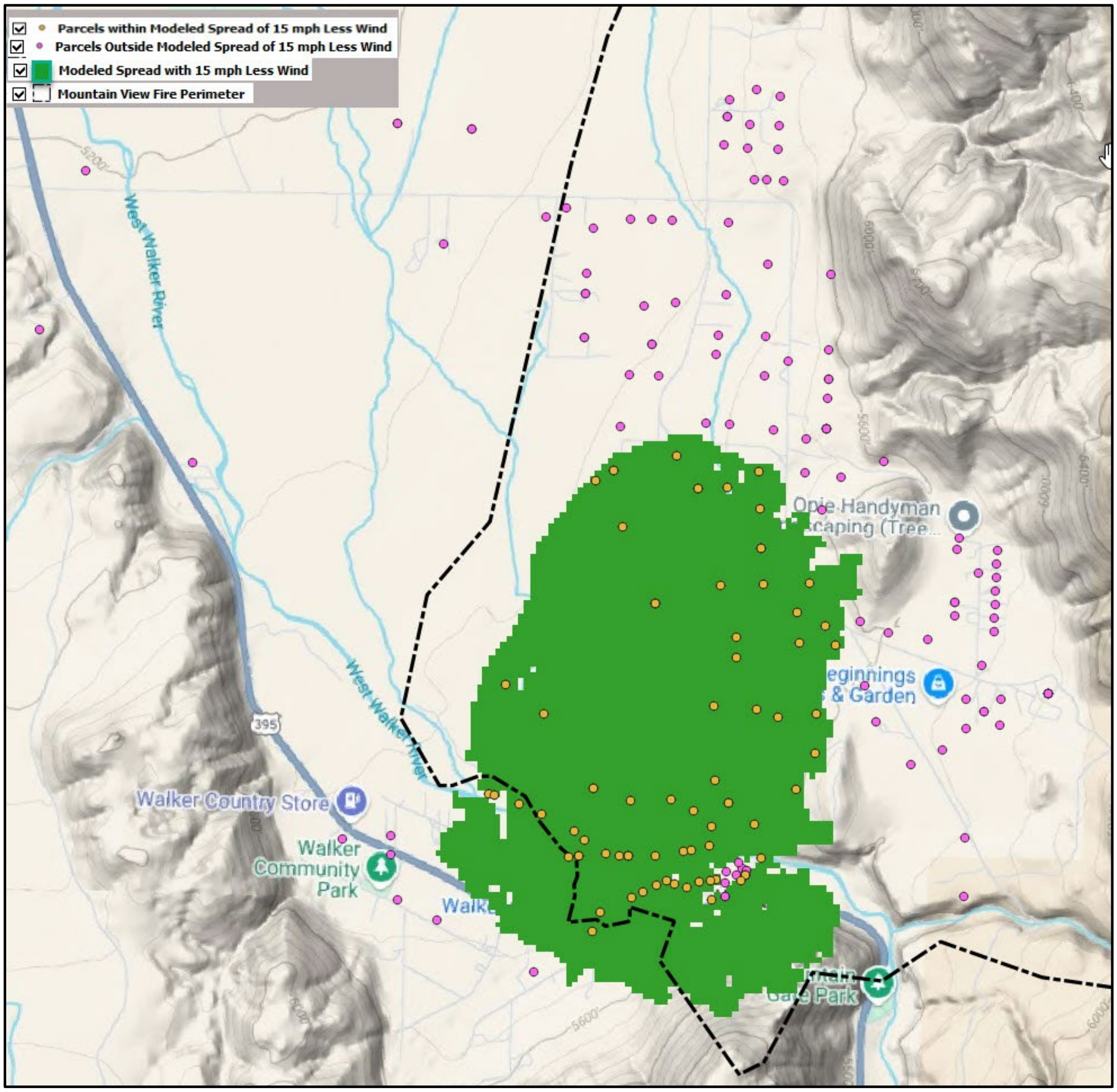
Likewise, precipitation that began in the early morning hours on November 18 proved critical to suppressing the Mountain View Fire. If precipitation had arrived earlier, that also would have aided fire suppression efforts and reduced the damage ultimately caused by the fire. Indeed, the nearby Pinehaven Fire provides an illustrative comparison. The Pinehaven Fire ignited around 1:00 p.m. on November 17 in the Caughlin Ranch area of Reno, Nevada. In other words, it ignited just an hour after the Mountain View Fire and in an area that experienced similarly anomalous weather conditions. But precipitation arrived to the area sooner after ignition of the Pinehaven Fire and forward progress by the fire was stopped by 7 p.m. that same evening. The Pinehaven Fire burned only 512 acres, with 5 structures destroyed and another 15 structures damaged. In the early afternoon on November 17, the Laura 2 Fire also ignited near Doyle, California, about 100 air miles northwest of Walker. Laura 2 also spread quickly through a small town, driven by gusts up to 60 mph, and eventually burned approximately 2,800 acres and damaged approximately 40 homes and outbuildings. Like the Pinehaven Fire, Laura 2's forward progress was slowed by about 6-7 p.m. on November 17, just a few hours after it ignited.

3. Estimate of Claims Payments Potentially Avoided

Using data regarding individual plaintiffs' and subrogation plaintiffs' claims and settlements provided by Liberty, I estimated the amount of settlement payments that would have been avoided had there been less wind by examining which parcels would not have been reached by the fire within the first 12 hours and the value of settlement payments associated with those parcels.

Under fire progression modeling with 15 mph less wind, I estimated that the fire would not have reached the parcels indicated in Figure 9. In total, claims attributed to these parcels and others further away from the fire perimeter accounted for a total of approximately $82.8 million in settlement payments. Damages to parcels within or near the fire's perimeter would have likely been substantially reduced or avoided under milder winds—along with more effective fire suppression efforts in less windy conditions and the overnight precipitation described above. It is also likely that payments made to claims associated with addresses further away from the fire's perimeter—which included smoke and ash claims, evacuation costs, and business and livestock losses—would also have been reduced or avoided.

Figure 9: Settlements Avoided or Reduced Under 15 MPH Reduced Wind Scenario



Moreover, as indicated in Figure 10, a substantial portion of the fire's footprint—especially outside the immediate vicinity of the origin area—consisted of public lands, owned by the United States Forest Service, Bureau of Land Management, the Bureau of Indian Affairs, and the County of Mono. As set forth in *Liberty-05: Litigation and Claims Resolution*, public entities or their affiliates—including the Bridgeport Indian Colony, the Toiyabe Indian Health Project, Inc., the County of Mono, United States Department of Agriculture and Bureau of Land Management—asserted civil claims or presented demands against Liberty for damages resulting from the fire. Under milder wind scenarios with the fire contained to a much smaller footprint, a substantial portion of the public entities' damages likely would have been reduced or avoided.

Figure 10: Public Lands Within Mountain View Fire's Footprint