



Office of the City Manager

ACTION CALENDAR

February 11, 2025

To: Honorable Mayor and Members of the City Council

From: Paul Buddenhagen, City Manager

Submitted by: David Sprague, Fire Chief

Subject: Effective Mitigations for Berkeley's Ember Resilience (EMBER): Leave Early and Fire Department Staffing

RECOMMENDATIONS

Provide insights, feedback and input on two proposals below as well as desired next steps:

1. Proposal 1: Evaluate the thresholds for the City's Extreme Fire Weather designation and the National Oceanic and Atmospheric Administration's (NOAA) Particularly Dangerous Situation (PDS) designation, considering how use of each would impact the City's "Leave Early" concept. Staff propose returning to City Council no later than the 2nd week of May 2025; and
2. Proposal 2: Affirm City Council support for Fire Department staffing recommendations 1, 5, 6, and 10 from the Fire Department Standards of Coverage and Community Risk Assessment (SOC) study.

SUMMARY

Recent events have corroborated historical precedent, validating the limited effectiveness of evacuating after a wildfire has started during extreme conditions. If we wait to begin evacuations until after a wildfire has started under extreme conditions, we expect loss of life and unnecessary loss of property as responders divert efforts from property conservation to supporting evacuation. Berkeley's practice of recommending that residents leave the hills during extreme weather conditions even BEFORE a fire ignites should be reaffirmed. In addition, the City's thresholds for Extreme Fire Weather should be evaluated and potentially aligned with evolving National Weather Service practices wherever possible. The City should continue to explore methods for expanding Extreme Fire Weather community education and encouraging community members to leave the Berkeley Hills during Extreme Fire Weather.

Additionally, the Citygate Standards of Coverage study provided staffing recommendations to meet the current threat posed by events like wildfire. These recommendations should be revisited and reaffirmed by the Council.

FISCAL IMPACTS OF RECOMMENDATION

The Department has and will continue to work within its established budget to implement what recommendations it can, while remaining budget neutral. The Department will return to Council with grant applications, creative funding strategies, and/or proposals for future budget processes. This item creates no new impacts to the General Fund.

CURRENT SITUATION AND ITS EFFECTS

Proposal 1: Extreme Fire Weather and Leave Early

Since 2018 the Berkeley Fire Department has used the “Extreme Fire Weather” designation to indicate the potential for weather conditions under which any fire that started has potential to grow quickly, leading to significant loss of life and property.

This Berkeley-specific designation indicates a National Weather Service forecast for very fast winds and very low humidity levels during a Red Flag Warning.

Fires that spread under Extreme Fire Weather conditions can quickly become catastrophic. The City recommends that all residents make plans to leave the hills during periods of Extreme Fire Weather, especially those residents who require more time to evacuate.

Advising residents to leave their homes during fire weather, ahead of an actual ignition, can have substantial challenging implications for some residents. Thus, aligning the City’s “Leave Early” advisories with weather that is known to carry the highest risk for ignition and rapid-fire spread is key to building confidence and maintaining community trust.

Since the City of Berkeley began using the “Extreme Fire Weather” designation, the local National Weather Service office introduced the “Particularly Dangerous Situation” designation, which serves a similar to Berkeley’s Extreme Fire Weather definition. The Fire Department will engage with NOAA to compare and contrast thresholds used by NOAA in its PDS rubric against the thresholds used for the City’s Extreme Fire Weather policy, with the objective of identifying the most conservative policy that would still trigger a “Leave Early” advisory under the weather conditions that prevailed during the deadliest wildfires in California’s recent history.

Los Angeles provides a valid recent example of the evacuation challenge posed by a large number of people using existing nonconforming roadways, leaving after a fire started under extreme weather conditions. Residents reported waiting 90 minutes to

move a one mile, after which they abandoned their cars and retreated on foot.¹ Fire crews bulldozed cars to make entry, and firefighting response was delayed due to traffic. The 2018 Camp Fire's deadly impact in Paradise, CA, provides a more tangible impact: 85 people died, many of whom perished as they were attempting to evacuate.²

As the Los Angeles fires have reminded us, dense residential communities, especially those on steep hills where roads must conform to topography, do not provide adequate infrastructure to rapidly evacuate an entire region ahead of a fire that is spreading under Extreme Fire Weather conditions. The evacuation challenge to the Pacific Palisades community, even on well-maintained streets, was documented as recently as 2020.³

Proposal 2: Post Fire Ignition - Staffing and Deployment

When an ignition occurs, the Department must be properly staffed with a sufficient number of responders who are deployed effectively so the speed and weight of the response is overwhelming and provides the best chance of stopping a small fire before it grows out of control.

Fire service deployment, simply summarized, is the speed and weight of response. Speed refers to initial (first-due) response of all-risk intervention resources (e.g., engines, ladder trucks, and ambulances). These resources must be strategically deployed across a jurisdiction for response to emergencies within a travel time sufficient to control routine-to-moderate emergencies without the incident escalating to greater size or severity. Weight refers to multiple-unit responses for more serious emergencies such as building fires, multiple-patient medical emergencies, vehicle collisions with extrication required, technical rescue incidents, or wildfire. In these situations, enough firefighters must be assembled within a specified time interval to safely control the emergency and prevent it from escalating into an even more serious event.

The Department retained Citygate to conduct the City's first Standards of Cover (SOC) Study and Community Risk Assessment, to define appropriate levels of service based on a comprehensive analysis of historical performance, existing and projected community risk factors, hazards, population growth and aging, topography, and the density and vertical growth of the built environment. The study results assisted the Department in determining whether the current levels of service can provide appropriate levels of protection for the risks present in the City, and whether current levels of service can meet Council and community expectations.

¹ Bogel-Burroughs, N., and Baker, M., (2025, Jan 8). In the Palisades, an Evacuation Disaster Was Years in the Making.

² AP, 2020, June 16. [Who they were: Victims of the deadliest California wildfire | AP News](#)

³ Bogel-Burroughs, N., and Baker, M., (2025, Jan 8). In the Palisades, an Evacuation Disaster Was Years in the Making.

Citygate's recommendations specifically relate to the City's capacity to respond appropriately during a wildfire.

Recommendation #1: Proceed with the planned conversion to staffing the four current ambulances with non-firefighter paramedics and EMTs.

CURRENT STATUS: The City has established two new classifications, EMT and Paramedic. Five groups of Paramedics have been hired; all are operational in the firehouses. This transition has provided stability and crew continuity on fire suppression apparatus which has already resulted in more effective operations.

Recommendation #5: Increase the staffing on six of the nine firefighting units (four engines, two aerial trucks) from three to four personnel per day.

CURRENT STATUS: The progress in Recommendation #1 will allow the Department to reassign a fourth firefighter to three of the six recommended firefighting units, beginning with the companies in Berkeley's downtown core. This transition is anticipated to be complete no later than mid-2025. The Department has also been awarded a \$7.7 million-dollar FEMA SAFER grant to add a fourth firefighter on three additional engine companies for three years. This upstaffing is also anticipated to occur in mid-2025.

Recommendation #6: Provide the overtime staffing increase from three to four firefighters for engines 3, 4, and 7, which are closest to the eastern hills during high-hazard wildfire threat periods.

CURRENT STATUS: Engine 3 (Russell St. @ College Ave.) will be permanently upstaffed with a fourth firefighter by mid-2025, the Department will work to implement the enhanced staffing at Engine 4 (The Alameda @ Marin Ave.) and Engine 7 (Shasta Road) beginning with the upcoming 2025 wildfire season. This will impact the Department's overtime budget with an approximate cost of \$3,600 per day when the additional staffing is deployed.

Recommendation #10: The City should add a second field operations Battalion Chief 24/7 as soon as fiscally possible.

CURRENT STATUS: Adding a second Battalion Chief is a critical need to enhance operational command and control during day-to-day operations, and also during extreme events like a wildfire or earthquake. The recurring cost in FY25 dollars is approximately \$1.2 million. The Department will continue to pursue opportunities to partially or fully fund the implementation of this recommendation.

BACKGROUND AND DISCUSSION

Leaving Early

When a wildfire is imminently threatening a community, attempting to coordinate mass evacuations has proven to be predictably chaotic and insufficient. Advising residents to leave early and relocate during the periods of highest-risk fire weather, with special focus on people who require additional time, can reduce injury and loss of life. History has shown that waiting too long to evacuate—or not evacuating at all—can lead to tragic outcomes. Wildfires can move unpredictably, creating their own weather, sometimes spreading much faster than residents expect. Once a fire reaches a neighborhood, visibility can be reduced to near zero due to thick smoke, fire, and ember storms. Roads can become easily clogged with traffic, and emergency responders may struggle to reach those in need.

One of the most devastating examples of a late evacuation came during the 2018 Camp Fire in Paradise, CA, where 85 people lost their lives. A number of victims were caught in the process of evacuating, some perishing in their vehicles or on foot, unable to escape as flames overtook them. The fire moved so rapidly that residents had little time to react, leading to panic and chaos. Similarly, during the 2017 Tubbs Fire in Santa Rosa, California, the fire raced into residential areas overnight, catching many people off guard. In both cases, injuries and deaths likely would have been reduced if a leave early campaign had been in place.

Ahead of results from Berkeley's Evacuation and Response Time Study, from lived everyday experience navigating Berkeley's narrow hill roads, and the experience of those attempting to evacuate during the 1991 Oakland/Berkeley Hills Fire, we know that roads in the Berkeley Hills will not accommodate a mass exodus under extreme conditions. Evacuating before the fire arrives allows an orderly departure, reducing the risk of accidents, injuries and deaths caused by panic.

We do not expect that The Evacuation Time Study will provide an evacuation solution to a fire problem under extreme conditions; we do not believe that solution exists outside of a managed retreat from the Berkeley Hills that would reduce the number of people and allow for widening of existing roads. The Study's primary utility will be for distant-source fires. By predicting how long it will take to clear out particular areas of Berkeley. The Study will provide useful information to emergency planners on the right time to issue evacuation orders for fires that are many hours away from our borders. By identifying anticipated traffic congestion points, the Study will also help responders to prioritize extremely limited evacuation support resources. The study will identify Berkeley roadways with the greatest capacities; however, it should be emphasized that directing people to those roadways in an evacuation will not create the capacity necessary to quickly move people out of harm's way. Berkeley's hills do not have adequate roadway capacity to ensure an evacuation that can be completed more quickly than a fire can spread through them.

Fire Department Staffing and Deployment

A properly staffed and strategically deployed fire department is one component of a community's ability to prepare for and respond to a wildfire. However, even the best-staffed and most well-equipped fire departments will be stretched thin during a major wildfire, earthquake, or other large-scale disaster – as we saw in Los Angeles in January. This is because numerous emergencies often occur simultaneously—the wildfire itself, structure fires ignited by embers, medical emergencies including burns and smoke inhalation, calls for help from trapped residents, and traffic collisions during evacuation. Resources can quickly become overwhelmed by the variety and volume of calls for help that occur during these incidents.

A rapid initial response to a wildfire when first detected, with an overwhelming number of personnel, can reduce the risk of wildfire loss the community will incur. In these scenarios the goal is to slow the transition of the vegetation fire to urban structural conflagration down long enough to amass an appropriate number of firefighters to the scene can mean the difference between a fire that impacts several dozen homes and one that engulfs entire neighborhoods.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

Wildfires that transition to a structure-to-structure conflagrations have acute and far-reaching consequences, not only for the environment and climate but also for the stability and well-being of impacted communities. These fires release large amounts of pollutants into the air, including soot and carbon dioxide, which contribute to climate change and degrade air quality. Additionally, toxic byproducts from burning structures, vehicles, and other synthetic material can pose significant health risks to residents and responders.

The water used to combat these fires is often sourced from the city's potable water supply. Once used, it can become contaminated with chemicals, ash, and debris, potentially polluting groundwater and local waterways.

The destruction of homes, businesses, and critical infrastructure leads to substantial economic burdens that jeopardize the financial stability of impacted communities. Rebuilding efforts require significant financial investment, as well as the production, transportation, and installation of new materials—all of which generate additional emissions. For individual residents, the loss of a home or business can lead to long-term financial instability, displacement, and increased insurance costs.

Beyond the physical and financial toll, these disasters leave lasting emotional and psychological scars on affected communities. Residents may experience trauma, anxiety, and grief, particularly when lives are lost, homes are destroyed, or neighborhoods are permanently altered. The social fabric of a community can be disrupted as families and businesses struggle to recover, sometimes forcing relocation and reducing neighborhood cohesion.

RATIONALE FOR RECOMMENDATION

Recent experiences in Paradise⁴ (CA), Santa Rosa⁵ (CA), Lahaina⁶ (HI), Boulder County⁷ (CO), Los Angeles⁸ (CA) and Oakland/Berkeley in 1991⁹ clearly show the results of wildfire becoming established in high-density neighborhoods. Moving residents out of hazardous fire areas before a fire ignites, especially those who require more time to leave, is a pragmatic approach.

CONTACT PERSON

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⁴ Porter, K., Scawthorn, C., Sandink, D. (2021) An impact analysis for the National Guide for Wildland-Urban Interface Fires., *Institute for Catastrophic Loss Reduction*. <https://www.iclr.org/wp-content/uploads/2021/05/ICLR-SPA-Risk-Impact-Analysis-for-the-National-WUI-Fire-Guide-2021.pdf>

⁵ Garrison, J. (2025, January 22). This California city lost thousands of homes to fire. Santa Rosa's rebuilding has lessons for L.A. *The Los Angeles Times*. <https://www.latimes.com/california/story/2025-01-22/santa-rosa-offers-hope-lessons-for-rebuilding-after-la-fires#:~:text=On%20the%20night%20of%20Oct,at%20low%20risk%20for%20wildfire>.

⁶ Kerber, S., Alkonis, D., (2024) Lahaina Fire Comprehensive Timeline Report. *UL Research Institutes Fire Safety Research Institute*. <https://fsri.org/research-update/lahaina-fire-incident-analysis-report-released-attorney-general-hawaii>

⁷ Giammanco, I.M., Hedayati, F., Hawks, S.R., Sanchez Monroy, Z.S., Sluder, E. (2023). The Return of Conflagration in Our Built Environment. *IBHS Wildfire Research Report*. https://ibhs.org/suburban_wildfire_conflagration_whitepaper/

⁸ ¹⁸ IBHS. (2025). 2025 LA County Wildfires: Early Insights. *The Insurance Institute for Business & Home Safety*. <https://ibhs.org/wp-content/uploads/2025-LAFires-EarlyInsights-FINAL.pdf>

⁹ Sullivan, M., Fowler, D., Ed. (1993 December). Report on the Response of the Berkeley Department of Fire and Emergency Services to the Berkeley-Oakland Conflagration of 1991. *City of Berkeley Department of Fire and Emergency Services*.

EMBER: Fire Department Staffing to Support a Wildfire Response

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Attachments:

1: Draft Resolution

RESOLUTION NO. ##,###-N.S.

EMBER: LEAVE EARLY AND FIRE DEPARTMENT STAFFING TO SUPPORT
WILDFIRE RESPONSE

WHEREAS, recent fires have corroborated historical precedent, validating the limited effectiveness of relying on the practice of evacuating after a wildfire has started during extreme conditions; and

WHEREAS, since 2018 the Berkeley Fire Department has used the “Extreme Fire Weather” designation to indicate the presence of weather conditions under which any fire that started has potential to grow quickly, leading to significant loss of life and property; and

WHEREAS, the National Weather Service has introduced the “Particularly Dangerous Situation” designation, which serves a similar to Berkeley’s Extreme Fire Weather definition; and

WHEREAS, a properly staffed and strategically deployed fire department is one component of a community’s ability to prepare for and respond to a wildfire; and

WHEREAS, even the best-staffed and most well-equipped fire departments will be stretched thin during a major wildfire, earthquake, or other large-scale disaster. This is because there are often multiple emergencies occurring simultaneously—the wildfire itself, structure fires ignited by embers, medical emergencies like burns or smoke inhalation, calls for help from trapped residents, and traffic collisions during evacuations—resources can quickly become overwhelmed; and

WHEREAS, a rapid initial response to a wildfire when it first ignites and is detected—with an overwhelming number of personnel can often prevent the fire from escalating to a full-scale disaster; and

WHEREAS, a matter of minutes in response of adequate fire department resources can mean the difference between a fire that impacts a handful of homes and one that engulfs entire neighborhoods; and

WHEREAS, the Fire Department retained Citygate to conduct the City’s first Standards of Cover (SOC) Study and Community Risk Assessment to define appropriate levels of service based on a comprehensive analysis of historical performance; existing and projected community risk factors, hazards, population growth and aging, topography, and the density and vertical growth of the built environment.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City Manager shall direct the Fire Department evaluate the current thresholds for the City’s Extreme Fire Weather designation and the National Oceanic and Atmospheric Administration’s (NOAA) Particularly Dangerous Situation (PDS) designation,

February 11, 2025

considering how use of each would impact the City's "Leavy Early" concept, reporting back to City Council no later than the 2nd week of May 2025; and

BE IT FURTHER RESOLVED that the City Council adopt a resolution affirming support for Fire Department staffing recommendations 1, 5, 6, and 10 from the Fire Department Standards of Coverage and Community Risk Assessment (SOC) study.