

Ahead of the Blaze: Proactive Planning for Wildfire Risks in the Bay Area

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California faces intense wildfire risk that will only worsen over time due to climate change. Local jurisdictions find it increasingly difficult to navigate their many imperatives: preventing structural and human loss, understanding and predicting wildfire behavior, tracking emergent state legislation, and reaching all residents with wildfire resources. As a case example, the City of Oakland lacks comprehensive, proactive wildfire mitigation infrastructure. This article reveals that effective strategies for saving homes and lives incorporate close community and regional partnerships and prioritize limited resources for close-to-home mitigations. In light of these findings, I offer three recommendations for the City of Oakland that balance proactive mitigation with the City's current budgetary constraints, offering a pragmatic path to community resilience in a fire-prone landscape. In the short term, the City could fund a community grants program using preexisting parcel tax revenue and prioritize funding for projects using effective mitigation approaches. In the medium term, the City could pass a Resilient Cities Development Measures zoning ordinance that streamlines permitting for post-fire rebuilding and enhances resilience of affected properties. And in the long term, the City could renew efforts to formalize an East Bay Joint Powers Authority that would coordinate regional wildfire resilience efforts. Though geared toward Oakland's local government, these recommendations are broadly applicable to communities throughout the Western United States.

Introduction

The last few decades have seen an annual average of 70,000 wildfires in the American West, where fires are a natural and essential part of many ecosystems.¹ In California and elsewhere, native species of fire-adapted areas are dependent on wildfire for survival, as it disburses nutrients into the

soil and boosts biodiversity.² However, drought and higher temperatures caused by global climate change paired with a culture of wildfire avoidance have primed California for more frequent, more destructive fires that burn through the built environment and raze natural landscapes.³ Rather than trying to eliminate fire entirely, we must adapt to this new reality.⁴

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¹ *Climate Change Indicators: Wildfires*, United States Environmental Protection Agency (2024).

² *Science: Wildfire Impacts*, California Department of Fish & Wildlife (accessed Dec. 1, 2024).

³ *Id.*

⁴ David E. Calkin et al., *Wildland-Urban Fire Disasters Aren't Actually a Wildfire Problem*, *Proceedings of the National Academy of Sciences* vol 120 no. 51 (Dec. 13, 2023).

The devastating January 2025 fires in Los Angeles bring this point to the fore. A cursory review of California's recent history yields no shortage of other catastrophic wildfires hitting unprepared communities. A Santa Rosa couple miraculously survived the horrific 2017 North Bay firestorms by submerging in and out of the water of their neighbor's pool for six hours.⁵ The conflagration that burned down their neighborhood was the Tubbs Fire, one of many that raged in the area that month. Together, the firestorms burned over 100,000 acres, destroyed over 5,000 structures, and killed 44 people in Sonoma and Napa Counties.⁶ Shortly afterward in 2018, the deadly Camp Fire razed the town of Paradise. Decades prior, the Oakland Hills Tunnel Fire of 1991 spread rapidly and ultimately destroyed over 5,000 structures and killed 25 people. Such disasters initiate a localized post-disaster response, sometimes triggering major reforms. For example, in the seven years since the Tubbs Fire, the City of Santa Rosa pursued major changes to its evacuation planning, landscape management, and zoning codes based on the latest wildfire science.⁷

The City of Oakland has not been proactive in making similar changes. Its fire code is sparse, and its building code does not mention any specific fire-resistant construction measures.⁸ A small demonstration of Oakland's unpreparedness is its blank Fire Prevention Bureau website;⁹

similarly, the Fire Department's "Wildfire District Inspections" page¹⁰ contains limited resources in comparison to other jurisdictions.

Jurisdictions in the East Bay, including the City of Oakland, lack the institutional infrastructure – such as local laws, dedicated funding, or other forms of formalized and actualized authority – to prepare for and mitigate loss from destructive wildfires. Any approach must recognize that wildfires do not stop at jurisdictional boundaries; mitigations are therefore best handled regionally, through interagency collaboration. In doing so, jurisdictions can share the administrative costs and burdens of mitigation activities, decide on grant funding allocations for regional activities rather than local ones, and avoid unnecessary competition for grant awards. In the East Bay, collaboration currently takes the form of a memorandum of understanding (MOU) among 10 local agencies called East Bay Wildfire.¹¹ Oakland District 1 Councilmember and former firefighters union president Zac Unger emphasized that Oakland has improved its fire suppression in recent years, successfully overwhelming small fires with multi-jurisdictional resources that were made possible by the coalition. While this initiative is a good start, structurally, it starts and ends as an MOU: although elected officials from the member agencies meet monthly, the coalition is backed by neither clear, robust policy measures nor the

⁵ Robin Abcarian, *They Survived Six Hours in a Pool as a Wildfire Burned Their Neighborhood to the Ground*, Los Angeles Times (Nov. 19, 2017).

⁶ Bill Gabbert, *Lessons Learned by Fleet Manager during Major Wildfire Siege*, Wildfire Today (Apr. 6, 2018).

⁷ Santa Rosa Fire Department (interviewed Nov. 18, 2024).

⁸ *Oakland Municipal Code*, City of Oakland, California (version Feb. 12, 2025).

⁹ *Fire Prevention Bureau*, City of Oakland (accessed Apr. 8, 2025) <https://www.oaklandca.gov/services/fire-prevention-bureau>.

¹⁰ *Wildfire District Inspection*, City of Oakland (accessed Apr. 8, 2025) <https://www.oaklandca.gov/services/wildfire-district-inspections>.

¹¹ East Bay Wildfire Coalition of Governments, eastbaywildfire.org (version Feb. 27, 2025)

funding to enact them. It appears the initial intent of the coalition was to begin laying the groundwork for the formation of a more formal Joint Powers Authority,¹² but its current goals and priorities make no mention of this original vision.

The political feasibility of implementing local disaster mitigation measures is low, and it is difficult to convince financially strapped jurisdictions to prioritize wildfire planning until it is too late. In the words of Meg McCabe, Executive Director of Fire Safe Marin, “Wildfire mitigation is a race against an unknown clock. If we do everything right, nothing happens.” Local government administrators and elected officials must justify expenditures and naturally want to point to concrete results. Those “results” being the mere absence of disaster make it even more challenging to devote the requisite resources to wildfire mitigation. Consequently, local governments are rife with wildfire plans and post-disaster autopsies without any implementation measures or clear responsibility, including the Woolsey after-fire report documenting Los Angeles County’s response to the Woolsey Fire,¹³ the North Bay firestorms after-fire report mapping lessons learned,¹⁴ the Sonoma County Community Wildfire Protection Plan listing priorities for risk reduction,¹⁵ and Oakland’s own vegetation management plan,¹⁶ the final version of which is not available at the time of this publication. While an

important first step, planning and documentation on their own is insufficient.

In that vein, the California Wildfire Resilience Task Force, a coalition of state, federal, local, and Tribal government representatives, recommends that East Bay cities and counties establish reliable, long-term funding to sustain implementation and enforcement of wildfire plans.¹⁷ After analyzing research and best practices, it is clear that Oakland and other East Bay communities need to go beyond soft recommendations and reactive plans. They must proactively develop the codes, funding mechanisms, and infrastructure to allow for evidence-based mitigation to happen.

We are seeing the beginning of such proactivity following the 2024 election cycle. Although Oakland’s vegetation management plan is currently just a blueprint, Oakland voters just passed Measure MM, a parcel tax that will generate \$2.67 million next year to fund the plan’s implementation.¹⁸ This presents a timely opportunity to rethink Oakland’s approach to wildfire and regional collaboration, particularly in the context of dwindling resources in other parts of the City budget: Oakland faces a critical \$129 million budget deficit in the 2024-25 fiscal year, with an additional \$280 million deficit projected for the next two fiscal years.¹⁹

¹² *East Bay Wildfire JPA Launches New Website*, Oakland Fire Safe Council (2024).

¹³ *After Action Review of the Woolsey Fire Incident*, Los Angeles County Board of Supervisors (2024).

¹⁴ *Lessons Learned from the 2017 North Bay Fire Siege*, CAL FIRE Sonoma-Lake-Napa Unit (2018).

¹⁵ *Sonoma County Community Wildfire Protection Plan 2023 Update*, Permit Sonoma (2023).

¹⁶ Natalie Stuart, *Oakland Vegetation Management Plan Tackles Wildfire Concerns*, The Oaklandside (Jun. 6, 2024); *Revised Vegetation Management Plan*, City of Oakland (2023).

¹⁷ *Central Coast Regional Profile: Concluding Recommendations from Interviews*, California Wildfire & Forest Resilience Task Force (Jul. 14, 2023).

¹⁸ Measure MM – Wildfire Prevention Financing Act, Empower Oakland (2024).

¹⁹ Nicole Neditch, *What it Will Take to Close Oakland’s Structural Deficit: How We Got Here*, SPUR (Jan. 24, 2025).

In this article, I define several key issues that wildfire planning efforts should address, namely preventing human and structural loss, understanding wildfire behavior, tracking shifting state requirements, reaching all residents equitably, and guiding future building patterns. Next, I describe key examples of how other localities are being proactive in addressing these issues through methods like passing and strengthening ordinances, prioritizing grant funding to communities, and forming regional collaborations. I end with recommendations for how the City of Oakland might implement a combination of these approaches, with implications for other communities facing fire risk throughout the West.

Methods

To inform this article, I reviewed local and state laws, academic studies on wildfire behavior, and best practices literature. I also interviewed 12 experts from different local, state, and regional governments (including fire departments and permitting authorities), fire safety nonprofits, think tanks, and wildfire survivors. A complete list is in the appendix.²⁰ Interviewees were selected in an effort to diversify perspectives, bringing expertise from both Northern and Southern California as well as elsewhere in the American West. My questions covered the breadth of each organization's wildfire prevention strategies, what has worked and not worked, and how each interviewee envisions their jurisdiction or state balancing growth and wildfire mitigation in the future. Interviews were conducted between November 12th, 2024 and March 3rd, 2025.

Analysis

Preventing loss of life

Because the utmost priority for wildfire planning is preventing loss of life, communities must incorporate detailed evacuation planning into their approaches to wildfire mitigation. Several interviewees, including CalFire's Northern Region Battalion Chief, emphasized thorough and iterative evacuation planning as critical for saving lives in the event of a wildfire. The Camp Fire's enormous death toll was largely due to inadequate evacuation planning.²¹ In the City of Santa Rosa, Fire Department officials noted in an interview that evacuations during the 2017 Tubbs Fire were chaotic and poorly executed. After learning from their mistakes and creating a "ready-set-go" program for communicating to residents, evacuations for the 2019 Kincaid Fire went much more smoothly. To further improve its emergency systems, the City also has a plan in place to "flush streets" by making all traffic lights green in an evacuation. Assistant Fire Marshal Kemplen Robbins highlighted that the City's evacuation planning has "become more of a scientific, formula-based approach based on historical experience. It's not just a season for Santa Rosa anymore, it's year-round planning." The Marin Wildfire Prevention Authority, a celebrated multi-agency partnership, mentioned recent investments in more informed evacuation planning. They worked with UC Berkeley researchers to develop an evacuation route risk assessment that factored in the tendency of human nature to underestimate danger and evacuate too late, which has subsequently informed route mapping

²⁰ To view the appendix to this article, contact Chelsea Hall: chelsea_hall@berkeley.edu.

²¹ Alexander Maranghides et al., *A Case Study of the Camp Fire*, National Institute of Standards and Technology, technical note (2023).

throughout Marin County.

Preventing structural loss

There are several aspects to preventing structural loss, with clearing the areas closest to a structure generally being the most effective according to interviewees. The three main approaches to preventing structural loss are, in increasing order of importance: vegetation management, defensible space, and home hardening. Vegetation management, also known as fuel management or fuel load management, is the targeted control and elimination of unwanted vegetation through methods such as prescribed burning or brush clearing.²² Vegetation management alone can abate the intensity and scope of wildland fires but does very little to protect communities. As Kimiko Barrett, Senior Wildfire Research & Policy Analyst at Headwaters Economics, noted in an interview, "Fuel management changes wildfire behavior, not necessarily wildfire risk."

Furthermore, defensible space is the buffer created between one's home and the grass, trees, shrubs, or any other wildland area that surrounds it.²³ There are three zones of defensible space, defined in Table 1. Fire Safe Marin's Meg McCabe emphasized that "Clearing Zone 0 is the most important thing that everyone can do. Just 5 feet can save your house."

Lastly, home hardening entails using fire-safe construction materials, maintaining your home, and ensuring the quality of the defensible space surrounding it. This includes installing ember-resistant vents, double-paned windows, and gutter screens, as well as regularly clearing vegetation debris from these areas.²⁴

Wildfire research has affirmed that we cannot exclusively address flammable material in forests if our goal is to prevent urban conflagrations. Several interviewees cited seminal, data-driven studies by Jack Cohen, a wildfire researcher who was among the first to notice that, after some fires, only the houses had burned and not the surrounding trees or vegetation.²⁵ This was largely due to issues with the homes themselves, such as leaf litter buildup in gutters. From the work of Cohen and others, we learn that the closer mitigatory actions get to a structure, the more effective they are in preventing structural ignition.²⁶ As an example, a 2019 Southern California study found that multi-paned windows lowered the chances of a home burning down by 26%; conversely, clearing defensible space by removing flammable vegetation beyond 15 feet from the house lowered its chance of burning down by only 3%.²⁷ Across the board, interviewees and existing research suggest that home hardening and defensible space – Zone 0 clearance in particular – are by far the most promising approaches to preventing structural loss.

²² *Reduce Your Wildfire Risk*, City of Santa Rosa (accessed Dec. 1, 2024).

²³ *Id.*

²⁴ *Zone 0 for Home Hardening*, Fire Safe Marin (accessed Nov. 21, 2024).

²⁵ Jack Cohen & Jim Saveland, *Structure Ignition Assessment Can Help Reduce Fire Damages in the WUI*, US Forest Service Rsch. and Dev. (1997).

²⁶ Kimiko Barrett et al., *Redefining the Urban Wildfire Problem in the West*, US Forest Service Rsch. and Dev. (2024).

²⁷ Alexandra Syphard & Jon Keeley, *Factors Associated with Structure Loss in the 2013–2018 California Wildfires*, Fire vol. 2 no. 3 (Sep. 2, 2019) at page 49.

Understanding wildfire behavior with new technologies

In wildfire planning, decision-makers must understand how fires behave and react to different conditions; therefore, it is imperative that they keep abreast of the latest fire research and technology. In February 2025, CalFire released new draft maps indicating areas of moderate, high, and very high fire risk in locally controlled areas of the Bay Area.²⁸ The state built these new severity maps from more advanced digital modeling techniques that factor in wind, fuel load, and more, making them more accurate than prior versions. Local governments will need to update their existing wildfire mitigation policies to incorporate these new maps. There are also opportunities for state grants to support localized technological improvements: the Contra Costa County Fire Department's Assistant Fire Marshal mentioned that CalFire has awarded them grants to develop fuel maps and geospatial modeling for defensible space needs.

Wildfire behavior is a growing area of research nationwide. A recent study out of Colorado uses satellite data and artificial intelligence to predict a fire's path,²⁹ and another highlights the importance of accurate atmospheric modeling.³⁰ Studies like these have implications for more accurate and proactive evacuation planning and firefighting in the future, saving homes and lives.

Localities should monitor the latest research and the upcoming Wildfire and Landscape Resilience Data Hub,³¹ which will combine and integrate fire modeling resources. When jurisdictions can predict what will go wrong and where, they can make better decisions about how to invest limited resources.

Tracking emergent state requirements

California is at the forefront of wildfire planning and policy in many ways.³² While the California policy environment is proactive, this leads to problems with enforcement, and localities must keep abreast of the latest state requirements. One area of policy concern aims to address the Wildland-Urban Interface (WUI)—the places with higher fire risk where human development meets undeveloped wildland. State building requirements for the WUI, found in Chapter 7A of the government code, are constantly changing to make new homes more fire resilient. For example, a recent reform requires mesh screens over ventilation openings to prevent embers from getting through.³³ Updated every three years, the California Building Code is the most rigorous in the country.³⁴

Although innovative when compared to other states, the California government moves slowly. The state passed official Zone 0 requirements effective January 2023, but as of March 2025 has

²⁸ *Fire Hazard Severity Zones*, Office of the State Fire Marshal, osfm.fire.ca.gov (2025).

²⁹ Theresa Barosh, *Satellite-Informed Fire Forecasting with Artificial Intelligence: A Spark of Innovation*, Colorado State University (Oct. 21, 2024).

³⁰ Janice L. Coen et al., *Computational Modeling of Extreme Wildland Fire Events: A Synthesis of Scientific Understanding with Applications to Forecasting, Land Management, and Firefighter Safety*, *J. Computational Sci.* vol. 46 (Oct. 2020).

³¹ *Forest Data Hub*, Climate and Wildfire Institute (2024) <https://climateandwildfire.org/cwi-projects/forest-data-hub/>.

³² Kimiko Barrett, Headwaters Economics (*interviewed* Dec. 5, 2024).

³³ *Materials and Construction Methods for Exterior Wildfire Exposure*, State of California Dept. of Housing & Community Development (*accessed* Dec. 1, 2024).

³⁴ Matthew Zeitlin, *California Has America's Strictest Wildfire Code*, *Heatmap News* (Jan. 16, 2025).

yet to issue specific guidance. As a result, some localities are getting ahead by passing their own Zone 0 requirements or beginning to educate their residents about the emerging rules.³⁵ However, this is fraught with complications that split localities into trying different approaches.

The tensions in implementing evidence-based strategies like Zone 0 without statewide guidance or, in some cases, local political will, have led to uneven results across the state. An Orange County Fire Authority official surmised that CalFire is taking so long to release Zone 0 guidance because broad enforcement will be practically difficult, with some uncertainties about what would be legally allowed. The closer a jurisdiction gets to regulating someone's home, the thornier enforcement becomes. While the Moraga-Orinda Fire District recently adopted a fully enforceable Zone 0 ordinance,³⁶ the City of Mill Valley tried to do so back in 2019 but was sued by residents.³⁷ To avoid a similar situation and save resources, the Contra Costa County Fire Department noted that they are currently following the State's lead and opting for community education instead of codification. Santa Rosa employs a mixed approach, having codified Zone 0 for any new builds while working with owners of existing structures to achieve compliance "within reason."³⁸ How to preempt and plan for emergent State mitigation requirements is a key challenge for local governments.

Table 1: Defensible Space Zones

Zone	Definition
Zone 0	The 0-5-foot perimeter around a home.
Zone 1	The 0-30-foot perimeter around a home.
Zone 2	The 30-100-foot perimeter around a home.

Reaching all residents equitably

Wildfires affect communities indiscriminately, and in a society where code enforcement can have inequitable impacts on marginalized communities, jurisdictions must be cognizant of making wildfire mitigation accessible for all residents. Nevertheless, community education and outreach alone may be ineffective without enforcement: researcher Kimiko Barrett noted that "People know the risks, and will still build their homes in dangerous places. You can only do so much with public education; you also need regulatory mechanisms to compel action." Enforcement actions like defensible space inspections are generally unwelcome, but particularly so for lower-income neighborhoods in which properly permitted buildings are less common. Conversations with Permit Sonoma and the Santa Rosa Fire Department underscored that these communities can be wary of officials and therefore difficult to reach

³⁵ *E.g.*, Contra Costa County; Orange County Fire Authority; City of Santa Rosa.

³⁶ *Abatement Requirements*, Moraga-Orinda Fire District (accessed Ap. 8, 2025).

³⁷ Lorenzo Morotti, *Mill Valley Settles Suit over Wildfire Prevention Ordinance*, Marin Independent Journal (Mar. 24, 2021).

³⁸ Santa Rosa Fire Department (interviewed Nov. 18, 2024).

for both inspections and wildfire education. Although enforcement helps ensure that mitigations actually occur through requirements and penalties, education may reach and persuade more people. Both approaches are critical.

Fire Safe Marin, a nonprofit organization focused on community outreach, is funded in part by a regional joint powers authority, the Marin Wildfire Prevention Authority. My research and interviews indicate that Fire Safe Marin is the gold standard in wildfire education. Established back in 1992 in response to the Oakland Hills Tunnel Fire, they are now globally known and receive 20,000 web page views per month.³⁹ Fire Safe Marin’s user-friendly website centers on action-oriented language such as “harden your home” and “prepare yourself.”⁴⁰ In keeping with their philosophy of meeting residents where they are, Fire Safe Marin has diversified their outreach. They use social media, YouTube, door-to-door volunteers (wearing t-shirts instead of uniforms to foster trust), organize fire safety community groups, host webinars, and appear on local TV channels. Their annual wildfire safety festival, Ember Stomp, draws many Spanish-speaking community members, engaging diverse communities with their outreach. They work with other nonprofits to translate all their materials into other languages and partner with trusted messengers at community centers.

Home insurance requirements and future building patterns

Because building in the WUI is subject to much higher fire risk, increasing home insurance costs, local governments will need to balance support for those already living in the WUI and fostering housing growth in lower-risk zones to mitigate the housing crisis in California. Interviewees with the Contra Costa County Fire Department, Fire Safe Marin, and the City of Santa Rosa Planning Division contended that the existence of additional fire prevention requirements has not had a major impact on WUI development. Instead, the main driver of future development patterns will be the difficulties in obtaining home insurance in zones with high fire hazard severity. CalFire’s new fire hazard severity maps will also affect insurance prospects for areas that have been remapped at a higher severity.⁴¹ Fewer and fewer people will be able to build new homes in the WUI or continue to live in these areas over time. In the long run, this will mitigate loss from catastrophic wildfires; however, it may also exacerbate the housing crisis. Jurisdictions should actively and meaningfully encourage development within existing urban areas—or infill—to ensure that housing in more populated places is plentiful and affordable.⁴²

Whether this insurance scarcity is a net positive or negative in the long run is difficult to parse. On one hand, the community should not have to protect, at all costs, the desires of residents who want to build irresponsibly further into the WUI. On the other hand, jurisdictions should find ways to

³⁹ Fire Safe Marin (*interviewed* Nov. 20, 2024).

⁴⁰ *Zone 0 for Home Hardening*, Fire Safe Marin (*accessed* Nov. 21, 2024).

⁴¹ Orange County Fire Authority (*interviewed* Dec. 2, 2024).

⁴² Sarah Jo Szambelan, *A Civic Vision for Growth*, SPUR (May 2021).

help the people already living in the WUI who are being priced out of their homes because of insurance rates. One retired Sonoma County resident without an income stream was previously paying \$2,500 for insurance before it rapidly jumped to \$43,000 per year.⁴³ Supporting low-income WUI residents is of critical concern, and barring major state reforms of insurance regulations, balancing equitable and practical market responses will continue to challenge California jurisdictions.⁴⁴

Options for Oakland: Framing Other Jurisdictions' Responses

Over the course of my interviews, I encountered four institutional approaches to addressing the issues above and proactively mitigating wildfire impacts, summarized in *Table 2*.

1. Passing a Resilient Cities Zoning Ordinance

Cities can institute a special zoning district for fire-affected areas as a preemptive measure. Following the 2017 Tubbs Fire, the City of Santa Rosa established a Resilient Cities Combining District, a zoning overlay with streamlined rebuilding measures that applied to the 8,000 burned parcels.⁴⁵ This approach addresses a huge issue with wildfires, exemplified by the experience of interviewee Diane Moss who has been rebuilding her home after the Woolsey Fire for six years because of complicated processes. Permitting, absent of streamlining, can be a quagmire.

The combining district was essential to achieving the 90% rebuild rate in Santa Rosa today but was not without its problems. Whenever there was a

new fire, planning staff would have to reactively rezone the affected parcels into the district, taking significant staff time. To address this inefficiency, the City passed a Resilient City Development Measures ordinance⁴⁶ that completely replaces the old combining district. Instead of applying to those 8,000+ specific parcels, it applies to *any* parcel automatically in the event of a disaster. At a high level, the ordinance allows streamlined approvals for design review and other planning processes, requires landscaping and weed abatement standards for fire-impacted parcels, and establishes a six-year window in which the standards apply to a parcel.

Distributional Impacts

If Oakland were to pass a similar ordinance, the main cost would be planning staff time to develop the ordinance. No extra funds would be required. In addition, a particularly vulnerable group would benefit: residents impacted by wildfire in the future would be able to rebuild faster and their homes would be more resilient to future hazards.

Tradeoffs in Implementation

Although this policy route is cost-effective and highly proactive, it does not prioritize enforcement. Code enforcement is complaint-based during the six years of defensible space requirements post-fire, so actual implementation of these measures is weak. The main virtue of this policy is streamlining the actual rebuild process for affected residents. Despite the staff time required for a Resilient Cities ordinance, we must

⁴³ Permit Sonoma (*interviewed* Nov. 15, 2024).

⁴⁴ Sarah Atkinson, *L.A. Fires: It's Time to Rethink Risk Mitigation to Save California's Home Insurance Market*, SPUR (Jan. 16, 2025).

⁴⁵ Santa Rosa Planning & Economic Development Department (*interviewed* Nov. 12, 2024).

⁴⁶ *Legistar: Wildfire Prevention Measures*, City of Santa Rosa City Council file #24-0811 (2024).

recognize that rebuilding after a disaster is much easier to plan for ahead of time instead of trying to coordinate in the moment of crisis.

2. Enforcing a Standalone Vegetation Management Ordinance

Vegetation management requirements intentionally codified as an ordinance rather than a toothless planning document prompt jurisdictions to prioritize enforcement. After the 2017 firestorms in Sonoma and Napa Counties, flammable invasive species such as Scotch and French broom started flourishing.⁴⁷ The Santa Rosa Fire Department instituted a standalone vegetation management ordinance to be responsive to the changing landscape.⁴⁸ The ordinance recently went into effect in January 2024. Contrary to its name, it includes both vegetation management and defensible space provisions. It bans certain types of mulch in residents' yards, limiting them in Zone 1, and plans for the removal of dead trees that pose risk to neighboring structures, among other measures. At the end of 2024, Santa Rosa Fire started to plan for enforcement of the ordinance, but implementation will take significant investment. Staff envisions needing two full-time inspectors focused on WUI and defensible space. Because of the resources involved, Santa Rosa Fire also plans to leverage education and voluntary compliance over enforcement.

As another example, the Contra Costa County Fire Department has also established a vegetation management ordinance that covers the entire county, including the 12 cities within it.⁴⁹ Like

Santa Rosa's, it contains both vegetation management and defensible space requirements. It used to be part of the fire code, which required every city to ratify any updates. The County's Assistant Fire Marshal mentioned that having it as a standalone, enforceable ordinance has greatly improved overall efficiency and interagency coordination.

Distributional Impacts

Although Oakland currently requires annual defensible space inspections of 25,000 homes in the WUI, it relies mainly on State requirements to guide these activities.⁵⁰ If the City were to pass a vegetation management ordinance in place of its current vegetation management plan, the main cost would be funding for enforcement by staffing additional defensible space inspections. Incidentally, Oakland has just passed Measure MM as a dedicated funding source for implementing its vegetation management plan. In this case, a parcel tax is more equitable than a sales tax, as the primary beneficiaries will also be the primary payors. Those who benefit will largely be the homeowners who have the time and resources to comply with the rules and thus enjoy greater fire protection. As with any enforcement measure, however, there are equity concerns with penalizing already struggling lower-income or marginalized groups.

Tradeoffs in Implementation

Enforcing a vegetation management ordinance can be expensive, requiring a continual funding stream and new staff for inspections. Oakland's

⁴⁷ Santa Rosa Fire Department (interviewed Nov. 18, 2024).

⁴⁸ *Vegetation Management Ordinance ORD-2023-016 Review*, City of Santa Rosa Fire Department (2024).

⁴⁹ *Ordinance 2023-07*, Contra Costa County Fire Protection District (2024).

⁵⁰ *Compliance Standards for Vegetation Inspections*, City of Oakland (accessed Nov. 21, 2024).

Measure MM largely alleviates this concern, shifting the focus to effectiveness. Although home hardening provisions would make an ordinance even more effective, focusing on defensible space (especially Zone 0) would certainly boost

Oakland's wildfire resilience. However, because the vegetation management plan is not law, there may be greater pushback from residents about enforcement.

Table 2: Summary, Proactive Approaches to Addressing Wildfire

Approach	Case Study Example(s)	Distributional Impacts	Implementation Tradeoffs
1. Passing a Resilient Cities zoning ordinance	City of Santa Rosa	Agency inputs: Planning staff time. Resident beneficiaries: Wildfire-impacted residents.	Benefits: Proactive and cost-effective. Drawbacks: Weak enforcement.
2. Enforcing a standalone vegetation management ordinance	City of Santa Rosa Fire Dept. County of Contra Costa Fire Dept.	Agency inputs: Add'l staffing for inspections. Resident beneficiaries: Homeowners with the resources to comply.	Benefits: Enforceable; effective if defensible space or home hardening are incorporated. Drawbacks: Expensive, with potential inequities in enforcement.
3. Administering community grants for wildfire adaptation	County of Contra Costa Fire Dept. Marin Wildfire Prevention Auth.	Agency inputs: Program planning and management. Resident beneficiaries: Potential for all to benefit, depending on administrative decisions.	Benefits: Effective and proactive. Drawbacks: No enforcement; grant program design may be a difficult undertaking.
4. Forming a multi-jurisdictional Joint Powers Authority (JPA)	Marin Wildfire Prevention Auth. Orange County Fire Auth.	Agency inputs: Significant planning and interjurisdictional coordination. Resident beneficiaries: All regional residents.	Benefits: Highly effective. Drawbacks: Resource-intensive, relies on creating new funding streams.

3. Administering Community Grant Programs

Thoughtful distribution of funding can help activate community participation in mitigation efforts. The Contra Costa County Fire Department administers a grant program for residents to fund mitigation such as fuel breaks and defensible space on their properties. The program is funded through Measure X, a 2020 sales tax initiative that collects \$5 million a year for wildfire mitigation.⁵¹ Its process is community-driven: fire safe councils, community groups, or even individual residents can apply for funds. They complete about 100 mitigation projects per year.

This approach is somewhat unique among the interviewed jurisdictions, given that it requires dedicated staff to coordinate the program and a continual funding stream. However, the Marin Wildfire Prevention Authority is another example. Funded through Measure C, a 2020 countywide parcel tax, the joint powers authority uses a portion of its budget for two different types of grants: reimbursement-based and direct assistance. Both prioritize funding for “mitigations that matter” – i.e., defensible space in Zones 0 and 1 and home hardening. The former offers retroactive payment for defensible space and home hardening activities. The caveat is that applicants’ properties must have already undergone a full evaluation by defensible space inspectors, and the grant will only cover improvements recommended by the official evaluation. Recognizing that not everyone can afford those initial payments, nor even know where to look to apply for reimbursement, Marin Wildfire also offers direct assistance. The process begins with staff identifying properties with likely hazards, and then inviting those homeowners to apply. Interestingly, these grants are predicated

on Zone 0 compliance.

Distributional Impacts

If Oakland were to establish a community grants program, it should take note of the different approaches and their equity implications. Inviting specific homeowners to apply for funds is more proactive, therefore leading to more complete community-wide mitigation. Further, offering direct assistance over reimbursement is more equitable. Without folding in these strategies, the most likely applicants will be wealthier homeowners who are not shy of government. However, both strategies are more time-intensive for staff than their alternatives.

Tradeoffs in Implementation

Given that it appears Measure MM could fund community grants for wildfire mitigation, implementing this in Oakland faces few barriers other than program establishment. It also ensures some home hardening and Zone 0 adherence without the political difficulties that would come with codification. However, grant design has implications for the staff time involved in coordinating the program.

4. Forming a Multijurisdictional Joint Powers Authority

A Joint Powers Authority (JPA) is a public entity formed when several agencies agree to jointly exercise their responsibilities to manage common interests and resources more efficiently. Establishing a JPA is by far the most resource-intensive policy approach analyzed in this article. However, Oakland should certainly regard it as an aspirational, long-term goal. Pooling regional resources and ensuring consistent region-wide policies is

⁵¹ Contra Costa Fire Department (interviewed Nov. 14, 2024).

the most efficient wildfire mitigation tool at the disposal of local governments.^{52,53}

The Orange County Fire Authority and the Marin Wildfire Prevention Authority are examples of wildfire prevention JPAs in California. The Marin Wildfire Prevention Authority is a 17-member JPA funded by the Measure C parcel tax already mentioned.⁵⁴ The Executive Officer recounted that it was established in 2020 in response to the absence of specific actions or responsible entities in the 2018 North Bay after-fire report. At a high level, the JPA coordinates regional wildfire prevention funds and activities, ensuring consistent regional mitigation and limiting inefficient agency competition for state and federal grants. The Executive Director highlights its many close partnerships, including with local environmental groups, as a huge determinant of the JPA's success. It is well-resourced enough to be able to implement mitigation activities on behalf of the member agencies, such as staffing 20-30,000 defensible space inspections per year. Due to the variety of activities a JPA can fund, it is an effective long-term way to coordinate and streamline the other policy approaches already described in this article.

Distributional Impacts

A JPA's wide range of activities, funding streams, and coordination efforts will benefit a vast number of East Bay residents, not only in Oakland but throughout the region. This renders JPA formation a highly effective, if costly, strategy.

Tradeoffs in Implementation

In the long term, JPAs are incredibly effective at

coordinating limited resources to make meaningful strides toward wildfire resilience. However, they are resource-intensive in the short term. Marin Wildfire's Executive Director recounted how negotiating the JPA language and coming to a consensus was an arduous process. Coordinating and passing the funding legislation, a regional parcel tax, would require a 2/3 voter approval.

Recommendations

Below are recommendations for the City of Oakland after analyzing the various approaches and tradeoffs above. They balance both the importance of proactive wildfire planning and the City's current budget crisis. Although tailored to Oakland, other jurisdictions in the West can adapt these approaches to their local context.

Short-term

Use the Measure MM parcel tax to fund a community grant program. Set aside funds for both reimbursement and direct assistance and prioritize funding home hardening and Zone 0 mitigations. This recommendation requires few resources apart from staff time. It also avoids political feasibility issues that come with enforcing close-to-the-home requirements, instead encouraging the strategies that are proven to save homes by funding them. Employing a mix of retroactive reimbursement and direct assistance balances staff time constraints and equitable distribution of funds.

Medium-term

Pass a Resilient Cities Development Measures ordinance similar to Santa Rosa's. Use it as an

⁵² Turner Center for Housing Innovation (*interviewed* Dec. 9, 2024).

⁵³ Jacoba Charles, *Marin Makes Clean Sweep of Forest Floors*, KneeDeep Times (Oct. 16, 2024).

⁵⁴ *Measure C*, Marin Wildfire Prevention Authority (*accessed* December 1, 2024).

opportunity to also codify Zone 0 for all new builds in the WUI and home hardening requirements for all new builds everywhere in the City. This recommendation also requires few resources – only planning and building staff time – and ensures that Oakland is ready for a rebuild situation. Note that there may be some political pushback and delays if any requirements for new builds are included. However, as an additional measure, requiring home hardening for new builds helps ensure that any fires in the WUI do not become urban conflagrations.

Long-term

Catalyze efforts to lay the groundwork for an East Bay Joint Powers Authority (JPA). This recommendation will improve regional efficiency and mitigate the costs of wildfire planning. However, Oakland's current budgetary woes make it less fiscally and politically feasible for the City to meaningfully contribute to JPA establishment anytime soon. In any case, a regional JPA should remain the long-term goal, and working through the existing structure of the East Bay Wildfire coalition will make it more attainable.

If the City of Oakland pursues just one of these recommendations, it will be a huge step closer to meaningful wildfire risk mitigation. Oakland can be a leader in proactive wildfire planning in a region where so many other jurisdictions have failed to enact meaningful change before it was too late. Even amid the fray of its acute fiscal issues, the City has a strict responsibility to ensure

that the community is resilient to the inevitability of wildfire.

Discussion

As California contends with the aftermath of the unprecedented January 2025 wildfires in Los Angeles, conversations about preventing wildfires, and what to do in their wake, have gained momentum. Jurisdictions everywhere are looking south as LA picks up the pieces with over 16,000 structures destroyed and nearly 30 people killed. In a reactive version of Santa Rosa's Resilient Cities Development Measures ordinance, LA Mayor Karen Bass issued an emergency executive order that streamlines permitting requirements for the rebuilding effort.⁵⁵ This was announced in tandem with an executive order by Governor Gavin Newsom that waives environmental review and coastal building requirements for the area.⁵⁶ Despite such decisive actions, concerns remain that there will be "too many cooks" in the fraught regulatory landscape of the LA area—the County, several city governments, and the State—to efficiently recover from the wildfires.⁵⁷ The lack of movement on a coordinated, cross-jurisdictional response to develop robust disaster recovery measures will result in increased costs and longer rebuilding times, despite the fact that decades of research have predicted increased firestorm risk.⁵⁸

Marshaling resources to enact effective laws, funding structures, and interagency coordination, not to mention garnering political support to

⁵⁵ *Mayor Bass Issues Sweeping Executive Order to Clear the Way for Angelenos to Rebuild Their Homes Fast*, Office of the Mayor of Los Angeles (Feb. 27, 2024).

⁵⁶ *Governor Newsom Signs Executive Order to Help Los Angeles Rebuild Faster and Stronger*, State of California Governor's Office (Jan. 12, 2025).

⁵⁷ Dan Walters, *Will Having 'Too Many Cooks' Complicate Recovery from Deadly Los Angeles Fires?*, CalMatters (Feb. 2025).

⁵⁸ Harold Meyerson, *The L.A. Apocalypse Was Entirely Predictable*, The American Prospect (Jan. 9, 2025).

prioritize risk reduction, is demanding work. Oakland is clearly already thinking about these issues, having released its draft vegetation management plan in 2024 and passed Measure MM to fund its enforcement. Although these approaches vary in their effectiveness, the City can enhance and build upon them by leveraging resources and groups that already exist: tax revenue from Measure MM can fund the most effective mitigations in the community, current planning staff can start to develop proactive rebuilding measures, and Oakland's members in the East Bay Wildfire coalition can work to fulfill the group's original JPA vision. Further, recent events in LA present an opportunity to spur more sweeping action in this political moment. As Oakland Councilmember Zac Unger stated, "In disaster management, the worst

time to exchange business cards is after the fact."

As more and more cities inevitably grapple with climate-exacerbated disasters, they must learn from one another. Though the specifics of fire mitigation look different throughout the West due to varying physical and regulatory landscapes, other core lessons remain the same. Cities must prepare for the worst through proactive, institutionalized policies, prioritize equitable enforcement of science-informed regulation, and coordinate regionally. In this swath of the United States, wildfire risk will never be mitigated down to zero. However, governments can take action to lessen the probabilities, and agencies in the East Bay region are no exception.