

Equitable Solutions to Dire Fires in Southern California

Kriseira Lamas-Krauletz, MPH (2023 Fellow)*

krissyvlk@gmail.com

Calleshia Gilliam, MPH (2023 Fellow)*

Jaimie Le

Executive Summary

The 2025 Palisades and Eaton wildfires displaced approximately 13,000 households and caused over \$30 billion in real estate losses (Smith & Kambhampati, 2025). These fires exacerbated long-standing inequalities and exposed deep vulnerabilities in Southern California's infrastructure, housing, and disaster response systems. This proposal presents an integrated, community-driven roadmap to rebuild smarter, faster, and more equitably by incorporating innovative approaches in infrastructure recovery, housing, wildfire mitigation, economic revitalization, and community health.

Infrastructure Recovery Recommendations

To address power, water, and evacuation system failures, we propose transitioning to decentralized solar microgrids at critical facilities, installing smart underground utilities, and deploying reinforced emergency cisterns and sprinkler systems for fire suppression. PG&E's successful undergrounding program and federal funding from the Inflation Reduction Act and Disaster Resilience Zones Act provide models and resources to support implementation.

Housing Recommendations

With nearly half of destroyed homes being rentals, including 770 rent-controlled units, and the loss of entire mobile home parks, we call for emergency modular housing villages using fire-resistant prefab units; one-to-one replacement mandates for rent-controlled units under 55-year affordability; lease-to-own programs and community land trusts; and retrofitting homes to Chapter 7A fire standards using state and federal recovery grants. CEQA Strike Teams and permitting self-certification pathways will prevent bureaucratic bottlenecks that delayed Woolsey Fire recovery.

Environmental Considerations and Wildfire Mitigation Recommendations

In the face of climate change, drought, and unmanaged fuel loads, we propose deploying AI-powered drones and machine learning for fire prediction and early detection; partnering with Indigenous tribes to expand cultural burning practices, as modeled by the Karuk Tribe; and “green corridor” firebreaks using low-flammability vegetation and smart water grids to reinforce our frontline defenses.

Economic Recovery Recommendations

With the loss of 11,400 jobs and impact on 1,900 small businesses, we propose launching Fire Recovery Bonds for small businesses and a Green Job Corps for displaced workers; creating a California Wildfire Recovery App for underinsured survivors, establishing equitable right-to-return policies to protect displaced renters, and stabilizing markets via a state-run wildfire reinsurance program.

Community Health and Support Recommendations

Wildfire smoke and trauma have led to surges in ER visits and long-term health risks. We recommend deploying mobile health units and resilience hubs with cooling centers and aid services; offering air filtration subsidies, N95 distribution, and school-based trauma counseling; and collaborating with health systems and philanthropy for mental health infrastructure.

We call on civic, philanthropic, and governmental stakeholders to fund a recovery that protects California’s most vulnerable communities, restores ecosystems, and reimagines fire resilience for a rapidly changing climate.

Proposal

Infrastructure Recovery

Fires exposed critical vulnerabilities in Los Angeles's already aged infrastructure. A forward-thinking recovery must address repairs, upgrades to the current power supply, innovative firefighting capabilities, water system, construction protocols for homes, schools, churches, and other public infrastructure to build true resilience. One that is smarter, more decentralized, and fire-resistant.

Problems Identified

- **Power outages:** High-voltage power lines are a major ignition source for wildfires and generally fail during fires, resulting in blackouts for regions not under fire. A call to action is redesigning electrical building codes to use fire retardants in electrical pipes and wires. Another is individual solar grids for residential and commercial real estate. Previous incentives can be revisited to place more emphasis on fire-prone and affected zip codes.
- **Collapsed water systems:** Fires damage water treatment facilities, ground water, and pipes throughout communities affected by fire - ash and parabens from melted plastic pipes destroy pumping stations, leaving firefighters and communities without critical water access. We can build resilience by installing water reserves evenly distributed, one per community. Metal pipes can be implemented in affected areas, and wells can be constructed in areas safe enough to do so. Another solution is salinated pumping stations or chemicals that use seawater to put out fires without damaging fire equipment.
- **Roads/bridges destroyed, affecting evacuation:** Fires compromised evacuation routes and isolated vulnerable communities, delaying emergency responses. Designated

evacuation routes can be implemented in newly built communities. Fire departments can provide mandatory fire education to residents living in the affected areas.

Policy Recommendations

- **Smart Underground Utilities:** Transitioning electrical lines underground using the right materials reduces fire ignition risk and shields critical energy supply during disasters. These systems can use smart sensors for leak detection, load balancing, and real-time fault alerts. Instead of burying lines, building localized microgrids using solar, batteries, and smart-switching infrastructure allows entire communities to stay powered during major fires.
- **Solar Microgrids at Critical Facilities:** Mandatory installation of solar-powered microgrids at hospitals, fire stations, and schools ensures these sites stay powered independently if the larger grids fail. Officials can revisit the home solar incentive programs to ensure homes and businesses in fire-prone areas have a chance. Microgrids will automatically be isolated when wildfires disrupt the main grid.
- **Emergency Water Storage Nodes:** Strategically positioned, reinforced water storage units near towns prone to wildfire threats. These nodes offer backup fire suppression resources when main pipelines are damaged. Another is sprinklered belting around fire-prone areas near homes and local businesses. Sprinkler systems can be designed to respond to detected heat and provide pressure for a prescribed distance. Another solution is tactical water storage. Post-fire reports reveal the urgent need for accessible water sources. Cisterns reinforced and elevated can support helicopters, drones, and on-the-ground firefighting, when main pipelines are damaged.
- **Case Study Observed:** PG&E's Undergrounding Project Northern California in 2023.

After catastrophic fires in 2017–2020, PG&E initiated a massive program to underground 10,000 miles of power lines. Results by 2023 showed a 65% reduction in wildfire ignition risk from electrical equipment. Early investments included partnerships with AI-based grid monitoring companies and local governments to speed deployment.

- **Policy, Investment, and Cost Breakdown:**

The State can leverage the Inflation Reduction Act (IRA) and the Disaster Resilience Zones Act for long-term funding. Collaborate with national labs (like Lawrence Berkeley National Lab) to test and pilot AI/IoT-enabled fire infrastructure. Prioritize tribal, rural, and low-income areas for pilot deployments, because these communities are often hit the hardest and recover slowest.

Pacific Gas and Electric Company (PG&E) reported the cost for undergrounding power lines decreased over time. The initial cost was approximately \$4 million per mile, but recent efforts have reduced cost to below \$3 million per mile. Assuming the development of 150 microgrid zones in Wildland-Urban Interface (WUI) areas, with each microgrid covering approximately 1 mile, the total cost would be: $150 \text{ microgrids} \times \$3.5 \text{ million per microgrid} = \525 million . Adding contingency and additional infrastructure costs, the total estimated cost aligns with the previously stated \$3.5 billion.

Aquamate's range of fire water storage tanks indicates that the cost for a 5,000-gallon tank is approximately \$4,780. Additional costs for installation, site preparation, and drone refill access can significantly increase the total expense per unit. Assuming the installation of 500 tactical cisterns: $500 \text{ cisterns} \times \$150,000 \text{ per unit (including additional costs)} = \75 million . Including contingency and maintenance over time, the total estimated cost reaches \$950 million.

Caltrans has allocated funding for projects to reduce fuel buildup and enhance fire resilience along state highways. Specific projects, such as the pavement, guardrail, and drainage rehabilitation near Copperopolis in Calaveras County, have received \$1.523 million for 20 miles of roadway, equating to approximately \$76,150 per mile. Assuming 300 miles of critical evacuation routes are enhanced: 300 miles × \$7 million per mile (including advanced materials and smart signage) = \$2.1 billion.

Disparity/Problem	Proposed Solution	Strategic Need	Estimated Cost	Leadership Required	Stakeholders to Mobilize	Proposed Timeline
Downed Power Lines	Build fire-resistant microgrid zones in WUI areas (not just underground lines)	Localized energy continuity; grid independence	\$3.5B	State DOE, California Energy Commission	Tribal utilities, climate tech firms, PG&E	2025–2032
Destroyed Water Systems	Install above-ground fireproof cistern networks with drone-refill access	Immediate water supply for suppression efforts	\$950M	Local water boards, CalOES	CalFire, FEMA, water tanker companies	2025–2029
Road/Bridge Destruction	Design fire-resilient escape corridors using pre-cleared fuel breaks + ember-resistant signage and lighting	Improve evacuation safety, maintain access	\$2.1B	Caltrans, State Emergency Planning Office	Forest rangers, US DOT, fire planners	2025–2035

Housing

Problems Identified

The Palisades and Eaton fires displaced nearly 13,000 households, exacerbating Los Angeles' existing housing crisis. Approximately 770 rent-controlled units were destroyed in the Pacific Palisades alone, and almost 50% of the destroyed single-family homes were rentals, devastating the region's affordable housing stock (Smith & Kambhampati, 2025; CalMatters, 2025). The fires cleared mobile home parks, leaving residents who lost their homes on leased land in precarious situations (CalMatters, 2025). Economic disparities across affected zones are stark, with median home values at \$3.7 million in the Palisades compared to \$1.2 million in Altadena. Many working-class survivors lack the resources to rebuild, facing delayed payouts and inadequate coverage from the California FAIR Plan, the state's insurer of last resort (Darmiento & Kambhampati, 2025).

Policy Recommendations

- While residents wait for their homes to be rebuilt, fire-resistant prefabricated (prefab) units should be deployed for interim housing in emergency modular housing villages. Prefab homes are built in factories and assembled on-site, featuring bathrooms, kitchens, and insulation, and can be built to be ADA-accessible (Prefabex, 2025). To ensure fire survivors have a secure form of interim housing, these units should include renewable lease protections of 12-14 months, with legislation prohibiting evictions unless survivors have secured permanent housing. These prefab homes can be paired with local resource hubs providing case management and rebuilding navigation for fire survivors. We can also create communities of prefab units for unhoused populations with nearby supportive services. The modular housing communities could be built on vacant public lands, such

as county fairgrounds or underutilized lots close to schools and transit hubs near the affected regions. Funding for building emergency modular housing villages would come from state housing crisis funds, FEMA temporary housing funds, and philanthropic organizations such as the California Community Foundation. Schools, daycare centers, and mental health clinics should be embedded in the village, allowing children displaced by school closures from the fires to thrive. The villages would be powered by panel and battery systems placed on top of the prefab units or in the center of the community. Backup power would be provided by mobile diesel or propane generators that will be kept on site. An estimate of \$30k to \$50k per village power costs could be provided via grants by the California Public Utilities Commission's microgrid incentive program (California Public Utilities Commission, n.d.).

- Recovery Navigation Centers, such as the One-Stop Permit Centers from L.A. County, should be established in the modular housing communities, county service hubs, and school gyms to assist survivors with rebuilding homes and accessing mental health support services, especially elderly and disabled residents (LA County Recovers, n.d.).
- **How emergency modular housing villages differ from FEMA trailers:** Testing by the Centers for Disease Control and Prevention (CDC) showed elevated levels of formaldehyde in Federal Emergency Management Agency (FEMA)-supplied trailers provided to displaced residents after Hurricanes Katrina and Rita in Louisiana and Mississippi (FEMA, n.d.). The prefab units of the emergency modular housing villages should be tested before site delivery for levels of formaldehyde to mitigate the risks of exposure.
 - **Timeline:** First modular units should be operational within 6 months.

- Wildfire rent-control replacement ordinances should be enforced by mandating one-to-one replacement of rent-controlled units with the new units under 55+-year rent stabilization laws, drawing inspiration from Santa Rosa’s successful rebuild of affordable units after the Tubbs fires, effectively helping many of their displaced elderly residents reconnect with their community (CalMatters, 2025).
 - Case study: A study found that socially vulnerable long-term residents of Paradise, California could not return to the rebuilt area after the 2018 Camp Fire due to barriers created by socially advantaged previous and new residents, despite more than a billion dollars of federal aid allocated to Camp Fire recovery (Lambrou & Loukaitou-Sideris, 2025).
 - We must protect socially vulnerable populations affected by the Palisades and Eaton fires from gentrification by replacing affordable housing stock in the area.
- **The City of Los Angeles should enforce the Mello Act’s provisions** in post-disaster contexts, expanding the law's criteria requiring demolished affordable housing units to be replaced at “like-for-like affordability” in coastal zones to include homes destroyed by the fires (Los Angeles City Planning, 2015).
- **Displaced residents from rent-controlled or mobile homes** should be prioritized through scoring systems to receive first access to lotteries and funding for affordable ownership opportunities. Residents leasing homes should be allowed to buy over time, with zero-interest second mortgages or shared equity between the state and the tenant (e.g., tenant owns 80%, state owns 20%).
 - Rent stabilization and anti-price-gouging laws should be strictly enforced to protect vulnerable populations (Wang, 2025).

- **Community land trusts (CLTs)**, nonprofits that own the land in perpetuity and lease to residents at below-market rates, should be supported in fire-rebuild zones. Funding for acquiring land and maintaining affordability can be attained through the FEMA Hazard Mitigation Grant Program (HMGP), California Housing Accelerator grants, and philanthropy from community foundations.
- **Fire-resilient building standards should be implemented via funding from HMGP, federal CDBG-DR disaster grants, or new wildfire bonds.** Affected communities should be retrofitted to meet Chapter 7A codes, including ember-resistant vents and non-combustible roofs, prioritizing areas with high fire risk and social vulnerability as identified by tools like CalEnviroScreen (Sommer, 2025). Cities should be able to waive fees or approve density bonuses like Accessory Dwelling Units (ADUs) for homes exceeding the code.
- **Underinsured survivors earning less than 120% of the local area median income or whose homes were destroyed or contaminated by smoke should receive grants and loans from the California Wildfire Fund** (California Wildfire Fund, n.d.).
 - 10.5% of California homeowners are uninsured, with underinsured homeowners estimated to comprise 10-15% of all homeowners in the state (Lansner, 2025; Pasadena Now, 2025).
 - **Success metrics:** 90% of underinsured or uninsured homeowners successfully reached.
- **To streamline rebuilding processes, centralized compliance review teams across different departments should be implemented to harmonize fire, zoning, and coastal codes**, as suggested by “Project Recovery” (Dillon, 2025).

- **Case study:** Less than 40% of homes have been rebuilt from the 2018 Woolsey fires due to bureaucratic bottlenecks and conflicting permitting requirements delaying the process (Dillon, 2025).
- We must not allow these delays to occur again for residents of Altadena and the Palisades. To mitigate delay in review processes, CEQA waivers should be implemented to suspend normal environmental reviews of rebuild requests after disasters, and the state should employ CEQA Strike Teams to pre-review templates to cut down months of review time (Carlin & Hoang, 2025).
- Rebuild progress could be displayed on transparent tracking systems.
- **Risks:** Permitting delays and insurer resistance should be handled by...
- **Success metrics:** 50% of destroyed homes rebuilt within 3 years.

Environmental Considerations and Wildfire Mitigation

Problems Identified

- Climate change has been a source of debate for decades, but its effects are undeniable. Year after year and with increasing intensity, devastating fires ravage habitats and homes for humans and wildlife alike all over the world, and now our homes in Southern California.
- **Drought and Water Shortages:** One of the most urgent challenges during major wildfires is the lack of a sufficient water supply for fire suppression efforts. Climate change exacerbates California's prolonged drought cycles, significantly lowering reservoir levels and straining rural water systems. This left fire-prone communities without accessible firefighting water when needed most. In several 2022–2024 fire

events, fire engines were forced to retreat due to dry hydrants and broken water mains (California Department of Water Resources, 2024). To mitigate this, innovations are needed to pre-position emergency water storage nodes, modular tanks, underground, and above-ground cisterns located in vulnerable areas and maintained year-round.

Additionally, fog and atmospheric water generators condense water from humid air and offer an off-grid solution for remote zones with limited infrastructure. Smart water grids powered by IoT sensors, which collect data from the physical world and transmit it to a network for analysis, can ensure faster detection of leaks and prioritize water flow to high-risk zones in real time. Investing in these systems ensures that water, the first line of defense against fire, is not the first thing to fail when disaster strikes.

- **Worsening Climate Conditions:** Rising temperatures, prolonged drought, and erratic wind patterns have created conditions for high-intensity fires. Scientific modeling attributes this trend to human-made greenhouse gas emissions and natural variability, with climate change playing a role in increasing fire weather risk (Zhuang et al., 2021; Madakumbura et al., 2025).
- **Poor Vegetation and Fuel Load Management:** Many forested and chaparral regions in California suffer from overgrown, unmanaged vegetation due to historical fire suppression policies. These fuel buildups increase the intensity and unpredictability of wildfires (California Department of Transportation, 2022).

Policy Recommendations

- To combat human-driven climate change, **federal and international goals must be implemented that go further than the Paris Agreement** and create a goal to decrease

greenhouse gas emissions by 50% by 2050, if not sooner. Locally, California must set similarly ambitious goals to reduce the environmental factors that feed wildfires.

- **Cultural Burns with Indigenous Tribes**

- Our proposed approach to managing vegetation is to honor traditional ecological knowledge. Historically, several Native American communities have participated in controlled burns to prevent the spread and high severity of wildfires. Through California Senate Bill 310 and a recent agreement with the California Natural Resources Agency (CNRA), the Karuk Tribe in California has achieved the first agreement under a new state law, granting tribal leadership control over cultural burns rather than state agencies (Oxendine, 2025). The Karuk Tribe is a leader in traditional forest management through cultural burns in collaboration with the University of California, Berkeley. To implement this in Southern California and its unique ecosystem, consultation with the Karuk Tribe would be essential. Learning their methods of maintaining controlled fires and monitoring for changes in canopy cover, vegetation composition, invasive species, wildlife, soil moisture, and public health via harvest surveys, 360° photo surveys, and wildlife surveys would help track short-term and long-term progress and track growth of vegetation, wildlife, and public health effects of fires (Karuk Tribe - UC Berkeley Collaborative).

- **AI Drone Mapping and Predictive Modeling**

- Unfortunately, with the rapid climate change, detection systems must be implemented to meet the short-term demands of wildfire seasons until climate change is slowed. Artificial intelligence (AI) has been promising in providing

early detection, mapping, and predictive modeling of wildfires. An AI-based unmanned aerial vehicle (UAV), or drone, that speeds up the detection and monitoring of wildfires was presented in Germany using Silvanet, a fire detection system. This AI drone detects wildfires at the smoldering stage using solar-powered gas sensors connected via a wireless network, making it a more sustainable option than traditional non-solar-powered drones and thus applicable in the case of a power grid failure (Cristofaro, 2025).

- Additional machine learning models can be used to predict fires using high-quality fuel and weather data that considers the unique factors of a geographical location. Recently, a research team used a machine learning model to reduce false alarms in fire hazard and improve regional accuracy. Fuel variables improved prediction accuracy, highlighting the need for predictive modeling to integrate regional variables (Di Giuseppe et al., 2025). AI UAVs and machine learning models within 6 months of a fire would provide a short-term and long-term system to predict, map, and monitor fires so Californians can be warned and evacuated sooner. In the long term, the AI fire data would improve and provide more accurate detection, mapping, and modeling, and would be used indefinitely as a new system to detect fire weather.
- Fire-resistant drones with infrared cameras aid in monitoring and mapping fires. Thermite RS3 robots assist in suppressing fires from a distance, reducing firefighter exposure to fires and increasing occupational safety.

- **Firebreak Reinforcement with Green Corridors**

- Vegetated firebreaks made from low-flammability native plants block fire spread, prevent soil erosion, support biodiversity, and cool urban heat islands. To implement this recommendation, we propose establishing permanent "green belts" and controlled grazing zones near wildland-urban interfaces (WUIs) as firebreaks and community assets.

Proper wildfire prevention requires multi-layered strategies — scientific, ecological, and cultural. Solutions must empower tribal knowledge systems, leverage cutting-edge tech, and redesign landscapes to prevent fire rather than fight it.

Economic Recovery

Problems Identified

The economic fallout of wildfires extends far beyond immediate property damage.

Communities often face prolonged financial instability due to:

- **Small Business Destruction:** According to the *California Chamber of Commerce (2024)*, only **20–30% of small businesses** survive one year after a wildfire. Following the **2025 Southern California fires**, nearly **1,900 small businesses** were damaged or destroyed, impacting approximately **11,400 jobs** in the region (Los Angeles Times, 2025).
- **Widespread Job Loss:** Job displacement from shuttered businesses, disrupted agriculture, and damaged infrastructure has left entire sectors, especially service-based economies, without a stable recovery path.

Policy Recommendations

To prevent long-term economic collapse and promote resilient rebuilding, California can pursue the following forward-thinking strategies:

Strategy	Description	Impact
Fire Recovery Bonds	Tax-exempt municipal bonds offering low-interest loans to affected businesses	Promotes rapid recovery without relying solely on federal aid
Green Infrastructure Jobs Corps	Trains displaced workers in fire-resistant construction, energy retrofitting, and ecosystem restoration	Provides stable income while enhancing environmental resilience
Wildfire Recovery Homeowner Fund	Grants to underinsured homeowners rebuilding with resilient and modular materials	Accelerates safe, sustainable rebuilding for vulnerable residents
Wildfire Reinsurance Program	State-run system to stabilize homeowner insurance markets	Prevents mass cancellations and ensures continued coverage
Public Recovery Leadership Boards	Survivor-led councils overseeing spending and rebuilding timelines	Prioritizes transparency and local community leadership
Digital Wildfire Recovery Apps	Free public access to apps managing claims, permits, and legal services	Streamlines survivor access to essential recovery tools

Community Land Trusts for MHPs	Public acquisition and redevelopment of damaged mobile home parks with permanently affordable housing	Preserves affordability and prevents displacement
Wildfire Insurance Reform	Requires full wildfire and smoke coverage with timely claim enforcement	Protects residents from prolonged financial hardship
Equitable Right-to-Return Policies	Guarantees displaced residents priority in post-disaster redevelopment	Safeguards against gentrification and demographic displacement

Small Business Survival Rate Post Fire (%):
(Source: California Chamber of Commerce, 2024)

Small Business Survival Rate Post Fire (%)	
Time Post-Fire	Survival Rate (%)
0–3 months	80%
4–6 months	60%
7–12 months	45%
After 1 year	20–30%

Community Health and Support

Problems Identified

- 40% increase in mental health ER visits post-fire events
- A spike in respiratory and cardiovascular conditions due to poor air quality
- Environmental contamination from ash, debris, and toxic runoff
- Long-term stress, PTSD, and displacement-related trauma

Following the 2025 Southern California wildfires, ER visits for mental health-related problems increased by 40% for hospitals in Los Angeles (California Department of Public Health, 2025). Children and the elderly were hardest hit. Simultaneously, wildfire smoke with high levels of fine particulate matter (PM2.5) as well as other parabens initiated unprecedented increases in asthma attacks, chronic obstructive pulmonary disease (COPD) exacerbations, and even heart attacks among at-risk groups. Findings from Australia's Black Summer bushfires (2019–2020) and Portugal's fires in 2017 demonstrate similar outcomes, with subsequent years to the initial disaster experiencing ongoing long-term respiratory illness and mental deterioration.

Policy Recommendations

- **Mobile Health and Mental Wellness Units:** Trauma centers that offer bodily and psychological intervention following disaster, particularly for rural and impoverished areas.
- **Resilience Hubs:** Community facilities serving as shelters, charging stations, cooling centers, and resource distribution points, such as grant applications and legal aid. For example, in the aftermath of Hurricane Harvey, Houston's Resilience Hubs sped recovery by 25% (City of Houston, 2022).
- **Tech/Text-Based Help Lines:** Text support based on AI for trauma, bereavement, and logistical issues (e.g., FEMA filing, housing assistance, etc.).

Anticipated Health Concerns:

- Respiratory illnesses: Asthma, bronchitis, COPD, pulmonary edema.
- Cardiovascular issues: Heart attacks, arrhythmias linked to smoke exposure.
- Mental health: PTSD, anxiety, depression, substance use disorders.

- Infectious disease outbreaks in overcrowded or unsanitary shelters.
- Long-term cancer risks from exposure to burned plastics and building materials.

Short-Term Plans:

- Deploy mobile clinics for post-disaster support.
- Offer free respiratory equipment and N95s at community centers.
- Launch community counseling pop-ups in partnership with NGOs.
- Host public clean-up days with health screening tents.

Long-Term Plans:

- Expand telemedicine access for mental and chronic health management.
- School-based recovery counseling to support youth trauma.
- Hazardous waste clean-up crews trained to handle post-fire toxins.
- Air filtration subsidies for homes in vulnerable zones.
- Local government collaboration with the environmental health departments to pan out sustainable plans.

Role of Hospitals and Health Organizations:

Hospitals can offset costs by coordinating state-funded FEMA reimbursements and community triage protocols to avoid ER overuse. Health systems like Kaiser Permanente have established fire response units and donated mobile clinics during past fire seasons. Public-private partnerships can also reduce strain. Philanthropic foundations, such as the Robert Wood Johnson Foundation, have provided mental health grants in prior U.S. disasters.

Local health departments can build data dashboards to track symptoms, smoke exposure levels, and mental health cases over time, prioritizing high-risk zip codes for support.

Philanthropic Collaboration:

- Blue Shield of California Foundation: Community-based trauma and recovery grant programs.
- Randall Lewis and the Lewis Group of Companies - actively contribute to wildfire recovery efforts in California, focusing on sustainable rebuilding and community resilience.
- California Endowment: Health equity investments in fire-prone areas.
- Global Medical Response: Emergency mobile care deployment.

International Best Practices:

- Australia implemented a National Bushfire Recovery Agency after its 2020 fires, prioritizing mental health via free telehealth for fire survivors.
- Portugal launched a national forest management and rural health fund, including mobile mental health outreach in remote fire-hit areas.

Implementation Action Plan: Timeline, Goals, Lead Stakeholders, Expected Outcomes

Implementation Timeline (2025–2030)			
Year	Goals	Lead Stakeholders	Expected Outcomes
2025	<ul style="list-style-type: none"> - Secure funding (state/federal/philanthropic) - Community clean-up and debris removal crews - Develop community-specific recovery and evaluation plans - Pilot programs: 3D printed homes, AI drones, resilience hubs 	Cal OES, FEMA, Local Governments, NGOs, ULI, RAND	Baseline data collected, pilots evaluated, partnerships formed
2026	<ul style="list-style-type: none"> - Scale mobile health and mental health clinics - Begin construction: homes, fire stations, resilience hubs - Deploy AI fire drone networks and microgrid 	State Contractors, Health Systems, PG&E, ICON	Mobile infrastructure active, AI detection operational
2027	<ul style="list-style-type: none"> - Large-scale rebuild of homes and utilities - Air and water quality sensors installed in all high-risk zones 	CA Dept. of Housing, Local Fire Departments, EPA	Housing 50% complete, environmental health protections scaled
2028	<ul style="list-style-type: none"> - Forest fuel thinning and Indigenous-led cultural burns - School and hospital hardening retrofits - Mental health infrastructure embedded in schools 	US Forest Service, Tribes, School Districts	Infrastructure >75% fire-resilient, local ecosystems stabilized
2029	<ul style="list-style-type: none"> - Evaluation of wildfire insurance reforms - Public dashboards for fire risk and recovery metrics - Expansion of resilience hubs to all counties 	Insurance Commission, Cal OES, Counties	Transparent data access, policy accountability, and rural equity
2030	<ul style="list-style-type: none"> - Final audits and impact assessments - Establish permanent Wildfire Resilience Task Force - Integrate tech updates (e.g., drone AI, sensors) 	CA Legislature, RAND, ULI, Health Depts.	Long-term resilience framework codified, public trust secured

Wildfire Recovery Resource Directory: Support for Medical, Housing, Insurance, Rebuilding, and More

Medical & Mental Health Support

Resource Name	Service Description	Phone Number	Website
Disaster Distress Helpline	24/7 crisis support for emotional distress	1-800-985-5990	https://www.samhsa.gov/disaster-distress-helpline
California Dept. of Public Health	Emergency clinics, air quality alerts, health safety	1-833-422-4255	https://www.cdph.ca.gov
LA County Mental Health Services	Free counseling, mobile crisis response	1-800-854-7771	https://dmh.lacounty.gov

Housing, Shelter, and Rebuilding

Resource Name	Service Description	Phone Number	Website
FEMA Disaster Assistance	Emergency housing, rental help, rebuild grants	1-800-621-3362	https://www.disasterassistance.gov
Cal OES Housing Mission	State-coordinated shelter and rental support	(916) 845-8510	https://www.caloes.ca.gov
ReCoverCA (CA HCD)	Homeowner rebuilding grants, mobile housing	1-866-282-8801	https://recover.hcd.ca.gov
American Red Cross – SoCal	Temporary shelter, supplies, meals, casework	1-800-733-2767	https://www.redcross.org
Habitat for Humanity – Greater LA	Rebuilding assistance for low-income fire survivors	(310) 323-4663	https://www.habitatla.org

Food and Essential Resources

Resource Name	Service Description	Phone Number	Website
---------------	---------------------	--------------	---------

California Food Banks Network	Find local food bank/distribution centers	1-866-321-4435	https://www.cafoodbanks.org
Feeding America – Los Angeles	Emergency food distribution and pantry locations	(323) 234-3030	https://www.lafoodbank.org

Insurance and Financial Assistance

Resource Name	Service Description	Phone Number	Website
CA Department of Insurance	File complaints, locate insurer, claims guidance	1-800-927-4357	https://www.insurance.ca.gov
United Policyholders	Legal templates, appeal help, homeowner insurance support	(415) 393-9990	https://www.uphelp.org

Land Use, Fire Recovery & Conservation

Resource Name	Service Description	Phone Number	Website
CAL FIRE – Wildfire Recovery	Debris removal, cleanup, reentry info	(916) 653-5123	https://www.fire.ca.gov
CA Dept. of Conservation	Post-fire erosion, land use guidance	(916) 322-1080	https://www.conservation.ca.gov
USDA NRCS (Natural Resources)	Soil and land rehabilitation for affected properties	(530) 792-5600	https://www.nrcs.usda.gov

Legal Aid and Tenant Rights

Resource Name	Service Description	Phone Number	Website
Legal Aid Foundation of LA	Renters' rights, landlord disputes, recovery support	1-800-399-4529	https://lafla.org
Disaster Legal Services (ABA/FEMA)	Free legal help for wildfire survivors	1-800-504-7030	https://www.americanbar.org/disaster

Need Help Navigating Services? Call 211 or visit <https://www.211ca.org> for live help connecting to local aid, housing, and health resources across California.

References

1. Aquamate. (n.d.). Fire water storage tanks. Retrieved April 30, 2025, from <https://www.aquamattanks.com/fire-water-storage-tanks/>
2. Awair. (n.d.). Air quality monitor for homes and businesses. Retrieved April 30, 2025, from <https://www.awair.com>
3. California Department of Public Health. (2025). Post-Wildfire Health Impact Summary: Southern California Fires. <https://www.cdph.ca.gov>
4. California Department of Transportation. (2022). Fire prep: Caltrans takes wildfire prevention to heart. The Mile Marker. <https://dot.ca.gov/programs/public-affairs/mile-marker/issue1-2022/fire-prep>
5. California Department of Transportation. (2023). California invests \$1B in technology upgrades, storm resiliency, safety improvements in District 10. <https://dot.ca.gov/caltrans-near-me/district-10/district-10-news/california-invests-1b-technology-upgrades-storm-resiliency-safety-improvements>
6. California Department of Transportation. (2023, July 13). Caltrans news release 2023-045: Governor Newsom announces more than \$1 billion for transportation infrastructure improvements. <https://dot.ca.gov/news-releases/news-release-2023-045>
7. California Department of Water Resources. (2025). Reservoir Conditions and Drought Monitor. <https://water.ca.gov>
8. California Office of Emergency Services. (2023). Statewide wildfire recovery initiatives: Advancing technology in disaster recovery. <https://www.caloes.ca.gov>

9. California Public Utilities Commission (n.d.). Resiliency and Microgrids.
<https://www.cpuc.ca.gov/resiliencyandmicrogrids>
10. California Wildfire Fund. (n.d.). CA Wildfire Fund. <https://www.cawildfirefund.com/>
11. CalMatters. (2025, February 12). Mobile homes are some of California’s last affordable housing. Can they rebuild after LA fires? LAist.
<https://laist.com/news/housing-homelessness/mobile-homes-are-some-of-californias-last-affordable-housing-can-they-rebuild-after-la-fires>
12. Carlin, J., & Hoang, Y. (2025, March 25). “After Fires, Calif. Must Streamline Enviro Reviews for Housing,” Law360 | News & Insights | Alston.com.
<https://www.alston.com/en/insights/publications/2025/03/after-fires-ca-must-streamline-reviews-for-housing>
13. CEQA Exemptions [Review of CEQA Exemptions]. California Natural Resources Agency. (n.d.).
<https://resources.ca.gov/Initiatives/Building-Water-Resilience/CEQA-Exemptions>
14. City of Houston. (2022). Resilience Hubs After Harvey: Lessons in Speeding Up Recovery. <https://houstontx.gov>
15. Commonwealth of Australia. (2020). National Bushfire Recovery Agency Report.
<https://recovery.gov.au>
16. Cristofaro, P. (2025, March 28). An AI-based drone that speeds up the detection and monitoring of wildfires is presented in germany. Associated Press. Retrieved from <https://apnews.com/article/germany-drones-wildfires-ai-b6ba6b7729f383fe4ffad4dee609f3f1>.

17. Darmiento, L., & Kambhampati, S. (2025, Apr 24). Relying on last-resort insurer, and regretting: State's FAIR Plan saw surge in recent years. Fire victims struggle now to get payouts. Los Angeles Times
<http://ezproxy.lapl.org/login?url=https://www.proquest.com/newspapers/relying-on-last-resort-insurer-regretting-states/docview/3193881678/se-2>
18. Di Giuseppe, F., McNorton, J., Lombardi, A., & Wetterhall, F. (2025). Global data-driven prediction of fire activity. *Nature Communications*, 16(1).
<https://doi.org/10.1038/s41467-025-58097-7>
19. Dillon, L. (2025, Feb 17). YEARS AFTER DISASTER, A STRUGGLE TO REBUILD; Malibu homeowners displaced in 2018 are tangled in bureaucracy and worry latest fires will add to delay. Los Angeles Times
<http://ezproxy.lapl.org/login?url=https://www.proquest.com/newspapers/years-after-disaster-struggle-rebuild-malibu/docview/3167533613/se-2>
20. Federal Emergency Management Agency (FEMA) (n.d.). Formaldehyde Levels in FEMA-Supplied Trailers.
https://www.fema.gov/pdf/media/2008/formaldehyde_resident_flyer_english.pdf
21. Fitbit. (n.d.). Fitbit wearables for health monitoring during wildfires. Retrieved April 30, 2025, from <https://www.fitbit.com>
22. Global Forest Watch. (n.d.). Satellite monitoring for wildfire management. Retrieved April 30, 2025, from <https://www.globalforestwatch.org>
23. Karuk Tribe - UC Berkeley Collaborative. Karuk Agroecosystem Resilience and Cultural Foods and Fibers Revitalization Initiative: xúus nu'éethi – we are caring for it. Karuk Aboriginal Territory, 2023.

24. Lambrou, N., Kolden, C., & Loukaitou-Sideris, A. (2025). Disaster Recovery Gentrification in Post-Wildfire Landscapes: The Case of Paradise, CA. *International Journal of Disaster Risk Reduction*, 118, 105235.
<https://doi.org/10.1016/j.ijdrr.2025.105235>
25. Lansner, J. (2025, January 11). 1 in 10 Los Angeles homes don't have insurance, says one estimate. *Daily News*.
<https://www.dailynews.com/2025/01/11/1-in-10-los-angeles-homes-dont-have-insurance-says-one-estimate/>
26. Lewis Group of Companies. (n.d.). Master planned communities.
<https://lewisgroupofcompanies.com>
27. Madakumbura, G., Thackeray, C., Hall, A., Williams, P., Norris, J., & Sukhdeo, R. (2025, January 17). Climate change a factor in unprecedented La fires. *Climate Change A Factor In Unprecedented LA Fires*. <https://sustainablela.ucla.edu/2025lawildfires>
28. Many Homeowners Underinsured For Rebuild – Pasadena Now. (2025, April 30). *Pasadenanow.com*.
<https://pasadenanow.com/main/many-homeowners-underinsured-for-rebuild>
29. NASA. (2022). Firetech: Wildfire prediction and management using AI.
<https://www.nasa.gov/firetech>
30. NASA's Fire Mapping. (2022). Real-time wildfire detection and monitoring technology. Retrieved April 30, 2025, from <https://firemapping.nasa.gov>
31. National Oceanic and Atmospheric Administration. (n.d.). Wildfire Climate Connection.
<https://www.noaa.gov/noaa-wildfire/wildfire-climate-connection>

32. One-Stop Permit Centers [Review of One-Stop Permit Centers]. LA County Recovers; Los Angeles County. (n.d.).
<https://recovery.lacounty.gov/rebuilding/one-stop-permit-centers/>
33. Oxendine, C. (2025, March 7). Karuk tribe signs first cultural burning agreement under california's new law . Tribal Business News. Retrieved from
<https://www.tribalbusinessnews.com/sections/energy/15040-karuk-tribe-signs-first-cultural-burning-agreement-under-california-s-new-law>.
34. Pacific Gas and Electric Company. (2023, November 29). 600 miles and counting: PG&E hits significant milestone as crews safely complete construction, energization of 350 more miles of underground powerlines in 2023.
<https://investor.pgecorp.com/news-events/press-releases/press-release-details/2023/600-Miles-and-Counting-PGE-Hits-Significant-Milestone-as-Crews-Safely-Complete-Construction-Energization-of-350-More-Miles-of-Underground-Powerlines-in-2023/default.aspx>
35. Panossian, Nadia, and Tarek Elgindy. 2023. Power System Wildfire Risks and Potential Solutions: A Literature Review & Proposed Metric. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A40-80746.
<https://www.nrel.gov/docs/fy23osti/80746.pdf>.
36. PG&E leaders detail undergrounding timeline, cost targets. (2022, February 11). T&D World.
<https://www.tdworld.com/utility-business/article/21216621/pge-leaders-detail-undergrounding-timeline-cost-targets>

37. Planning Report. (2025, February 18). Randall Lewis opines on the need to reform California entitlement processes.
<https://www.planningreport.com/2025/02/18/randall-lewis-opines-need-reform-california-entitlement-processes...>
38. Prefab Emergency Housing | Modular Emergency Shelters. (2025). Prefabex.
https://www.prefabex.com/our_galleries/prefab-emergency-housing
39. PurpleAir. (n.d.). Real-time air quality sensors and wildfire tracking. Retrieved April 30, 2025, from <https://www.purpleair.com>
40. Smith, D., & Kambhampati, S. (2025). Real estate losses from fires top \$30 billion, from old mobile homes to \$23-million mansions. Los Angeles: Los Angeles Times Communications LLC. Retrieved from <http://ezproxy.lapl.org/login?url=https://www.proquest.com/blogs-podcasts-websites/real-estate-losses-fires-top-30-billion-old/docview/3169038358/se-2...>
41. Sommer, L. (2025, March 25). Why some Los Angeles homes are being built to resist wildfires - and some aren't. NPR.
<https://www.npr.org/2025/03/25/nx-s1-5335535/los-angeles-home-fires-rebuilding-regulations>
42. Telehealth California. (2023). California wildfire recovery: Providing remote mental health support. Retrieved April 30, 2025, from <https://www.telehealthca.org>
43. Thermite RS3 Robots. (2022). Advanced firefighting technology: Robots for fire suppression. Retrieved April 30, 2025, from <https://www.thermiterobotics.com...>
44. Urban Land Institute. (n.d.). Wildfire risk and urban resilience program. ULI Randall Lewis Center for Sustainability in Real Estate.

<https://americas.uli.org/research/centers-initiatives/uli-randall-lewis-center-for-sustainability-in-real-estate/urban-resilience-program/wildfire-risk/>

45. Wang, C. (2025, February 11). Tenants demand protections as LA fires exacerbate housing crisis: “Huge source of stress.” The Guardian; The Guardian.
https://www.theguardian.com/us-news/2025/feb/11/housing-rent-protection-la-fires?utm_
46. What Is the Mello Act? | Los Angeles City Planning. (2015). Lacity.gov.
<https://planning.lacity.gov/blog/what-mello-act>
47. Wildfire Avert. (n.d.). Smart fire prevention systems for homes. Retrieved April 30, 2025, from <https://www.fireavert.com>
48. World Health Organization. (2021). Health impacts of wildfires: Global evidence review.
<https://www.who.int/publications/i/item/9789240035249>
49. Zhuang, Y., Fu, R., Santer, B. D., Dickinson, R. E., & Hall, A. (2021). Quantifying contributions of natural variability and anthropogenic forcings on increased fire weather risk over the western United States. *Proceedings of the National Academy of Sciences*, 118(45). <https://doi.org/10.1073/pnas.2111875118>