IMPACT OF 2025 LOS ANGELES WILDFIRES AND COMPARATIVE STUDY

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Collaboratively Advancing Growth and Prosperity for All

SCLC SOUTHERN CALIFORNIA LEADERSHIP COUNCIL

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The LAEDC Institute for Applied Economics provides objective economic and policy research for public agencies and private firms. The group focuses on economic impact studies, regional industry analyses, economic forecasts, and issue studies, particularly in workforce development, transportation, infrastructure, and environmental policy.

Every reasonable effort has been made to ensure that the data contained herein reflect the most accurate and timely information possible and they are believed to be reliable.

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Executive Summary

Analysis of the Impacts of the LA Fires

The 2025 Los Angeles wildfires have resulted in significant economic, property, and employment losses, with total property damages estimated between $28.0 billion and $53.8 billion. The Palisades and Eaton Fires account for the majority of these losses, impacting thousands of properties and businesses.

Business disruptions within the fire perimeters are projected to cause $4.6 billion to $8.9 billion in lost economic output in Los Angeles County over a five-year period (2025-2029), representing approximately 0.3 to 0.6 percent of the county's total economic output. The fires could lead to employment losses totaling between 24,990 and 49,110 job-years and labor income reductions ranging from $1.9 billion to $3.7 billion. Additionally, federal, state, and local governments could see tax revenue losses between $0.73 billion and $1.4 billion due to reduced business activity and employment.

Impacted Properties and Businesses

We identified 20,218 parcels within the burn areas, with the Palisades Fire affecting 10,658 properties (52.7%) and the Eaton Fire affecting 9,226 properties (45.6%). An additional 334 parcels (1.7%) were impacted by other smaller fires.

A total of 1,863 businesses were located within the fire zones, with the Palisades Fire affecting 1,117 businesses (60.0%) and the Eaton Fire affecting 746 businesses (40.0%). These businesses employed an estimated 9,610 workers, generating $1.4 billion in annual sales.

Impacted Industries

Industries in the burn areas are primarily consumer-facing and labor-intensive, making them particularly vulnerable to prolonged business disruptions. The most impacted industries by number of affected businesses include:

Other Services (235 businesses)
Professional, Scientific, and Technical Services (229 businesses)
Retail Trade (156 businesses)
Health Care and Social Assistance (142 businesses)
Construction (92 businesses)

When considering employment impacts, five industries account for 58% of the affected workforce, including Educational Services, Health Care, Retail Trade, Accommodation and Food Services, and Other Services.

Despite the predominance of service-based industries, business revenue losses reveal a more complex picture, with capital-intensive sectors such as Wholesale Trade, Professional Services, and Construction contributing significantly to lost sales.

Structure Damage Assessments

Palisades Fire

CAL FIRE assessed 12,066 structures, with 56.3 percent (6,831) destroyed. An additional 8 percent (1,045) sustained major, minor, or affected damage, while 35.1 percent (4,262) remained undamaged.

- Residential: 55.8 percent (5,058) of single-family homes and 94.5 percent (361) of mobile homes were destroyed.
- Commercial: 43.9 percent (101) of buildings were destroyed.
- Community: 51 percent of schools and 46.2 percent of churches were lost or damaged.
- Utilities & Infrastructure: 62.4 percent of utility structures were destroyed.

Eaton Fire

Out of 18,421 structures assessed, 50.9 percent (9,413) were destroyed. 5.8 percent (1,074) suffered damage, while 42.7 percent (7,894) remained intact, with 40 structures inaccessible.

- Residential: 50.6 percent (6,003) of single-family homes and 60 percent (12) of mobile homes were destroyed.
- Commercial: 36.3 percent (98) of buildings were destroyed.
- Community: 42.9 percent of churches and 37.4 percent of schools were lost or damaged.
- Utilities & Infrastructure: 55.1 percent of utility structures were destroyed.

Both fires caused severe structural losses, particularly in residential areas, highlighting the urgent need for recovery efforts.

Economic Impacts of Business Interruptions

To assess the economic and fiscal effects of business interruptions within the Palisades and Eaton fire perimeters, three recovery scenarios for economic activities are considered, using FEMA's HAZUS Earthquake Model as a reference for wildfire recovery timelines. These scenarios are informed by CAL FIRE's assessments of structural damage and FEMA estimated median repair and reconstruction times for damaged buildings. Scenario 1 follows FEMA's standard recovery timeline but includes a one-year business disruption in Palisades due to extensive destruction and population displacement. Scenario 2 extends the FEMA timeline twofold, accounting for potential challenges such as labor shortages, financial constraints, and administrative delays. Scenario 3 triples the timeline, representing the most challenging recovery process among the three, considering major logistical and funding barriers, extended infrastructure rebuilding, and prolonged social and economic disruptions that could substantially slow recovery.

Direct Economic Activity Losses

The direct economic losses stemming from business interruptions in the burned areas of the Palisades and Eaton fires over a five-year period (2025 to 2029) under the three recovery scenarios are first estimated. In Year 1, losses are projected at $1.26 billion in sales revenue (90% of baseline levels) and 8,200 jobs (85% of baseline employment) across all scenarios. In

Scenario 1, the fastest recovery, annual economic losses decline to 57 percent in Year 2 (2026) and 15 percent in Year 3 (2027), with full recovery by Year 4. Scenario 2 experiences a slower recovery, with $169.7 million in revenue losses and 1,370 jobs still affected by 2029, achieving full recovery by 2032. Scenario 3, the slowest recovery among the three, still shows $419.8 million in revenue losses and 3,290 jobs affected after five years, with full recovery extending to 2034.

Total Economic and Fiscal Impacts

The disruptions to the affected businesses in the burned areas of the Palisades and Eaton fires also affect their supply chains, as they are unable to purchase goods and services as inputs. This results in indirect and induced economic impacts beyond the direct effects.

Economic Impacts of Business Interruptions over a 5-year Study Period (2025-2029):

Total Economic Impacts on Los Angeles County:
Total economic output impacts range from $4.6 billion in Scenario 1 to $8.9 billion in Scenario 3
Total employment impacts range from 24,990 job-years in Scenario 1 to 49,110 job-years in Scenario 3
Total labor income losses range from $1.9 billion in Scenario 1 to $3.7 billion in Scenario 3
Loss of federal, state, and local taxes range from $0.73 billion to $1.41 billion

Total Economic Impacts on 7-County Southern California Region:
Total economic output impact ranging from $5.0 billion in Scenario 1 to $9.7 billion in Scenario 3
Total employment impacts ranging from 27,100 job-years in Scenario 1 to 53,210 job-years in Scenario 3

Total labor income losses range from $2.0 billion in Scenario 1 to $3.9 billion in Scenario 3
Loss of federal, state, and local taxes range from $0.81 billion to $1.57 billion

Demographic Profiles

Palisades Fire

The Palisades Fire area is a highly educated, affluent, and predominantly white community with over 21,300 residents. It has a Diversity Index of 43.2, with 80.0 percent White, and smaller Black (1.0 percent), Asian (7.0 percent), and Hispanic (7.1 percent) populations. The area skews older, with 43 percent of residents aged 45 and older.

- Education: 77.9 percent hold a bachelor's degree or higher, reflecting a highly skilled workforce.
- Income & Housing: Median household income is $200,001, with 56.9 percent earning over $200,000. Homeownership is high (77.4 percent), and the average home value is $1.96 million.
- Employment & Industry: A commuter-heavy area, with 8,749 residents working elsewhere. Employment is concentrated in information (18.2 percent), professional services (12.9 percent), and health care (11.9 percent). The workforce is 92.4 percent white-collar, dominated by management and professional roles.

Eaton Fire

The Eaton Fire area is more diverse and economically varied, with nearly 23,000 residents and a Diversity Index of 83.7. The population is 43.5 percent White, 18.8 percent Black, 8.3 percent Asian, and 27.8 percent Hispanic, making it significantly more racially diverse than the Palisades Fire area. The community has a balanced age distribution, though older residents form a significant portion.

- Education: 57.8 percent hold a bachelor's degree or higher, with strong representation in professional sectors.
- Income & Housing: Median household income is $143,186, with 35.1 percent earning over $200,000. Homeownership is 76.8 percent, and the average home value is $1.23 million.
- Employment & Industry: A residential hub, with 11,644 residents commuting out for work. Key industries include health care (16.4 percent), education (12.7 percent), and professional services (10.1 percent). The workforce is 71.0 percent white-collar, but with a higher share of service (18.0 percent) and blue-collar (11.0 percent) jobs compared to Palisades.

Both areas are affluent and well-educated, though the Eaton Fire area is significantly more diverse and has a broader economic spectrum. Their reliance on external job centers suggests that rebuilding efforts will need to consider both local employment opportunities and regional economic integration.

Comparative Analysis Summary

This analysis examines recovery strategies and outcomes from four major wildfires - the Marshall Fire (2021), Tubbs Fire (2017), Camp Fire in Paradise (2018), and Lahaina Fire (2023) - to identify effective practices for application in Los Angeles County, particularly for the Pacific Palisades and Altadena fire recovery efforts.

The economic impact of these fires varied significantly, from Marshall Fire's $513 million to the Camp Fire's $16.5 billion in damages. The Los Angeles fires (Palisades and Altadena) are estimated to cause between $28.0-53.8 billion in property damage alone, with projected business interruption impacts of $5.0-9.7 billion across Southern California over the next five years (2025-2029).

Analysis of successful recovery efforts reveals several critical patterns. For example communities that established emergency operations centers within the showed faster response times. Streamlined permitting processes reduced stress while accelerating recovery efforts. Implementation of comprehensive infrastructure resilience programs demonstrated significant reduction in system vulnerabilities during subsequent extreme weather events.

Key findings highlight four emerging trends that should shape recovery planning:

First, climate resilience has become increasingly central to infrastructure planning, with innovations like microgrids showing full cost recovery within three years through improved system recovery phases, with early integration preventing potential conflicts between reconstruction and preservation needs. Innovative insurance and financing mechanisms, such as parametric insurance programs, have demonstrated faster claim resolution compared to traditional approaches. Technology integration

in recovery coordination has shown significant improvements, reduced coordination delays and improving overall efficiencies in resource allocation.

For Los Angeles County, the analysis outlines a phased recovery approach:

- Emergency Response (0-30 days): Establish centralized coordination centers with particular attention to the unique geographical challenges of canyon environments
- Early Recovery (1-6 months): Implement coordinated debris removal programs adapted to challenging terrain while maintaining emergency services
- Intermediate Recovery (6-18 months): Focus on rebuilding with enhanced resilience measures while preserving community character
- Long-term Recovery (18+ months): Transform communities into models of fire-resilient development while maintaining their distinct identities
- Success depends on careful orchestration of multiple elements: strong leadership, sustained community engagement, and flexible adaptation of proven recovery practices to local conditions. The comprehensive approach must balance immediate needs with long-term resilience objectives while maintaining sensitivity to each community's unique characteristics.

This comparative summary draws from extensive documentation, including FEMA reports, municipal recovery plans, long form journalism and academic studies, synthesizing their findings to provide actionable guidance for Los Angeles County's recovery efforts.

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1 Introduction

The series of devastating wildfires that broke out in Early January 2025 across parts of Los Angeles, have burned over 40,000 acres, destroying thousands of homes, businesses, and community institutions and causing at least twenty-seven deaths. The fires, fueled by bone-dry vegetation and hurricane-force winds, leveled entire neighborhoods, particularly in the Pacific Palisades and Malibu areas (Palisades Fire) as well as in Altadena and Pasadena (Eaton Fire). The impacts of these fires will be felt across these communities and the rest of Los Angeles County for years, if not decades, to come.

2 Analysis of the Impacts of the LA Fires

LAEDC's Institute for Applied Economics (IAE) has conducted an analysis of data on properties and businesses located within the fire perimeters (as of January 14, 2025) to 1) estimate property losses from the fires and 2) estimate the resulting economic and fiscal impacts from business disruptions. IAE based its analysis on incident maps from the California Department of Forestry and Fire Protection (Cal Fire); parcel data from the Los Angeles County Office of the Assessor; property price data from the U.S. Federal Housing Finance Agency and Green Street; and business establishment data from Data Axle. IAE conducted the analysis using mapping software from ESRI and economic modeling software from IMPLAN.

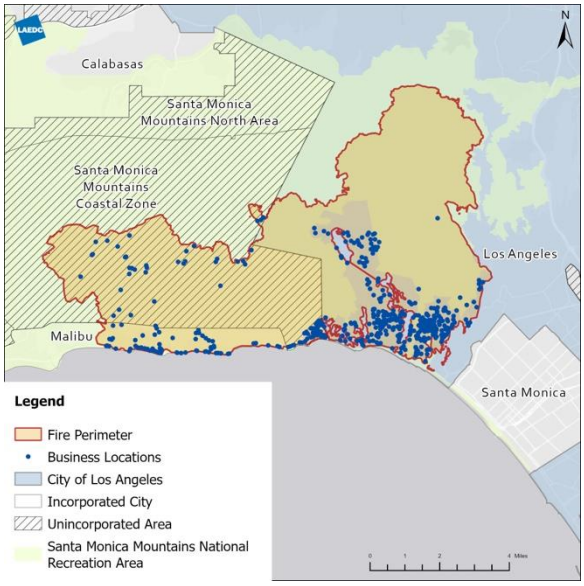
IAE estimates that **the 2025 Los Angeles wildfires have caused between $28.0 billion and $53.8 billion of property damage**, with the vast majority occurring as a result of the Palisades and Eaton Fires. Additionally, IAE estimates that **business interruptions within the perimeters of the Palisades and Eaton Fires could result in $4.6 billion to $8.9 billion in lost economic output in Los Angeles County over a 5-year study period (2025-2029)** depending on the trajectory of the recovery timeline, representing about 0.3 to 0.6 percent of the total output produced across the County. These disruptions could result in employment losses totaling 24,990 to 49,110 job-years[1] and labor income losses of $1.9 billion to $3.7 billion over the same period. Losses of federal, state, and local tax revenues could total $0.73 billion to $1.4 billion.

Impacted Properties and Businesses

As of January 14, 2025, IAE identified 20,218 parcels in the burn areas, including residential, commercial, industrial and government properties. Of these, 10,658 (52.7 percent) were located in the vicinity of the Palisades Fire and 9,226 (45.6 percent) were located in the vicinity of the Eaton Fire. The remaining 334 parcels (1.7 percent) were affected by the Archer, Hurst, Kenneth, Lidia, Sunset and Sunswept Fires.

IAE also identified 1,863 individual businesses that were located in the burn areas (**Exhibits 1 and 2**). Of these, 1,117 (60.0 percent) were located in the vicinity of the Palisades Fire and 746 (40.0 percent) were located in the vicinity of the Eaton Fire. These businesses employed an estimated 9,610 people, or 5,970 employees (62.1 percent) and 3,640 employees (37.9 percent), respectively. Altogether, these businesses realize an estimated $1.4 billion in sales a year.

Exhibit 1
Locations Businesses Affected by the Palisades Fire



[1] One job-year refers to a worker working full time for that year. In analysis of total economic impacts over multiple years, employment impacts are usually expressed in job-years rather than the number of jobs because most positions are ongoing rather than temporary.

Impacted Industries

IAE analyzed the industries in which these directly impacted businesses operate to better understand the ramifications of the wildfires. Of the 1,863 individual businesses, 1,479 reported both their North American Industry Classification System (NAICS) code and their number of employees. Aggregating these companies by their 2-digit NAICS code and their number of employees indicates that many of the impacted industries involve consumer facing services and are labor intensive. For example, Other Services[2], Retail Trade and Health Care and Social Assistance make up three of the four largest impacted industries by the number of companies (**Exhibit 3**).

This is magnified when looking at the share of directly affected employees by industry. Five industries (i.e., Educational Services, Other Services, Health Care and Social Assistance, Retail Trade, and Accommodation and Food Services) account for roughly 5,550 employees, or 58 percent of the total impacted (**Exhibit 4**).

The sales volumes of these impacted businesses suggests a more complicated picture of economic activity in the burn areas, however. These 1,479 companies reported total sales of $1.4 billion, and five industries accounted for 62 percent of these sales, yet only two of these industries (i.e., Retail Trade and Health Care and Social Assistance) are consumer facing (**Exhibit 5**). The other three are Wholesale Trade; Professional, Scientific, and Technical Services; and Construction. These industries generally cater to other businesses and can be more capital intensive as well.

Exhibit 2
Locations Businesses Affected by the Eaton Fire

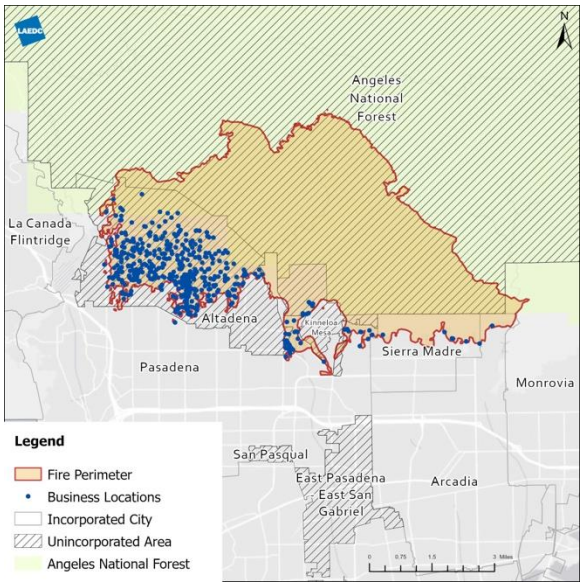


Exhibit 3
Largest Impacted Industries by Number of Companies

NAICS Sector	Industry Description	Companies
81	Other Services (except Public Admin)	235
54	Professional, Scientific, and Tech Svcs	229
44-45	Retail Trade	156
62	Health Care and Social Assistance	142
23	Construction	92
53	Real Estate and Rental and Leasing	87
72	Accommodation and Food Services	83
61	Educational Services	70
92	Public Administration	12
---	Other	373
Total		1,479

[2] Other Services includes activities such as personal care services, automotive repair and maintenance, drycleaning and laundry services, pet care services, and grantmaking and giving services.

Exhibit 4
Distribution of Employees by Impacted Industry

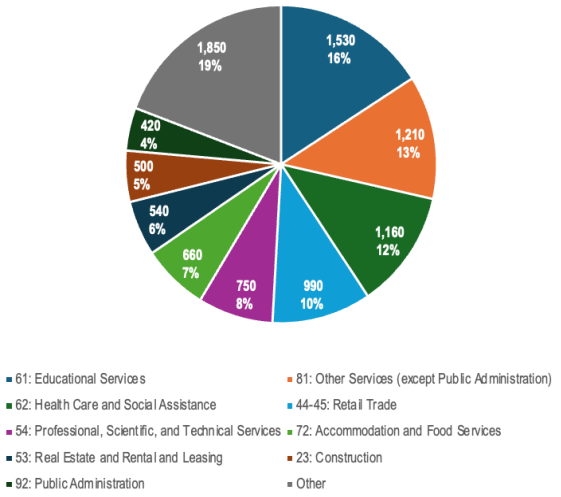
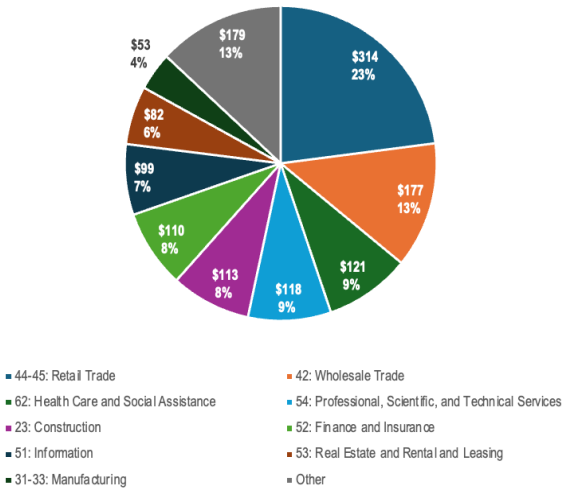


Exhibit 5
Distribution of Sales by Impacted Industry ($Millions)



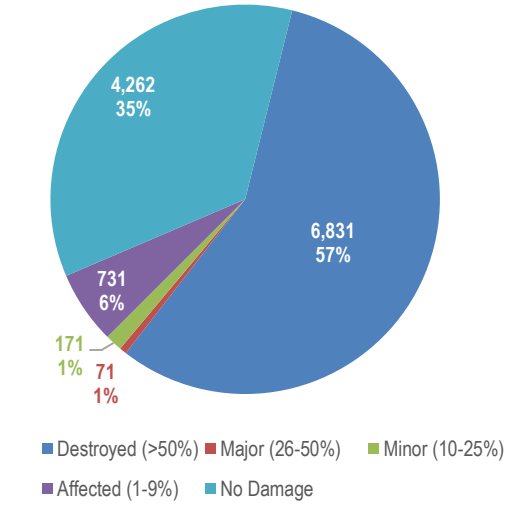
Structure Damage Assessment – Palisades Fire

A total of 12,066 structures were assessed by CAL FIRE Damage Inspection Program (DINS) for damage due to the Palisades Fire, with damage levels ranging from no damage to complete destruction. The assessment reveals that a significant share of structures, 56.3 percent (6,831 structures), were destroyed, making this the most substantial damage category.

Extent of Structure Damage:

- 6,831 structures (56.3 percent) were **Destroyed** (greater than 50 percent structural damage), resulting in total losses.
- 71 structures (0.6 percent) suffered **Major** (26-50 percent structural damage), indicating severe structural impact but not total loss.
- 171 structures (1.4 percent) sustained **Minor** (10-25 percent structural damage), requiring some repairs but remaining functional.
- 731 structures (6.0 percent) were **Affected** (1-9 percent structural damage), meaning they experienced minor damage but remained intact.
- 4,262 structures (35.1 percent) sustained **No Damage**, suggesting that a portion of the structures were untouched by the fire.

Exhibit 6
Assessed Structures by Extent of Damage
Palisades Fire



Impact by Property Types:

- **Commercial Structures:**
  - **Commercial buildings (multi-story and single-story):** 101 structures (43.9 percent) were destroyed, an additional 31 structures (13.5 percent) sustained some level of damage (affected, minor, or major), while 98 structures (42.6 percent) sustained no damage.
  - **Mixed-use buildings (residential and commercial):** 5 structures (38.5 percent) were destroyed, an additional 2 structures (15.4 percent) sustained some level of damage (affected or minor), while 6 structures (46.2 percent) sustained no damage.

- **Residential Structures:**
  - **Multi Family Residences (multi-story and single-story):** 135 structures (32.5 percent) were destroyed, an additional 52 structures (12.5 percent) sustained some level of damage (affected, minor, or major), while 228 structures (54.9 percent) sustained no damage.
  - **Single-Family Residences (multi-story and single-story):** 5,058 structures (55.8 percent) were destroyed, an additional 760 structures (8.4 percent) sustained some level of damage (affected, minor, or major), while 3,247 structures (35.8 percent) sustained no damage.
  - **Mobile Homes and Motor Homes:** 361 structures (94.5 percent) were destroyed, an additional 4 structures (1.1 percent) sustained some level of damage (affected or minor) while 17 structures (4.5 percent) sustained no damage.

- **Community and Public Structures:**
  - **Churches:** 6 structures (46.2 percent) were destroyed, an additional 1 structure (7.7 percent) had major damage, and 6 structures (46.2 percent) sustained no damage.
  - **Schools:** 51 structures (51.0 percent) were destroyed, an additional 7 structures (7.0 percent) sustained some level of damage (affected, minor, or major), while 42 structures (42.0 percent) sustained no damage.

- **Infrastructure, Utility, and Miscellaneous Structures:**
  - **Infrastructure:** 1 structure (1.6 percent) was destroyed, an additional 5 structures (8.1 percent) were affected, while 56 structures (90.3 percent) sustained no damage.
  - **Utility / Miscellaneous Structures:** 1,115 structures (62.4 percent) were destroyed, an additional 111 structures (6.2 percent) sustained some level of damage (affected, minor, or major), while 562 structures (31.4 percent) sustained no damage.

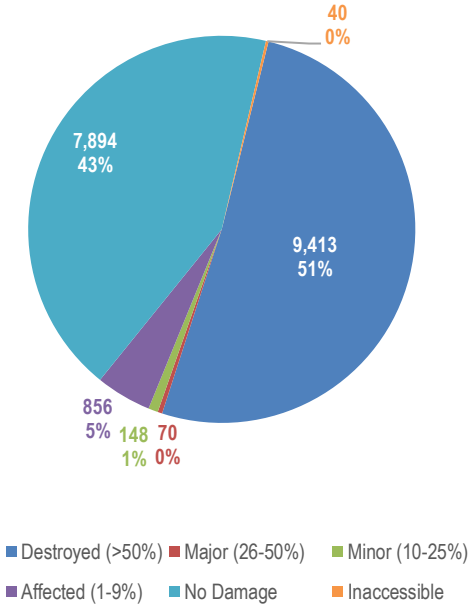
Structure Damage Assessment – Eaton Fire

A total of 18,421 structures were assessed by CAL FIRE Damage Inspection Program (DINS) for damage due to the Eaton Fire, with damage levels ranging from no damage to complete destruction. The assessment reveals that a significant share of structures, 50.9 percent (9,413 structures), were destroyed, making this the most substantial damage category.

Extent of Structure Damage:

- 9,413 structures (50.9 percent) were **Destroyed** (greater than 50 percent structural damage), resulting in total losses.
- 70 structures (0.4 percent) suffered **Major** (26-50 percent structural damage), indicating severe structural impact but not total loss.
- 148 structures (0.8 percent) sustained **Minor** (10-25 percent structural damage), requiring some repairs but remaining functional.
- 856 structures (4.6 percent) were **Affected** (1-9 percent structural damage), meaning they experienced minor damage but remained intact.
- 7,894 structures (42.7 percent) sustained **No Damage**, suggesting that a portion of the structures were untouched by the fire.
- 40 structures (0.2 percent) were **Inaccessible** to allow for damage assessment.

Exhibit 7
Assessed Structures by Extent of Damage
Eaton Fire



Impact by Property Types:

- **Commercial Structures:**
  - **Commercial buildings (multi-story and single-story):** 98 structures (36.3 percent) were destroyed, an additional 27 structures (10.0 percent) sustained some level of damage (affected, minor, or major), while 145 structures (53.7 percent) sustained no damage.
  - **Mixed-use buildings (residential and commercial):** 5 structures (38.5 percent) were destroyed, an additional 2 structures (15.4 percent) sustained some level of damage (affected or minor), while 6 structures (46.2 percent) sustained no damage.

- **Residential Structures:**
  - **Multi Family Residences (multi-story and single-story):** 96 structures (30.2 percent) were destroyed, an additional 28 structures (8.8 percent) sustained some level of damage (affected, minor, or major), while 194 structures (61.0 percent) sustained no damage.
  - **Single-Family Residences (multi-story and single-story):** 6,003 structures (50.6 percent) were destroyed, an additional 750 structures (6.3 percent) sustained some level of damage (affected, minor, or major), while 5,083 structures (42.8 percent) sustained no damage, and 31 structures (0.3 percent) were inaccessible to allow for damage assessment.
  - **Mobile Homes and Motor Homes:** 12 structures (60.0 percent) were destroyed, while 8 structures (40.0 percent) sustained no damage.

- **Community and Public Structures:**
  - **Churches:** 9 structures (42.9 percent) were destroyed, an additional 1 structure (4.8 percent) were affected, and 11 structures (52.4 percent) sustained no damage.
  - **Schools:** 46 structures (37.4 percent) were destroyed, an additional 3 structures (2.4 percent) sustained some level of damage (affected or major), while 74 structures (60.2 percent) sustained no damage.
  - **Hospitals:** 2 structures were affected (1-9 percent damage).

- **Infrastructure, Utility, and Miscellaneous Structures:**
  - **Infrastructure:** 10 structures (9.8 percent) were destroyed, an additional 18 structures (17.6 percent) sustained some level of damage (affected or major), while 74 structures (72.5 percent) sustained no damage.
  - **Utility / Miscellaneous Structures:** 3,134 structures (55.1 percent) were destroyed, an additional 243 structures (4.3 percent) sustained some level of damage (affected, minor, or major), while 2,299 structures (40.4 percent) sustained no damage, and 9 structures were inaccessible to allow for damage assessment.

Economic Impacts of Business Interruptions

In this subsection, we conduct analyses of the economic and fiscal impacts of business interruptions caused by the Palisades Fire and Eaton Fire on Los Angeles County and the seven-county Southern California Region. The assessment focuses solely on the potential effects of wildfire-induced business interruptions for establishments located within the perimeters of the two fires. Detailed data on industry classifications, employee numbers, and sales volumes for all businesses within the perimeters of the two fires were obtained from Data Axle and used as inputs for the economic impact analysis.

The analysis evaluates the economic impacts of business interruptions of the Palisades and Eaton fires on Los Angeles County and the Southern California region, focusing on direct, indirect, and induced effects. *Direct* impacts represent the immediate losses in business output, labor income, and employment resulting from wildfire-related destruction to buildings and structures, permanent business closures, and damage to critical infrastructure such as utilities, transportation, and communications within the fire perimeters. These disruptions can suspend the operations of businesses, even those with little or moderate structural damage. *Indirect* impacts capture the ripple effects on supply chains caused by the operational interruptions of directly affected businesses. Lastly, *induced* impacts arise from reduced household spending by employees, as income and jobs are lost among workers affected both directly and indirectly.

In this study, we established three scenarios with alternative recovery timelines of economic activities in the burned areas of the Palisades and Eaton fires. The timeline is based on the damage state of individual building structures within the fire perimeter, as assessed by CAL FIRE Damage Inspection Program (DINS), and the estimated median time of repair and reconstruction for damaged buildings.

We apply the building recovery timeline methodology from FEMA's HAZUS modeling tool. The FEMA HAZUS model is a nationally standardized, GIS-based risk assessment tool that evaluates the physical, economic, and social impacts of natural disasters, such as earthquakes, hurricanes, floods, and tsunamis. Managed by FEMA's Natural Hazards Risk Assessment Program, HAZUS integrates comprehensive inventory databases for all U.S. states and territories, incorporating the latest

scientific approaches to disaster modeling.[3] Since HAZUS does not include a specific wildfire model, we use the building damage recovery timelines provided in the HAZUS Earthquake Model as a proxy for estimating timeline for wildfire recovery.

The FEMA HAZUS model offers median building recovery timelines based on damage severity and occupancy type, accounting for both clean-up/repair/reconstruction times and delays due to decision-making, financing, permitting, and other logistical factors. Recovery times increase with the severity of damage. For example, slight damage is typically resolved within months, while complete damage may take years to reconstruct. Critical facilities such as hospitals and nursing homes may face recovery times of up to 960 days for complete damage, while business-related facilities like retail and professional services recover more quickly, averaging 360-480 days for complete damage.[4] Detailed assumptions on building recovery time by damage state and occupancy class adopted in the FEMA HAZUS Earthquake model are provided in the Appendix.

Three Recovery Scenarios:

Scenario 1: This scenario adheres to the FEMA recovery timeline for residential, commercial, and industrial buildings in the Eaton fire burned area. For Palisades, the FEMA recovery timeline is applied to residential buildings. However, for affected businesses in Palisades, we assume a one-year disruption of any business activities before the FEMA recovery timeline begins. This assumption reflects the current condition that, one month post-fire, the area largely remains closed, delaying the process of rebuilding or reoccupation. Additionally, businesses in the area will likely face prolonged disruptions due to the displacement of their customer base and extensive construction activity.

Scenario 2: This scenario doubles the FEMA recovery timeline. It reflects the potential challenges associated with mobilizing recovery resources, including construction labor shortages, financial constraints, and administrative delays. The extent of damages in these areas, combined with high uncertainty about the availability and efficiency of recovery resources, may slow down the reconstruction efforts. Furthermore, complex permitting processes, decision-making delays, and competition for construction resources with other disaster-affected areas could extend recovery times.

Scenario 3: This scenario assumes a recovery timeline three times of FEMA's estimates, representing the most conservative trajectory for this analysis. In this scenario, recovery efforts are substantially delayed by logistical and resource challenges. Potential factors include limited access to disaster funding, lengthy negotiations with insurers, delays in critical infrastructure rebuilding, and regional shortages of construction labor and materials. Additionally, the scenario accounts for the compounded effects of social and economic displacement, which could further hinder rebuilding and reoccupation efforts in the affected areas.

Direct Economic Activity Losses

We first estimate the direct loss of economic activities in the burned areas of Palisades and Eaton fires in a five-year study period from 2025 to 2029 under the three alternative recovery scenarios.

[3] FEMA. 2025. HAZUS Disaster Risk and Loss Assessment Modeling Tool. https://www.fema.gov/flood-maps/products-tools/hazus

[4] FEMA. 2024. HAZUS Earthquake Model Technical Manual (HAZUS 6.1). https://www.fema.gov/sites/default/files/documents/fema_hazus-earthquake-model-technical-manual-6-1.pdf.

Exhibit 8 presents the direct economic activity disrupted in the two burned areas measured in terms of sales revenue and employment. Percentage disruption with respect to the baseline levels of economic activities are also calculated.

Exhibit 8
Disruption of Direct Economic Activity of the Palisades and Eaton Fires under Three Recovery Timeline Scenarios

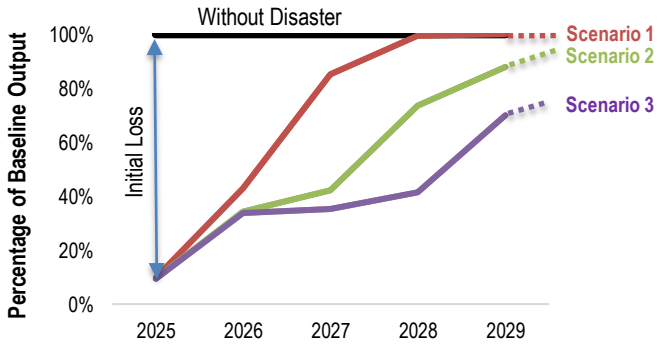
Indicator	Baseline Economic Activity	Direct Economic Activity Disruptions (loss and percentage to baseline)				
		2025	2026	2027	2028	2029
Scenario 1 -- Using FEMA Recovery Timeline						
Sales Revenue ($)	1,397,526,776	1,261,052,817	797,906,152	207,844,812	7,703,522	0
		90.2%	57.1%	14.9%	0.6%	0.0%
Employment (jobs)	9,604	8,200	5,640	1,670	150	0
		85.4%	58.7%	17.4%	1.6%	0.0%
Scenario 2 -- Doubling FEMA Recovery Timeline[a]						
Sales Revenue ($)	1,397,526,776	1,264,466,935	918,682,590	807,510,678	369,327,949	169,696,164
		90.5%	65.7%	57.8%	26.4%	12.1%
Employment (jobs)	9,604	8,230	6,670	5,850	2,850	1,370
		85.7%	69.4%	60.9%	29.7%	14.3%
Scenario 3 -- Tripling FEMA Recovery Timeline[b]						
Sales Revenue ($)	1,397,526,776	1,266,335,643	926,687,985	906,625,645	819,726,415	419,843,241
		90.6%	66.3%	64.9%	58.7%	30.0%
Employment (jobs)	9,604	8,240	6,720	6,610	6,070	3,290
		85.8%	70.0%	68.8%	63.2%	34.3%

[a] Under Scenario 2, it is estimated that full recovery of affected business activities in the burned areas will take place by 2032.
[b] Under Scenario 3, it is estimated that full recovery of affected business activities in the burned areas will take place by 2034.

Across all scenarios, the initial direct economic loss in the burned areas amounted to $1.26 billion of sales revenue (or 90 percent of baseline level) and about 8,200 jobs (or 85 percent of baseline employment) in Year 1 (2025). In Scenario 1, the quickest recovery scenario, economic losses reduced to about 57 percent and 15 percent of the baseline output levels in Year 2 (2026) and Year 3 (2027), respectively. Employment disruptions follow a similar pattern. For Scenario 2, while the initial disruptions in Year 1 are similar to Scenario 1, the recovery pace slows substantially. By 2029, $169.7 million (12.1%) sales revenue and 1,370 jobs (14.3%) remain disrupted, with full recovery projected by 2032. For Scenario 3, the slowest recovery trajectory among the three scenarios, five years post-fire, sales revenue losses remain at $419.8 million (30.0%), and employment disruptions still affect 3,290 jobs (34.3%), with full recovery delayed until 2034.

Exhibit 9 depicts the recovery trajectory between 2025 and 2029 of the three scenarios.

Exhibit 9
Recovery Trajectory of Economic Output under Three Alternative Scenarios



Source: LAEDC analysis

Total Economic and Fiscal Impacts

Impacts on Los Angeles County

The disruptions to the 1,479 businesses in the fire perimeters of the Palisades and Eaton fires also affect their supply chains, as they are unable to purchase goods and services as inputs. This results in indirect and induced economic impacts beyond the direct effects.

As presented in **Exhibits 10 to 12**, over the five-year study period (2025-2029), the total economic and fiscal impacts of business interruption from the Palisades and Eaton fires vary significantly across the three scenarios, assuming different recovery timelines. Under Scenario 1, which follows the FEMA recovery timeline, total economic output losses amount to $4.6 billion, with 24,990 job-year losses and $1.9 billion in labor income reductions. Scenario 2, which assumes a doubling of the FEMA recovery timeline, results in a higher total output loss of $7.2 billion, with 39,720 job-year losses and a labor income reduction of $3.0 billion. Scenario 3, the most severe case with a tripled FEMA recovery timeline, leads to an $8.9 billion reduction in economic output, 49,110 job losses, and $3.7 billion in lost labor income. The fiscal impacts follow a similar pattern, with total tax revenue losses of $726.9 million in Scenario 1, $1.14 billion in Scenario 2, and $1.41 billion in Scenario 3.

Summary of total economic impacts of business interruptions on **Los Angeles County** over the five-year analysis period (2025-2029):

Scenario 1 (FEMA Recovery Timeline)

- Total economic output impact of nearly $4.6 billion
- Total employment impacts of 24,990 job-years
- Total labor income losses of $1.9 billion
- Total value-added losses of $2.9 billion
- Loss of federal, state, and local taxes of $0.73 billion

Scenario 2 (Doubling FEMA Recovery Timeline)

- Total economic output impact of nearly $7.2 billion
- Total employment impacts of 39,720 job-years
- Total labor income losses of $3.0 billion
- Total value-added losses of $4.6 billion
- Loss of federal, state, and local taxes of $1.14 billion

Scenario 3 (Tripling FEMA Recovery Timeline)

- Total economic output impact of nearly $8.9 billion
- Total employment impacts of 49,110 job-years
- Total labor income losses of $3.7 billion
- Total value-added losses of $5.7 billion
- Loss of federal, state, and local taxes of $1.41 billion

Exhibit 10

Economic and Fiscal Impacts of Business Interruption from Palisades Fire and Eaton Fire in LA County--Scenario 1

	2025	2026	2027	2028	Total
Total Economic Contribution:					
Output ($ millions)	**$2,514.0**	**$1,621.9**	**$445.8**	**$17.4**	**$4,599.0**
Direct	*$1,440.8*	*$925.7*	*$255.2*	*$10.4*	*$2,632.1*
Indirect	*$509.5*	*$327.7*	*$89.1*	*$3.3*	*$929.6*
Induced	*$563.7*	*$368.4*	*$101.5*	*$3.7*	*$1,037.4*
Employment (job-years)	**13,280**	**8,950**	**2,580**	**180**	**24,990**
Direct	*8,200*	*5,640*	*1,670*	*150*	*15,660*
Indirect	*2,300*	*1,490*	*400*	*20*	*4,210*
Induced	*2,790*	*1,820*	*500*	*20*	*5,130*
Labor income ($ millions)	**$1,029.5**	**$674.9**	**$186.3**	**$6.9**	**$1,897.6**
Direct	*$650.6*	*$430.3*	*$119.2*	*$4.4*	*$1,204.4*
Indirect	*$186.0*	*$118.6*	*$32.4*	*$1.2*	*$338.3*
Induced	*$192.8*	*$126.0*	*$34.7*	*$1.3*	*$354.8*
Value added ($ millions)	**$1,594.4**	**$1,025.9**	**$281.0**	**$11.3**	**$2,912.6**
Direct	$925.5	$592.1	$162.0	$6.9	$1,686.4
Indirect	$300.8	$193.2	$52.7	$2.0	$548.6
Induced	$368.2	$240.7	$66.3	$2.4	$677.6
Total Fiscal Contribution ($ millions)**:**	**$401.0**	**$254.3**	**$68.6**	**$3.0**	**$726.9**
Federal tax revenues	$236.9	$154.6	$42.6	$1.6	$435.7
State and local tax revenues	$164.1	$99.7	$26.0	$1.4	$291.1

Sources: IMPLAN; estimates by LAEDC

Exhibit 11

Economic and Fiscal Impacts of Business Interruption from Palisades Fire and Eaton Fire in LA County --Scenario 2

	2025	2026	2027	2028	2029	Total
Total Economic Contribution:						
Output ($ millions)	**$2,520.9**	**$1,882.5**	**$1,657.6**	**$813.9**	**$366.7**	**$7,241.7**
Direct	*$1,444.6*	*$1,075.1*	*$945.1*	*$456.4*	*$209.6*	*$4,130.8*
Indirect	*$511.2*	*$376.1*	*$333.3*	*$163.7*	*$75.0*	*$1,459.4*
Induced	*$565.1*	*$431.3*	*$379.2*	*$193.8*	*$82.1*	*$1,651.5*
Employment (job-years)	**13,330**	**10,500**	**9,230**	**4,550**	**2,110**	**39,720**
Direct	*8,230*	*6,670*	*5,850*	*2,850*	*1,370*	*24,970*
Indirect	*2,300*	*1,700*	*1,510*	*740*	*340*	*6,590*
Induced	*2,800*	*2,130*	*1,880*	*960*	*410*	*8,180*
Labor income ($ millions)	**$1,032.0**	**$790.4**	**$694.8**	**$355.5**	**$150.6**	**$3,023.3**
Direct	*$652.1*	*$507.0*	*$444.6*	*$229.5*	*$95.2*	*$1,928.3*
Indirect	*$186.7*	*$135.9*	*$120.6*	*$59.7*	*$27.4*	*$530.2*
Induced	*$193.3*	*$147.5*	*$129.7*	*$66.3*	*$28.1*	*$564.8*
Value added ($ millions)	**$1,598.6**	**$1,197.0**	**$1,050.5**	**$513.7**	**$228.9**	**$4,588.7**
Direct	$927.7	$693.7	$606.4	$290.1	$130.7	$2,648.6
Indirect	$301.8	$221.6	$196.5	$97.0	$44.6	$861.4
Induced	$369.1	$281.7	$247.7	$126.6	$53.6	$1,078.8
Total Fiscal Contribution ($ millions)**:**	**$402.0**	**$298.3**	**$260.4**	**$126.9**	**$55.9**	**$1,143.5**
Federal tax revenues	$237.5	$180.9	$159.0	$80.3	$34.5	$692.2
State and local tax revenues	$164.5	$117.5	$101.4	$46.5	$21.4	$451.3

Sources: IMPLAN; estimates by LAEDC

Exhibit 12
Economic and Fiscal Impacts of Business Interruption from Palisades Fire and Eaton Fire in LA County--Scenario 3

	2025	2026	2027	2028	2029	Total
Total Economic Contribution:						
Output ($ millions)	**$2,524.8**	**$1,897.3**	**$1,860.7**	**$1,696.8**	**$928.9**	**$8,908.6**
Direct	*$1,446.8*	*$1,083.4*	*$1,062.8*	*$966.7*	*$521.4*	*$5,080.9*
Indirect	*$512.1*	*$379.4*	*$371.4*	*$339.7*	*$185.4*	*$1,788.1*
Induced	*$565.9*	*$434.5*	*$426.5*	*$390.4*	*$222.2*	*$2,039.5*
Employment (job-years)	**13,350**	**10,590**	**10,390**	**9,540**	**5,240**	**49,110**
Direct	*8,240*	*6,720*	*6,600*	*6,070*	*3,290*	*30,920*
Indirect	*2,310*	*1,710*	*1,680*	*1,540*	*850*	*8,090*
Induced	*2,800*	*2,150*	*2,110*	*1,930*	*1,100*	*10,090*
Labor income ($ millions)	**$1,033.5**	**$796.2**	**$781.7**	**$715.6**	**$407.6**	**$3,734.6**
Direct	*$652.9*	*$510.5*	*$501.7*	*$459.2*	*$264.1*	*$2,388.4*
Indirect	*$187.0*	*$137.1*	*$134.1*	*$122.9*	*$67.5*	*$648.7*
Induced	*$193.6*	*$148.6*	*$145.9*	*$133.5*	*$76.0*	*$697.5*
Value added ($ millions)	**$1,601.0**	**$1,205.9**	**$1,183.8**	**$1,077.0**	**$588.3**	**$5,656.1**
Direct	$929.0	$698.5	$686.5	$621.8	$333.5	$3,269.3
Indirect	$302.3	$223.6	$218.8	$200.2	$109.7	$1,054.5
Induced	$369.6	$283.8	$278.6	$255.0	$145.2	$1,332.2
Total Fiscal Contribution ($ millions)**:**	**$402.6**	**$300.6**	**$295.0**	**$266.9**	**$145.1**	**$1,410.2**
Federal tax revenues	$237.8	$182.2	$178.9	$163.5	$92.1	$854.5
State and local tax revenues	$164.7	$118.4	$116.2	$103.4	$53.0	$555.7

Sources: IMPLAN; estimates by LAEDC

Exhibit 13 presents the detailed tax impacts on Los Angeles County, broken down by type of tax and level of government, for each of the three scenarios over the five-year study period.

Exhibit 13
Detailed Fiscal Impacts of Business Interruption from Palisades Fire and Eaton Fire in LA County (2025 to 2029)

	Scenario 1	Scenario 2	Scenario 3
By Type of Tax ($ millions)**:**			
Personal income taxes	$233.1	$370.7	$457.6
Social insurance	213.8	341.4	422.0
Sales and excise taxes	107.0	164.7	202.7
Property taxes	90.1	138.7	170.7
Corporate profits taxes	54.7	84.4	103.6
Other fees and taxes	28.2	43.5	53.6
Total	**$726.9**	**$1,143.5**	**$1,410.2**
By Type of Government ($ millions)**:**			
Federal	$435.7	$692.2	$854.5
State	156.5	244.1	300.6
County	46.1	71.0	87.3
Cities	88.5	136.3	167.7
Total	**$726.9**	**$1,143.5**	**$1,410.2**

Sources: IMPLAN; estimates by LAEDC

Summary of Total Fiscal Impacts for Los Angeles County (2025-2029):

Scenario 1 (FEMA Recovery Timeline):

Total tax revenue losses are estimated to be $726.9 million:
- Federal taxes: $435.7 million (60%)
- State taxes: $156.5 million (22%)
- Local taxes (county & city): $134.6 million (18%)

Scenario 2 (Doubling FEMA Recovery Timeline):

Total fiscal losses are estimated to be $1.14 billion:
- Federal taxes: $692.2 million (61%)
- State taxes: $244.1 million (21%)
- Local taxes: $207.3 million (18%)

Scenario 3 (Tripling FEMA Recovery Timeline):

The most severe scenario results in $1.41 billion in total tax losses:
- Federal taxes: $854.5 million (61%)
- State taxes: $300.6 million (21%)
- Local taxes: $255 million (18%)

Tax Impact by Type:

- Personal income taxes account for the largest share of fiscal losses across all scenarios, making up approximately 32% to 34% of total tax losses
- Social insurance taxes are the second largest category, contributing 29% to 30% of total losses
- Sales and excise taxes follow, representing 14% to 15% of tax losses

Exhibits 14 and 15 disaggregate the total output and employment impacts by industry sector defined by two-digit NAICS code. In terms of output impacts, the sectors most significantly affected across all scenarios are real estate and rental, retail trade, and professional, scientific, and technical services. Real estate and rental is estimated to experience the largest output losses, ranging from $515.8 million in Scenario 1 to $1,016.9 million in Scenario 3. Retail trade follows closely, with output losses ranging from $525 million in Scenario 1 to $959.8 million in Scenario 3. Professional, scientific, and technical services is estimated to experience the third largest output losses, with impacts ranging from $448.2 million in Scenario 1 to $867.2 million in Scenario 3.

The top three sectors most significantly impacted by business interruption in terms of employment are health and social services, educational services, and other services. Health and social services is estimated to experience the greatest employment disruptions, with job-year losses ranging from 3,220 in Scenario 1 to 6,370 in Scenario 3. Educational services follows, with employment impacts ranging from 2,810 job-years lost in Scenario 1 to 6,240 in Scenario 3. Other services is also one of the most affected sector, with losses ranging from 2,910 job-years in Scenario 1 to 5,240 in Scenario 3.

Exhibit 14

Distribution of Output Impacts of Business Interruption by Industry in LA County -2025 to 2029 (millions of 2025$)

	Scenario 1	Scenario 2	Scenario 3
Ag, Forestry, Fish & Hunting	$3.8	$6.4	$8.1
Mining	$0.8	$1.3	$1.6
Utilities	$12.8	$20.2	$25.1
Construction	$204.5	$330.6	$412.3
Manufacturing	$174.3	$276.4	$323.9
Wholesale trade	$416.3	$642.3	$771.5
Retail trade	$525.0	$770.9	$959.8
Transportation and warehousing	$106.9	$168.6	$205.9
Information	$368.3	$592.3	$721.2
Finance and insurance	$392.3	$606.2	$753.4
Real estate and rental	$515.8	$812.3	$1,016.9
Professional, scientific technical services	$448.2	$714.0	$867.2
Management of companies	$88.4	$135.5	$163.2
Administrative and waste services	$186.2	$292.9	$359.8
Educational services	$214.6	$360.6	$475.6
Health and social services	$372.9	$598.0	$742.2
Arts, entertainment and recreation	$90.3	$144.8	$180.3
Accommodation and food services	$165.6	$258.3	$321.2
Other services	$254.3	$420.1	$491.2
Government	$43.7	$68.3	$84.3
Total	**$4,585.0**	**$7,220.2**	**$8,884.7**

Sources: IMPLAN; estimates by LAEDC

Exhibit 15

Distribution of Employment Impacts of Business Interruption by Industry in LA County -2025-2029 (job-years)

	Scenario 1	Scenario 2	Scenario 3
Ag, Forestry, Fish & Hunting	50	80	110
Mining	0	0	0
Utilities	10	20	20
Construction	930	1,480	1,850
Manufacturing	460	710	890
Wholesale trade	490	780	940
Retail trade	2,190	3,360	4,200
Transportation and warehousing	930	1,460	1,780
Information	840	1,380	1,700
Finance and insurance	1,180	1,830	2,270
Real estate and rental	1,950	3,060	3,870
Professional, scientific technical services	2,120	3,390	4,070
Management of companies	280	430	520
Administrative and waste services	1,550	2,440	2,990
Educational services	2,810	4,720	6,240
Health and social services	3,220	5,250	6,370
Arts, entertainment and recreation	700	1,120	1,410
Accommodation and food services	1,880	2,900	3,620
Other services	2,910	4,560	5,240
Government	290	450	580
Total	**24,990**	**39,730**	**49,100**

Sources: IMPLAN; estimates by LAEDC

Impacts on Southern California Region

The economic and fiscal impacts resulting from business interruptions within the fire perimeters of the Palisades and Eaton fires are also estimated for the broader Southern California region, which includes the seven counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, Imperial, and Ventura. The direct economic losses in the burned areas remain the same as those presented in the previous section for the direct impacts within Los Angeles County. However, when the analysis expands to cover the entire Southern California region, the indirect and induced impacts become larger. This is because the analysis also captures the supply chain effects that ripple through the region outside of Los Angeles County.

Exhibit 16

Economic and Fiscal Impacts of Business Interruption from Palisades Fire and Eaton Fire in SoCal Region (2025-2029)

	Scenario 1	Scenario 2	Scenario 3
Total Economic Contribution:			
Output ($ millions)	**$5,002.8**	**$7,879.3**	**$9,692.8**
Direct	*$2,612.2*	*$4,097.3*	*$5,039.3*
Indirect	*$1,042.0*	*$1,636.5*	*$2,004.1*
Induced	*$1,348.6*	*$2,145.5*	*$2,649.4*
Employment (job-years)	**27,100**	**43,070**	**53,210**
Direct	*15,660*	*24,970*	*30,920*
Indirect	*4,750*	*7,450*	*9,140*
Induced	*6,690*	*10,660*	*13,160*
Labor income ($ millions)	**$1,996.1**	**$3,176.3**	**$3,922.8**
Direct	*$1,170.9*	*$1,872.4*	*$2,319.3*
Indirect	*$374.5*	*$587.0*	*$718.1*
Induced	*$450.7*	*$717.0*	*$885.3*
Value added ($ millions)	**$3,122.2**	**$4,917.7**	**$6,061.6**
Direct	$1,661.4	$2,606.0	$3,217.3
Indirect	$602.2	$945.8	$1,157.5
Induced	$858.6	$1,365.9	$1,686.8
Total Fiscal Contribution ($ millions)**:**	**$806.5**	**$1,269.4**	**$1,565.3**
Federal tax revenues	$482.3	$765.7	$945.1
State and local tax revenues	$324.2	$503.7	$620.2

Summary of total economic impacts of business interruptions on the **Southern California Region** over 5-year analysis period (2025-2029) (see **Exhibit 16**):

Scenario 1 (FEMA Recovery Timeline)

- Total economic output losses of approximately $5.0 billion
- Total employment impacts of 27,100 job-years
- Total labor income losses of nearly $2.0 billion
- Total value-added losses of about $3.1 billion
- Loss of federal, state, and local taxes totaling $806.5 million

Scenario 2 (Doubling FEMA Recovery Timeline)

- Total economic output losses of nearly $7.9 billion
- Total employment impacts of 43,070 job-years
- Total labor income losses of about $3.2 billion
- Total value-added losses of about $4.9 billion
- Loss of federal, state, and local taxes totaling $1.27 billion

Scenario 3 (Tripling FEMA Recovery Timeline)

- Total economic output losses of nearly $9.7 billion
- Total employment impacts of 53,210 job-years
- Total labor income losses of about $3.9 billion
- Total value-added losses of about $6.1 billion
- Loss of federal, state, and local taxes totaling $1.57 billion

Exhibit 17 presents the detailed tax impacts on the Southern California region, broken down by type of tax and level of government, for each of the three scenarios over the 5-year study period.

Summary of Total Fiscal Impacts for the Southern California region (2025-2029):

Scenario 1 (FEMA Recovery Timeline):

Total tax revenue losses reach $806.5 million:
- Federal taxes: $482.3 million (60%)
- State taxes: $184.9 million (23%)
- Local taxes (county & city): $139.3 million (17%)

Scenario 2 (Doubling FEMA Recovery Timeline):

Total fiscal losses are estimated to be $1.27 billion:
- Federal taxes: $765.7 million (60%)
- State taxes: $288.6 million (23%)
- Local taxes (county & city): $215.1 million (17%)

Scenario 3 (Tripling FEMA Recovery Timeline):

The most severe scenario results in $1.57 billion in total tax losses:
- Federal taxes: $945.1 million (60%)
- State taxes: $355.5 million (23%)
- Local taxes (county & city): $264.6 million (17%)

Personal income taxes account for the largest share of fiscal losses across all scenarios, representing approximately 33% to 34% of total tax losses, with estimated impacts ranging from $268.7 million in Scenario 1 to $527.2 million in Scenario 3. Social insurance taxes follow as the second-largest category, accounting for 28% to 29% of total losses, with estimated impacts between $227.2 million in Scenario 1 and $448.0 million in Scenario 3. Sales and excise taxes also represent a significant portion of the tax losses, making up 14% to 15% of the total and ranging from $118.6 million in Scenario 1 to $225.2 million in Scenario 3.

Exhibit 17

Detailed Fiscal Impacts of Business Interruption from Palisades Fire and Eaton Fire in SoCal Region

	Scenario 1	Scenario 2	Scenario 3
By Type of Tax ($ millions):			
Personal income taxes	$268.7	$427.0	$527.2
Social insurance	227.2	362.6	448.0
Sales and excise taxes	118.6	183.0	225.2
Property taxes	100.7	155.6	191.4
Corporate profits taxes	60.7	93.9	115.3
Other fees and taxes	30.5	47.3	58.2
Total	**$806.5**	**$1,269.4**	**$1,565.3**
By Type of Government ($ millions):			
Federal	$482.3	$765.7	$945.1
State	184.9	288.6	355.5
County	40.5	62.5	76.9
Cities	98.8	152.6	187.7
Total	**$806.5**	**$1,269.4**	**$1,565.3**

Sources: IMPLAN; estimates by LAEDC

Exhibits 18 and 19 detail the total output and employment impacts by industry sector, categorized by two-digit NAICS codes. In terms of output impacts, the most significantly affected sectors across all scenarios are real estate and rental, retail trade, and professional, scientific, and technical services. Real estate and rental is estimated to experience the largest output losses, ranging from $559.3 million in Scenario 1 to $1,101.8 million in Scenario 3. Retail trade follows closely, with losses between $550.5 million in Scenario 1 and $1,009.8 million in Scenario 3. Professional, scientific, and technical services rank third, with estimated output losses ranging from $472.6 million to $915.2 million across scenarios.

The employment impacts indicate that health and social services, educational services, and other services experience the greatest job disruptions. Health and social services is estimated to face the highest employment losses, ranging from 3,430 job-years in Scenario 1 to 6,790 job-years in Scenario 3. Educational services follow closely, with job losses between 2,850 and 6,320. Other services also see significant employment impacts, with estimated losses ranging from 3,030 to 5,480 job-years across scenarios.

Exhibit 18

Distribution of Output Impacts of Business Interruption by Industry in SoCal Region (millions of 2025$)

	Scenario 1	Scenario 2	Scenario 3
Ag, Forestry, Fish & Hunting	$10.8	$17.3	$21.7
Mining	$3.2	$5.2	$6.3
Utilities	$16.0	$25.3	$31.4
Construction	$210.0	$339.3	$423.0
Manufacturing	$249.6	$396.0	$470.3
Wholesale trade	$459.8	$711.3	$856.3

Retail trade	$550.5	$811.4	$1,009.8
Transportation and warehousing	$135.0	$212.5	$259.7
Information	$383.6	$616.4	$750.8
Finance and insurance	$434.1	$672.5	$834.9
Real estate and rental	$559.3	$881.2	$1,101.8
Professional, scientific technical	$472.6	$752.9	$915.2
Management of companies	$99.5	$152.9	$184.7
Administrative and waste services	$211.4	$332.7	$408.6
Educational services	$204.8	$343.6	$452.4
Health and social services	$400.4	$641.6	$796.2
Arts, entertainment and recreation	$98.8	$158.3	$196.8
Accommodation and food services	$184.7	$288.5	$358.5
Other services	$255.9	$421.8	$495.3
Government	$49.5	$77.9	$96.0
Total	**$4,989.4**	**$7,858.5**	**$9,669.8**

Source: Estimates by LAEDC

Exhibit 19

Distribution of Employment Impacts of Business Interruption by Industry in SoCal Region (job-years)

	Scenario 1	Scenario 2	Scenario 3
Ag, Forestry, Fish & Hunting	90	150	190
Mining	10	10	10
Utilities	10	20	30
Construction	960	1,520	1,900
Manufacturing	620	980	1,220
Wholesale trade	590	930	1,130
Retail trade	2,380	3,660	4,580
Transportation and warehousing	1,180	1,850	2,260
Information	860	1,400	1,730
Finance and insurance	1,400	2,170	2,690
Real estate and rental	1,990	3,110	3,940
Professional, scientific technical	2,280	3,640	4,390
Management of companies	320	490	600
Administrative and waste services	1,730	2,730	3,340
Educational services	2,850	4,780	6,320
Health and social services	3,430	5,600	6,790
Arts, entertainment and recreation	790	1,260	1,580
Accommodation and food services	2,070	3,190	3,980
Other services	3,030	4,750	5,480
Government	320	500	640
Total	**27,110**	**43,070**	**53,220**

Source: Estimates by LAEDC

It is important to note that the current analysis does not account for the potential effects of economic resilience measures or coping strategies that businesses may implement to mitigate economic losses. These measures could include production shifts or the relocation of business operations within Los Angeles County and Southern California Region. By adopting such strategies, businesses may be able to cushion the economic impact of disruptions, reducing overall losses from business interruptions in both county and regional economies.

Demographic Profile – Palisades Fire

The Palisades Fire area is a well-educated, predominantly white community with a strong concentration of professionals in white-collar industries. Home to more than 21,300 residents, the area is marked by high levels of educational attainment, a strong economic foundation, and an aging demographic, as indicated by data from ESRI Business Analyst Online and US Census OnTheMap.

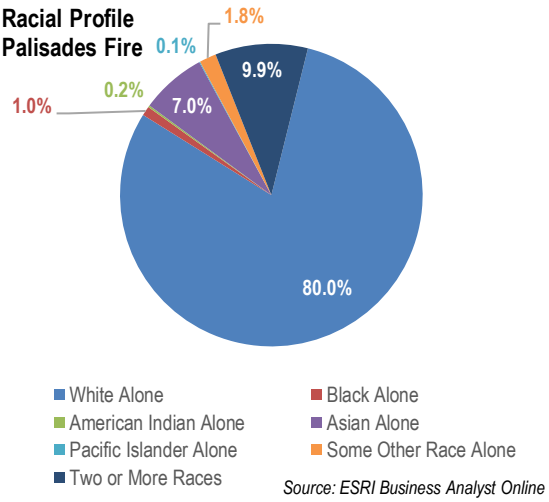
Population Characteristics

Compared to other regions, the Palisades Fire area has less racial and ethnic diversity, as reflected in its Diversity Index of 43.2. The population is 80.0 percent White, with smaller percentages of other racial and ethnic groups:

- Black Alone: 1.0 percent
- Asian Alone: 7.0 percent
- Hispanic Origin: 7.1 percent
- Two or More Races: 9.9 percent

This composition suggests a more demographically homogeneous profile than many other communities in the region.

Exhibit 8
Racial Profile
Palisades Fire



Source: ESRI Business Analyst Online

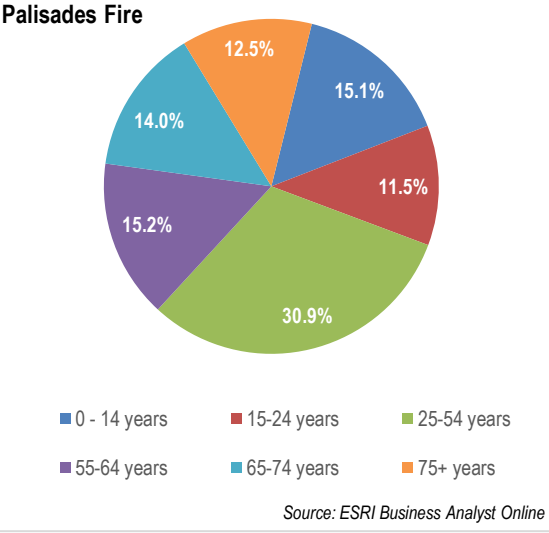
Age Distribution

The Palisades Fire area has a notably older population, with 81.0 percent of residents over the age of 18. A significant portion is concentrated in middle-aged and senior age brackets:

- 45-54 years: 14.2 percent
- 55-64 years: 15.2 percent
- 65-74 years: 14.0 percent
- 75+ years: 13.4 percent

While younger residents (0-24 years) make up 26.6 percent of the population, the majority falls within middle-aged and older brackets, with nearly 43 percent aged 45 and older. This suggests that the area is home to more established households and retirees, rather than younger families or early-career professionals.

Exhibit 9
Age Profile
Palisades Fire



Source: ESRI Business Analyst Online

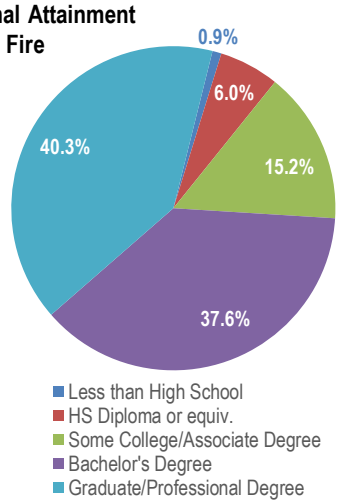
Educational Attainment

The educational attainment levels in the Palisades Fire area are among the highest in the region, reflecting a highly skilled and professional workforce. Among those aged 25 and older:

- Bachelor's Degree or Higher: 77.9 percent
  - Bachelor's Degree: 37.6 percent
  - Graduate/Professional Degree: 40.3 percent
- Some College, No Degree: 10.6 percent
- High School Graduate or Less: 6.9 percent

With nearly four out of five residents holding at least a Bachelor's degree, the Palisades Fire area is home to a highly educated population with advanced degrees being particularly prevalent.

Exhibit 10
Educational Attainment
Palisades Fire



Source: ESRI Business Analyst Online

Income and Housing

The median household income is $200,001, while the average household income is $275,139, making it one of the more economically prosperous areas in the county. More than 56.9 percent of households earn over $200,000 annually, while only 12.2 percent earn below $75,000.

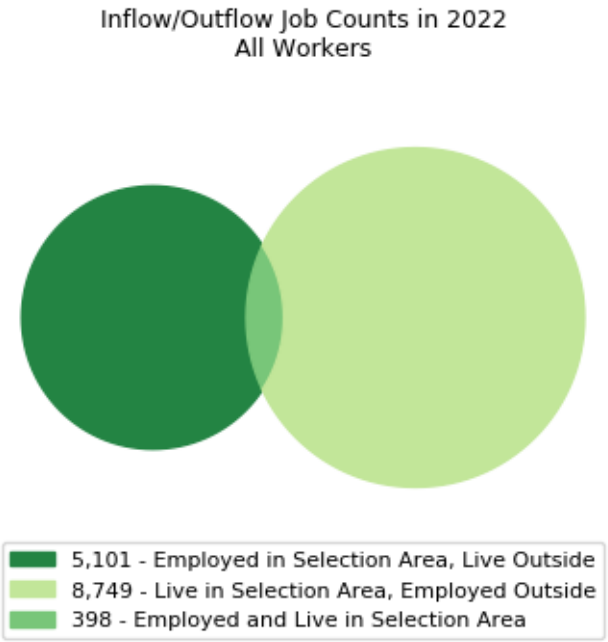
Homeownership is also high, with 77.4 percent of households being owner-occupied. The average home value is $1.96 million, with 69.1 percent of owner-occupied homes valued at over $2 million. The Housing Affordability Index of 40 and the fact that residents dedicate 62.6 percent of their income to mortgage costs indicate elevated housing cost relative to income levels.

Commuting Patterns

The Palisades Fire area employment patterns indicate a strong reliance on external job centers, with most residents commuting outside the area for work. The breakdown of employment patterns is as follows:

- 8,749 residents live in the area but commute elsewhere for work.
- 398 residents both live and work in the Palisades Fire area.
- 5,101 individuals commute into the Palisades Fire area for employment.

This suggests that Palisades Fire area is primarily a residential community, with many of its working residents employed in other parts of the region.



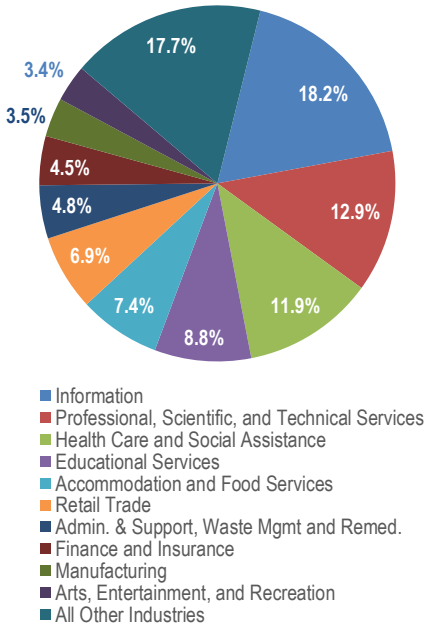
Source: US Census OnTheMap

Industry Composition

The employment base in Palisades Fire area is dominated by white-collar industries, with a particular concentration in information, professional services, and finance. The largest industries by employment share include:

- Information (18.2 percent) – A leading sector, likely reflecting media, technology, and entertainment jobs.
- Professional, Scientific, and Technical Services (12.9 percent) – Includes roles in law, consulting, engineering, and business services.
- Health Care and Social Assistance (11.9 percent) – Reflects a significant medical and caregiving workforce.
- Educational Services (8.8 percent) – Suggests a concentration of schools and academic institutions.
- Accommodation and Food Services (7.4 percent) – Includes hospitality, restaurants, and lodging services.
- Retail Trade (6.9 percent) – Represents consumer-facing businesses serving the local community.

Exhibit 11
Industry Composition
Palisades Fire



Source: US Census OnTheMap

Other industries, such as finance and insurance (4.5 percent), manufacturing (3.5 percent), and arts, entertainment, and recreation (3.4 percent), represent smaller shares of employment.

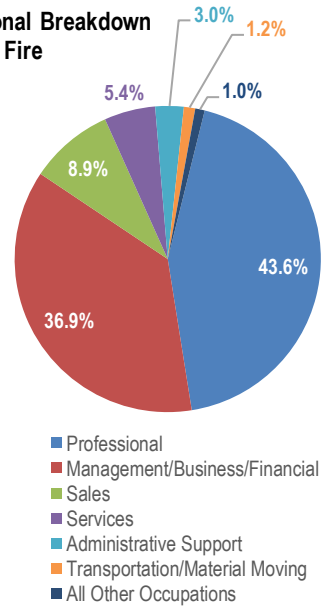
Occupational Breakdown

The Palisades Fire area workforce is predominantly professional and managerial, with 92.4 percent of employed residents working in white-collar occupations. Key occupational groups include:

- Professional roles (43.6 percent) – Includes specialized fields such as legal, engineering, and scientific professions.
- Management, Business, and Financial (36.9 percent) – A major segment reflecting executive and administrative roles.
- Sales (8.9 percent) – Represents commercial and client-focused occupations.

Service-based employment accounts for 5.4 percent of jobs, while blue-collar jobs make up just 2.2 percent. The limited presence of construction, maintenance, and transportation jobs suggests that the local labor market is highly specialized and knowledge based.

Exhibit 12
Occupational Breakdown
Palisades Fire



Source: ESRI Business Analyst Online

The Palisades Fire area has a highly educated and professional workforce, with high concentrations in information, finance, health care, and education. The area functions primarily as a commuter hub, with the majority of working residents employed outside the community.

The employment landscape reflects a highly skilled labor force concentrated in white-collar industries, while blue-collar and trade-based employment remain minimal. These patterns underscore the area's economic alignment with corporate, technological, and professional service sectors rather than industrial or trade-related fields.

Demographic Profile – Eaton Fire

The Eaton Fire area is a diverse and highly educated community with a strong presence in professional and service-oriented industries. Home to nearly 23,000 residents, the area reflects a mix of backgrounds, income levels, and occupational specializations that shape its economic and social landscape, as indicated by data from ESRI Business Analyst Online and US Census OnTheMap.

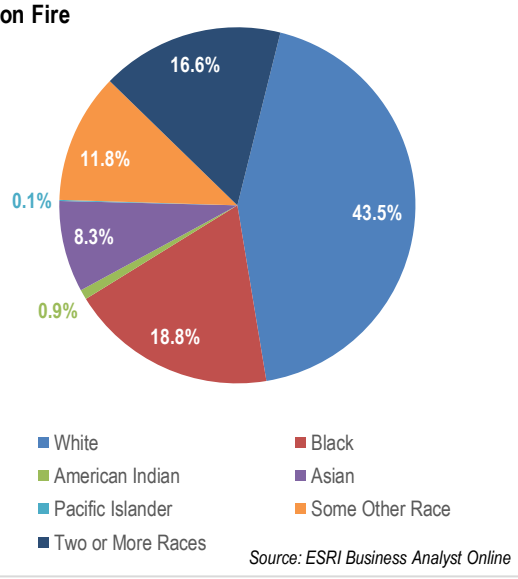
Population Characteristics

The Eaton Fire area has a highly diverse population, reflected in its Diversity Index of 83.7. The racial and ethnic composition includes:

- White Alone: 43.5 percent
- Black Alone: 18.8 percent
- American Indian Alone: 0.9 percent
- Asian Alone: 8.3 percent
- Pacific Islander Alone: 0.1 percent
- Some Other Race Alone: 11.8 percent
- Two or More Races: 16.6 percent
- Hispanic Origin: 27.8 percent

With over 16 percent of residents identifying as multiracial and nearly 28 percent identifying as Hispanic, Eaton Fire area is a culturally rich community. This diversity is evident in local businesses, educational institutions, and community engagement, creating a dynamic environment with broad cultural influences.

Exhibit 13
Racial Profile
Eaton Fire



Source: ESRI Business Analyst Online

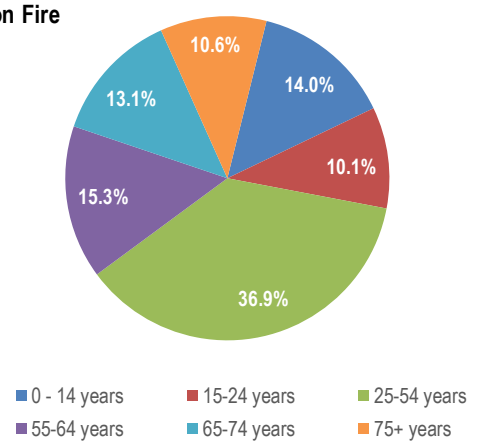
Age Distribution
The Eaton Fire area has a balanced age distribution, though there is a notable presence of older residents. Nearly 83 percent of the population is 18 or older, with a significant portion in the middle-aged and senior age groups:

- 55-64 years: 15.3 percent
- 65-74 years: 13.1 percent
- 75+ years: 10.6 percent

At the same time, the presence of younger age groups indicates a mix of generations:

- Children (0-14 years): 14.0 percent
- Young Adults (15-24 years): 10.1 percent
- Prime Working Age (25-54 years): 36.9 percent

Exhibit 13
Age Profile
Eaton Fire



Source: ESRI Business Analyst Online

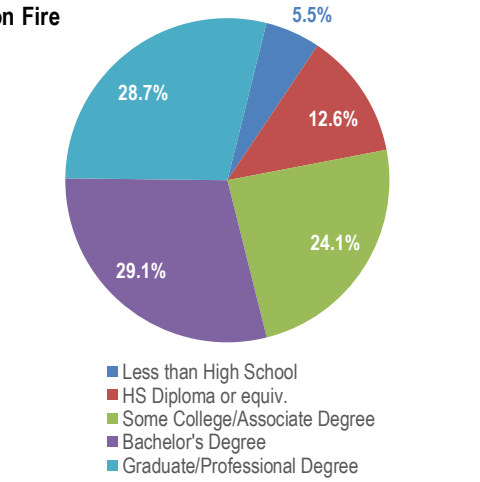
This mix indicates an experienced workforce, with the community's established professional base supporting recovery and rebuilding efforts.

Educational Attainment
Education levels in the Eaton Fire area are high, with a large proportion of residents holding post-secondary degrees. Among those aged 25 and older:

- Bachelor's Degree or Higher: 57.8 percent
- Some College, No Degree: 15.5 percent
- High School Graduate or Equivalent: 11.2 percent
- Less than High School: 5.5 percent

The large number of residents with graduate or professional degrees (28.7 percent) suggests a workforce with specialized expertise. This aligns with the area's strong presence in professional and business services.

Exhibit 14
Educational Attainment
Eaton Fire



Source: ESRI Business Analyst Online

Income and Housing
The median household income is $143,186, while the average household income is $192,841. More than 64 percent of households earn over $100,000 annually, with 35.1 percent earning over $200,000. At the lower end, 12.6 percent of households earn below $50,000.

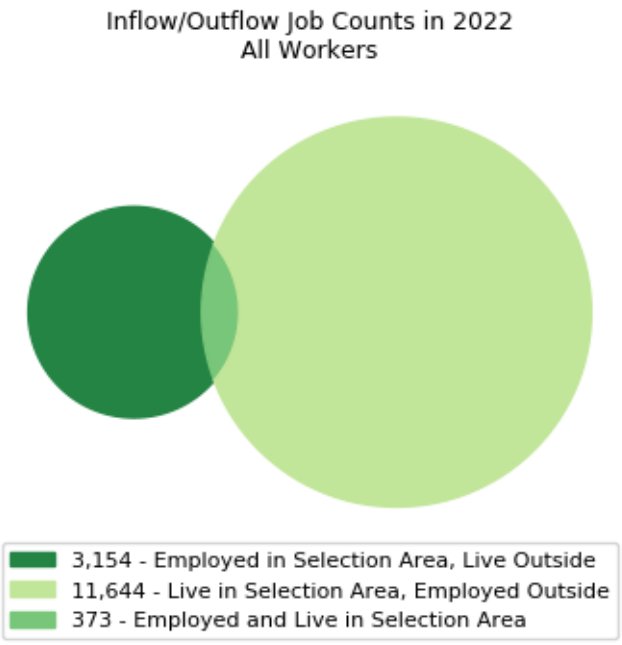
Homeownership is widespread, with 76.8 percent of households being owner-occupied. The average home value is $1.23 million, with nearly 90 percent of owner-occupied housing units valued above $750,000. The Housing Affordability Index of 51 indicates that a significant portion of income is spent on housing, suggesting elevated housing costs relative to income levels.

Commuting Patterns

The Eaton Fire area employment landscape is shaped by commuting patterns, with a significant portion of residents working outside the area. The breakdown of employment patterns is as follows:

- 11,644 residents live in Eaton Fire but commute elsewhere for work.
- Only 373 residents both live and work within Eaton Fire.
- 3,154 individuals commute into Eaton Fire for employment.

This suggests that Eaton Fire area primarily functions as a residential hub, with many working residents commuting to job centers outside the community.



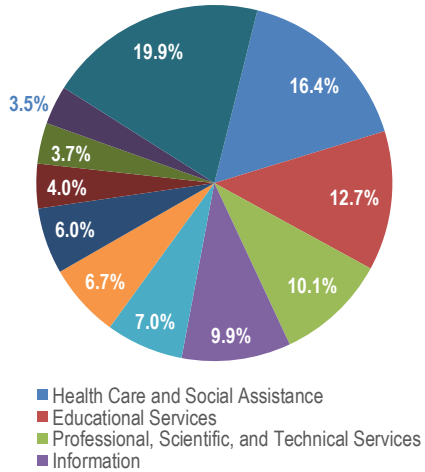
Source: US Census OnTheMap

Industry Composition

The Eaton Fire area has a strong emphasis on professional and service-related occupations. Jobs are distributed across various NAICS industry sectors:

- Health Care and Social Assistance (16.4 percent) – The largest industry, reflecting demand for medical and support services.
- Educational Services (12.7 percent) – A significant sector, indicating a concentration of schools, universities, or training institutions.
- Professional, Scientific, and Technical Services (10.1 percent) – Represents a highly skilled workforce in law, engineering, and consulting.
- Information (9.9 percent) – Includes telecommunications, publishing, and digital media roles.
- Accommodation and Food Services (7.0 percent) – Suggests a presence of restaurants and hospitality businesses.
- Retail Trade (6.7 percent) – Highlights the presence of commercial activity catering to local consumers.
- Administration & Support, Waste Management, and Remediation (6.0 percent) – Includes employment in administrative roles and facility management.
- Finance and Insurance (4.0 percent) – Covers banking, investment services, insurance agencies, and financial planning, supporting both businesses and individuals.

Exhibit 15
Industry Composition
Eaton Fire



Source: US Census OnTheMap

- Manufacturing (3.7 percent) - Includes the production of goods such as machinery, fabricated materials, and consumer products, contributing to the area's industrial and supply chain activities.
- Public Administration (3.5 percent) – A moderate share, indicating government employment in the area.

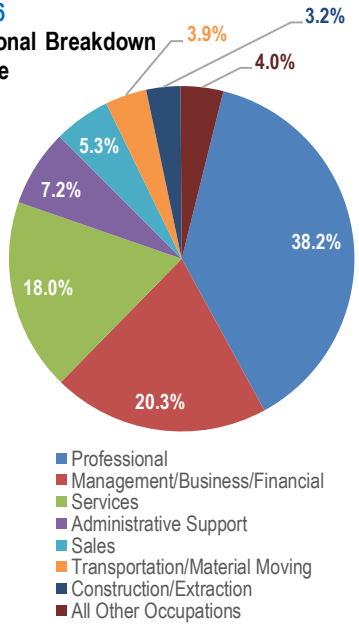
Other industries with smaller shares include wholesale trade (3.1 percent), other services (excluding public administration) (3.0 percent), construction (3.0 percent), transportation and warehousing (2.7 percent), arts, entertainment, and recreation (2.7 percent), and real estate and rental and leasing (2.3 percent).

Occupational Breakdown

The Eaton Fire area workforce is heavily concentrated in white-collar professions, with 71.0 percent of employed residents working in professional, managerial, and administrative roles. Key occupational groups include:

- Professional roles (38.2 percent)
- Management, Business, and Financial positions (20.3 percent)
- Services (18.0 percent)
- Sales and Administrative Support (12.5 percent combined)

Exhibit 16
Occupational Breakdown
Eaton Fire



Source: ESRI Business Analyst Online

Blue-collar jobs represent 11.0 percent, with the most common roles in construction, transportation, and maintenance.

Eaton Fire area has a highly educated, professional workforce, with a strong reliance on external job centers for employment. While local industries provide jobs in health care, education, and professional services, the low percentage of residents working within the area suggests that Eaton Fire area functions primarily as a residential hub, with economic ties extending beyond its borders.

Looking ahead, the area's demographic composition and employment patterns may shape the recovery process, influencing how businesses, infrastructure, and housing are rebuilt following the fire.

Preliminary Takeaways

The rebuilding and recovery from the Los Angeles wildfires will take many years. While the anticipated economic losses from impacted businesses are small relative to Los Angeles County as a whole, these do not represent the entirety of economic losses that could be expected. IAE has concerns with respect to a number of areas that could adversely affect the County's economic performance over the near- and long-term:

- Displaced residents who are forced to leave the County for housing or employment reasons. Note that residents located in the vicinity of the Palisades and Eaton Fires have median household incomes of $200,000 and $143,200, respectively, and generate sizeable amounts of economic activity and personal income tax revenue;

- Tourists who forego visiting the County because of the fires and as a result do not spend their dollars in the region;

- Delays in federal disaster spending and insurance payouts that, in turn, delay the rebuilding process and impede economic recovery; and

- Increased prices across the County for shelter, construction materials, and other goods and services resulting from severe imbalances between demand and supply. Higher prices have the potential to suppress economic activity County-wide.

IAE will update its economic analysis as more information in these areas becomes known.

3 Comparative Study and Best Practice

Introduction

In January 2025 a series of wind driven wildfires swept through **Pacific Palisades and Altadena** in Los Angeles County. As a result of these fires, 16,244 structures were destroyed, causing between $28.0 billion and $53.8 billion of property damage. Now, Los Angeles policymakers and residents join a growing list of jurisdictions around the country learning from recent urban-wildlife interface wildfire events and considering how to plan for recovery and growth under the specter of growing risk of catastrophic loss. This report compares four well-documented disasters—the **Marshall Fire** in Boulder County, Colorado (Dec 2021); the **Tubbs Fire** in Napa and Sonoma counties, California (Oct 2017); the **Camp Fire** that destroyed Paradise, California (Nov 2018); and the **Lahaina fire** on Maui, Hawai‘i (Aug 2023)—to identify lessons and barriers relevant to the recovery of the 2025 Los Angeles fires.

The analysis of major wildfire recovery efforts reveals a complex but discernible pattern in successful recovery timelines. Through careful examination of the Marshall, Tubbs, Paradise, and Lahaina fires, we can trace how recovery efforts evolve through distinct phases, each building upon the foundations laid in previous stages while setting the groundwork for future progress. Moreover, this analysis examines the most impactful practices and their outcomes across various recovery dimensions, providing insights for future recovery planning and implementation.

Comparative Economic Impact Analysis

Fire	Total Economic Impact/ estimate in Damage	Property Loss	Business Impact	Insurance Claims	Recovery Challenges	Recovery Progress	Key Barriers & Lessons Learned
Marshall Fire	$2B	6,000 acres burned; 1,105 homes	30+ commercial structures	$680 million	Housing shortage and displacement of residents Supply chain disruptions affecting rebuilding	By Dec 2024 about **two-thirds of destroyed homes rebuilt** [1] Progress varies: ~70 % in Louisville and Superior	Major insurance gaps. **Two-thirds** of households underinsured with average shortfall > $100 k [1] Delays in state recovery grants

					efforts Insurance coverage gaps Rising construction costs	vs **34 %** in unincorporated Boulder County [1]	(190 of 593 applications still under review in Sept 2024) [1] Recovery facilitated by **community Slack platform** for survivors [3] and advocacy Survivors advise quick search for rental housing and early FEMA application [3].
Tubbs Fire	$1.3 Billion	36,807 acres; 5,636 structures	Significant impact on wine industry and tourism	$7.8 billion	Labor shortage for rebuilding Tourism industry disruption Agricultural sector impacts Insurance premium increases	Local reports indicate thousands of homes rebuilt but underinsurance led to **gentrification**; median home prices in Sonoma County increased >25 % [5]. Community groups such as **Coffey Strong** formed "block captain" networks to coordinate recovery and advocate for survivors (not quantified due to data gaps).	Huge property losses and **underinsurance**—many victims lacked adequate coverage [5]. High rebuilding costs and insurance premium hikes Gentrification by wealthier newcomers [5]. Lessons: Early formation of neighborhood groups (block captain networks) improved communication and negotiation with insurers and governments.

Camp/ Paradise Fire	$16.5 Billion	153,336 acres burned; 18,804 structures	Near-complete destruction of local economy	$12.5 billion	Almost complete destruction of community infrastructure. Massive population displacement Environmental contamination Insurance market destabilization	Five years on, Paradise has **repopulated to about one-third of its pre-fire population** [6]. Rebuilding averaged ~600 homes/year; town leaders streamlined permitting and offered **preapproved floorplan libraries** [2]. The population grew from <5,000 in 2020 to ~11,000 in late 2024 [2].	Recovery slowed by the **9-month debris removal process** and severe underinsurance; many elderly and low-income residents relocated permanently [6]. Housing and labor shortages delayed timelines [6]. **Rebuild Paradise Foundation** provided grants for surveying, septic replacement and **$500 defensible space vouchers** to help homeowners obtain insurance discounts [7]. High insurance premiums (FAIR Plan ~$6 k/yr) and insurers leaving the market remain critical barriers [7].
Lahaina Fire	$5.5 billion	2,200 structures	Severe impact on	Undetermined	Cultural preservation concerns Tourism	Two years after the fire (Aug 2025), only **45**	Huge **insurance gaps**: typical payouts $300k–

			tourism industry		dependent economy disruption Housing crisis Infrastructure rebuilding	**residential structures—about 2 % of lost homes—have been rebuilt** [8]. More than 330 applications were in permitting and over 400 other projects permitted [8]	$500k while rebuilding costs $600k–$700k [8]. Some residents lacked any insurance [8]. Survivors must pay mortgages on destroyed homes while also paying rent [8]. Rebuilding hindered by **housing market shortages and trauma**; only 2 % of businesses reopened by Aug 2025 [8]. County launching recovery program and lawsuit settlement funds to close financing gaps [8].
Los Angeles (Palisades and Altadena)	$53.8 + billion	16,244 structures		Undetermined	Complex rebuilding. Remediation and clean up Housing crisis Urban wildlife interface mitigation Infrastructure rebuilding Small business support	TBD	TBD

					Federal funding uncertainty Construction and labor costs		

Comparative lessons and barriers
Analysis of major wildfire recovery efforts reveals a complex but discernible pattern in applying successful recovery best practices and timelines. Through careful examination of the Marshall, Tubbs, Paradise, and Lahaina fires, we can trace how recovery efforts evolve through distinct phases, each building upon the foundations laid in previous stages while setting the groundwork for future progress.

1. Insurance adequacy and affordability
Across all four disasters, **under-insurance** emerges as the most persistent barrier to recovery. In Boulder County at least **two-thirds of households were underinsured** following the Marshall Fire, with average gaps exceeding $100,000 [1]. The Lahaina fire demonstrates similar gaps: most homeowners were underinsured and still had mortgages on homes that would take years to rebuild [18]. In Paradise, many returning residents saw their insurance premiums quadruple; one family paid $6,000 per year under the California FAIR Plan, and insurers withdrew from high-risk areas [7]. The Tubbs Fire **triggered a gentrification-by-fire effect**: wealthier households with better insurance were more able to rebuild, while those without coverage were forced to leave [5].

Implications for Los Angeles: Policymakers should work with insurers and state regulators to expand affordable insurance coverage, provide upfront grants or low-interest loans to close coverage gaps, and educate homeowners about adjusting policies for rising construction costs. Programs such as the Rebuild Paradise Foundation's **defensible space $500 grant program** demonstrate that even small mitigation incentives can help residents secure coverage [7].

2. Speed of debris removal and permitting
In Paradise, it took **nine months** to complete hazardous debris removal before rebuilding could begin[6]. This delay exacerbated community morale and extended displacement. By contrast, Boulder County's **expedited permitting** processes enabled a quicker rebuilding pace; by the end of 2024, about **two-thirds of homes had been rebuilt [**1], far exceeding the national average of 25 % within five years [1]. In Lahaina, debris removal progressed quickly—by August 2024 the U.S. Army Corps of Engineers had cleared 1,372 of 1,399 residential propertiestheatlantic.com—yet official data on reconstructed homes are lacking. High numbers of permit applications suggest permitting may not be the primary bottleneck, but accurate measures of rebuilding remain unavailable.
Implications for Los Angeles: establishing a **Building Resiliency Center**—a one-stop rebuilding and permitting resource similar to Boulders expedited process referenced above and the facility that was eventually opened in Paradise—offering **pre-approved home plans** that shorten design and approval times. Paradise's Building Resiliency Center provides walk-in

appointments and rebuild advocates to help residents navigate building and septic permitstownofparadise.com, complementing the town's library of pre-approved floor plans [2]. Additionally, rapid debris removal contracts and clear communication about soil safety helps communities move forward. Local governments should also fund case managers to assist residents with permitting, insurance and construction.

3. Community organization and communication
After the Marshall Fire, survivors created a **Slack (communication) platform** with dedicated channels for each neighborhood and topic; the platform facilitated information sharing and fostered a sense of solidarity [3]. Community groups such as Coffey Strong emerged after the Tubbs Fire, **establishing block captain networks** that coordinated debris removal, negotiated with insurers and guided rebuilding [5]. Rebuild Paradise Foundation offered survivors technical assistance and grants for site surveys, septic systems and defensible space [7]. These examples show that organized, survivor-led communication networks can accelerate recovery and amplify residents' voices in policy discussions.

Implications for Los Angeles: City and County officials should support survivor-led organizations, provide digital collaboration platforms and ensure regular briefings with clear, consistent information. Grants for neighborhood leaders to organize meetings and develop preparedness plans could strengthen social cohesion.

4. Housing, labor and mental health challenges
All four fires created severe housing shortages; displaced residents competed for scarce rental units, leading to rent spikes and long commutes. In Paradise, labor shortages hindered rebuilding [6], while in Lahaina thousands of residents remained displaced and underinsured [18]. Many survivors also faced trauma and mental health challenges, compounded by administrative burdens such as insurance claims and reconstruction paperwork. These factors can slow recovery even when financial resources are available.

Implications for Los Angeles: expand temporary housing options (e.g., modular units, hotel vouchers), offer workforce training and incentives to attract contractors, and increase funding for mental health services. Streamlined permitting and clear timelines can reduce uncertainty associated with rebuilding and alleviate associated stress for residents and small businesses.

Risk mitigation and land use strategies for the wildland urban interface (WUI)

1. Building codes and ignition resistant construction
The Marshall Fire demonstrated that grassland communities are also at risk. Boulder County responded by **extending its ignition resistant construction requirements** to Wildfire Zone 2, requiring approved exterior materials and detailing for homes in the plains [9][10]. County commissioners emphasized that the amendment aims to "better protect people and their homes" and noted that ignition resistant materials cost about the same as conventional products [11].

During the Camp Fire, **only 30% of structures built to the 2008 wildfire-prone building standard were damaged or destroyed**, compared with **90%** of older homes [19]. However,

some jurisdictions—like Santa Rosa's Coffey Park—were not designated high risk zones and thus did not enforce the 2008 standard, contributing to widespread losses [13].

Engineers and planners proposed additional construction adaptations such as **non-vented roofs**, **slab on grade foundations**, **fire resistant shutters**, and use of concrete walls and metal roofs [14]. These techniques can prevent ember entry and improve structural survival, but they are rarely required by codes. Headwaters Economics estimates that building to wildfire resistant standards increases construction costs by less than 10% yet reduces property losses by up to 43% [12].

2. Defensible space and vegetation management

Paradise adopted a **defensible space ordinance** that goes beyond California's state law: it mandates a **noncombustible five-foot perimeter** around buildings, requires accessory structures to be at least 10 feet from dwellings, limits combustible fences, and obliges property owners to maintain a 100 foot firebreak by removing ladder fuels and trimming weeds to four inches [15]. Unimproved parcels must also be cleared to create fuel breaks [15]. Compliance certificates are required before property transfer and violators face fines.

Boulder County's wildfire mitigation code specifies that new homes must have an **emergency water supply**: owners can install an individual cistern filled with water, contribute to a community cistern or install a dry hydrant connected to a pressurized water system [17]. These requirements ensure that firefighters have water sources even in rural areas and complement defensible space rules.

3. Land use planning and hazard mapping

The comparative analysis shows that communities have responded to major fires by revising and revaluating hazard maps and land-use rules. The destruction of Coffey Park resulting from the Tubbs Fire demonstrates that poorly mapped hazard zones can leave communities vulnerable and exempt from wildfire-resistant building codes [13]. In California, the 2017 Tubbs Fire exposed how poorly drawn hazard zones can mislead planners: the suburban neighborhood of **Coffey Park** was classified as a low-risk area, yet it was devastated during the fire; the episode spurred state officials to update fire-hazard severity maps and reconsider where development should occur [25]. **Paradise** responded to the **Camp Fire** by adopting a stringent defensible-space ordinance that requires a non-combustible five-foot buffer around buildings, mandates accessory structures to be at least ten feet from dwellings, restricts combustible fencing and enforces a 100-foot firebreak through vegetation trimming and ladder-fuel removal [15]. **Boulder County** extended ignition-resistant construction requirements to all homes in its grassland **Wildfire Zone 2**, demonstrating how hazard mapping can lead directly to new building codes [9]. These examples show that accurate hazard maps, defensible-space ordinances and ignition-resistant building codes are complementary tools for reducing future wildfire losses.

4. Critical infrastructure and utilities

Downed or malfunctioning utilities sparked or worsened several of the fires studied. Marshall Fire investigators pointed to high winds toppling a power pole. Post-fire recommendations include **vegetation management around power lines**, burying or shielding lines where feasible, and installing **remote shut-off devices**. Boulder County requires

firefighting cisterns or connections to pressurised water systems for new homes [17]; Paradise mandates accessible hydrants and clear water supplies. Although outside the perimeters set by this comparative analysis, other disasters illustrate how utility equipment can both ignite fires and spur reforms. Investigations of California's **2017 Thomas Fire** found that **Southern California Edison power lines and a transformer ignited dry brush during high winds**; in a 2024 settlement with federal prosecutors the utility agreed to pay **$80 million** for damages and stated that it is now investing in **grid hardening, situational awareness and enhanced operational practices**renewableenergyworld.com. After the **2018 Camp Fire**, California utilities introduced **Public Safety Power Shutoffs** during high-risk weather to reduce ignition, prompting communities to install microgrids; during the 2019 shutoffs Humboldt County's **Blue Lake Rancheria microgrid** kept critical facilities powered and reportedly **saved at least four lives**microgridknowledge.com, while the **Alliance Medical Center microgrid** provided **up to 15 hours of electricity** for medical equipmentmicrogridknowledge.com. These examples underscore the need to harden infrastructure, de-energize high-risk circuits when necessary and invest in local microgrids to maintain critical services.

5. Communication, education and preparedness

Public engagement in disaster planning emphasizes the need for **clear communication channels, education programs and evacuation readiness**. For example, Maui County's 2024 draft Lahaina Recovery Plan—based on surveys and workshops with more than 3,800 participants—prioritizes rebuilding with **underground utilities**, expanding **evacuation routes** and incorporating **fire prevention designs**; fire prevention and better infrastructure were identified as the highest priorities [21]. These recommendations highlight the importance of coordinated governance, public education and continuous monitoring of fire conditions.

Other fire-affected communities demonstrate how active public engagement can drive recovery and preparedness. After the **Marshall Fire**, survivors organized a **Slack community** with neighborhood-specific channels for information sharing and mutual aid; the platform grew to more than 1,200 members and became a critical hub for rebuilding advicemarshalltogether.com. In Paradise, residents participated in town meetings and used the **Rebuild Paradise Foundation's pre-approved floor-plan library** and defensible-space grants to simplify design choices and meet insurance requirementscapradio.org. These examples underscore that education and communication are not just top-down processes: they require platforms where survivors can share experiences, ask questions and advocate for resources. They also highlight the need for authorities to maintain redundant alert systems, conduct regular evacuation drills and invest in remote weather stations and real-time monitoring so residents know how to respond when high winds or utility failures occur.

Building codes and sustainable infrastructure for resilient recovery

Comparative analysis shows that incorporating **sustainable building codes and infrastructure** into wildfire recovery delivers multiple benefits: it reduces future fire risk (fire resistant materials, microgrids, defensible space), addresses climate change by lowering emissions (all electric homes, renewable energy, water reuse), and improves public health (clean air and water, shade). Successful implementation will require coordination among city agencies, utilities,

community organizations, and the private sector. Incentives and assistance programs must ensure that **lower income residents can afford energy efficient, fire-resistant upgrades**. By uniting the lessons from past fires with **forward looking sustainability initiatives**, Los Angeles can rebuild safer, greener and more resilient communities.

Beyond wildfire specific risk mitigation, **rebuilding after the 2025 Los Angeles fires offers a critical opportunity to incorporate sustainable design and infrastructure** that reduce greenhouse gas emissions and improve resilience to future disasters. Local leaders have already taken steps in this direction, and lessons from both the case study fires and broader research highlight several strategies:

Applied building codes

- **Streamline permitting and encourage ignition resistant construction.** Jurisdictions recovering from the Marshall and Camp fires found that preapproved house plans and expedited permitting significantly reduced rebuilding times [2]. Los Angeles should adopt similar practices—creating libraries of preapproved, fire resistant designs and simplifying permit reviews—to help residents rebuild quickly while meeting ignition resistant standards set by California's Chapter 7A building code [19] and Boulder County's Wildfire Zone 2 requirements [9][10]. Coordinating with utility companies to underground lines and harden equipment will also reduce ignition sources in the wildland urban interface.

- **Maintain and enforce Chapter 7A and beyond.** The 7A building code has proven effective in past fires—only **30 %** of buildings constructed to the 2008 standard were damaged or destroyed, compared with **90 %** of structures not built to that standard [19]. Los Angeles should not waive these requirements for accessory dwelling units or affordable housing; building codes are developed from past tragedies and represent the **minimum acceptable safety standard [**19]. Incentives (e.g., insurance premium discounts or tax rebates) can encourage homeowners to retrofit older, nonconforming homes to meet modern wildfire and energy codes [19].

Sustainable infrastructure initiatives

- **Deploy microgrid based energy systems.** Microgrids—decentralized networks with renewable generation, battery storage and advanced controls—allow critical facilities to continue operating when the main grid is deenergized. During prolonged power shutoffs in Humboldt County in 2019, the **Blue Lake Rancheria microgrid** kept the community powered and **saved at least four lives** [22]. In Sonoma County, the **Alliance Medical Center** installed a 58 kW solar array with 330 kWh of battery storage that can **power medical equipment and refrigeration for up to 15 hours during outages** [22]. Los Angeles County has also proposed a **regional microgrid agency** to support microgrid development across public facilities; the plan would build microgrids that can island during outages or export power to the grid [22]. Investing in community and

facility scale microgrids designed to withstand fire exposure (e.g., underground cabling, fire hardened components) will enhance emergency resilience.

- **Advance water recycling and local supply.** The **Pure Water Los Angeles** program aims to provide a droughtproof local water supply; officials note that the **Donald C. Tillman Groundwater Replenishment Project** will deliver a critical source of recycled water for the city's **Pure Water LA** program [23]. Integrating onsite greywater reuse and rainwater harvesting into rebuilding plans will further reduce dependence on imported water.
- **Invest in renewable energy and storage.** Los Angeles is rapidly expanding its clean energy infrastructure: by December 2024 the city had installed **nearly 16,000 EV chargers**, a **77 % increase** in charging infrastructure, and opened the **Eland Solar & Storage Center**, which provides clean electricity to **about 250,000 homes** [23]. Rebuilding should prioritize rooftop solar panels and battery storage systems on homes and community facilities so they can participate in microgrids and reduce peak demand. Continued expansion of EV charging infrastructure supports transportation electrification and enables **vehicle-to-grid** systems that provide additional emergency power.
- **Rebuild critical infrastructure to zero emissions standards.** A federal **Clean Ports Program grant announced in October 2024** will provide **$411 million** to the Port of Los Angeles to transition terminals to **zero emission operations**, reduce air pollution and deploy zero emission cargo handling equipment and EV charging infrastructure [24]. Requiring municipal fleets and public buildings to adopt zero emission standards in fire affected areas will further reduce pollution and demonstrate leadership in sustainable recovery.

Implications for Los Angeles Recovery

As Los Angeles looks to move from response to recovery, success in implementing recovery strategy requires coordinated leadership, sustained community engagement, and careful attention to the unique characteristics of each community. By adapting proven recovery practices to address local conditions while maintaining focus on long-term resilience, Pacific Palisades and Altadena can emerge from recovery as more resilient communities better prepared for future challenges. The experiences of previous wildfire recoveries demonstrate that communities that applied elements of this comparative approach, while remaining flexible enough to adapt to changing conditions, can achieve the most successful and sustainable recovery outcomes in accordance with specific local needs and conditions.

Comparative Lessons for Los Angeles

1. **Enforce and update ignition resistant codes:** adopt Chapter 7A or stronger standards for all WUI rebuilding, drawing on Boulder County's Zone 2 regulations and California's Chapter 7A. Regularly update hazard maps and ensure that previously "low risk" zones like Coffey Park are covered.

2. **Adopt robust defensible space ordinances:** mandate noncombustible perimeters, fuel breaks and regular vegetation maintenance, using Paradise's ordinance as a model. Enforce these requirements before property transfers.
3. **Integrate land use planning with wildfire risk:** restrict development in high-risk areas, maintain open space buffers and require adequate access, water supplies and emergency egress. Create incentives for relocating critical infrastructure away from hazard zones.
4. **Harden utilities and improve monitoring:** coordinate with utilities to manage vegetation, underground lines and install remote weather stations and shutoff devices. Ensure backup water supplies (cisterns, hydrants) for firefighting. Los Angeles agencies should work with utilities to harden infrastructure, preposition water sources and ensure backup power for pumping stations.
5. **Enhance communication and evacuation readiness:** invest in redundant alert systems, clear signage and community drills. Draft recovery plans in Lahaina emphasized adding evacuation routes and undergrounding utilities [21]; Los Angeles should similarly prioritize evacuation planning and assign a dedicated authority to oversee WUI preparedness.
6. **Provide financial assistance for mitigation:** expand code upgrade insurance coverage, offer grants or tax incentives and engage private foundations to fund home hardening for lower income households.
7. Los Angeles should conduct updated **risk assessments and hazard mapping**, incorporating factors like wind corridors, vegetation types and ember transport. Land use plans should discourage or prohibit new development in high-risk WUI areas and require **open space buffers** between neighborhoods and wildland vegetation [14]. Zoning codes should also mandate emergency access routes and adequate water supply (e.g., cisterns and hydrants), like Boulder County's firefighting cistern requirements for new homes [17].

These measures should be integrated into Los Angeles' recovery and long-range planning to reduce future losses in the wildland urban interface. While available data provide compelling evidence for building codes and defensible space policies, some gaps remain—such as the cost of implementing non-vented roofs in Colorado or the precise survival rates of homes built with novel materials. Policymakers should invest in postfire studies to evaluate the effectiveness of mitigation measures and refine regulations accordingly.

Conclusion

The experiences of **Marshall**, **Tubbs**, **Paradise** and **Lahaina** reveal that wildfire recovery is a multiyear effort requiring coordinated policy, adequate insurance and strong community organizations. Underinsurance, delays in debris removal, housing shortages, mental health impacts and the risk of gentrification were common barriers. However, proactive strategies—

such as survivor led communication networks, preapproved house plans, defensible space grants and streamlined permitting—demonstrated tangible benefits. Los Angeles officials can adapt these lessons to support the 2025 Pacific Palisades and Altadena fire recovery, while recognizing that each community's demographic, economic and ecological context will shape future outcomes.

Methods

The analysis draws on official incident reports from agencies such as **CAL FIRE** and **Boulder County**, academic papers and longform journalism (KUNC, Boulder Reporting Lab, CapRadio, NPR and Civil Beat, etc.,). These sources provide data on the number of destroyed structures, fatalities and rebuilding progress. Recovery statistics are treated with caution because they are often estimates. For example, *Marshall Fire* recovery dashboards counted 712 rebuilt homes by December 2024—a number that may not correspond exactly to occupied homes [1]. Similarly, *Paradise* population counts are based on state demographic estimates [2]. Where sources disagree or lack numeric data (e.g., proportion of underinsured households in the *Tubbs Fire*), the report notes the uncertainty rather than inferring percentages.

Data gaps

- **Tubbs Fire:** The available sources provide destruction totals and gentrification trends[5], but there is no publicly available database summarizing the number of homes rebuilt or percentage underinsured; Consequently, quantitative comparisons with later fires are limited.
- **Paradise:** Estimates of rebuilt structures vary, and there is no comprehensive dataset describing the percentage of underinsured households; many interviews suggest high insurance gaps [7], but without raw data we avoid approximations.
- **Lahaina:** Official dashboards provide counts of permit applications and track debris removal but do not report how many homes have been rebuilt. By August 2024 debris removal had cleared nearly all residential properties in Lahainatheatlantic.com, yet no comprehensive dataset exists on reconstruction progress.

Endnotes

[1] Boulder Reporting Lab, "Marshall Fire recovery dashboards show two-thirds of homes rebuilt and highlight underinsurance" (2024).
[2] CapRadio, *Paradise repopulation from 5,000 to 11,000; pre-approved floor plan library speeds rebuilding* (2024).
[3] KUNC, "Marshall Fire survivors offer support and lessons learned to L.A. wildfire victims" (2024).
[4] CAL FIRE, *Tubbs Fire incident information and status* (2017).
[5] After the Fire USA, "Gentrification by fire: people left behind after the Tubbs Fire" (2020).
[6] NPR/CapRadio, "Five years after the Camp Fire, Paradise still rebuilding" (2023).
[7] CapRadio, "In Paradise, underinsurance and high premiums hinder recovery; Rebuild Paradise Foundation grants for defensible space" (2023).

[8] Civil Beat, "Draft Lahaina Recovery Plan emphasizes underground utilities, evacuation routes and fire-prevention design" (22 Oct 2024).
[9] Boulder County, "Ignition Resistant Construction and Materials – Wildfire Zone 2, BORC-22-0001" (2022).
[10] Boulder County, "Public hearing on ignition-resistant requirements for Wildfire Zone 2 – BORC-22-0001" minutes (2022).
[11] Boulder County, "County commissioners adopt ignition-resistant construction requirements for Wildfire Zone 2; survivors support new codes" news release (2022).
[12] Headwaters Economics, "Building wildfire-resistant homes after disasters reduces economic losses and only slightly increases costs" (2023).
[13] Wildfire Today, "California's 7A building code improved survival rates in the Camp Fire; Coffey Park not designated a hazard zone" (2019).
[14] Brelje & Race Consulting Engineers, "Adapting local policy in response to wildfire risk" (2020).
[15] Town of Paradise, California: defensible space and wildfire resiliency ordinance (Section 8.58.060)" (2020).
[16] Western City Magazine, "Building and fire codes are the minimum standard: protecting your community from wildfire" (2019).
[17] Boulder County, "Wildfire mitigation code requirements: emergency water supply and firefighting cistern requirement" (2024).
[18] The Guardian, "First came the Maui wildfires. Now come the land grabs: 'Who owns the land is key to Lahaina's future'" (2024)
[19] Western City Magazine, "Building and fire codes are the minimum standard: protecting your community from wildfire" (2019)
[20] The Atlantic, "One Year After the Lahaina Fire" (2024)
[21] Civil Beat, "Draft Lahaina Recovery Plan Reflects Desires Of Residents, County Says" (2024)
[22] Microgrid Knowledge, "With Wildfire Season Arriving, Microgrids Can Save Lives and Protect Health" (2024)
[23] Office of Mayor Karen Bass, "DELIVERING RESULTS IN 2024: Bass Highlights Unprecedented Green Year for L.A."
[24] Office of Governor Gavin Newsom, "Seven California ports get more than $1 billion to shift to zero-emission operations, cut pollution"
[25] CalMatters, "California isn't built for 21st century wildfires – here's what the state could do about that" (2020)

Appendices

Synthesis of Best Practices by Recovery Indicator

Infrastructure & Resilient Building Development

- **Building Code Enhancement**
  - Implementation of WUI (Wildland-Urban Interface) building standards
  - Mandatory use of fire-resistant materials (Class-A roofing, tempered windows)
  - Enhanced ventilation systems with ember-resistant screens
  - Improved structural hardening requirements
- **Infrastructure Hardening**
  - Underground power line conversion programs
  - Redundant water systems with emergency backup
  - Enhanced communication infrastructure with multiple redundancies
  - Fire-resistant utility housing
- **Community Design Standards**
  - Establishment of defensive space requirements
  - Implementation of fuel break zones
  - Strategic placement of community safe zones
  - Enhanced access/egress route planning

Recovery Timeline Management

- **Phase 1: Emergency Response (0-30 days)**
  - Immediate safety and security measures
  - Emergency shelter coordination
  - Critical infrastructure assessment
  - Initial debris management planning
- **Phase 2: Early Recovery (1-6 months)**
  - Temporary housing solutions
  - Initial debris removal
  - Utility restoration
  - Business continuity support
- **Phase 3: Intermediate Recovery (6-18 months)**
  - Permanent housing planning
  - Infrastructure reconstruction
  - Economic recovery programs
  - Community planning processes
- **Phase 4: Long-term Recovery (18+ months)**
  - Implementation of resilience measures
  - Permanent reconstruction
  - Economic revitalization
  - Community rebuilding

Regulatory Adaptation & Streamlining

- **Permit Fast-Tracking**
  - Dedicated rebuild permit center establishment
  - Pre-approved building plans

    - Expedited plan check processes
    - Mobile permit processing capabilities
- **Code Modifications**
    - Temporary use permit flexibility
    - Rebuild ordinance adaptation
    - Zoning requirement adjustments
    - Temporary housing allowances

Site Remediation

- **Environmental Assessment**
    - Comprehensive soil testing protocols
    - Groundwater contamination monitoring
    - Hazardous material identification
    - Ecological impact evaluation
- **Remediation Protocols**
    - Standardized cleanup procedures
    - Erosion control measures
    - Soil stabilization techniques
    - Watershed protection strategies

Debris Removal

- **Program Structure**
    - Public-private partnership models
    - Right-of-entry programs
    - Coordination with insurance providers
    - Environmental compliance measures
- **Implementation Strategy**
    - Phased removal approach
    - Hazardous material handling protocols
    - Recycling and waste separation
    - Transportation management plans

Economic Recovery

- **Business Support**
    - Bridge loan programs
    - Technical assistance centers
    - Workforce retention programs
    - Supply chain restoration support
- **Industry Diversification**
    - Sector vulnerability assessment
    - Economic resilience planning
    - New industry attraction strategies
    - Workforce development programs

Insurance Market Response

- **Market Stabilization**
    - Insurance requirement adjustments
    - Coverage gap identification

    - Public-private insurance solutions
    - Risk pool development
- **Claims Processing**
    - Expedited claim procedures
    - Standardized documentation requirements
    - Mobile claim centers
    - Public adjuster coordination

Emergency Response Enhancement

- **Communication Systems**
    - Multi-modal alert systems
    - Redundant communication networks
    - Language accessibility
    - Special needs population protocols
- **Evacuation Planning**
    - Transportation-disadvantaged assistance
    - Pet and livestock evacuation
    - Shelter location pre-planning
    - Traffic management protocols

Economic Impact Analysis Methodology

Economic impact analysis is used to assess the broader effects of a disruption, policy change, or investment on a regional economy. Such analyses evaluate how changes—such as business interruptions, new developments, or policy shifts—affect economic activity. This method captures the direct, indirect, and induced effects of an event or intervention on employment, labor income, value-added (GDP), and overall output.

The analysis accounts for how industries are interconnected within a regional economy. Direct effects reflect the immediate impact on businesses directly affected by the event, such as revenue losses due to business closures. Indirect effects stem from changes in demand for goods and services from suppliers, while induced effects arise from shifts in household spending as workers experience income gains or losses. Together, these effects provide a comprehensive picture of how an economic disruption or investment ripples through the local economy.

To estimate these impacts, economic models based on inter-industry relationships are used. These models rely on data from sources such as the U.S. Bureau of Labor Statistics, the U.S. Census Bureau, and the Bureau of Economic Analysis. The regional economic structure is incorporated to reflect local conditions, including wage levels, cost structures, and the availability of suppliers. The results help policymakers, businesses, and stakeholders understand the full scope of economic disruptions or benefits associated with specific scenarios.

A key aspect of economic impact analysis is the use of multipliers, which measure how initial changes in economic activity generate additional rounds of spending and employment. The magnitude of these multipliers depends on regional economic characteristics. For instance, industries with extensive local supply chains generate higher multipliers because more spending stays within the region. Conversely, industries that rely heavily on imported goods or labor tend to have lower

multipliers, as more money leaves the local economy. Additionally, technological advancements and shifts in production processes can influence multipliers over time.

The metrics used to determine the value of the economic impacts are employment, labor income, value-added and the value of output. Employment includes full-time, part-time, permanent, and seasonal employees and the self-employed. The impacts are usually expressed in job-years rather than the number of jobs. A job-year represents one full-time job sustained for one year. This distinction is necessary because employment impacts cannot be summed across multiple years, as many positions are ongoing rather than temporary. For example, if a job lasts five years, it contributes five job-years rather than five separate jobs. This approach ensures that employment impacts are measured accurately, avoiding overstatement of job creation or loss over multi-year periods. Labor income represents all earnings received by workers as a result of the economic event, including wages, salaries, and benefits such as health insurance and pension contributions. Value-added measures the net impact to Gross Domestic Product (GDP) resulting from the economic disruption or investment. It includes employee compensation, business taxes on production, and gross operating surplus. Output represents the total value of goods and services produced as a result of the economic event. For most industries, this corresponds to total business revenues. However, in sectors like wholesale trade and retail, output reflects the value of services provided rather than gross sales.

This analysis estimates the total economic impact of business disruptions in Los Angeles County and in the seven-county Southern California region (Los Angeles, Orange, Riverside, San Bernardino, San Diego, Imperial, and Ventura). Estimates are developed using IMPLAN economic modeling software, which traces inter-industry transactions resulting from changes in demand. The study reports impacts in 2025 dollars to ensure consistency in valuation.

Description of Industry Sectors

The industry sectors used in this report are established by the North American Industry Classification System (NAICS). NAICS divides the economy into twenty sectors, and groups industries within these sectors according to production criteria. Listed below is a short description of each sector as taken from the sourcebook, North American Industry Classification System, published by the U.S. Office of Management and Budget (2022).

Agriculture, Forestry, Fishing and Hunting: Activities of this sector are growing crops, raising animals, harvesting timber, and harvesting fish and other animals from farms, ranches, or the animals' natural habitats.

Mining: Activities of this sector are extracting naturally occurring mineral solids, such as coal and ore; liquid minerals, such as crude petroleum; and gases, such as natural gas; and beneficiating (e.g., crushing, screening, washing and flotation) and other preparation at the mine site, or as part of mining activity.

Utilities: Activities of this sector are generating, transmitting, and/or distributing electricity, gas, steam, and water and removing sewage through a permanent infrastructure of lines, mains, and pipes.

Construction: Activities of this sector are erecting buildings and other structures (including additions); heavy construction other than buildings; and alterations, reconstruction, installation, and maintenance and repairs.

Manufacturing: Activities of this sector are the mechanical, physical, or chemical transformation of material, substances, or components into new products.

Wholesale Trade: Activities of this sector are selling or arranging for the purchase or sale of goods for resale; capital or durable non-consumer goods; and raw and intermediate materials and supplies used in production and providing services incidental to the sale of the merchandise.

Retail Trade: Activities of this sector are retailing merchandise generally in small quantities to the general public and providing services incidental to the sale of the merchandise.

Transportation and Warehousing: Activities of this sector are providing transportation of passengers and cargo, warehousing and storing goods, scenic and sightseeing transportation, and supporting these activities.

Information: Activities of this sector are distributing information and cultural products, providing the means to transmit or distribute these products as data or communications, and processing data. This industry contains all aspects of motion picture recording and distribution as well as the sound and telecommunications industry.

Finance and Insurance: Activities of this sector involve the creation, liquidation, or change of ownership of financial assets (financial transactions) and/or facilitating financial transactions.

Real Estate and Rental and Leasing: Activities of this sector are renting, leasing, or otherwise allowing the use of tangible or intangible assets (except copyrighted works) and providing related services.

Professional, Scientific, and Technical Services: Activities of this sector are performing professional, scientific, and technical services for the operations of other organizations.

Management of Companies and Enterprises: Activities of this sector are the holding of securities of companies and enterprises, for the purpose of owning controlling interest or influencing their management decision, or administering, overseeing, and managing other establishments of the same company or enterprise and normally undertaking the strategic or organizational planning and decision-making of the company or enterprise.

Administrative and Support and Waste Management and Remediation Services: Activities of this sector are performing routine support activities for the day-to-day operations of other organizations, such as: office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, cleaning, and waste disposal services.

Educational Services: Activities of this sector are providing instruction and training in a wide variety of subjects. Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home through correspondence, television, or other means.

Health Care and Social Assistance: Activities of this sector are operating or providing health care and social assistance for individuals.

Arts, Entertainment and Recreation: Activities of this sector are operating facilities or providing services to meet varied cultural, entertainment, and recreational interests of their patrons, such as: (1) producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) preserving and exhibiting objects and sites of historical, cultural, or educational interest; and (3) operating facilities or providing services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.

Accommodation and Food Services: Activities of this sector are providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption.

Other Services (except Public Administration): Activities of this sector provide services not specifically provided elsewhere in the classification system. Establishments in this sector are primarily engaged in activities, such as equipment and machinery repairing, promoting, or administering religious activities, grant-making, advocacy, and providing dry-cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services.

FEMA Building Recovery Time

FEMA Building Recovery Time (in days)

Occupancy Class	Structural Damage State				
	Complete	Extensive	Moderate	Slight	None
Personal and Repair Services	360	270	90	10	0
Banks/Financial Institutions	360	180	90	20	0
Retail Trade	360	270	90	10	0
Professional/Technical/Business Services	480	360	90	20	0
Parking	360	180	60	5	0
Professional/Technical/Business Services	480	360	90	20	0
Food/Drugs/Chemicals	360	240	90	10	0
Personal and Repair Services	360	270	90	10	0
Retail Trade	360	270	90	10	0
Retail Trade	360	270	90	10	0
Retail Trade	360	270	90	10	0
General Services	480	360	90	10	0
Heavy or Light Industrial	360	240	90	10	0
Wholesale Trade	360	270	90	10	0
Church/Membership Organization	960	480	120	5	0
Nursing Home	960	480	120	10	0
Hospital	720	540	135	20	0
Schools/Libraries	480	360	90	10	0
Entertainment & Recreation	360	180	90	20	0

Occupancy Class	Structural Damage State				
	Complete	Extensive	Moderate	Slight	None
General Services	480	360	90	10	0
Entertainment & Recreation	360	180	90	20	0
Entertainment & Recreation	360	180	90	20	0
Church/Membership Organization	960	480	120	5	0
Multi-family Dwelling	960	480	120	10	0
Single-family Dwelling	720	360	120	5	0
Multi-family Dwelling	960	480	120	10	0
Multi-family Dwelling	960	480	120	10	0
Multi-family Dwelling	960	480	120	10	0

Source: FEMA. 2024. HAZUS Earthquake Model Technical Manual (HAZUS 6.1)

Mapping between LA County Assessor Parcel Data and FEMA Occupancy Class

LA County Assessor Parcel Data		FEMA HAZUS Model
Use Type	**Use Description**	**Occupancy Class**
Commercial	Auto, Recreation EQPT, Construction EQPT, Sales & Service	Personal and Repair Services
Commercial	Banks Savings & Loan	Banks/Financial Institutions
Commercial	Nurseries or Greenhouses	Retail Trade
Commercial	Office Buildings	Professional/Technical/Business Services
Commercial	Parking Lots (Commercial Use Properties)	Parking
Commercial	Professional Buildings	Professional/Technical/Business Services
Commercial	Restaurants, Cocktail Lounges	Food/Drugs/Chemicals
Commercial	Service Stations	Personal and Repair Services
Commercial	Store Combination	Retail Trade
Commercial	Stores	Retail Trade
Commercial	Supermarkets	Retail Trade
Government	Government Parcel	General Services
Industrial	Lgt Manf.Sm. EQPT. Manuf Sm.Shps Instr.Manuf. Prnt Plnts	Heavy or Light Industrial
Industrial	Warehousing, Distribution, Storage	Wholesale Trade
Institutional	Churches	Church/Membership Organization
Institutional	Homes For Aged & Others	Nursing Home
Institutional	Hospitals	Hospital
Institutional	Schools (Private)	Schools/Libraries
Miscellaneous	Miscellaneous	Entertainment & Recreation
Miscellaneous	Utility Commercial & Mutual: Pumping Plants State Assessed Pr	General Services
Recreational	Athletic & Amusement Facilities	Entertainment & Recreation
Recreational	Camps	Entertainment & Recreation

LA County Assessor Parcel Data		FEMA HAZUS Model
Use Type	**Use Description**	**Occupancy Class**
Recreational	Clubs., Lodge Halls, Fraternal Organizations	Church/Membership Organization
Residential	Five or more apartments	Multi-family Dwelling
Residential	Single	Single-family Dwelling
Residential	Three Units (Any Combination)	Multi-family Dwelling
Residential	Two Units	Multi-family Dwelling
Residential	Four Units (Any Combination)	Multi-family Dwelling

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