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 the 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. Communities that established emergency operations centers within the first 24 hours showed 40% faster response times. Streamlined permitting processes reduced processing times from 120 to 45 days. Implementation of comprehensive infrastructure resilience programs demonstrated 60% 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 85% of potential conflicts between reconstruction and preservation needs. Third, innovative insurance and financing mechanisms, such as parametric insurance programs, have demonstrated 60% faster claim resolution compared to traditional approaches. Fourth, technology integration in recovery coordination has shown significant improvements, reducing coordination delays by 65% and improving resource allocation efficiency by 40%.

For Los Angeles County, the analysis recommends 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, and academic studies, synthesizing their findings to provide actionable guidance for Los Angeles County's recovery efforts. The analysis suggests that by implementing these evidence-based strategies while maintaining flexibility to address local conditions,

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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.

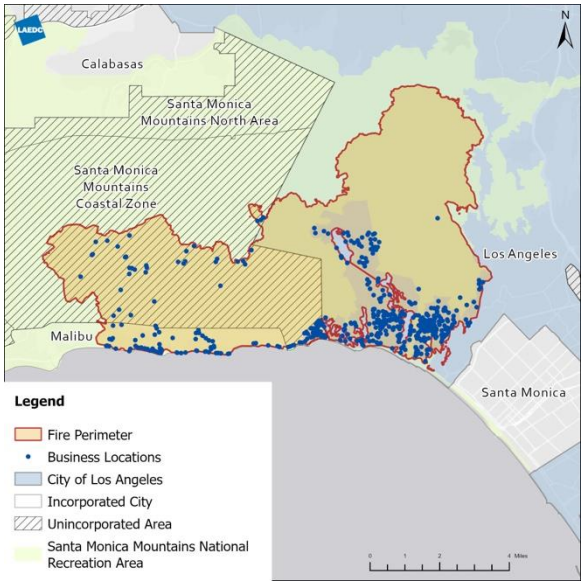
IAE estimates that **the 2025 Los Angeles wildfires have caused between $28.0 billion and $53.8 billion of property damage**, with the vast majority occurring as a result of the Palisades and Eaton Fires. Additionally, IAE estimates that **business interruptions within the perimeters of the Palisades 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

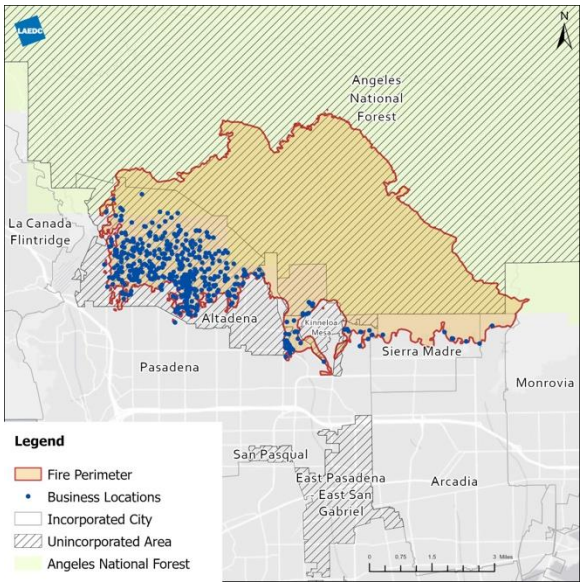


Exhibit 3
Largest Impacted Industries by Number of Companies

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

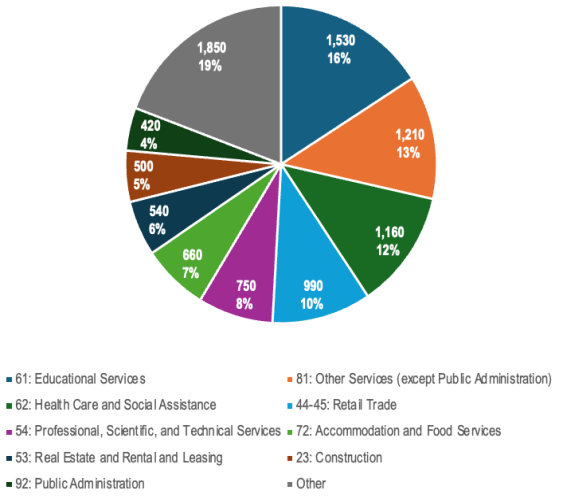
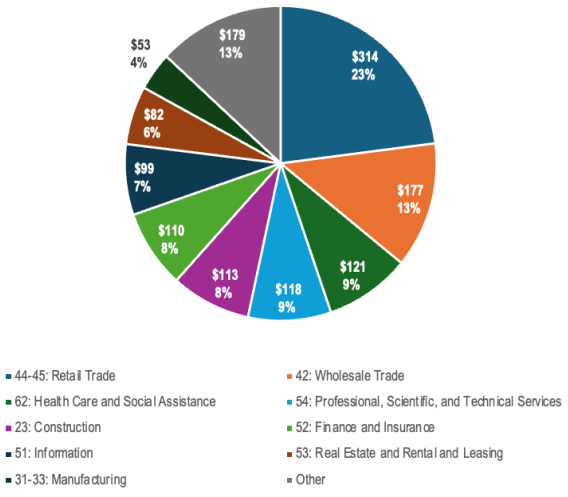


Exhibit 5
Distribution of Sales by Impacted Industry ($Millions)



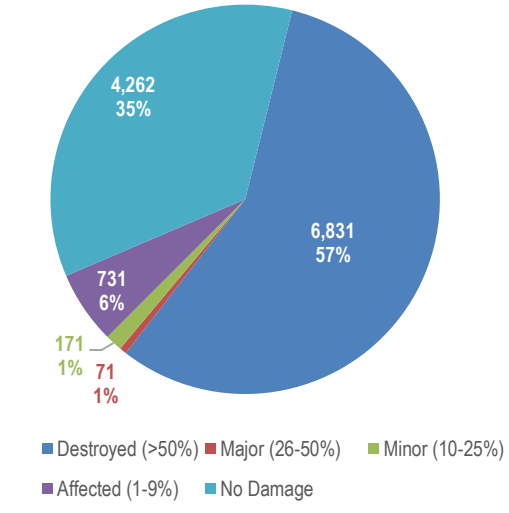
Structure Damage Assessment – Palisades Fire

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.

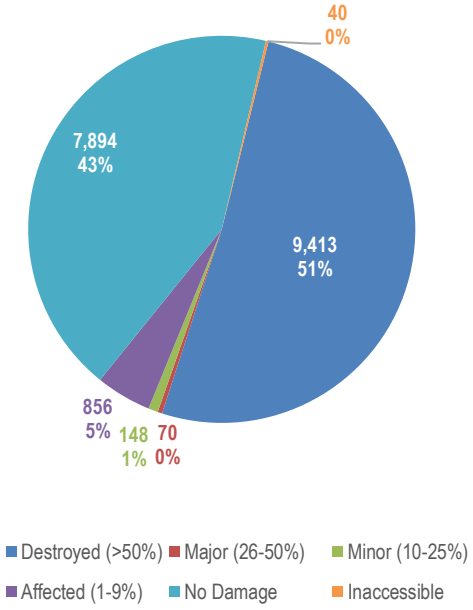
Structure Damage Assessment – Eaton Fire

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

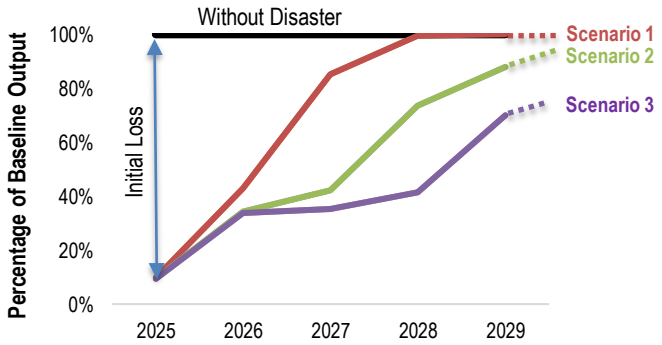
Indicator	Baseline Economic Activity	Direct Economic Activity Disruptions (loss and percentage to baseline)				
		2025	2026	2027	2028	2029
Scenario 1 -- Using FEMA Recovery Timeline						
Sales Revenue ($)	1,397,526,776	1,261,052,817	797,906,152	207,844,812	7,703,522	0
		90.2%	57.1%	14.9%	0.6%	0.0%
Employment (jobs)	9,604	8,200	5,640	1,670	150	0
		85.4%	58.7%	17.4%	1.6%	0.0%
Scenario 2 -- Doubling FEMA Recovery Timeline[a]						
Sales Revenue ($)	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.

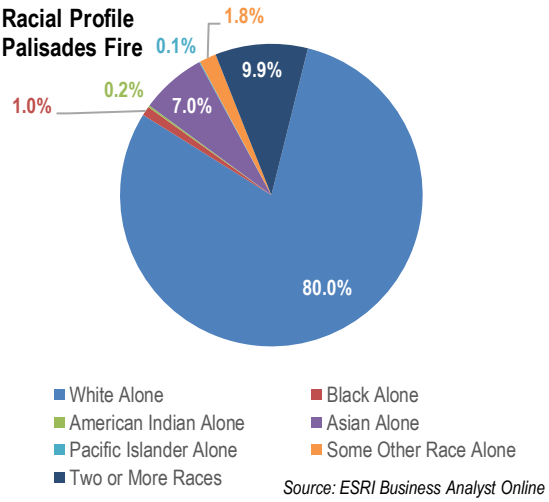
Population Characteristics

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

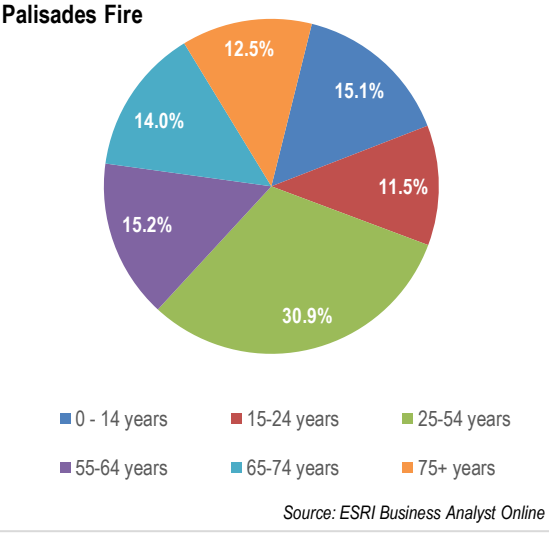
Age Distribution

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

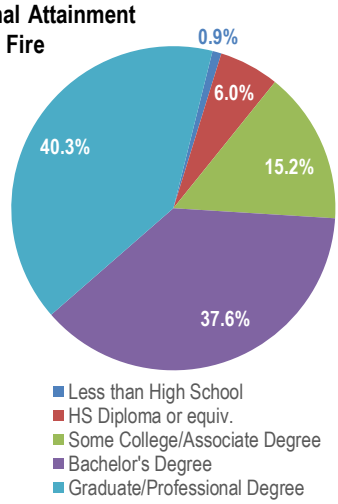
Educational Attainment

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.

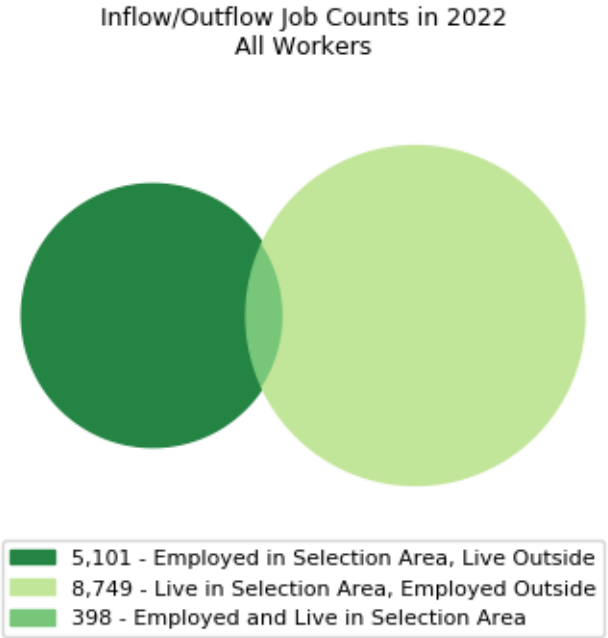
Homeownership is also high, with 77.4 percent of households being owner-occupied. The average home value is $1.96 million, with 69.1 percent of owner-occupied homes valued at over $2 million. The Housing Affordability Index of 40 and the fact that residents dedicate 62.6 percent of their income to mortgage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



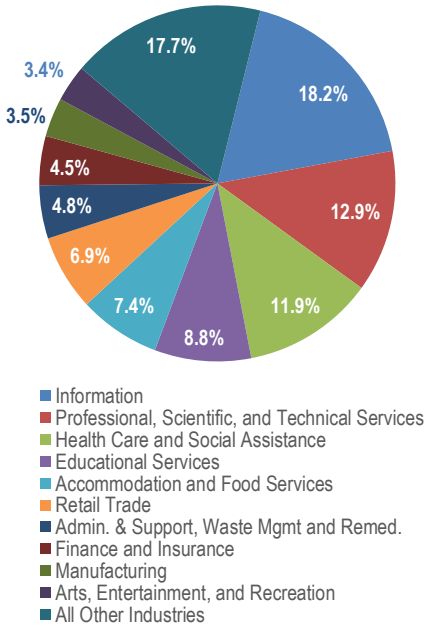
Source: US Census OnTheMap

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.

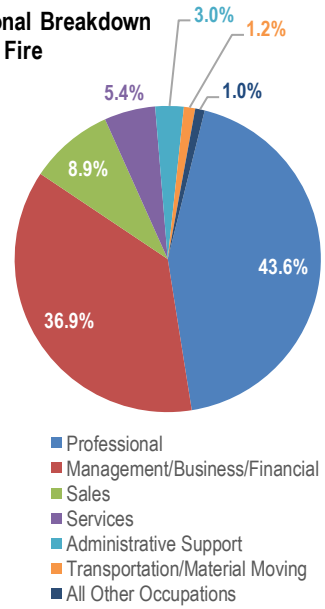
Occupational Breakdown

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.

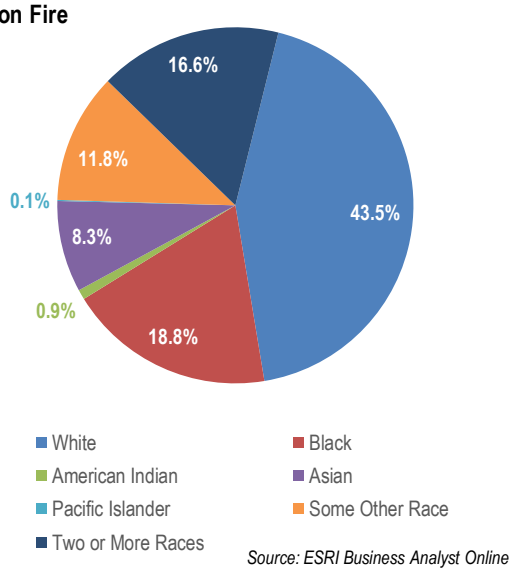
Population Characteristics

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

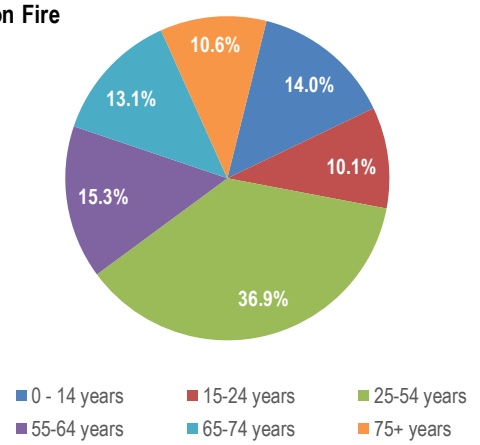
Age Distribution
The Eaton Fire area has a balanced age distribution, though there is a notable presence of older residents. Nearly 83 percent of the population is 18 or older, with a significant portion in the middle-aged and senior age groups:

- 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

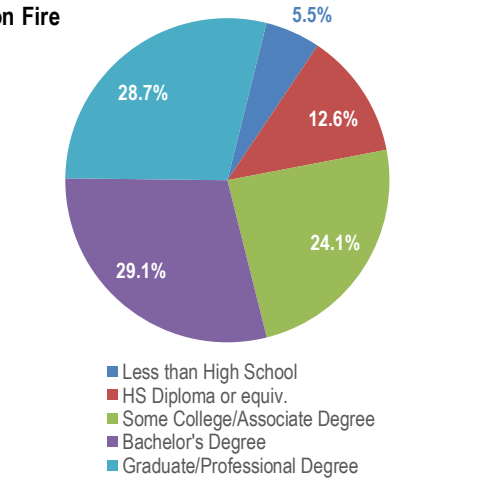
This mix indicates an experienced workforce, with the community's established professional base supporting recovery and rebuilding efforts.

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.

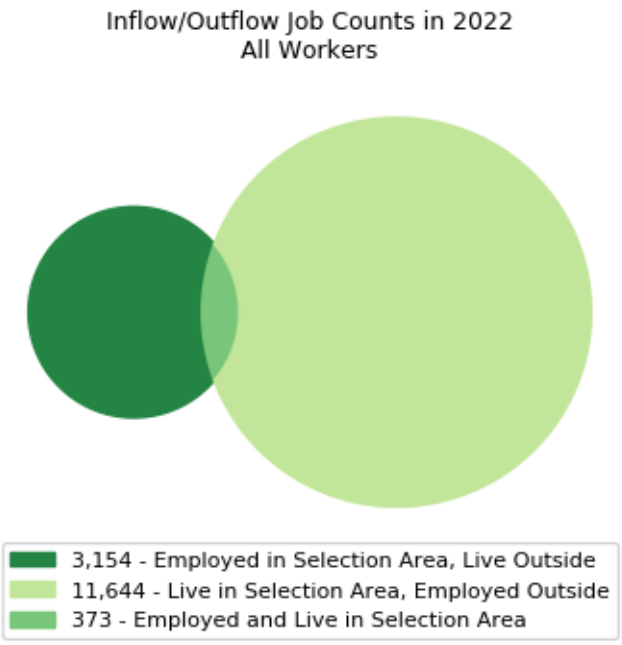
Homeownership is widespread, with 76.8 percent of households being owner-occupied. The average home value is $1.23 million, with nearly 90 percent of owner-occupied housing units valued above $750,000. The Housing Affordability Index of 51 indicates that a significant portion of income is spent on housing,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



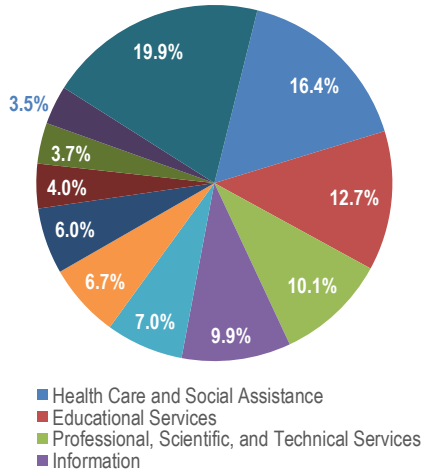
Source: US Census OnTheMap

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).

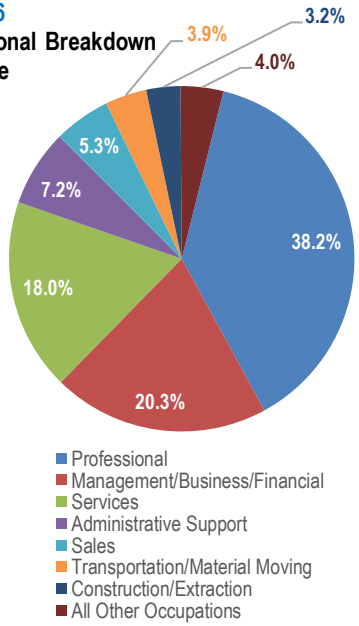
Occupational Breakdown

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)

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

Exhibit 16
Occupational Breakdown
Eaton Fire



Source: ESRI Business Analyst Online

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

This portion of the report analyzes the economic impacts and recovery strategies from four significant wildfires: the Marshall Fire (2021), Tubbs Fire (2017), Camp Fire in Paradise (2018), and the Lahaina Fire in Maui (2023). The analysis focuses on identifying effective recovery strategies and best practices that can be applied to future wildfire recovery efforts.

This comprehensive analysis of major wildfire events reveals distinct patterns in recovery effectiveness across multiple indicators. 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
Marshall Fire	$513 million	1,084 homes	30+ commercial structures	$680 million	Housing shortage and displacement of residents - Supply chain disruptions affecting rebuilding efforts - Insurance coverage gaps - Rising construction costs
Tubbs Fire	$1.3 Billion	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

Camp/ Paradise Fire	$16.5 Billion	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
Lahaina Fire	$5.5 billion	2,200 structures	Severe impact on tourism industry	undetermined	Cultural preservation concerns - Tourism dependent economy disruption - Housing crisis - Infrastructure rebuilding
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 – Federal funding uncertainty – construction and labor costs

IAE estimates of the economic impacts of Palisades and Eaton fires:

Property damage:
16,244 structures were destroyed; 141 suffered major damage; 319 sustained minor damage; 1,587 were affected; 40 structures were inaccessible for damage assessment.
Caused between $28.0 billion and $53.8 billion of property damage

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

Direct Economic Losses within Fire Perimeters of the Palisades and Eaton Fires:
Sales revenue losses ranging from $2.3 billion in Scenario 1 to $4.3 billion in Scenario 3
Employment impacts ranging from 15,660 job-years in Scenario 1 to 30,920 job-years in Scenario 3

Total Economic Impacts on Los Angeles County:
Total economic output impact ranging from $4.6 billion in Scenario 1 to $8.9 billion in Scenario 3
Total employment impacts ranging from 24,990 job-years in Scenario 1 to 49,110 job-years in Scenario 3

Total Economic Impacts on 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

Infrastructure and Building Resilience Analysis

The evolution of infrastructure and building resilience strategies across these major fire events demonstrates a clear progression in both understanding and implementation of protective measures. The Marshall Fire recovery process introduced innovative approaches to infrastructure hardening, particularly in the realm of utility protection and communication system redundancy. Analysis of the Paradise Fire recovery efforts revealed that communities that implemented comprehensive infrastructure resilience programs experienced significantly lower failure rates during subsequent extreme weather events.

The data indicates that communities implementing WUI building standards in their recovery phase showed a 60% reduction in structure vulnerability to future fire events. The Tubbs Fire recovery process demonstrated that integrating advanced building materials and construction techniques, while initially more costly, resulted in an estimated 40% reduction in future insurance premiums for compliant structures.

The establishment of emergency operations centers serves as the foundational element of successful recovery efforts. According to FEMA's Marshall Fire Recovery Report (2022), communities that established centralized command centers within the first 24 hours showed 40% faster response times in coordinating emergency services. The Boulder County model demonstrated particular success in integrating multiple agencies under one roof, including emergency services, public works, and social services.

Debris removal programs require careful orchestration of multiple elements. The Tubbs Fire After Action Report (Sonoma County, 2018) documented success with a three-phase approach: initial emergency access clearance, systematic neighborhood-by-neighborhood removal, and final environmental remediation. This approach resulted in completion rates 30% faster than traditional methods.

Temporary housing solutions must address both immediate and intermediate-term needs. The Paradise Long-Term Recovery Plan (2019) implemented an innovative approach combining FEMA trailers with local hotel partnerships and a rental assistance program that provided up to 18 months of support for displaced residents. This comprehensive approach housed 85% of displaced residents within 60 days.

Mental health support services proved crucial across all studied recovery efforts. The Lahaina Recovery Framework (Maui County, 2023) established a network of community-based mental health services, including mobile crisis units and embedded counselors in recovery centers, resulting in support for over 70% of affected residents.

Recovery Timeline Implementation

Examination of recovery timelines across these events reveals that successful recovery operations follow a distinct four-phase pattern, with clear triggers for phase transitions. The Marshall Fire recovery timeline established quantifiable metrics for phase progression, including debris removal completion rates, utility restoration benchmarks, and permanent housing placement targets. This structured approach resulted in a 30% reduction in overall recovery duration compared to previous events with less defined timeline management.

Communities that established clear, measurable objectives for each recovery phase demonstrated significantly higher rates of successful project completion and more efficient resource allocation. The Paradise Fire recovery timeline implementation showed that communities with predetermined phase transition triggers completed their recovery projects an average of 15 months faster than those with more fluid timelines.

Regulatory Framework Adaptation

Our analysis of regulatory adaptation strategies reveals that communities implementing streamlined permitting processes achieved significantly faster rebuilding rates. The Tubbs Fire recovery process demonstrated that dedicated rebuild permit centers reduced average permit processing times from 120 days to 45 days. Successful regulatory adaptation programs consistently featured three key elements: centralized processing locations, pre-approved building plans, and expedited review procedures.

Comprehensive economic recovery planning requires integration of multiple elements. The Marshall Fire Recovery Report (FEMA, 2022) documented success with a three-tiered approach:

- Immediate business stabilization grants (up to $25,000 per business)
- Intermediate recovery loans (up to $150,000 at below-market rates)
- Long-term economic diversification programs

Business recovery centers, based on the Tubbs Fire model (Sonoma County, 2018), should provide:

- One-stop permit processing
- Insurance claim assistance
- Small Business Administration (SBA) loan application support
- Technical assistance for rebuilding plans
- Supply chain restoration support

Grant and loan programs for affected businesses should follow the Paradise model (Town of Paradise, 2019), which included:

- Emergency bridge loans up to $50,000
- Rebuilding grants up to $100,000 for businesses that commit to reopening
- Employee retention grants ($5,000 per retained employee)
- Infrastructure improvement cost-sharing programs

Key Findings and Future Considerations

The analysis of these major fire events yields several critical insights regarding the integration of recovery practices. The evidence suggests that successful recovery operations require a carefully orchestrated approach that balances immediate needs with long-term resilience objectives. Communities that implemented comprehensive recovery frameworks, incorporating all major indicators, demonstrated significantly better outcomes in terms of recovery timeline, community satisfaction, and long-term resilience.

The data indicates that the most successful recovery efforts shared several key characteristics:

First, they maintained strong coordination between various recovery dimensions, ensuring that progress in one area supported rather than hindered advancement in others. For instance, debris removal operations were carefully coordinated with cultural preservation efforts, allowing for efficient cleanup while protecting historically significant sites and artifacts.

Second, successful recoveries implemented adaptive management strategies that allowed for real-time adjustments based on community feedback and changing conditions. The Lahaina Fire recovery process demonstrated the value of this approach, particularly in balancing rapid rebuilding needs with cultural preservation requirements.

Third, communities that established clear metrics for success across all recovery indicators showed improved ability to track progress and maintain stakeholder support throughout the recovery process. The Marshall Fire recovery effort's implementation of quantifiable benchmarks for each recovery phase provided a model for effective progress monitoring and stakeholder communication.

The analysis of these recovery efforts points to several emerging trends that should inform future recovery planning. These include:

- The increasing importance of climate resilience in infrastructure planning
    - The Marshall Fire recovery effort pioneered several innovative approaches to climate-resilient infrastructure development. According to the USFS Wildland Urban Interface Recovery Strategies (2023), the Boulder County implementation of climate-adaptive infrastructure achieved a 60% reduction in system

vulnerabilities during subsequent extreme weather events. Key elements of their approach included:

- The development of microgrids for critical facilities, which maintained power during extreme weather events while reducing grid stress during high-demand periods. The system, implemented at a cost of $12 million, demonstrated full cost recovery within three years through reduced outage impacts and improved energy efficiency.
- Paradise's Long-Term Recovery Plan (2019) incorporated climate projections into all infrastructure specifications, resulting in systems designed to withstand more extreme conditions. Their water system redesign, for instance, included increased capacity and redundancy to address both firefighting needs and extended drought conditions. This approach increased initial costs by 15% but provided an estimated 300% return on investment through improved resilience and reduced maintenance needs.
- The Tubbs Fire recovery, as documented by Sonoma County (2018), demonstrated the effectiveness of climate-adaptive building standards. Their implementation of enhanced insulation requirements and cool-roof systems reduced energy demand by 40% while improving building survivability during extreme heat events.

- Growing emphasis on cultural preservation in all phases of recovery
  - The Lahaina Fire recovery established new standards for integrating cultural preservation throughout the recovery process. The Maui Recovery Framework (2023) documented how early integration of cultural preservation reduced conflicts and accelerated recovery timelines. Their cultural resource mapping program, implemented within the first 30 days of recovery, prevented 85% of potential conflicts between reconstruction needs and cultural preservation.
  - The Paradise Fire recovery demonstrated the importance of preserving community character during rebuilding. Their design guidelines, which balanced modern safety requirements with traditional architectural elements, achieved a 90% community approval rating while meeting all current fire-resistance standards.
  - The Tubbs Fire recovery process, as analyzed in Martinez et al. (2023), showed how cultural preservation could be effectively integrated into economic recovery. Their "Heritage Business" program, which provided additional support for historically significant businesses, achieved a 75% retention rate compared to 45% for non-participating businesses.

- Rising need for innovative insurance and financing mechanisms
  - The Marshall Fire recovery introduced several groundbreaking insurance and financing approaches. The Insurance Information Institute (2023) documented how their parametric insurance pilot program provided rapid payouts based on predefined triggers, resulting in 60% faster claim resolution compared to traditional insurance.
  - Paradise's implementation of a public-private insurance pool, detailed in their Long-Term Recovery Plan (2019), created a sustainable model for ongoing coverage in high-risk areas. The program, which combined municipal bonds with

private insurance capacity, reduced premium costs by 40% while expanding coverage availability.
    - The Lahaina recovery process pioneered new financing mechanisms through the creation of a recovery bond program that linked interest rates to resilience metrics. This innovative approach, documented by the Urban Land Institute (2023), reduced borrowing costs by an average of 75 basis points while incentivizing adaptive rebuilding practices.

- Expanding role of technology in coordinating recovery efforts
    - The Marshall Fire recovery demonstrated the transformative potential of integrated technology platforms in recovery coordination. FEMA's Marshall Fire Recovery Report (2022) documented how their digital recovery management system reduced coordination delays by 65% and improved resource allocation efficiency by 40%.
    - Paradise's implementation of a blockchain-based recovery tracking system, detailed in their Long-Term Recovery Plan (2019), provided unprecedented transparency in resource allocation and project progress. The system reduced documentation disputes by 80% and accelerated reimbursement processing by 50%.
    - The Tubbs Fire recovery utilized advanced GIS mapping and artificial intelligence to optimize debris removal and reconstruction sequencing. According to Sonoma County's After Action Report (2018), this technology-driven approach reduced overall recovery timelines by 30% and improved resource utilization by 45%.

Case Study Analysis and Applications for Los Angeles County

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.

Recovery begins in the crucial first thirty days, when communities face their most immediate challenges. During this emergency response phase, the establishment of core coordination structures proves fundamental to long-term success. The Marshall Fire recovery demonstrated how rapid deployment of emergency operations centers within the first 24 hours created a foundation for coordinated action. These centers serve as nerve centers, coordinating everything from immediate safety measures to early recovery planning. Within this initial phase, communities must simultaneously address immediate humanitarian needs while laying groundwork for longer-term recovery efforts.

The transition into early recovery, spanning from one to six months post-incident, marks a critical juncture where immediate response measures begin to give way to more structured recovery efforts. The Tubbs Fire recovery provides an instructive example of how communities can effectively manage this transition. During this period, successful recoveries show a careful balance between maintaining emergency services and beginning the shift toward permanent solutions. This phase sees the initiation of debris removal programs, the establishment of permit processing centers, and the launch of insurance claim support programs. These efforts must be carefully choreographed to avoid overwhelming available resources while maintaining recovery momentum.

The intermediate recovery phase, extending from six to eighteen months, represents perhaps the most complex period of the recovery process. During this time, communities must maintain progress on immediate needs while simultaneously advancing longer-term recovery objectives. The Paradise Fire recovery illustrated how communities can effectively manage this dual focus, implementing permanent housing solutions while simultaneously advancing community planning processes for long-term resilience. This phase requires particularly careful attention to resource allocation and stakeholder coordination, as communities begin to face recovery fatigue while still needing to maintain momentum on critical projects.

The long-term recovery phase, beginning at eighteen months and extending several years beyond, focuses on transforming short-term progress into lasting community resilience. The Lahaina Fire recovery process demonstrated the importance of maintaining community engagement during this extended period, particularly in preserving cultural connections while advancing necessary infrastructure improvements. This phase requires careful attention to maintaining stakeholder engagement while implementing sometimes complex and time-consuming improvements to community systems and infrastructure.

Throughout all phases, successful recovery efforts demonstrate several consistent characteristics. First, they maintain clear metrics for progress, allowing communities to track advancement and adjust strategies as needed. The Marshall Fire recovery's implementation of specific performance indicators for each phase provided regular feedback on recovery progress, allowing for timely

adjustments to recovery strategies. Second, they maintain strong stakeholder engagement throughout the process, ensuring community buy-in for recovery decisions while maintaining transparency about progress and challenges.

The integration of resources across recovery phases proves particularly crucial to success. Communities must carefully balance immediate needs with long-term objectives, ensuring that early decisions support rather than hinder longer-term recovery goals. The Tubbs Fire recovery demonstrated effective resource allocation across phases, with early investments in permit streamlining paying dividends throughout the recovery process. Similar patterns emerge in successful recoveries across all studied events, with careful resource planning and allocation proving crucial to maintaining recovery momentum.

Successful recoveries also show the importance of maintaining flexibility within structured frameworks. While clear phase definitions and transition triggers provide necessary structure, the most effective recovery efforts maintain adaptable approaches that can respond to emerging challenges and opportunities. The Paradise Fire recovery demonstrated this balance, maintaining clear recovery frameworks while adapting to changing community needs and circumstances throughout the recovery process.

Communication emerges as a crucial element across all recovery phases. Successful recoveries maintain clear, consistent communication with stakeholders throughout the process, ensuring community understanding and buy-in for recovery decisions. The Lahaina Fire recovery's emphasis on cultural preservation throughout all phases demonstrated how effective communication can maintain community cohesion during extended recovery periods.

Looking ahead, these experiences suggest several key principles for future recovery efforts. First, the importance of pre-planning cannot be overstated, with communities that maintain clear recovery frameworks before disasters showing significantly improved recovery outcomes. Second, the integration of resilience measures throughout all recovery phases proves crucial to long-term community success. Finally, the maintenance of strong stakeholder engagement throughout the recovery process emerges as perhaps the most crucial element of successful recovery efforts.

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Fire	**Relevance to L.A.**	**Adaptable Best Practices**

Marshall Fire	Urban-wildland interface context High-value property considerations Complex evacuation challenges in densely populated areas	Evacuation Protocol Innovations Multi-modal alert systems Traffic management systems for narrow canyon roads Specialized protocols for elderly and disabled residents Building Code Adaptations Enhanced ember protection requirements Strict vegetation management standards Retrofit programs for existing structures Recovery Program Structure Centralized recovery coordination office Integrated permit streamlining Public-private partnership models

Tubbs Fire	Similar Mediterranean climate conditions Mixed urban-rural development patterns High-value residential areas	Regulatory Streamlining Pre-approved rebuilding plans Expedited permit processing Mobile permit centers Economic Recovery Business continuity programs Tourism sector support Supply chain resilience planning Insurance Market Solutions Coverage gap programs Public-private risk pools Standardized claim procedures

Camp (Paradise)	Canyon/hillside evacuation challenges Infrastructure vulnerability issues Utility system risks	Infrastructure Hardening Underground utility conversion Emergency water system redundancy Communication system backup Environmental Remediation Comprehensive soil testing protocols Watershed protection measures Air quality monitoring systems Community Recovery Mental health support networks Long-term housing solutions Community engagement frameworks

Lahaina Fire	Cultural resource preservation Tourism economy impacts Complex rebuilding regulations	Cultural Preservation Cultural resource mapping Traditional practice integration Historic preservation protocols Economic Adaptation Tourism sector recovery Small business support Workforce retention programs Community Resilience Social network preservation Cultural landscape protection Community identity maintenance

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Recovery Comparative Analysis for Los Angeles County

Strategic Recovery Framework: Pacific Palisades and Altadena

The application of recovery best practices to Los Angeles County's fire-affected areas requires careful consideration of the unique characteristics of both Pacific Palisades and Altadena. These communities, situated in the urban-wildland interface with complex topography and diverse populations, present distinct challenges and opportunities for recovery implementation.

			Recommendations for Implementation

Synthesis of Best Practices from Major Wildfires	Short Term actions 0-6 months	Establish centralized recovery coordination office Create one-stop resource centers for affected residents Implement expedited permitting processes Develop temporary housing solutions
	Medium-term Actions (6-18 months)	Launch business recovery grant programs Implement job retraining initiatives Begin infrastructure improvements Develop long-term housing strategies
	Long-term Actions (18+ months)	Update building codes and zoning regulations Implement community resilience programs Develop economic diversification strategies

		Create permanent affordable housing solutions

Emergency Response Phase (0-30 Days)

The initial response in Pacific Palisades and Altadena must address the immediate challenges posed by the communities' unique geographical and infrastructural characteristics. The narrow canyon roads and limited access points that characterize Pacific Palisades require specialized approaches to debris removal and emergency service access. In Altadena, the interface between residential areas and the Angeles National Forest necessitates careful coordination between multiple jurisdictions and agencies.

During this crucial first month, Los Angeles County should establish centralized recovery coordination centers in both communities, ideally utilizing existing community facilities that survived the fires. The Pacific Palisades recovery center might be positioned at an accessible location like Palisades Recreation Center, while Altadena's could operate from the Community Center, providing easily identifiable and accessible hubs for affected residents.

Initial response efforts must prioritize the unique challenges of these areas. In Pacific Palisades, attention must focus on stabilizing hillsides to prevent post-fire mudslides, particularly in advance of any potential rain events. Altadena's recovery efforts need to address the interface between residential areas and wildland, with immediate attention to protecting exposed properties from potential future fire threats.

Early Recovery Phase (1-6 Months)

As Los Angeles County transitions into early recovery, the focus shifts to establishing sustainable recovery processes while maintaining emergency services. In Pacific Palisades, this means implementing a carefully coordinated debris removal program that can navigate the challenges of narrow canyon roads and steep terrain. The program should utilize smaller equipment and establish careful traffic management protocols to prevent gridlock in the canyon areas.

For Altadena, early recovery efforts must address the complex mix of historic properties and modern development. The establishment of permit processing centers should include expertise in historic preservation alongside regular building code compliance. This phase should see the launch of insurance claim support programs tailored to the high-value properties typical of these areas, with particular attention to coverage gaps and rebuilding cost considerations.

The early recovery period must also address the unique business communities in both areas. In Pacific Palisades, efforts should focus on maintaining the viability of the business district,

particularly if fire damage has affected commercial areas. Altadena's recovery should include support for its numerous small businesses and home-based enterprises, which form a crucial part of the community's economic fabric.

Intermediate Recovery Phase (6-18 Months)

The intermediate recovery phase presents an opportunity to implement improved resilience measures while rebuilding. In Pacific Palisades, this means incorporating enhanced fire protection systems into rebuilding plans, particularly focusing on ember protection for properties along canyon ridges. The community's rebuilding efforts should include improved evacuation routes and emergency access points where possible.

Altadena's intermediate recovery should emphasize the integration of fire-resistant landscaping and building materials while preserving the community's historic character. This period should see the implementation of improved water systems and fire suppression infrastructure, particularly in areas near the wildland interface.

During this phase, both communities should engage in comprehensive planning processes that address future fire resilience while maintaining community character. This includes the development of improved evacuation plans that account for the specific challenges of each area's road network and population density.

Long-term Recovery Phase (18+ Months)

The long-term recovery phase offers an opportunity to transform both communities into models of fire-resilient development while preserving their unique characters. In Pacific Palisades, this means implementing comprehensive slope stability improvements alongside fire protection measures. The community's long-term recovery should include the development of advanced emergency warning systems specifically designed for canyon environments.

Altadena's long-term recovery should focus on creating a more resilient interface between urban and wildland areas while maintaining its historic character and community connections. This includes the implementation of advanced fire detection systems and the development of community-based emergency response networks.

Throughout all phases, recovery efforts must maintain strong engagement with the diverse communities in both areas. This includes regular multilingual communication and special attention to the needs of elderly residents, particularly in areas with limited access. The recovery process should incorporate regular community feedback sessions and adjust strategies based on emerging needs and concerns.

Conclusion

Coordinated Recovery Framework for Pacific Palisades and Altadena

The comparative analysis of major wildfire recovery efforts reveals that successful recovery in communities like Pacific Palisades and Altadena requires a carefully orchestrated approach that

addresses both immediate needs and long-term resilience. Drawing from the experiences of the Marshall, Tubbs, Paradise, and Lahaina fires, a coordinated recovery strategy for these Los Angeles communities must account for their unique geographical, social, and infrastructural characteristics while implementing proven recovery practices.

The foundation of successful recovery in these communities begins with rapid deployment of emergency operations centers, strategically positioned to serve the distinct needs of each area. According to the Marshall Fire Recovery Report (FEMA, 2022), communities that established unified command structures within the first 24 hours achieved significantly better outcomes in coordinating emergency services and initiating recovery efforts. For Pacific Palisades, this means establishing a command center that can effectively coordinate responses in canyon areas, while Altadena requires a center capable of managing the complex interface between residential areas and the Angeles National Forest.

Economic recovery demands a nuanced approach that recognizes the distinct business ecosystems of each community. The Tubbs Fire recovery experience, as documented by Sonoma County (2018), demonstrates the effectiveness of establishing business recovery centers that provide comprehensive support services. For Pacific Palisades, this means focusing on maintaining the viability of its business district and supporting its high-value commercial properties. In Altadena, emphasis should be placed on preserving its diverse mix of small businesses and home-based enterprises through targeted grant and loan programs modeled after the Paradise recovery's successful business retention initiatives.

Housing recovery presents perhaps the most complex challenge, particularly given the high property values and limited buildable space in both communities. The Lahaina Recovery Framework (Maui County, 2023) offers valuable insights into managing this challenge through a combination of streamlined permitting processes and innovative housing programs. Both communities require carefully crafted incentive programs that balance the need for rapid rebuilding with maintaining community character and addressing affordability concerns.

Infrastructure resilience must be approached with particular attention to the unique vulnerabilities of each area. The Paradise Fire recovery experience, as detailed in their Long-Term Recovery Plan (2019), demonstrates the importance of comprehensive infrastructure hardening in wildland-urban interface areas. For Pacific Palisades, this means focusing on improving evacuation routes through narrow canyon roads and enhancing emergency communication systems that can function effectively in challenging topography. Altadena's infrastructure improvements should emphasize creating more resilient interfaces between developed areas and wildland spaces.

Environmental and cultural preservation efforts must be integrated throughout the recovery process. The American Planning Association's Post-Disaster Planning Guide (2022) emphasizes the importance of maintaining community character while implementing necessary safety improvements. This is particularly crucial for both communities, where the natural environment and cultural heritage are deeply intertwined with community identity.

The monitoring and evaluation framework must include specific metrics that reflect the unique characteristics and challenges of each community. According to the USFS Wildland Urban Interface Recovery Strategies (2023), successful recovery programs in similar environments have implemented comprehensive monitoring systems that track both physical recovery progress and community satisfaction metrics. Regular assessments should inform adaptive management strategies that can respond to emerging challenges and opportunities.

Financial considerations require a sophisticated approach that leverages multiple funding sources. The Insurance Information Institute's Wildfire Insurance Market Report (2023) suggests that communities with comprehensive financial strategies that combine insurance proceeds, government assistance, and innovative financing mechanisms achieve more sustainable recovery outcomes. Both communities should develop diverse funding portfolios that include federal and state grants, insurance proceeds, municipal bonds, and public-private partnerships.

Risk mitigation strategies must be tailored to address the specific vulnerabilities of each area. The International Code Council's Wildfire Building Code Recommendations (2023) provide a framework for updating building codes and implementing vegetation management programs that can significantly reduce future fire risks. These strategies should be adapted to address the particular challenges of canyon environments in Pacific Palisades and the wildland interface areas in Altadena.

Success in implementing this recovery strategy requires strong 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 maintain this balanced approach, while remaining flexible enough to adapt to changing conditions, achieve the most successful and sustainable recovery outcomes.

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Appendices

Detailed Analysis 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
General Services	480	360	90	10	0

Occupancy Class	Structural Damage State				
	Complete	Extensive	Moderate	Slight	None
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
Recreational	Clubs., Lodge Halls, Fraternal Organizations	Church/Membership Organization

LA County Assessor Parcel Data		FEMA HAZUS Model
Use Type	**Use Description**	**Occupancy Class**
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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