2025

RIVERSIDE FIRE DEPARTMENT

MASTER PLAN, COMMUNITY RISK ASSESSMENT & STANDARDS OF COVER

DECEMBER 2025

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ACKNOWLEDGMENTS

AP Triton wishes to extend its sincere appreciation to each of those individuals and organizations whose contributions and assistance made this project possible.

Our sincere appreciation is extended to each of you!

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And to each of the firefighters, officers, support staff, elected and appointed officials that daily serve the citizens and visitors of the City of Riverside.

Section I:
CURRENT CONDITIONS

ORGANIZATION **OVERVIEW**

The Riverside Fire Department (RFD) has proudly served the community for over 125 years, built upon core values of Professionalism, Integrity, Teamwork, Ethics, Honesty, and Safety. Its mission is to protect life, property, and the environment by providing exceptional and progressive all-hazard emergency services, public education, and safety programs.

HISTORICAL MILESTONES & ACCOMPLISHMENTS

- **Established:** Founded on October 7, 1887, as one of California's oldest fire departments, RFD has grown from a volunteer-based force with hand-drawn equipment to a fully professional department with 231 uniformed members.
- **Medical Services Expansion:** Beginning with basic life support in the 1980s, RFD advanced to offering paramedic services and advanced life support (ALS) by 2000, with ALS tools and paramedics now available on all engines and rescue squads.
- **Specialized Divisions:** In 1990, RFD developed a hazardous materials response team, and in 1993, the Urban Search and Rescue Program. By 1998, the department implemented an automatic external defibrillator program, enhancing its EMS capabilities.
- **Station and Facility Upgrades:** With the passing of Measure G in 2003, RFD was able to rebuild and upgrade several fire stations, including Sycamore Canyon, Canyon Crest, and Northside, and build a new Emergency Operations Center and Training Facility, which opened in 2007.

COMMUNITY ENGAGEMENT & GLOBAL OUTREACH

- **Training and Partnerships:** RFD has long partnered with local colleges, providing facilities for Riverside Community College Fire Academy and Crafton Hills College Paramedic Program students. Additionally, since the 1970s, RFD has donated fire apparatus and training to our Sister Cities in Mexico, including Cuautla and Ensenada.
- **Local Initiatives:** In 2004, RFD launched the Community Emergency Response Team (CERT) Program, training residents to respond to local emergencies. The department also developed the Fire/Arson Investigation Task Force in collaboration with the Riverside Police Department and the Bureau of Alcohol, Tobacco, Firearms, and Explosives.

PREPAREDNESS & PUBLIC SAFETY

- **Emergency Medical Dispatch (EMD):** The Communications Center implemented Emergency Medical Dispatch in 2007 to improve the efficiency of medical call responses, ensuring that callers receive critical post-dispatch instructions.
- **Terrorism and Disaster Response:** In response to increasing public safety threats from terrorism and natural disasters, RFD proactively integrated disaster preparedness into its operations. Since 2003, the department has included an Emergency Services Coordinator to oversee this critical division.

KEY TECHNOLOGICAL & STRATEGIC DEVELOPMENTS

- **Hazardous Materials and Online Disclosure:** RFD launched an online hazardous materials disclosure system in 2004, enabling businesses to file their inventories electronically, which can be accessed immediately by the hazardous materials team during emergencies.
- **Federal Recognition and Search and Rescue:** In 2008, Riverside was included in the Urban Area Security Initiative by the U.S. Department of Homeland Security, and RFD's first search and rescue dog was certified for deployment.
- **A Commitment to Excellence in Firefighting and EMS:**
    - **Advanced Life Support:** In 2000, RFD became one of the first departments to provide paramedic services on every fire engine and rescue squad. RFD's dedicated paramedics administer advanced medical care, including medication, electrocardiogram interpretation, advanced airway management, and critical care during transport.
    - **Response Times:** RFD's goal is to respond to medical emergencies within 5 minutes of the initial 911 call, ensuring timely and effective care.

Today, the Riverside Fire Department is a modern, professional organization committed to safeguarding its community through advanced fire suppression, emergency medical services, and specialized programs. RFD continues to evolve with the growing needs of the city while maintaining a steadfast commitment to the safety and well-being of Riverside's residents.

GOVERNANCE AND LINES OF AUTHORITY

RFD operates within the framework of Riverside, California's city government, which follows a Council–Manager system. Under this structure, the City Council, led by an elected Mayor, sets policies and priorities, while the City Manager oversees the daily administration of city services, including the fire department.

Leadership and Organizational Structure

The Fire Chief reports directly to the City Manager. Supporting the Chief are two Deputy Chiefs.

- **Deputy Chief of Operations:** Manages the Operations and Training Divisions, ensuring effective emergency response and personnel readiness.
- **Deputy Chief of Administration:** Oversees Fire Prevention, Urban Search and Rescue (US&R), Arson Investigations, and Accreditation, focusing on compliance, risk reduction, and strategic planning.

The department's organizational chart further includes specialized divisions such as the Office of Emergency Management, which coordinates disaster preparedness and community response initiatives.

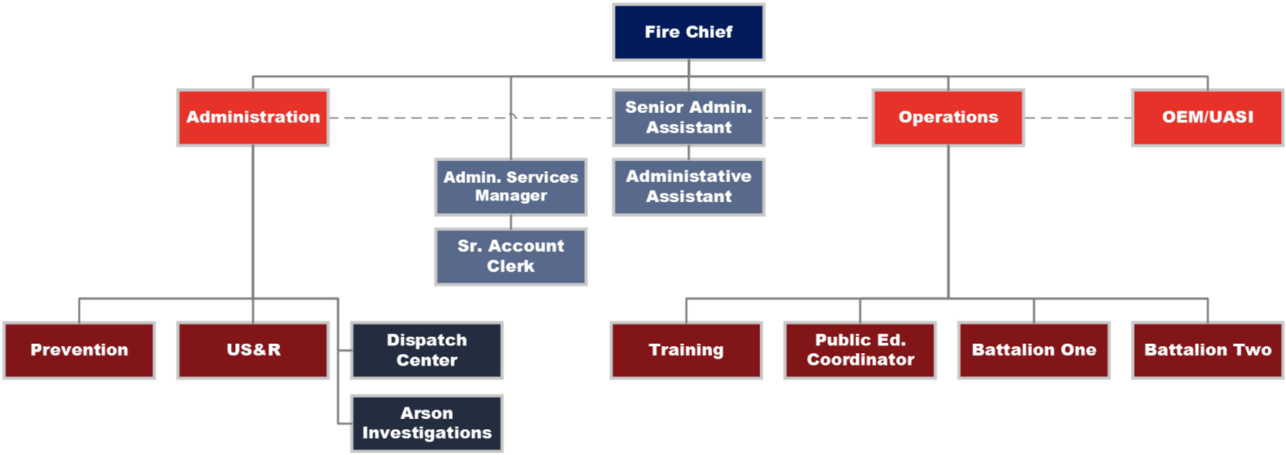
Strategic Planning and Accreditation

The RFD is committed to continuous improvement through strategic planning and external evaluation. It operates under the 2023–2028 Strategic Plan, developed with input from both the community and department personnel. This plan aligns with the city's broader goals and the Commission on Fire Accreditation International (CFAI) standards. In 2024, the department achieved re-accreditation through CFAI, securing its status through 2028.

Budget and Resources

The Fire Administration Division manages an annual operating budget of $79 million (2024) and oversees approximately $1.4 million in grants. This funding supports the department's diverse services, including emergency response, training, prevention programs, and community outreach.

Figure 1: RFD Organizational Chart (2025)



FINANCIAL **OVERVIEW**

Sound fiscal health is essential for the effective functioning of local governments. Analyzing historical trends provides valuable insights into current and future fiscal health. To understand the historical and projected financial position, AP Triton reviewed and analyzed the City of Riverside and Riverside Fire Department's historical and current budgeting documents, schedules, and independent auditor reports provided by the City for the five-year period of FY 2021 through FY 2025. Additionally, AP Triton examined the local, state, and national economic conditions to assess and gain a clearer understanding of significant trends that could potentially impact the assumptions in RFD's current and future fiscal years.

This analysis briefly assesses the fiscal position of the City's General Fund, Measure Z, and a more in-depth review of RFD for the five-year period of FY 2021 to FY 2025.

CITY OF RIVERSIDE ACCOUNTING & BUDGET GOVERNANCE

As one of the largest cities in the region, the City of Riverside serves as a major economic hub and driver of growth. Its diverse economy encompasses a wide range of industries, including healthcare, education, manufacturing, and logistics. Key employment sectors include the County of Riverside, March Air Reserve Base, University of California–Riverside, and major health systems.

The City provides a full range of services which include general government, public safety, construction and maintenance of highways and streets, economic development, culture and recreation, electric, water, airport, refuse, sewer, and senior citizen/handicap transportation. In addition to general City activities, the Council is financially accountable for the Riverside Housing Authority, Riverside Public Financing Authority, Riverside Municipal Improvements Corporation, and the Successor Agency.

The City of Riverside operates under the council-manager form of government with seven elected council members. The City Council is responsible for, among other things, passing ordinances adopting the budget appointing committees, and hiring the City Manager, City Attorney, and City Clerk.

Riverside adopts a biennial budget and a five-year planning process to provide an informative, long-term outlook on the city's finances. In developing the budget, the City utilizes a Priority Based Budgeting methodology that focuses on aligning financial resources with an organization's strategic priorities and goals. Instead of relying only on traditional budgeting methods that may be based on historical spending patterns or incremental adjustments, priority-based budgeting seeks to allocate resources based on the importance of various programs, services, or initiatives.

The City of Riverside operates on a July 1 to June 30 fiscal year. The City utilizes fund accounting and prepares its financial statements using the modified accrual basis of accounting. Under the modified accrual basis of accounting, revenues are recognized when they become measurable and available as net current assets. Expenditures are generally recognized when the related fund liability is incurred, with the exception being that interest on general long-term debt is recognized when due.

The total budget is comprised of an Operating Budget and a Capital Budget. At the City level, the City maintains a five-year Capital Improvement Program (CIP) serves as a capital budget at the capital project level and a long-term financial planning tool for infrastructure and other capital investment, last revised in 2023 and scheduled to be reviewed in early 2026.

The budget process begins in the fall, with the preparation of baseline revenue and expenditure assumptions. In December, City departments attend a budget kickoff meeting where they receive the budget development calendar, a summary of the baseline budget, and direction on balancing measures. Community engagement begins in April and continues through May, with the presentation of department budgets to their respective boards and commissions. In April, the Finance Department Committee is presented with a budget workshop, and their feedback is incorporated into the budget. In May, a budget workshop is also presented to the budget engagement commission for their input on the budget's development. The proposed budget is then presented to the City Council in May, with their feedback incorporated before adoption in June.

The City Manager presents a Mid-Cycle Budget Update in May of the second year of a biennial budget cycle. This update includes necessary adjustments to the operating budget and personnel detail that have been identified by staff since the adoption of the Biennial Budget.

The City adheres to Generally Accepted Accounting Principles (GAAP) for both budgeting and accounting processes and has consistently been recognized for excellence in financial management through continuous certification by the Government Finance Officers Association (GFOA).

Council policy requires maintaining a General Fund reserve equal to at least 15% of annual appropriations, split between a 10% Emergency Reserve and a 5% Economic Contingency Reserve. In practice, Riverside has maintained reserves closer to 20% allowing for the accumulation of surplus reserves and further strengthening its overall financial position.[1]

GENERAL FUND

Although the City of Riverside maintains various funds, the General Fund serves as the City's primary operating fund. Given this structural dependency, the fiscal condition and trajectory of the General Fund directly influence the long-term service capacity and financial stability of many of the City's departments.

The General Fund serves as the City's primary operating fund, supporting core services including police, fire, public works, and general government functions. The General Fund represents about 27% of the citywide operating budget with appropriations increasing 18.4% from nearly $309.5 million in FY 2021 to $361.2 million projected for FY 2025.

Between FY 2021 and FY 2025, revenues grew from $298.0 million to $361.2 million, an increase of 21%, driven largely by tax revenues.

As one of many departments operated by the City of Riverside, the Riverside Fire Department receives most of its funding from the General Fund. In addition, RFD has become increasingly reliant on funding from Measure Z.

The General Fund has remained in a strong position. Revenues have historically exceeded expenditures, allowing the City to maintain a structurally balanced budget while also building and sustaining healthy reserve balances. This surplus has allowed the City to invest in non-recurring needs without compromising long-term stability.

[1] City of Riverside FY 2024 Annual Comprehensive Financial Report.

General Fund Revenue

Over the past five years, the General Fund has grown at a steady pace. Total General Fund revenue, sometimes referred to as resources, has increased nearly 21% from $298.0 million in FY 2021 to $361.2 million in FY 2025's adopted budget. This steady increase has provided the City with the ability to fund services, maintain operations, and build healthy reserve balances. The growth has been driven primarily by tax revenues, particularly property, sales, and Utility User Taxes, which together account for roughly two-thirds of the General Fund. Other revenue sources include charges for services, intergovernmental, licenses and permits, operating transfers, and investment revenues.

The next figure summarizes the total revenue and resources of the General Fund from FY 2021 to FY 2025, providing a historical overview of the resources available for daily operations.[2]

Figure 2: Riverside General Fund Revenue (in millions $)

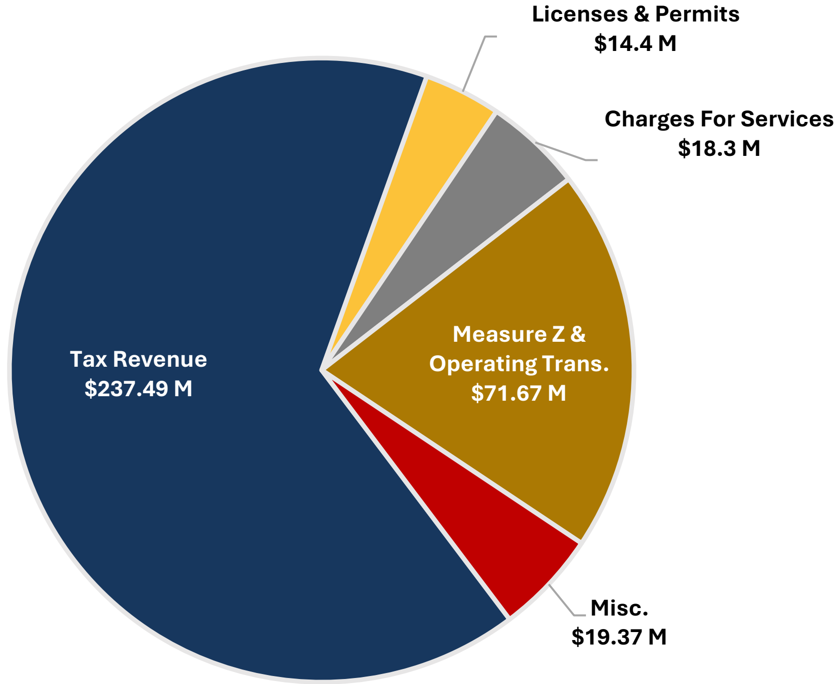
General Fund	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Budget	FY 2025 Budget
Tax Revenue	193.82	215.83	226.50	228.93	237.49
Licenses & Permits	10.26	11.30	12.44	11.96	14.40
Charges For Services	13.14	15.31	16.38	16.34	18.30
Other	9.78	6.11	19.58	4.50	19.37
Operating Trans In	52.76	47.30	67.52	53.50	53.40
Measure Z Transfer In	18.27	18.27	18.27	18.27	18.27
Total General Fund Revenue:	**$298.03**	**$314.11**	**$360.69**	**$333.50**	**$361.23**

For FY 2025, General Fund revenues are projected at $361.2 million, an increase of 8.3% compared to FY 2024's budget of $333.5 million.

The General Fund's FY 2025 revenue by source are visually depicted in the next figure.

[2] City of Riverside FY 2024–2026 Adopted Budget.

Figure 3: Riverside General Fund Revenues by Category—FY 2025



Tax Revenue

Excluding transfers-in from other funds, the top three sources of General Fund revenue are sales tax, property taxes, and utility user tax (UUT).

Over the five-year period from FY 2021 to FY 2025, combined tax revenue has grown by approximately 22.5%, increasing from $193.8 million in FY 2021 to an anticipated $237.5 million in FY 2025. Tax revenue growth has been responsible for nearly 70% of the total $63.2 million increase in General Fund revenues during the same period.

- **Property Taxes**: include real property taxes and property transfer taxes.
- **Sales & Use Tax**: composed of retail sales taxes collected on taxable goods and services.
- **Utility User Tax**: levied on utility consumption such as electricity, natural gas, and telecommunications.
- **Other Taxes**: include transient occupancy tax and franchise fees.

Figure 4: Riverside General Fund Tax Revenue (in millions $)

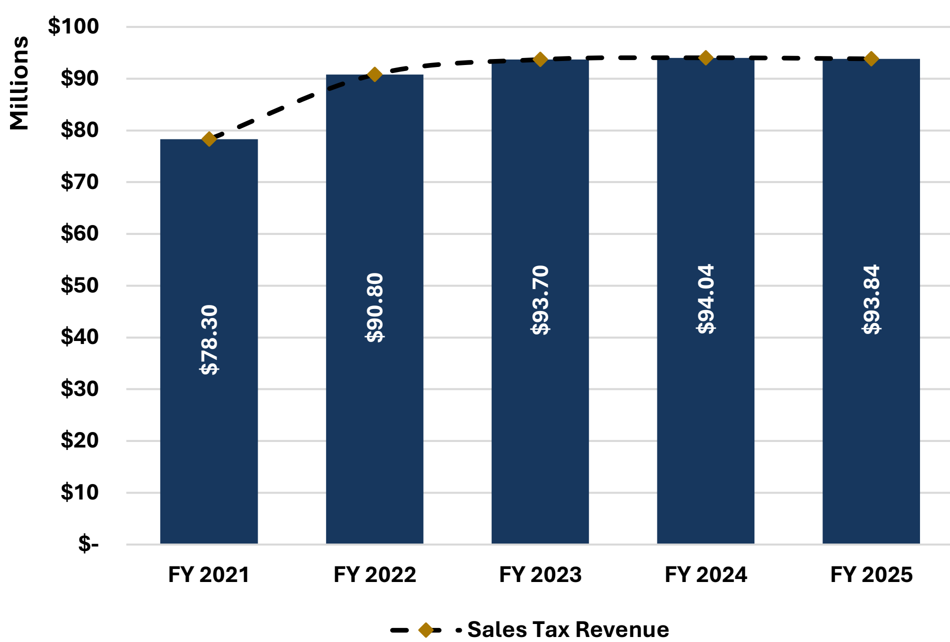
General Fund Tax Revenue	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Budget	FY 2025 Budget
Property Tax	73.60	77.90	82.80	88.43	92.59
Sales Tax	78.30	90.80	93.70	94.04	93.84
Utility User Tax	30.60	32.50	35.00	33.52	34.94
Franchise & Occupancy	11.32	14.63	15.00	12.94	16.12
General Fund Tax Revenue:	**$193.82**	**$215.83**	**$226.50**	**$228.93**	**$237.49**

Sales Tax

Sales tax is the City's largest revenue source, accounting for about 27% of total General Fund revenue, on average. Sales tax revenue collection increased from $78.3 million in FY 2021 to $93.8 million in FY 2025, a 20% increase.

Sales tax provides the City with critical operating flexibility, but it is also highly sensitive to economic cycles. While this source has generally experienced year-over-year increases, signs of softening consumer and business spending coupled with possible Federal Reserve action have resulted in the City taking a conservative approach and revising FY 2025 sales tax revenues downwards.

Figure 5: Riverside General Fund Sales Tax Revenue



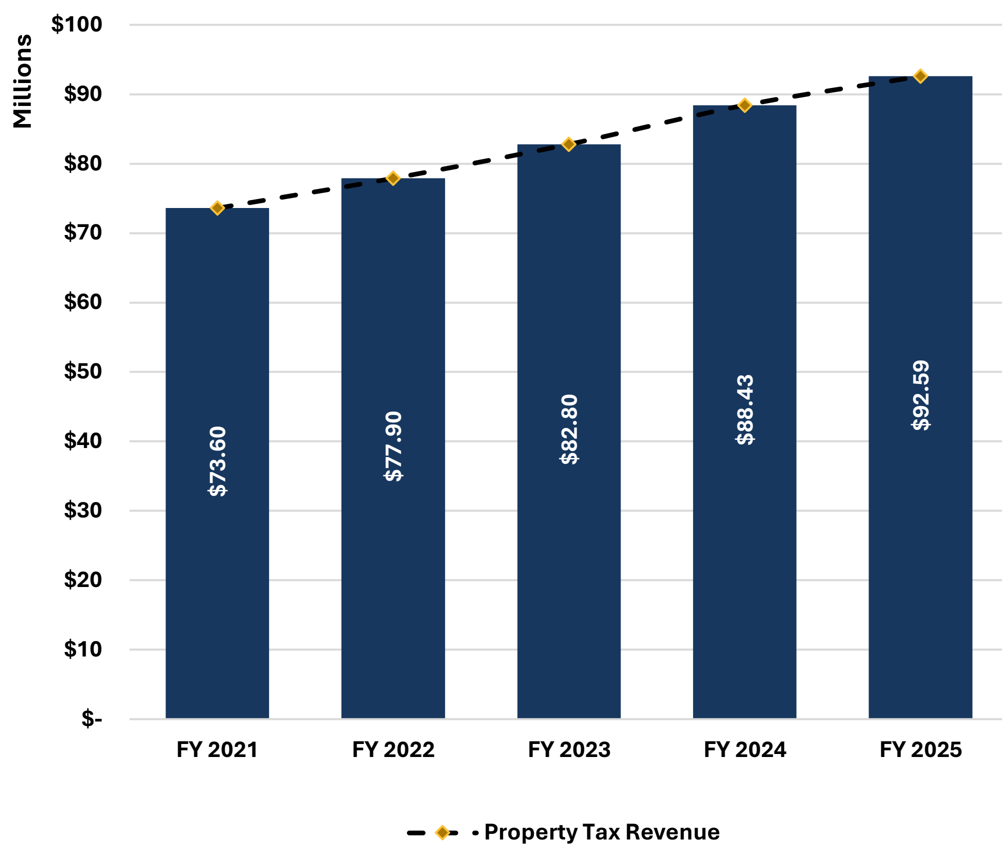
Property Tax

Property tax is the second largest single source of revenue, representing about 33% of the total General Fund revenue. Property tax revenues increased from $73.6 million in FY 2021 to $92.6 million in FY 2025, a 26% rise, reflecting growth in assessed valuation and new development.

While this growth has been consistent, it is also subject to Proposition 13 limits, which caps annual increases in assessed values at 2% unless property changes ownership. Looking forward, the pace of growth may moderate with slowing real estate activity, but property tax remains one of the most reliable revenue sources to the General Fund.

The following figure illustrates the trajectory of property tax revenue over the five-year period FY 2021 to FY 2025.

Figure 6: Riverside General Fund Property Tax Revenue



Utility User Tax (UUT)

The Utility User Tax (UUT) provides a steady and significant stream of General Fund revenue. Between FY 2021 and FY 2025, UUT increased from $30.6 million to $34.9 million, a 14% increase. The UUT is levied on utility consumption such as electricity, natural gas, and telecommunications. The Utility User Tax represents approximately 10% of General Fund revenue.

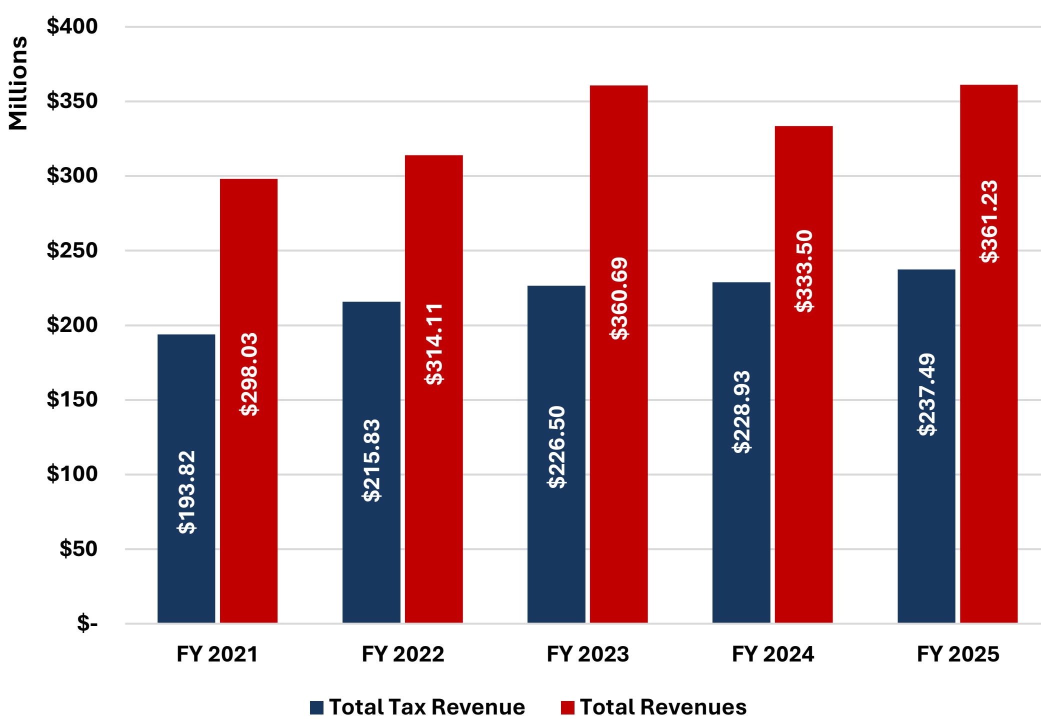
Franchise Fees & Occupancy Tax Revenue

Transient occupancy tax is a tax that is charged for occupancy in any hotel at a rate of 13%. Franchise fees are payments made by private utility and service providers for the right to use public property, such as streets and rights-of-way, to deliver their services.

Combined, these taxes grew from $11.3 million in FY 2021 to $16.1 million in FY 2025, representing about 4% the General Fund.

The following figure illustrates the significance of tax revenue compared to total General Fund revenue.

Figure 7: Riverside General Fund Total Revenue vs. Tax Revenue



Measure Z and Operating Transfers

Operating transfers from other funds provide another important share of General Fund resources. These transfers, which averaged between $47 million and $68 million annually during the review period, come primarily from enterprise and special revenue funds. Examples include reimbursements from the Water, Sewer, Refuse, and Electric Funds for their share of administrative and overhead costs, as well as transfers that cover interfund obligations. Although they are not true revenue from external sources, these transfers add budgetary capacity, or resources, to the General Fund and help support recurring expenses.

Measure Z, approved by Riverside voters in 2016, is a dedicated one-cent sales tax that has and continues to be used to support essential city services, particularly public safety and roads. The Measure Z revenue and spending plan are overseen by a citizen advisory committee.[3]

Each year, at least $18.3 million in Measure Z revenues are transferred into the General Fund to support debt service, public safety staffing, and infrastructure. Beyond the transfers to the General Fund, the Measure Z Spending Plan outlines additional funding appropriations for various initiatives.

In FY 2025, Measure Z was budgeted to generate nearly $82 million citywide, with more than 6.4% of RFD's budget supported by the measure. As Measure Z is a sales tax, any fluctuation in consumer and business spending will impact this revenue stream.

The most significant challenge is that Measure Z contains a hard sunset provision in 2036. If the measure is allowed to expire, the City will lose one of its largest and most reliable sources of revenue. Beginning work on a renewal or replacement measure now is essential. Early planning allows the City to demonstrate the value of Measure Z programs, engage the community, and ensure a smooth transition. If possible, the renewal should avoid another sunset clause to give the City the permanent structural support needed to sustain staffing, equipment, and training investments that residents now expect.

Other General Fund Revenue Sources

Licenses and permits generated $10.3 million in FY 2021 and grew to $14.4 million in FY 2025. These revenues are tied to economic activity such as building permits and regulatory programs.

Charges for service rose from $13.1 million to $18.3 million over the same period. As it specifically relates to RFD, charges for service include fire department cost recovery, permit, and inspection fees.

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[3] City of Riverside Measure Z Implementation Plan.

General Fund Expenses

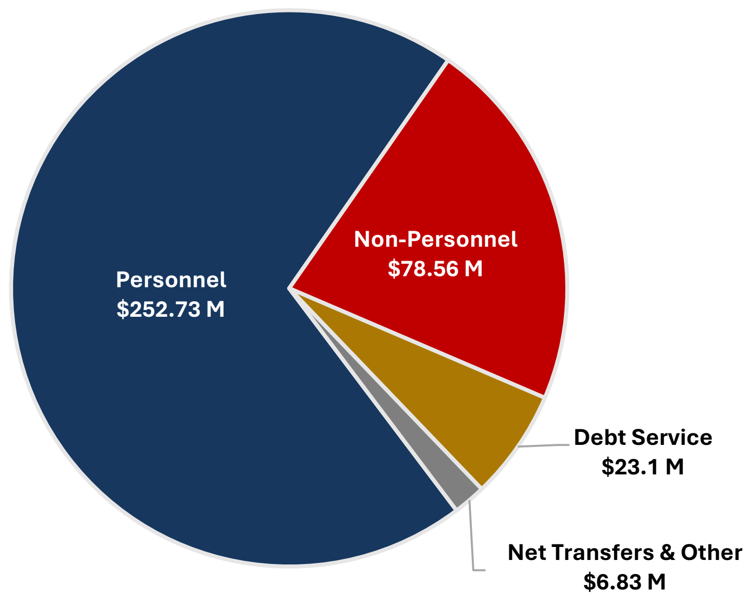
AP Triton classifies expenses as either recurring or non-recurring. Recurring expenses make up the operating expenses and include personnel, services, supplies, internal service charges, and operating transfers to other City funds. Non-recurring expenses include non-routine debt service, capital outlay, and other one-time expenditures.

Figure 8: Riverside General Fund Expense (in millions $)

General Fund Expense	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Budget	FY 2025 Budget
Personnel	207.12	209.34	229.32	236.48	252.73
Non-Personnel	46.59	53.05	61.36	67.39	78.56
Debt Service	54.20	32.77	32.96	22.72	23.10
Net Charges & Transfers	-4.12	-15.43	1.28	-10.46	-16.49
Recurring Expense:	**303.79**	**279.73**	**324.91**	**316.13**	**337.90**
Special Projects	4.55	5.40	7.39	9.65	10.90
Equipment & Capital	0.70	0.32	0.73	1.30	3.71
Other	0.48	0.07	0.21	0.00	8.72
Non-Recurring Expense:	**5.72**	**5.79**	**8.33**	**10.96**	**23.33**
Total General Fund Expense:	**$309.51**	**$285.52**	**$333.24**	**$327.09**	**$361.23**

Overall, total General Fund expenses rose by 16.7%, increasing from $309.5 million in FY 2021 to $361.2 in the FY 2025 adopted budget.

Figure 9: Riverside General Fund Allocations FY 2025



The following figure illustrates FY 2025's General Fund appropriations by major expense category.

The majority of the General Fund expenses are recurring in nature, such as salaries, benefits, contracts, and debt service.

Recurring expenses increased from $303.8 million in FY 2021 to $337.9 million in FY 2025, largely driven by rising personnel costs. Non-recurring costs, which include special projects, one-time equipment purchases, and other extraordinary allocations, are more variable. These grew from $5.7 million in FY 2021 to $23.3 million in FY 2025.

The following sections present an overview of the General Fund's recurring expenses. Consideration of RFD-specific expenses and budget items are presented in the subsequent section.

Personnel Expense

Personnel expenditures represent the single largest operating cost within the City's General Fund, historically accounting for roughly two-thirds to three-quarters of all recurring expenses. As a service organization, personnel expenses remain the City's most significant operating cost, both now and in the future.

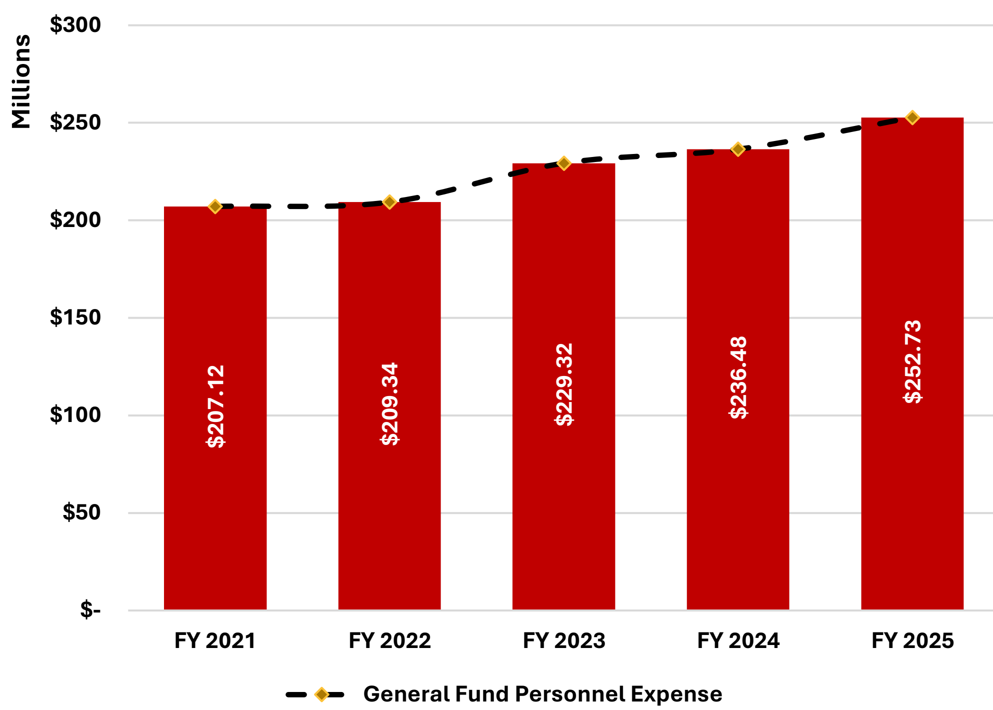
Between FY 2021 and FY 2025, personnel costs grew from $207.1 million to $252.7 million, an increase of approximately $45.6 million, or 22%. FY 2026 anticipates personnel expenses to reach over $271.1 million, accounting for about 76% of recurring General Fund.

One of the largest and fastest-growing components of personnel costs is retirement obligations associated with the California Public Employees' Retirement System (CalPERS). The City's required contributions to CalPERS represent the second-largest personnel-related expense after wages and salaries. These rising retirement costs are a central factor in the City's long-term financial planning.

CalPERS investment performance has fluctuated significantly over the past decade, resulting in swings in funding levels and changes in projected payments toward the City's unfunded accrued liability (UAL). In 2021, the City issued a Pension Obligation Bond (POB) to restructure and stabilize a portion of its UAL costs. This shifted some obligations from the personnel budget into the Debt Service category. At the same time, the City created a Section 115 Trust to help mitigate the long-term fiscal impacts of rising pension costs. Funds placed in the Section 115 Trust are invested with the intent of earning higher returns than the City's pooled investments, and are legally restricted for the sole purpose of paying down the City's CalPERS UAL.[4]

The following figure illustrates personnel-related expenses over the study period.

Figure 10: Riverside General Fund Personnel Expense



[4] City of Riverside FY 2021 Annual Comprehensive Financial Report.

Non-Personnel Expense

Non-personnel expenses make up the second-largest category of recurring General Fund costs. These include contracted services, utilities, insurance, fleet charges, fuels, supplies, technology, and other day-to-day operating needs that support City departments. Over the five-year review period, non-personnel costs increased from $46.6 million in FY 2021 to $78.6 million in FY 2025, a growth of nearly 69%.

Professional services and contracts made up the largest share, followed by insurance premiums, technology support, utilities, neighborhood maintenance, and the costs of fueling and repairing the City's fleet. Together, these areas drive more than two-thirds of all non-personnel spending.

Debt Service & Net Charges/Transfers

Debt service and transfers out have varied over the review period, ranging from $54 million in FY 2021 to about $23 million in FY 2025. The debt service budget covers current principal and interest payments, fiscal charges, and other related costs tied to the City's long-term obligations. Future expenditures are based on the City's repayment schedule, though actual costs can fluctuate with variable interest rates and credits applied to outstanding debt.

Net charges and transfers, which represent cost allocations across City departments, are negative in most years but help ensure that shared services such as fleet, IT, and facilities are distributed fairly across all departments.

Non-Recurring Expenses

Non-recurring expenditures vary from year to year and cover items that do not represent ongoing commitments. These include special projects, one-time capital outlays, and extraordinary allocations. Over the review period, non-recurring spending ranged from $5.7 million in FY 2021 to $23.3 million in FY 2025.

Non-recurring expenditures fluctuate from year to year and typically reflect items that do not represent ongoing commitments. These include special projects, one-time capital outlays, and extraordinary allocations. Over the review period, non-recurring spending ranged from $5.7 million in FY 2021 to $23.3 million in FY 2025.

The largest single category is Special Projects, which grew from $4.6 million in FY 2021 to $10.9 million in FY 2025. Special Project include funding for a variety of initiatives important to community services and quality of life. These costs include charter-mandated items, programs funded by restricted revenues such as Public, Educational & Government (PEG) fees, and support for community organizations, venues, and events. Many of these programs directly benefit the public, ranging from high-profile initiatives like the Festival of Lights and Convention Center operations to essential services such as outsourced animal control, refuse services, safety vehicle replacement, and hazardous materials cleanup.

General Fund FY 2026 Budget

The next figure shows the General Fund budget for FY 2026, separated between revenues and expenses.

Figure 11: FY 2026 Riverside General Fund

General Fund	FY 2026
Taxes	244,771,735
Licenses & Permits	14,134,487
Intergovernmental	2,078,898
Charges for Services	19,166,399
Fines & Forfeits	1,451,800
Operating Transfers	56,198,700
Measure Z Transfer	25,633,367
Miscellaneous	6,050,842
Section 115 Trust Set-Aside	12,003,485
Use of Reserves	667,500
Total GF Resources:	**$382,157,213**
Personnel	280,831,342
Non-Personnel Expenses	79,484,769
Special Projects	10,502,698
Debt Service	22,047,769
Charges from Others	43,025,905
Charges to Others	(86,982,742)
Operating Transfers Out	23,556,674
Capital & Equipment	507,598
Water GF Transfer Offset[5]	9,183,200
Total GF Appropriations:	**$382,157,213**

[5] Water General Fund Transfer collections are placed in reserve account pending litigation outcome, resulting in potential revenue loss estimated at $49.31 million over the next five years.

RIVERSIDE FIRE DEPARTMENT BUDGET

The Riverside Fire Department's budget across all funds has increased from $75.2 million in FY 2021 to a projected $86.6 million in FY 2025, an approximately 15% increase over the review period. As a labor-intensive public safety agency, personnel-related expenses make up the majority of RFD's budget, accounting for more than four out of every five dollars spent each year. This trend illustrates both the labor-intensive nature of fire and emergency medical services and the effects of negotiated salary increases, pension contribution requirements, healthcare costs, and the addition of new positions.

RFD's total expenditures consist of both recurring and non-recurring expenses. Recurring expenditures are those that can be anticipated each year, including personnel, benefits, non-personnel, internal service charges, and debt service. Non-recurring expenditures represent one-time or project-based allocations such as capital outlay, grants, and special projects.

The following figure summarizes RFD's budget across all funds over the five-year period of FY 2021 to FY 2025. Note, the table below excludes RFD's share of the City's Cost Allocation Plan to provide a more transparent view of RFD's direct costs.

Figure 12: Riverside Fire Department Budget

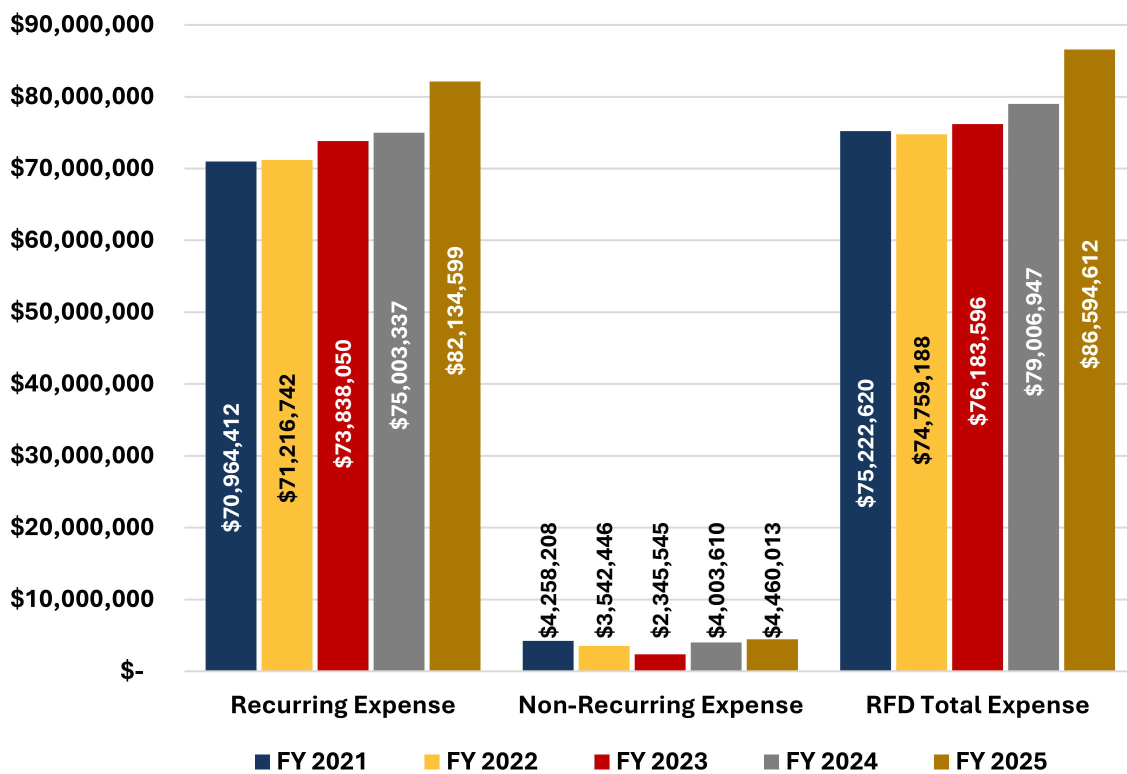
RFD Expenses	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
Personnel	58,482,387	58,587,421	60,540,079	64,382,920	71,436,709
Non-Personnel	4,530,352	4,628,196	5,557,485	6,959,336	7,378,278
Charges from Others	5,640,549	5,851,957	5,950,579	6,537,678	6,849,288
Charges to Others	(3,544,787)	(3,734,192)	(3,942,973)	(4,514,732)	(5,160,976)
Debt Service	5,855,910	5,883,360	5,732,880	1,638,135	1,631,300
Recurring Expense:	**$70,964,412**	**$71,216,742**	**$73,838,050**	**$75,003,337**	**$82,134,599**
Capital Purchases	408,366	147,141	304,769	1,479,063	267,598
Grants and Projects	926,034	2,332,625	1,817,366	1,488,226	2,842,656
Operating Grants	273,843	574,449	105,471	551,651	893,628
Special Projects Apparatus	2,460,919	293,131	81,718	447,125	456,131
Other Non-Recurring	189,046	195,100	36,221	37,544	—
Non-Recurring:	**$4,258,208**	**$3,542,446**	**$2,345,545**	**$4,003,610**	**$4,460,013**
Total RFD Budget:	**$75,222,620**	**$74,759,188**	**$76,183,596**	**$79,006,947**	**$86,594,612**

RFD's recurring expenses rose from $71.0 million in FY 2021 to a projected $82.1 million in FY 2025, an increase of nearly 16 percent. Personnel expenses grew from $58.5 million to $71.4 million, driven by contractual salary adjustments, pension obligations, healthcare costs, and newly funded positions. Non-personnel costs also grew significantly, increasing from $4.5 million to $7.4 million. Debt service, which previously accounted for more than $5.8 million annually, declined to about $1.6 million after FY 2023, following the retirement of major bond obligations.

Non-recurring expenses varied from $4.3 million in FY 2021 to $4.5 million projected in FY 2025, reflecting grant-funded projects, capital purchases, and special apparatus replacements.

The next figure illustrates RFD's combined expenses from all funds separated between recurring and non-recurring.

Figure 13: RFD Total Recurring vs. Non-Recurring Expenses



RFD Funding Sources

The Riverside Fire Department is primarily supported by the City's General Fund, with supplemental contributions from Measure Z, categorical state and federal grants, and targeted homeland security allocations through the Urban Areas Security Initiative (UASI). Over the five-year review period of FY 2021 through FY 2025, RFD's total budget grew from $75.2 million to $86.6 million.

In FY 2025, about 81.5% of RFD's $86.6 million budget was supported by the General Fund, 8–10% by Measure Z, and the remainder by state/federal grants and UASI homeland security allocations.

RFD contributes to the overall revenue for the City primarily from service charges for fire prevention and regulatory activities, reimbursements for mutual aid deployments, various permit and inspection fees, and grant funding received from State and Federal agencies.

Figure 14 summarizes RFD funding sources by fund.

Figure 14: Riverside Fire Department Budget by Fund

RFD Budget by Fund	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
General Fund (101)	63,595,465	61,178,955	65,377,202	63,710,107	70,591,270
Measure Z (110)	7,867,388	8,128,349	6,349,044	7,941,725	7,276,539
UASI (205)	2,569,207	2,880,282	2,449,666	5,473,171	5,521,050
Grants & Programs (215)	1,190,560	2,571,603	2,007,683	1,881,943	3,205,753
Total RFD Budget:	**$75,222,620**	**$74,759,188**	**$76,183,596**	**$79,006,947**	**$86,594,612**

A description of each of these funds is presented below:

- **General Fund**: The General Fund serves as the Department's principal operating fund and is the main operating fund for the City. This fund finances daily fire suppression, emergency medical response, training, logistics, fire prevention, and administrative functions. In FY 2025, the General Fund accounts for $70.6 million, representing approximately 81.5% of RFD's total budget.

- **Measure Z Fund**: Measure Z, a one-cent voter-approved transactions and use tax, is the second most important funding source for RFD. Since beginning collection in 2017, Measure Z continues to be one of the department's lifelines, supporting, on average, nearly 10% of RFD's budget. These funds directly support firefighter staffing stability, have added additional positions, and help reinstate previously eliminated positions, and the City's vehicle replacement and maintenance plan. Measure Z provides approximately $7.3 million annually to RFD, supporting 15 full-time equivalent positions and the Fire Vehicle Replacement Plan. The measure expires in 2036 unless renewed, creating a major future risk.[6]
- **Urban Area Security Initiative Fund (UASI) Fund**: The UASI Fund is used to account for UASI grants received from the U.S. Department of Homeland Security. As a special revenue fund, these funds are legally restricted to expenditure for their designated purpose. Historically, the UASI Fund supports RFD's Special Services Division which encompasses the Office of Emergency Management and, specifically, the Urban Areas Security Initiative.
- **Grants & Restricted Programs Fund**: The Grants & Restricted Programs Fund is similar to the UASI Fund and is used to account for federal, state grants and other restricted program revenue, such as the Department of Homeland Security US&R Grant proceeds.

Figure 15: RFD Funding by Source Five-Year Average

City Fund	Average
General Fund	83%
Measure Z Fund	10%
Grants & Restricted Programs	5%
UASI Fund	3%

While RFD has successfully managed its finances over the five-year review period, the department faces several long-term challenges, including rising operational costs, the expiration of Measure Z in 2036, and the need for capital investments in aging infrastructure. The City and department need to invest in much-needed capital equipment and infrastructure to support growing service demands. This includes upgrading fire apparatus, enhancing facilities, and ensuring that the department is equipped to handle the increasing complexity and volume of emergency calls.

[6] City of Riverside Measure Z Biennial Budget FY 2024–2026.

RFD Recurring Expenses

While it is essential to monitor and evaluate outflows across an organization, it is most instructive for the purposes of this study to analyze recurring expenses. RFD's recurring expenses include personnel, non-personnel, charges from others, and debt service. Together, these categories constitute the Department's operating expenses necessary to fund day-to-day operations.

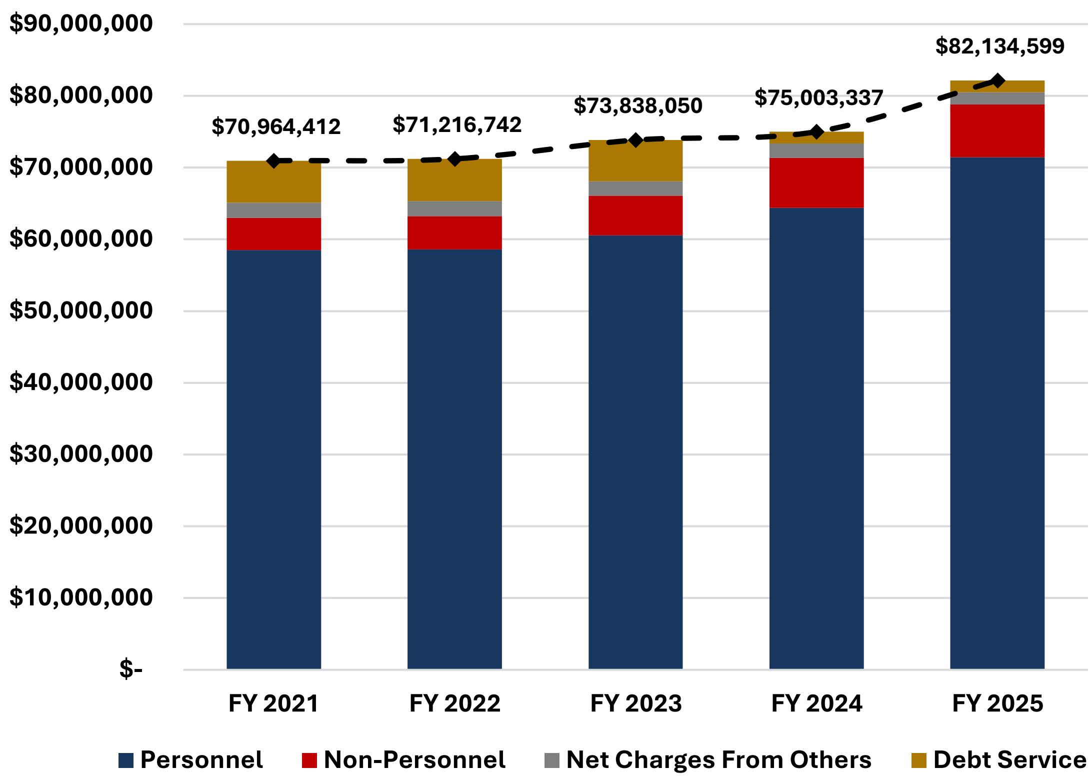
Figure 16: RFD Recurring Expenses

RFD Expenses	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
Personnel	58,482,387	58,587,421	60,540,079	64,382,920	71,436,709
Non-Personnel	4,530,352	4,628,196	5,557,485	6,959,336	7,378,278
Net Charges from Others	2,095,762	2,117,765	2,007,606	2,022,946	1,688,312
Debt Service	5,855,910	5,883,360	5,732,880	1,638,135	1,631,300
RFD Recurring Expense:	**$70,964,412**	**$71,216,742**	**$73,838,050**	**$75,003,337**	**$82,134,599**

On average, approximately 95% of the Department's budget consists of recurring expenses, while non-recurring expenses have historically accounted for about 5% of total annual expenses.

The following figure illustrates the trend of RFD's recurring expenses, broken out between these major components.

Figure 17: RFD Recurring Expenses by Subcategory



Recurring expenses rose by $11,170,187, nearly 16%, increasing from $70,964,412 in FY 2021 to $86,594,612 projected in FY 2025. Personnel expenses are the largest driver of this change.

Personnel

Typical of most public safety agencies, personnel-related expenditures account for the largest share of RFD's recurring and total expenses. As a service-driven organization, the Department's greatest resource is its workforce, and accordingly, the majority of its operating budget is dedicated to compensating and supporting sworn and civilian staff. Personnel expenses include salaries, wages, overtime, retirement system contributions, health and welfare benefits, and workers' compensation. These costs represent not only current obligations but also long-term financial commitments tied to pension liabilities and post-employment benefits.

RFD's personnel expenses can be grouped into three major components:

- **Salaries & Wages**: Wages, overtime, certification pay, and accrued payroll obligations.
- **Pension & Retirement**: Employer-paid contributions to CalPERS for both Safety and Miscellaneous personnel, unfunded actuarial liability (UAL) amortization payments, and post-employment retiree medical obligations.
- **Insurance & Benefits**: Health, dental, life, workers' compensation, unemployment, long-term disability, Medicare, and other employee benefit costs.

Figure 18 summarizes RFD's personnel expense for the five-year period of FY 2021 to FY 2025.

Figure 18: RFD Personnel Expense

RFD Personnel	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
Salaries & Wages	43,557,621	42,466,730	43,925,269	47,301,886	52,680,037
PERS & Retirement	11,124,137	11,584,963	11,925,729	11,860,594	13,148,028
Insurance & Benefits	3,800,628	4,535,728	4,689,080	5,220,440	5,608,645
RFD Personnel Total:	**$58,482,387**	**$58,587,421**	**$60,540,079**	**$64,382,920**	**$71,436,709**

Over the review period, total personnel expenses rose from $58.5 million in FY 2021 to a projected $71.4 million in FY 2025, reflecting a 22% increase. On average, personnel accounted for approximately 80% of total expenditures and 84% of recurring expense. This increase has been driven by a $9.1 million increase in salaries, $2.0 million increase in PERs and Retirement, and a $1.8 million increase in insurance and benefits.

Salaries & Wages

Salaries and wages constitute the majority of personnel-related costs. As a service organization, salaries and wages are and will continue to be RFD's most considerable operational expense. Salaries and wages account for approximately 74% of personnel-related expenses and 62% of recurring expenses between FY 2021 and FY 2025. Wages have risen due, in part, to contractual wage increases and the addition of new positions supported through both the General Fund and Measure Z allocations.

PERS & Retirement

Employer contributions to CalPERS rose from $11.1 million in FY 2021 to more than $13.1 million in FY 2025. This 18% increase is driven by both the "normal cost" of active employees and unfunded actuarial liability (UAL) payments associated with legacy benefit tiers.

Typical for most California fire agencies that participate in CalPERS, pension costs account for a significant portion of total personnel expenditures due to enhanced public safety benefit formulas. Although pension reform measures have moderated cost growth for newer hires, legacy obligations and volatile CalPERS investment returns require ongoing fiscal monitoring.

To address these long-term obligations, the City of Riverside has undertaken proactive fiscal strategies. In 2021, the City issued a Pension Obligation Bond (POB) to restructure and stabilize a portion of its UAL costs. This financing tool shifted some pension-related obligations from the personnel budget into the Debt Service category, easing immediate pressure on the operating budget while providing a predictable repayment structure. At the same time, the City established a Section 115 Pension Trust to help mitigate the long-term fiscal impacts of rising pension costs. Funds deposited into this trust are invested with the intent of generating higher returns than the City's pooled investment portfolio and are legally restricted for the sole purpose of paying down CalPERS UAL. Together, the POB and Section 115 Trust represent a dual approach to stabilizing future costs, enhancing the City's ability to manage pension liabilities sustainably over the long term.[7]

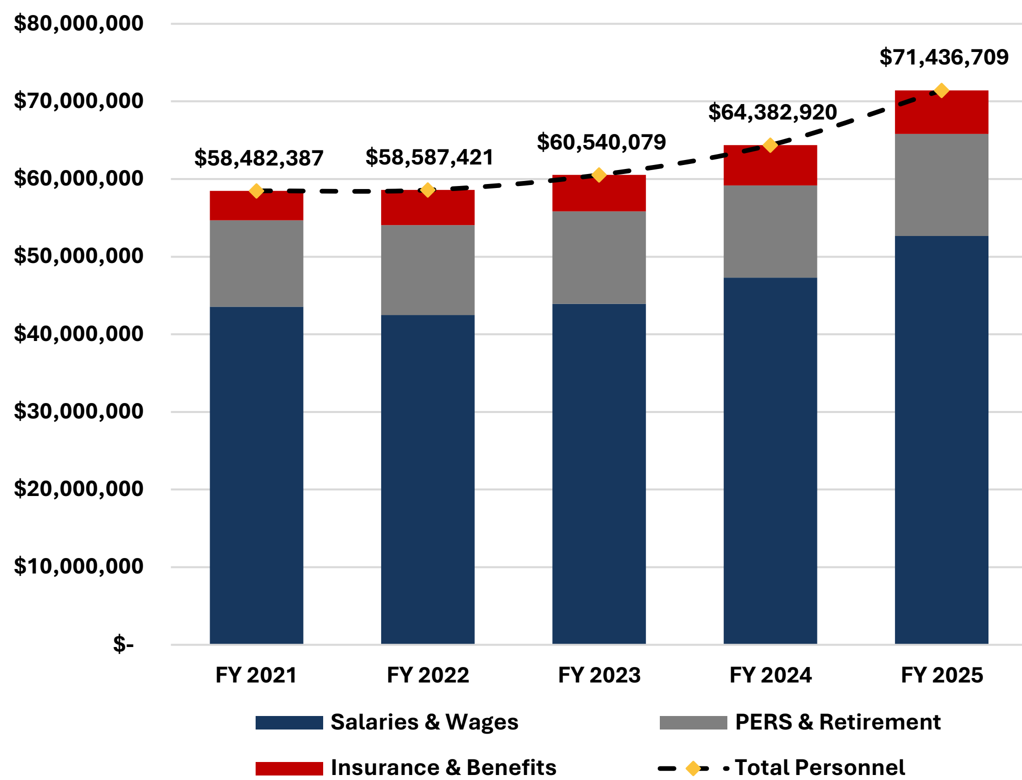
Insurance & Benefits

Insurance and benefit costs increased from $3.8 million in FY 2021 to $5.6 million in FY 2025, a growth of nearly 47%. This reflects rising health insurance premiums, increased liability and workers' compensation costs, and adjustments in employer contributions to Medicare and other mandated benefits. Like many public agencies, the Department has faced benefit cost growth outpacing inflation, which contributes to overall upward pressure on the personnel budget.

The next figure summarizes the trend of RFD's personnel expenses from FY 2021 to FY 2025, separated between salaries, retirement, and benefits.

[7] City of Riverside, 2021 Pension Funding Policy and Comprehensive Annual Financial Report (ACFR), adopted by City Council, FY 2021.

Figure 19: RFD Personnel Expense Trajectory



The majority of personnel costs are financed by the General Fund, which consistently covers more than 80% of personnel obligations. However, Measure Z has become a critical supplemental funding source, supporting approximately 8% of personnel expenditures during the review period and directly funding a number of sworn and civilian positions. Measure Z supports **15.0 FTEs in FY 2025**, with an additional position planned in FY 2026.

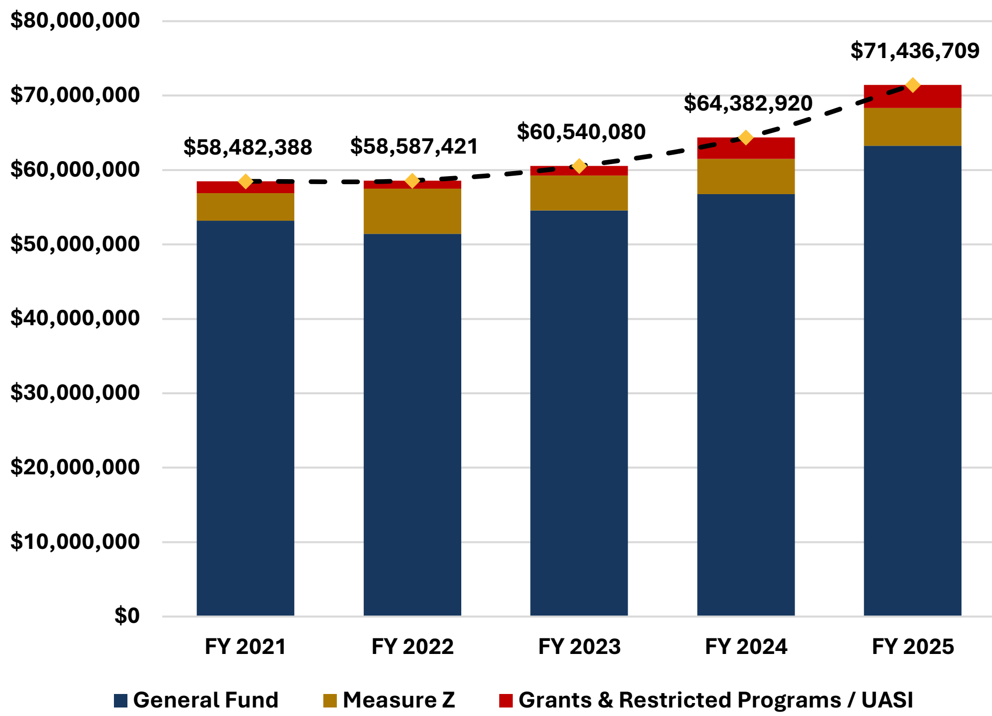
Figure 20 illustrates RFD's personnel expense by fund from FY 2021 through FY 2025.

Figure 20: RFD Personnel Expense by Fund

RFD Personnel	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
General Fund	53,195,226	51,439,197	54,566,649	56,749,434	63,243,060
Measure Z	3,714,699	6,038,270	4,679,487	4,744,319	5,080,251
Restricted Programs	1,255,327	855,970	1,031,636	2,495,450	2,599,548
UASI	317,136	253,984	262,308	393,717	513,850
RFD Personnel Total:	**$58,482,387**	**$58,587,421**	**$60,540,079**	**$64,382,920**	**$71,436,709**

The next figure illustrates the trajectory of RFD's personnel expense by funding source.

Figure 21: RFD Personnel Expense by Fund



Non-Personnel Expense

Non-personnel expenditure represents RFD's second-largest category of recurring expenses, after personnel. This category includes a variety of operating expenses, including professional services, utilities, vehicle and fleet operations, supplies and safety materials, technology, training, office-related expenses, insurance, leases, and general building and equipment maintenance. As a whole, these expenditures provide the resources necessary for the department to sustain daily operations and maintain service readiness.

Figure 22 summarizes non-personnel expenses by subcategory for the years FY 2021 through FY 2025.

Figure 22: RFD Non-Personnel Expense

RFD Non-Personnel	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
Central Garage	1,012,331	722,869	1,084,920	1,249,446	1,256,100
Fuel	281,347	440,918	499,748	450,039	402,425
Professional Service	323,457	303,379	489,008	1,210,912	794,759
Utilities	403,801	416,223	467,726	531,358	558,982
Supplies	947,321	974,098	1,261,690	1,406,615	1,500,973
Insurance & Liability	606,904	375,763	693,191	871,455	867,371
Office Expense	133,030	109,744	112,067	159,556	397,719
Rentals & Leases	287,700	278,539	264,191	412,646	393,560
Training & Travel	274,990	333,441	397,711	348,741	633,369
Build & Equip Maint.	259,471	673,222	287,233	318,568	573,020
RFD Non-Personnel Total:	**$4,530,352**	**$4,628,196**	**$5,557,485**	**$6,959,336**	**$7,378,278**

From FY 2021 through FY 2025, RFD's non-personnel costs increased from $4.53 million to a projected $7.38 million, an overall increase of approximately 63%. Despite this growth in dollar terms, they have remained relatively stable as a share of recurring costs, averaging between 7–9% of operating expenditures.

Key drivers of non-personnel costs include fleet operations (Central Garage allocations and fuel), supplies and operational materials, professional and contracted services, insurance and liability charges, and training and travel.

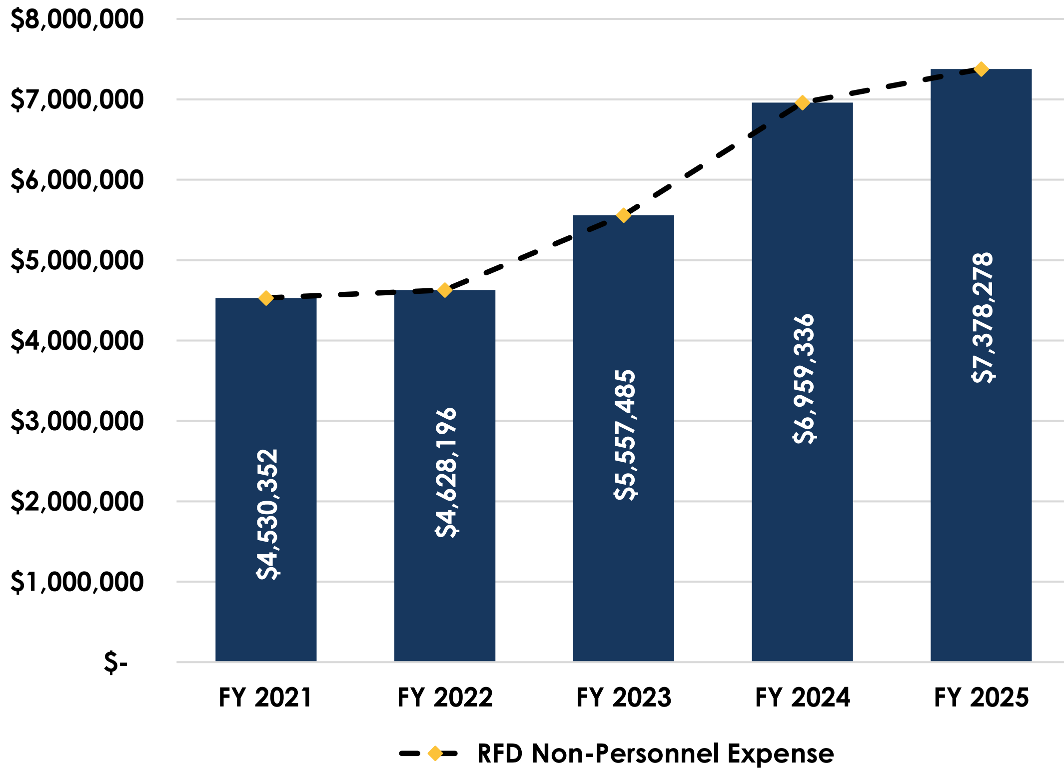
Major Categories of Non-Personnel Expense

- **Central Garage and Fleet Operations**: Central Garage expenses and fuel combined account for the largest share, averaging $1.5–1.7 million annually. Central Garage costs have remained stable while fuel varied with market conditions.
- **Professional Services**: Expenditures for contracted technical, legal, and consulting services have varied significantly year to year, contingent on the Department's specific needs in a given year. Costs ranged from $323,457 in FY 2021 to a high of $1.2 million in FY 2024, with $794,759 projected in FY 2025.

- **Supplies and Safety Materials**: Supplies consistently represent one of the largest non-personnel categories, averaging more than $1.2 million annually. This category includes uniforms, personal protective equipment (PPE), medical supplies, and other consumables essential for field operations. Costs rose from $947,321 in FY 2021 to a projected $1.5 million in FY 2025.
- **Insurance and Liability**: Insurance-related costs, including liability premiums and direct insurance charges have remained proportionally stable, increasing from $606,904 in FY 2021 to a projected $867,371 in FY 2025.
- **Training and Travel**: Training-related expenditures grew from $275,000 in FY 2021 to $633,000 in FY 2025, though early-year expenditures were likely artificially low due to COVID-19 pandemic-related restrictions on travel and in-person training.
- **Building and Equipment Maintenance**: Although proportionally smaller compared to other categories, building and equipment maintenance expenditures ranged from $259,471 in FY 2021 to $573,020 projected in FY 2025. AP Triton recommends that the department periodically review the condition of non-apparatus assets, such as beds, appliances, and minor station equipment, to ensure that maintenance and replacement levels remain adequate. Proactive planning in this area will help reduce the potential for unexpected costs in the future.

The following figure illustrates the trend of RFD's non-personnel expenses for the five-year review period.

Figure 23: RFD Non-Personnel Expense Trajectory



Centralized Logistics

As it specifically relates to non-personnel expenses, AP Triton's review identified that RFD currently lacks a centralized logistics management plan or formalized system for overseeing the procurement, storage, distribution, and tracking of materials, supplies, and personal protective equipment (PPE). At present, supplies and PPE are dispersed across multiple department facilities without a unified inventory control process. This decentralized approach has resulted in operational inefficiencies, difficulty in tracking supply levels, and a heightened risk of both shortages and overstocking.

For example, AP Triton noted that the responsibility for maintaining and issuing PPE currently resides with a single Operations Captain, who is required to manage all PPE-related tasks in addition to their primary operational duties. This arrangement not only limits efficiency but also creates a single point of failure within the department's supply chain.

A more effective and sustainable model would involve the development of a comprehensive logistics management plan, supported by appropriate technology solutions such as inventory management software and standardized reporting procedures. This plan should be overseen by a dedicated logistics position or unit tasked exclusively with managing the acquisition, distribution, and lifecycle tracking of supplies and PPE.

Debt Service

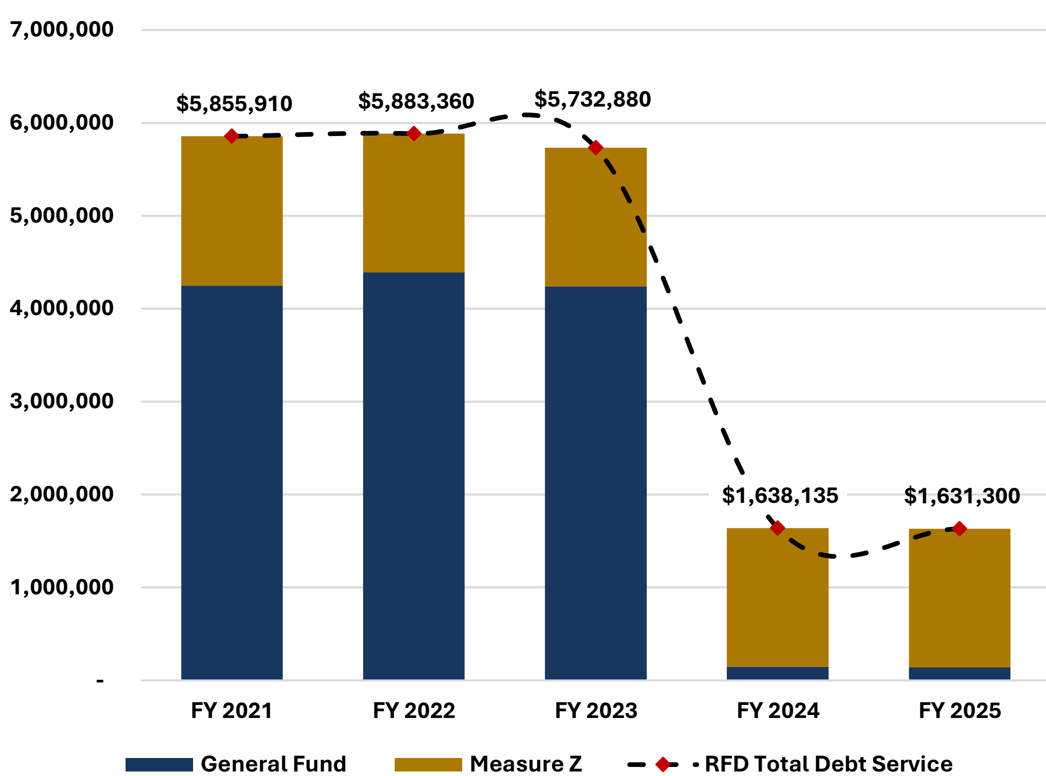
Measure Z has been instrumental in supporting not only personnel, but also the repayment of debt service tied to apparatus replacement. This funding stream has helped stabilize the fire department's budget by covering obligations that would otherwise fall entirely on the City's General Fund or delayed all together.

Figure 24: RFD Debt Service Expense

RFD Non-Personnel	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
General Fund	4,248,450	4,390,960	4,240,480	145,740	138,900
Measure Z	1,607,460	1,492,400	1,492,400	1,492,395	1,492,400
RFD Total Debt Service	**$5,855,910**	**$5,883,360**	**$5,732,880**	**$1,638,135**	**$1,631,300**

In FY 2021, debt service totaled nearly $5.9 million, with the General Fund bearing the largest share at $4.25 million. By FY 2025, that General Fund contribution had declined sharply to just $138,900, while Measure Z continued to provide steady support at approximately $1.49 million per year.

Figure 25: RFD Debt Service Support by Fund



Net Charges To/From Others

The Net Charges From Others category reflects the City's system of allocating internal service costs across departments. When a specific cost can be clearly identified and tied to a department that cost is directly assigned as a charge from others in the utilizing department. In other cases, allocations are based on reasonable estimates, such as projected labor and overhead costs associated with capital projects. Conversely, when RFD provides support or resources to another City department, those amounts are reflected as charges to others. The net of these two items represents RFD's overall share of these internal service costs.

Figure 26: RFD Net Charges From Others

RFD Non-Personnel	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
Charges from Others	5,640,549	5,851,957	5,950,579	6,537,678	6,849,288
Charges to Others	(3,544,787)	(3,734,192)	(3,942,973)	(4,514,732)	(5,160,976)
Net Charges from Others:	**$2,095,762**	**$2,117,765**	**$2,007,606**	**$2,022,946**	**$1,688,312**

Non-Recurring Expenses

RFD's non-recurring expenses include capital purchases, grants, special projects, and other allocations that are not built into the Department's base operating budget.

Figure 27: RFD Non-Recurring Expenses

RFD Non-Recurring Expense	FY 2021 Actual	FY 2022 Actual	FY 2023 Actual	FY 2024 Actual	FY 2025 Projected
Capital Purchases	408,366	147,141	304,769	1,479,063	267,598
Grants and Projects	926,034	2,332,625	1,817,366	1,488,226	2,842,656
Operating Grants	273,843	574,449	105,471	551,651	893,628
Special Projects Apparatus	2,460,919	293,131	81,718	447,125	456,131
Other Non-Recurring	189,046	195,100	36,221	37,544	—
RFD Total Non-Recurring:	**$4,258,208**	**$3,542,446**	**$2,345,545**	**$4,003,610**	**$4,460,013**

Over the FY 2021 to FY 2025 period, non-recurring expenses have ranged from approximately $2.3 million to just over $4.4 million annually, averaging about five percent of the Department's total budget. Although relatively small in proportion to total spending, non-recurring allocations are significant because they often represent major equipment purchases, grant-funded projects, and community priorities that would otherwise remain unfunded.

The UASI Fund has consistently been one of the most significant sources of non-recurring funding for RFD. Allocations have ranged from $873,000 in FY 2021 to nearly $2.7 million in FY 2025. Unlike Measure Z, UASI and other grant support is restricted by federal priorities, with funding dedicated to specialized equipment and regional preparedness initiatives. Recent UASI and Urban Search & Rescue (US&R) grants have supported major investments in technical rescue, hazardous materials response, and disaster readiness equipment, ensuring that the Riverside Fire Department remains capable of meeting national deployment standards and supporting regional emergency operations.

CAPITAL PROJECT FUNDING

By Council policy, the City develops and adopts a multi-year capital planning spanning at least five years in conjunction with the adoption of the City's budget. The policy defines a capital project as an asset or improvement having a total cost of $20,000 or more and a useful life of at least ten years.

These capital projects include major facilities investments, technology equipment, and vehicles/apparatus.

The City formally identified various RFD-specific capital projects as needed, but are currently unfunded. As of 2025, RFD has identified 18 unfunded capital projects totaling approximately $78.5 million, including full station replacements (Stations 2, 3, 4, 7, 8, 10), apparatus bay upgrades, and a new fire warehouse facility.[8]

[8] City of Riverside Five Year Capital Improvement Program FY 2024–2026.

Figure 28: RFD Unfunded Capital Projects

Unfunded Capital Project	Amount
Station 11, 12, 13 Apparatus Door Replacement	$300,000
Station 10 Security Fencing	$44,250
Fire EOC Data Center Security & Sprinkler Removal	$559,680
Station 12 Flooring	$27,825
Station 12 Kitchen Remodel	$60,000
Station 9 Kitchen Remodel	$80,000
Station 2 Office and Bath Remodel	$110,000
Station 11 Kitchen Remodel	$200,000
Station 3 Parking Structure	$207,548
Station 4 Asphalt	$52,500
Station 1 Concrete	$21,000
Station 2 Replacement	$12,000,000
Station 3 Replacement	$12,000,000
Station 4 Replacement	$12,000,000
Station 7 Replacement	$12,000,000
Station 8 Replacement	$12,000,000
Station 10 Replacement	$12,000,000*
Fire Warehouse	$4,500,000

**Amounts shown reflect current values listed in the City's adopted Capital Improvement Plan. Actual replacement costs for major facilities such as Station 10 are expected to exceed $12 million, contingent on future construction costs and the City's decision regarding multi-company versus single-company design.*

MANAGEMENT **COMPONENTS**

Managing a progressive public safety organization requires leadership to create appropriate management systems, policies, and philosophies that are shared at all levels of the organization. Line staff, managers, and leaders need simple and consistent tools to constantly monitor performance. Fire agencies need these tools to be integrated into their organizational culture to effectively address complex management issues such as organizational structure, staffing, and operational excellence.

FOUNDATIONAL MANAGEMENT PRINCIPLES

Successful organizations know *why* they exist. Employees understand what their organization does, and what common values hold them together and accountable to the community. Fire departments collect these operational philosophies in adopted mission, vision, and core values statements.

Mission Statement

Effective mission statements capture the reason an agency exists. It should be a brief, concise, statement that efficiently and effectively states why the agency exists and for whom they provide its service.[9]

"The mission of the City of Riverside fire Department is to protect life, property, and the environment by providing exceptional and progressive, all-hazard emergency services, and community risk reduction programs."[10]

The mission statement has the needed elements of what the fire department wants to accomplish but does not necessarily address whose lives they are protecting. The statement defines responsibilities and is general enough to include both response, prevention, and emergency management.

Vision Statement

Vision statements provide a direction for the entire organization and a common goal to strive for. The vision statement should clearly articulate what the organization views as the ultimate success in providing service. It should reflect where the fire department is heading and provide a desired end state for leadership to use as a guide.[11]

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[9] Wallace, M. (2006). *Fire Department Strategic Planning, Creating Future Excellence. (2nd Ed).* Pennwell, pp 112-115.
[10] City of Riverside Fire Department Strategic Plan 2023-2028 https://online.fliphtml5.com/ltghc/ywzs/.
[11] Bryson, J. (2018). *Strategic Planning for Public and Nonprofit Organizations (5th Ed.).* John Wiley & Sons, Inc, pp 269-270.

The RFD vision statement states:

"The City of Riverside Fire Department is committed to providing professional and equitable service to its diverse community."[12]

The RFD vision statement is an important organizational asset. While the vision states an important goal for the organization (to treat every member of the public professionally regardless of their station in life, the statement lacks a desired end state or goal.

Core Values

Core values are established as a framework for all members of an organization, enabling them to collaboratively work together to meet the fire department's mission and vision statements. Agencies should clearly state their values, and either create rules to defend them or create a culture of value-driven decisions (or both). RFD identified seven core values, each with a clarifying statement. These values appear effective, and clearly articulate intent. They are encapsulated in a video on the department website.[13]

Accountability

We take responsibility for our actions, decisions, and outcomes. We hold ourselves accountable to one another and to the community we serve.

Honesty

We communicate openly and truthfully, admit our mistakes, and reject all forms of deception.

Trustworthiness

We are reliable, dependable, and act with integrity. We honor our commitments, maintain confidentiality, and earn the trust placed in us.

Integrity

We consistently do the right thing, uphold the highest ethical standards, and remain steadfast in our principles, regardless of the circumstances.

Professionalism

We demonstrate competence, responsibility, and respectful conduct at all times, representing the fire department with pride and dedication.

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[12] City of Riverside Fire Department Strategic Plan 2023-2028 https://online.fliphtml5.com/ltghc/ywzs/.
[13] https://riversideca.gov/fire/about-contact/office-chief.

Teamwork

We work collaboratively toward shared goals, support one another, and combine our strengths to better serve the community.

Respect

We treat everyone with dignity, value diverse perspectives, and recognize the inherent worth of all individuals.

ORGANIZATIONAL DIRECTION AND PLANNING

Reviewing a fire department's mission, vision, and core values is helpful to gain an understanding of the leader's intent and culture. It is vital to evaluate the alignment and integration of these components in work products including budget, strategic planning, and master planning.

The RFD 2023–2028 Strategic Plan (updated June 2025), states, "The City of Riverside Fire Department's Strategic Plan 2023–2028 was developed with extensive community and employee engagement. The strategic plan will assist the department in producing decisions and actions that will shape and guide the organization for the next five years."

The document continues with this statement, "This document was written to align with the department's Community Risk Assessment, Standards of Cover, the 10th Edition Commission of Fire Accreditation International (CFAI) Accreditation Model upholding the department's commitment to continuous quality improvement. The goals and objectives within this plan are in alignment with the City of Riverside's Envision Riverside 2025 Strategic Plan."[14]

The effort to engage the public, employees, and the focused approach of these complimentary projects clearly reflect alignment and engagement with the mission, vision and core values of the fire department.

INTERNAL EVALUATION

AP Triton requested a list of organizational critical issues from the Fire Chief's perspective. The identified concerns are consistent with similar sized agencies that are focused on current and future service delivery.

[14] City of Riverside Strategic Plan 2023-2028 https://online.fliphtml5.com/ltghc/ywzs/.

The Fire Chief provided the following items:

- Department size—current and future needs based on future growth and NFPA guidelines (5,10,15, 20-year projections).
- Incident Volume and Projections—based on future growth.
- Department Staffing—All Divisions.
- Fire Stations—additional stations and appropriate locations.
- Community Risk Assessment.

Based on these critical issues, future challenges for the RFD revolve primarily around future development impacts within the service area (population, multi-story/high density structures), an increasing call volume, and appropriate staffing, equipment, and fire stations to address these concerns.

COMMUNICATION STRATEGIES

Effective communications are the manager's primary tool to affect change and to provide the best level of service to the community. There are multiple dynamics at play when focused on internal and external communications including:

- Sender/Receiver dynamic
- Context
- Content
- Method/Platform
- Internal or External audiences

Internal Communications

Internal communications are typically more "straightforward" due to shared context, and employee familiarity with an industry reliant on acronyms, jargon, and specific technical concepts. The manager/communicator still must carefully select the appropriate communications platform, and be sure the information is accurate, clearly articulated (free from vague references), and consistent with past statements and positions.

The Riverside Fire Department utilizes multiple methods of internal communication including:

- Monthly Staff Meetings
- E-Mail
- Agency Intranet (Internal Website)
- Memorandums
- Open-Door Policy

The Fire Chief is interested in producing an internal newsletter in the future.

External Communications

Effective external communications carry both challenges and potential rewards. A well-informed citizenry can be an agency champion, a tough critic, or both. Unlike internal communications, external parties do not understand acronyms, fire centric terminology, or historical perspective. Managers must communicate externally without assuming the public (or other city departments) know or understand fire service operations. It is important to understand how "external stakeholders" prefer to receive their information. It is also vital that both internal and external messaging align so that department employees are aware of what the public is receiving in their messaging.

RFD utilizes several platforms for external communications including:

- Public Website
- Facebook
- Instagram
- X (formerly Twitter)
- Community Meetings

The fire department also has a formal complaint process available on the website and does utilize community surveys to solicit feedback.

ADMINISTRATIVE PROCESSES

Fire service agencies produce a variety of information and documents in the ordinary course of daily business. These documents are maintained for regulatory and organizational needs and can significantly impact the agency's functionality and reputation. Therefore, agencies must produce policies and procedures to safeguard these documents and ensure that they make adequate and valuable information.

Record Management

Regulatory documents such as policy manuals, employee handbooks, standard operating guidelines, and incident reporting must be maintained, kept current, and protected from unauthorized use. In addition, informational documents such as official memorandums, agency performance reporting, and general agency information should comply with the agency, local, state, and federal policies and regulations.

Agencies should also understand their employees, the public, and other stakeholder groups will have differing informational needs. The agency must balance community needs, transparency, and organizational confidentiality. The agency must produce policies and procedures to direct information flow to internal and external consumers.

The Riverside Fire Department maintains systems, processes, and policies to assist with documentation management. In addition, the department publishes an annual report available to both internal and external parties. These reports, along with other documents, are available on the department website.

Technological Infrastructure

Information technology (IT) management and related systems are a requirement of the modern fire service. Agencies require access to computers, software, and data to record response and other activities, data analysis to justify future organizational needs, along with communications (mobile data computer, radio network), and a platform to monitor situational awareness. RFD is supported by city Information Technology staff, though there are not dedicated individuals focused solely on the fire department. The IT staff does not support the existing radio network and equipment. An outside vendor, along with an RFD Captain, support the radio system.

Infrastructure

Modern information technology systems must have a solid infrastructure, including data retention, back-up systems, security, and dedicated hardware and software support resources.

Management, Control, & Security

RFD technology is managed and secured within city policies. While the department utilizes computers and software, technical management is accomplished by city IT staff, an outside vendor for the radio network, and fire department staff. Computers and software are password protected, and access is granted and maintained at the user level. Electronic records are backed up by the city.

Records Management Systems/Patient & Incident Reporting Systems

RFD utilizes technology to document incident responses. ImageTrend™ is utilized for both incident and patient care reporting. Additionally, the organization utilizes First Watch™, a performance dashboard aggregating several data sources for organization performance and situational awareness.

STAFFING **& PERSONNEL**

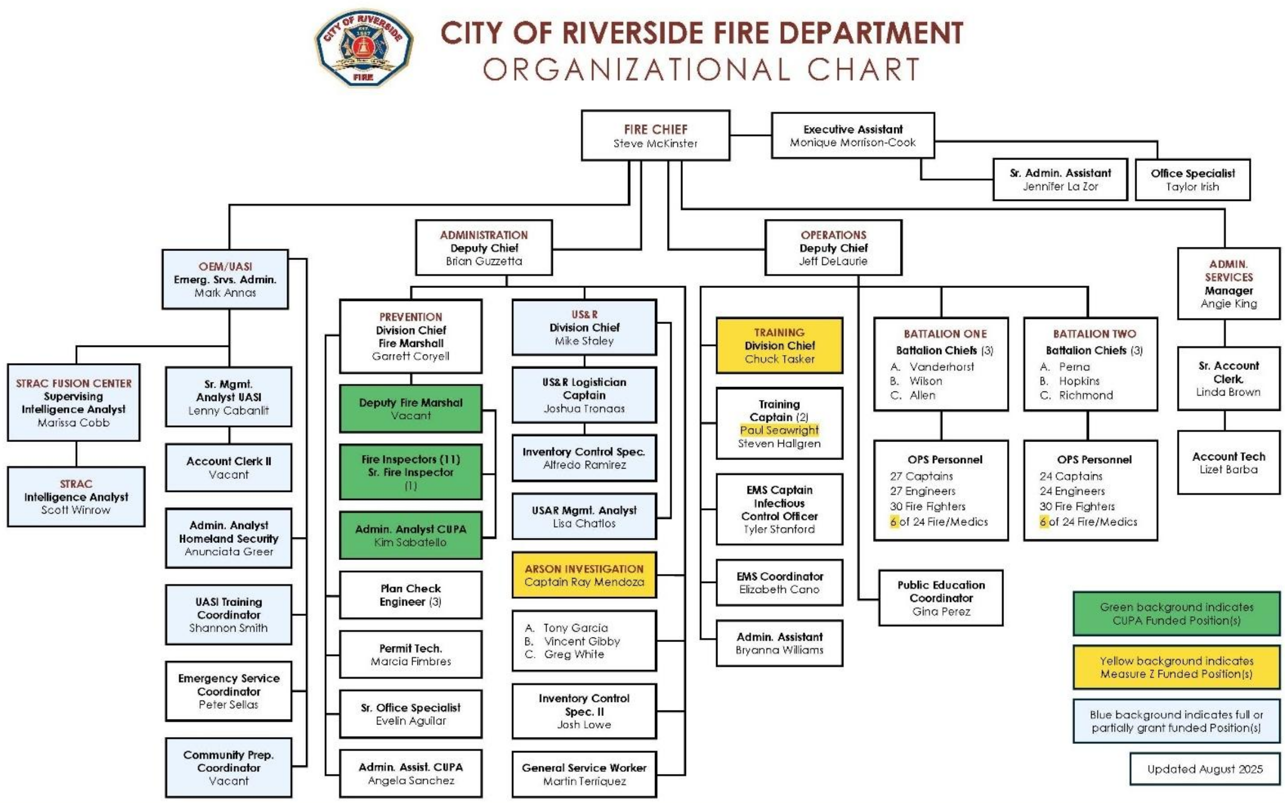
A government entity at its core is a service-based industry, and public safety is no different. An organization's ability to meet its service demands requires a workforce with enough training and depth to meet community expectations. In the following sections, AP Triton evaluates current staffing levels and administrative functions and makes recommendations based on best practices and national standards.

An organization also needs to have proper rules for effective personnel management. Well-defined, consistent, and documented policies and practices help employees understand their responsibilities and benefits. It also helps them chart their road to success and professional advancement.

The number of positions and personnel deployment depends on the organization's needs, mission, and resources. Similarly, the organization's structure, size, and legal requirements drive the administrative and managerial policies and practices. This section overviews RFD's staffing structure and human resources practices.

The following figure shows the current organizational chart provided by RFD.

Figure 29: Organizational Chart



ADMINISTRATION & SUPPORT STAFFING

The administrative and support functions are diverse, and the list of tasks can be extensive. Typical responsibilities include planning, organizing, directing, coordinating, finance, program evaluation, and public education. It is important to note that a fire department is a dynamic organizational model and may require staff to balance work efforts in many different areas simultaneously.

Typical responsibilities and duties of the Fire Chief include planning, organizing, directing, and budgeting for all aspects of the department's operations and serving as a senior management team member of the city's senior management team. Departmental administrative and operational responsibilities rest with the Fire Chief and two Deputy Chiefs. Organizational structure is based on three primary divisions including:

- Administration
- Emergency Management
- Operations

Administrative Services Manager and Emergency Service Administrator report to the Fire Chief and oversee city-wide Emergency Management and Administrative Services. The following figure details the program responsibilities in more detail.

Figure 30: Leadership Team—Program Responsibilities

Deputy Chief—Administration	Deputy Chief—Operations	Admin Services Manager (2)	Emergency Services Manager
Fire Prevention	Operations Division	Budget	Emergency Operations Center (EOC)
Arson Investigations	Training Division	Contracts & Agreements	Riverside Urban Area Security Initiative (UASI)
Urban Search & Rescue (US&R)	EMS	Accounting & Payroll	CERT
Accreditation	Public Education		
ISO Rating			

The following figure summarizes the current administrative and support service organizational structure of the Riverside Fire Department:

Figure 31: RFD Administrative and Support Staff—Full Time Equivalent Count

Position Title	Number of Positions	Hours/Week	Work Schedule
Fire Chief	1	40	M–F
Deputy Chief	2*	40	M–F
Division Chiefs (Includes Fire Marshal)	3	40	M–F
Deputy Fire Marshall	1	40	M–F
Administrative Captains	6	40	M–F
Fire Inspectors	11	40	M–F
Fire Investigators (S)	3	56	4–6 Kelly
Plan Reviewers	3	40	M–F
Admin Services and Emergency Services Manager	2	40	M–F
Accounting Technician	1	40	M–F
Educational Instructor	3	40	M–F
Emergency Services Coordinator/EMS Coordinator	1	40	M–F
Executive Assistant	1	40	M–F
Inventory Control Specialist I/II/General Service	3	40	M–F
Permit Technician	1	40	M–F
Senior Account Clerk	1	40	M–F
Senior Administrative/Administrative Assistant	4	40	M–F
Senior Office Specialist	3	40	M–F
Senior Management/Admin or Management Analyst	3	40	M–F
Total Fire Administrative FTEs	**54**		

*Administrative (1) and Operational (1) Deputy Chiefs

Administrative Services

The Administrative Services Manager and Executive Assistant report to the Fire Chief. As identified in the previous figure, administrative functions reflect budget maintenance, payroll processing, accounts payable, accounts receivable including mutual aid response reimbursement, oversight of contracts and agreements, and other support functions.

Fire Prevention

RFD's Fire Prevention Division is staffed with 20 employees reporting to the Fire Marshal (Division Chief). The department is tasked with managing two divisions; Fire and Life Safety and Building, coupled with being a Certified Unified Program Agency (CUPA). Fire prevention activities include new construction plan review, fire inspections of existing commercial occupancies, and fire hazard/fuel reduction inspections. CUPAs are legal entities acting as a centralized organization able to permit, inspect, manage, and enforce hazardous waste and hazardous materials programs.

Office of Emergency Management

The Office of Emergency Management (OEM) is responsible for city-wide emergency planning, training, community preparedness, and management of the Emergency Operations Center (EOC) and federal Urban Areas Security Initiative (UASI) grant program. RFD manages UASI for the Inland Empire, and nearly all positions within OEM are either partially or fully supported with grant funds.

Training & Emergency Medical Services

The Training Division is managed by a Division Chief who reports to the Deputy Chief of Operations. With a total staff of six personnel, the bureau is responsible for all fire, EMS, special operations, driver/operator, and new-hire training program design and coordination, and evaluations. Additionally, the Training Division is responsible for all facets of the EMS program which is based on an Advanced Life Support (ALS)/Paramedic scope of service. Supporting an ALS agency requires support staff for training, Quality Assurance (QA) with state and county benchmarks/protocols, controlled substance inventory and control, and a Quality Improvement (QI) process to optimize patient care and service delivery. Lastly, the Division provides Public Information Officer (PIO) coverage for the fire department.

External Support Services

RFD is dependent on other city departments to support both administrative and operational functions. support.

Police Department

The police department provides 911 dispatch services to RFD. The fire department budget provides funding for one fire-designated dispatcher position on a full-time basis (24/7/365).

General Services—Fleet Management

The fire department funds certified fire mechanics at a dedicated shop located at the city's corporation yard.

Communications & Technology

The Innovation and Technology Department (IT) for the City of Riverside provides IT support to RFD. The support function includes all technology platforms including hardware and software at both RFD facilities and the fleet. The radio network is not supported by IT, and the department relies on shift-based employees, Riverside Public Utilities, private contractors, and the county to support the radio system.

Human Resources & Finance

These city departments support RFD Administrative Services with comprehensive fiscal and personnel management resources.

Administrative and Support Staffing Discussion

During the site visit, AP Triton noted a common theme from all employee group conversations. A lack of administrative and support headcount, along with an inefficient allocation of program responsibilities to shift-based personnel were clearly articulated. Additionally, staffing challenges in the Fire Prevention Division, Office of Emergency Management, Training Division, and the Dispatch Center were also identified.

There has been a dynamic shift in the RFD. Call volume has increased, development of both residential and industrial projects is in the planning process, required wildfire mitigation and defensible space inspections, and an increased reliance on technology and data analysis are all identified factors shared by RFD staff. Recommendations related to potential reorganization of program responsibilities and increased administrative staffing needs are addressed in the Master Plan section of the report.

OPERATIONS STAFFING

The Deputy Chief of Operations is responsible for emergency response staffing (suppression) along with Training, EMS, and Public Education. One Division Chief reports to the Deputy, supervising Training/EMS. This section will focus on suppression personnel exclusively. A summary of full-time staffing follows.

Figure 32: Operations Staff—Full Time Equivalent Count

Position Title	Number of Positions	Hours/Week	Work Schedule
Battalion Chiefs	6	56	4–6 Kelly
Captains	51	56	4–6 Kelly
Engineers	51	56	4–6 Kelly
Firefighter – Medic	60	56	4–6 Kelly
Firefighter – EMT	48	56	4–6 Kelly
Total Fire Operations FTEs	**216**		

Shift-Based Scheduling

RFD staffing is based on a three-platoon system operating on two consecutive 24-hour shift rotations per position. With this model, response personnel work a 56-hour work week, averaged over a 24-day Fair Labor Standards Act (FLSA) defined work period.

Minimum daily suppression staffing serving the city includes:

Figure 33: Minimum Daily Staffing[15]

Position Title	Number of Positions
Captain	17
Engineer	17
Firefighter – EMT/Medic	36
Battalion Chief	2
Minimum Daily Staffing	**72**

[15] Memorandum of Understanding Between the City of Riverside and the Riverside Firefighters' Association, Inc. January 1, 2023–December 31, 2025.

Operations Staff Distribution

The Fire Captain is the company officer on the assigned apparatus and the station manager. Engineers are responsible responding fire apparatus to emergency incidents and for all aspects of maintaining fire apparatus and related equipment. Battalion Chiefs are responsible for several stations on a shift and serve as the Incident Commander on more complex incidents. Daily staffing per fire station is dependent on the number of apparatus assigned to a given station, MOU obligations, with a minimum crew size of four at a fire station. The following figure identifies staffing levels at each fire station.

Figure 34: Operational Staffing & Allocation

Unit	Type	Minimum Staffing
Fire Station 1 – 3401 University Avenue		
Engine 1	Engine	(3) 1 Captain, 1 Engineer, 1 Firefighter-Medic
Truck 1	Truck	(4) 1 Captain, 1 Engineer, 1 Firefighters, Firefighter-Medic
Squad 1	Squad	(2) 1 Firefighter-Medic, 1 Firefighter
Battalion 1	Battalion	1 Battalion Chief
Fire Station 2 – 9450 Andrew Street		
Engine 2	Engine	(3) 1 Captain, 1 Engineer, 1 Firefighter-Medic
Truck 2	Truck	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Squad 2	Squad	(2) 1 Firefighter-Medic, 1 Firefighter
Battalion 2	Battalion	1 Battalion Chief
Fire Station 3 – 6395 Riverside Avenue		
Engine 3	Engine	(3) 1 Captain, 1 Engineer, 1 Firefighter-Medic
Truck 3	Truck	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 4 – 3510 Cranford Avenue		
Engine 4	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, 1 Firefighter-Medic
Fire Station 5 – 5883 Arlington Avenue		
Engine 5	Engine	(3) 1 Captain, 1 Engineer, 1 Firefighter-Medic
Rescue Ambulance 5	Ambulance	(2) 1 Firefighter-Medic, 1 Firefighter
Fire Station 6 – 1077 Orange Street		
Engine 6	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 7 – 10191 Cypress Avenue		
Engine 7	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 8 – 11076 Hole Avenue		
Engine 8	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 9 – 6674 Alessandro Boulevard		
Engine 9	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 10 – 2590 Jefferson Avenue		
Engine 10	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic

Unit	Type	Minimum Staffing
Fire Station 11 – 19595 Orange Terrace Parkway		
Engine 11	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 12 – 10692 Indiana Avenue		
Engine 12	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 13 – 6490 Sycamore Canyon Boulevard		
Truck 13	Truck	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic
Fire Station 14 – 725 Central Avenue		
Engine 14	Engine	(4) 1 Captain, 1 Engineer, 1 Firefighter, and 1 Firefighter-Medic

Operations Staff Scheduling Methodology

While the total number of positions allocated to the fire department is a city policy decision, maintaining minimum daily staffing requires personnel be available to backfill for scheduled vacation leaves, unscheduled sick leaves, and unscheduled strike team or mutual aid requests. Backfilling positions is typically completed by hiring off-duty personnel back on overtime, scheduling additional personnel on a shift to provide relief coverage, or "force hiring" employees scheduled to complete their regular shift to remain to fill vacancies. AP Triton noted that the Memorandum of Understanding (MOU) between the city and represented employees includes a provision limiting the number of consecutive hours a shift-based employee can work. Apart from specified circumstances, employees are limited to 96 consecutive hours worked without a rest period.

Operations Staff Relief Analysis

While the total number of positions allocated to the Determining the theoretical number of employees required to provide adequate relief coverage is referred to as a Staffing Relief Factor (SRF). To quantify this factor, AP Triton analyzed deployment and leave usage history provided by the department, which included comparing the minimum daily staffing requirement, the total number of operations personnel on staff, and the historical average amount of leave used by these employees. The SRF quantifies how many personnel the department may need to maintain minimum daily staffing, excluding the two Battalion Chief positions. The following schedule reflects the SRF to fill the minimum 72 daily staffing positions.

Figure 35: Elements Used to Calculate Staffing Relief Factor

Shift Schedule	Annual Hours	Average Workweek	Average Vacation Leave per Employee	Average Sick Leave per Employee	Average Other Leaves per Employee[1]
4–6 Kelly	2,912	56	181	111	151

[1] Includes Holiday, FMLA, Long-Term Disability, Bereavement, Military, and other leaves.

Based on the preceding values, AP Triton calculated a Staffing Relief Factor of 1.24.

The SRF was then multiplied by three to determine the number of shift-based personnel required for every 24-hour shift. Based on the historical leave usage, each position requires 3.72 full-time employees.

Figure 36: Staffing Relief Factor

SRF	Min Daily Staffing	Theoretical Total Shortage of Personnel
1.24	72	51 (All shifts)

Operations Staffing Level Discussion

The SRF analysis reflects that RFD theoretically has a shortage of 51 personnel needed to staff 72 positions 24-hours per day. Due to the financial impact of new-hire employee benefit costs, the city has elected to fill open positions utilizing the existing workforce compensated on an overtime rate.

As was stated in the Administrative Staffing section, the city has experienced increased call volume, along with additional residential and industrial projects in the planning process. Of the 13 engine companies deployed by RFD each day, four (29%) are staffed with three-personnel rather than four. This staffing differential creates inconsistent response capabilities and challenges for the Battalion Chiefs/Incident Commanders on more complex incidents. Additionally, due to the geographic distances and roadway access/travel times, the consideration of a third daily Battalion Chief position is warranted. Recommendations for changes to operational staffing levels are addressed later in this report.

PERSONNEL MANAGEMENT STRUCTURE AND SYSTEMS

The fire service relies heavily on department members to accomplish its mission. Effectively managing, supporting, and organizing staff must be a priority to provide successful service delivery. The investment in on boarding a new first responder is significant in terms of time and cost. The cost of retaining that new employee requires a positive work environment, along with competitive salary and benefits. Having a strong human resources presence, along with documented policies, procedures, and programs is critical to maintaining employee retention, productivity, and health and wellness.

Policies, Rules, Regulations & Guidelines

RFD employees are subject to overarching city policies as follows, along with department-specific Standard Operating Procedures (SOPs). These documents are available in each station, and SOPs are revised as needed or reviewed on a three-year cycle. All city employees are subject to city-wide policies outlined in the following resources:[16]

- City of Riverside Administrative Policies and Procedures for Human Resources/Personnel Policies and Procedures
- Riverside City Charter
- Riverside Municipal Code
- Employee/Employer Relations Resolution
- State and Federal laws

RFD employees are provided with additional guidance with the following documents:

- Standard Operating Procedures (SOPs)
- Existing Memorandum of Understanding (MOU) between the City and Firefighters bargaining unit
- County Emergency Medical Services (EMS) policies and protocols
- State and Federal training and certification requirements

Personnel Reports and Record Keeping

The Human Resources department maintains employee records and other related documentation including performance evaluations, injury and accident records, and health/exposure records. Both current and archived records are managed by the Human Resources department.

Compensation Systems

RFD's compensation system is managed by the City of Riverside, and is primarily based on position and seniority. Compensation includes hourly wages and annual salaries, Social Security (non-sworn), deferred compensation, various paid and unpaid leave programs, health and life insurance, retirement benefits, longevity pay, and recognized holidays. The MOU between the city and members of the Firefighters' bargaining group which includes Chief Officers, Captains, Engineers, and Firefighters. The Fire Chief's compensation is defined in an employment agreement, while compensation for other employees not included in the MOU is defined by city policy.

[16] https://online.fliphtml5.com/ltghc/rork/.

Application and Recruitment Process

To be considered for the entry level position of Firefighter, an applicant must possess basic minimum qualifications including:

- Equivalent to the completion of the 12th grade
- Completion of a State Fire Marshal approved Fire Academy
- Class C Driver's License
- Emergency Medical Technician (EMT) or Paramedic certification/license

Additionally, the applicant must register in a statewide database and have a passing score of at least 70% on a standardized test (Firefighter Candidate Testing Center-FCTC), along with a current Candidate Physical Agility Test (CPAT) card.

The hiring process includes interviews, background check, psychological assessment and a pre-employment physical examination. During the one-year probationary period, candidates must pass periodic skill-based and written examinations.

The RFD employs an in-house assessment center process for the positions of Captain, Engineer, and Battalion Chief. All other positions within the organization are based on a city-wide application and evaluation process.

HEALTH AND WELLNESS PROGRAM

RFD has a defined health and wellness program for operational personnel. While new hires complete a pre-employment physical examination, all other operational personnel are provided with an annual physical examination. An Employee Assistance Program (EAP), Peer Support Program, and Critical Incident Stress Debriefings are also made available.

CAPITAL FACILITIES, **APPARATUS, & EQUIPMENT**

Capital facilities and apparatus are essential for a fire department's mission. Regardless of how many firefighters and their competency, the RFD cannot effectively perform emergency duties without the proper capital resources for operations personnel. The key capital resources for emergency operations are facilities and apparatus. This section of the report evaluates RFD fire stations and apparatus.

FIRE STATION FEATURES

Fire stations are crucial for a fire department to deliver emergency services to communities. Their strategic location plays a significant role in response times. This can be the difference in saving a life from a cardiac arrest or confining a structure fire to one room instead of losing the entire structure. Fire stations must be designed to adequately accommodate personnel, equipment, and apparatus while meeting the needs of the organization and community. Fire station activities should be thoroughly evaluated to ensure the facility is appropriately sized and functional. Key functions to consider include:

- Kitchen facilities, appliances, and storage
- Residential living spaces and sleeping quarters for on-duty personnel (inclusive of all genders)
- Bathrooms and showers (inclusive of all genders)
- Areas for training and classrooms
- A fitness area for firefighters
- Spaces for housing and cleaning apparatus and equipment, including areas for decontamination and biohazard disposal
- Administrative and management offices, computer stations, and office facilities
- Public meeting space

In gathering information from the RFD, AP Triton asked the fire department to rate the condition of its fire stations using the following criteria. The results will be seen in the subsequent figures.

Figure 37: Fire Station Rating Criteria

Excellent	Like new condition. No visible structural defects. The facility is clean and well maintained. Interior layout is conducive to function with no unnecessary impediments to the apparatus bays or offices. No significant defect history. Building design and construction match the building's purposes. Age is typically less than 10 years.
Good	The exterior has a good appearance with minor or no defects. Clean lines, good work flow design, and only minor wear of the building interior. Roof and apparatus apron are in good working order, absent any significant full-thickness cracks or crumbling of apron surface or visible roof patches or leaks. Building design and construction match the building's purposes. Age is typically less than 20 years.
Fair	The building appears to be structurally sound with weathered appearance and minor to moderate non-structural defects. The interior condition shows normal wear and tear, but flows effectively to the apparatus bay or offices. Mechanical systems are in working order. Building design and construction may not match the building's purposes well. Showing increasing age-related maintenance, but with no critical defects. Age is typically 30 years or more.
Poor	The building appears to be cosmetically weathered and worn with potentially structural defects, although not imminently dangerous or unsafe. Large, multiple full-thickness cracks and crumbling of concrete on apron may exist. The roof has evidence of leaking and/or multiple repairs. The interior is poorly maintained or showing signs of advanced deterioration with moderate to significant non-structural defects. Problematic age-related maintenance and/or major defects are evident. May not be well suited to its intended purpose. Age is typically greater than 40 years.

Figure 38: Fire Station 1

Station Name/Number:	STATION 1
Address/Physical Location:	3401 UNIVERSITY AVE., RIVERSIDE, CA 92501

General Description:

Fire Station 1 is located in downtown Riverside. Station 1 is a multi-company station staffing Engine 1, Truck 1, Squad 1, and Battalion 1. This station is Battalion 1's headquarters. Its response area includes downtown, portions of the Northside, and the Eastside. The space and design are sufficient for current and future modern firefighting operations.

Structure						
Date of Original Construction	2013					
General Condition	EXCELLENT					
Seismic Protection	YES					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	4	Back-Ins	0	Total Bays:	4
Total Square Footage	30,412					
Facilities Available						
Sleeping Quarters	Bedrooms	14	Beds	14	Dorm Beds	14
Maximum Staffing Capability	14	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	YES					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	YES					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 39: Fire Station 2

Station Name/Number:	STATION 2
Address/Physical Location:	9450 ANDREW ST., RIVERSIDE, CA 92503
	**General Description:** Fire Station 2 is located on Andrew St., Arlington. Station 2 is a multi-company station. This station is Battalion 2's headquarters. It also facilitates the Hazardous Materials Team and Unmanned Remote Control Aerial program. It is in good condition and will need some improvements because of its age.

Structure							
Date of Original Construction	1971						
General Condition	FAIR						
Seismic Protection	NO						
Auxiliary Power	YES						
ADA Compliant	YES						
Number of Apparatus Bays	Drive-Throughs	3	Back-Ins	0	Total Bays:	3	
Total Square Footage	7,558						
Facilities Available							
Sleeping Quarters	Bedrooms	11	Beds	11	Dorm Beds	10	
Maximum Staffing Capability	11	(Total number of staff that can be housed at station)					
Bathroom/Shower Facilities	YES						
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y	
Exercise/Workout Facilities	YES						
Kitchen Facilities	YES						
Individual Lockers Assigned	YES						
Training/Meeting Rooms	YES						
Washer/Dryer/Extractor	YES						
Safety & Security							
Station Sprinklered	YES						
Smoke & CO Detection	YES						
Decon. & Biological Disposal	YES						
Security System	NO						
Apparatus Exhaust System	YES						

Figure 40: Fire Station 3

Station Name/Number:	STATION 3
Address/Physical Location:	6395 RIVERSIDE AVE. RIVERSIDE, CA 92504
	**General Description:** Fire Station 3 is located on Riverside Ave, Magnolia Center (Midtown). It is a multi-company station. This Station facilitates the technical rescue team and all personnel are members of the California Urban Search and Rescue Task Force. The station is also responsible for filling of SCBA cylinders.

Structure						
Date of Original Construction	1962					
General Condition	FAIR					
Seismic Protection	NO					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	3	Back-Ins	0	Total Bays:	3
Total Square Footage	10,606					
Facilities Available						
Sleeping Quarters	Bedrooms	10	Beds	8	Dorm Beds	8
Maximum Staffing Capability	10	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	YES					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	YES					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 41: Fire Station 4

Station Name/Number:	STATION 4
Address/Physical Location:	3510 CRANFORD AVE., RIVERSIDE, CA 92506

General Description:

Fire Station 4, the University Fire Station, is located on Cranford Ave, University. It is a single engine company station. Engine 4 cross-staffs Water Tender 4. Its response areas include Eastside and University. It is in fair condition and will need some improvements because of its age.

Structure						
Date of Original Construction	1962					
General Condition	FAIR					
Seismic Protection	NO					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	4,363					
Facilities Available						
Sleeping Quarters	Bedrooms	5	Beds	4	Dorm Beds	4
Maximum Staffing Capability	5	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	YES					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	NO					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 42: Fire Station 5

Station Name/Number:	STATION 5
Address/Physical Location:	5883 ARLINGTON AVE., RIVERSIDE, CA 92504

General Description:

Fire Station 5, the Airport Fire Station, is located on Arlington Ave, Airport. It is a multi-company station staffing Engine 5 and Squad 5. Station 5 personnel cross-staff Breathing Support 5. It also facilitates the SCBA program.

Structure						
Date of Original Construction	2005					
General Condition	EXCELLENT					
Seismic Protection	YES					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	3	Back-Ins	0	Total Bays:	3
Total Square Footage	9,000					
Facilities Available						
Sleeping Quarters	Bedrooms	7	Beds	6	Dorm Beds	6
Maximum Staffing Capability	7	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	YES					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	YES					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 43: Fire Station 6

Station Name/Number:	Station 6					
Address/Physical Location:	1077 ORANGE ST., RIVERSIDE, CA 92501					
	**General Description:** Fire Station 6 is located on Orange St, Northside. It is a single engine company station staffing Engine 6. On duty Station 6 personnel include: one captain, one engineer, one firefighter, and one firefighter/paramedic. It serves the Northside area and portions of Hunter Industrial Park.					
Structure						
Date of Original Construction	2012					
General Condition	EXCELLENT					
Seismic Protection	YES					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	7,161					
Facilities Available						
Sleeping Quarters	Bedrooms	6	Beds	4	Dorm Beds	4
Maximum Staffing Capability	6	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	YES					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	YES					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 44: Fire Station 7

Station Name/Number:	STATION 7
Address/Physical Location:	10191 CYPRESS AVE., RIVERSIDE, CA 92503

General Description:

Fire Station 7 is a single engine company station Fire Station 7 is located on Cypress Ave, Arlanza. It is a single engine company station staffing Engine 7. Engine 7 is cross-staffed with Brush 7. It serves Arlanza, portions of La Sierra Acres, and portions of La Sierra Hills. It is in fair condition and will need some improvements because of its age.

Structure						
Date of Original Construction	1967					
General Condition	FAIR					
Seismic Protection	NO					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	3,902					
Facilities Available						
Sleeping Quarters	Bedrooms	5	Beds	4	Dorm Beds	4
Maximum Staffing Capability	5	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	NO					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	NO					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 45: Fire Station 8

Station Name/Number:	STATION 8
Address/Physical Location:	11076 HOLE AVE., RIVESIDE, CA 92505

General Description:
Fire Station 8 is located on Hole Ave., La Sierra. It is a single engine company station staffing Engine 8. Engine 8 is cross-staffed with Cal-OES Engine 369. Its response areas include La Sierra and portions of Arlanza. It is in fair condition and will need some improvements for future modern firefighting operations.

Structure						
Date of Original Construction	1977					
General Condition	FAIR					
Seismic Protection	NO					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	5,719					
Facilities Available						
Sleeping Quarters	Bedrooms	5	Beds	4	Dorm Beds	4
Maximum Staffing Capability	5	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	NO					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	NO					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 46: Fire Station 9

Station Name/Number:	STATION 9					
Address/Physical Location:	6674 ALESSANDRO BLVD., RIVERSIDE, CA 92506					
	**General Description:** Fire Station 9 is a single engine company station. It facilitates the Horticulture program and SCBA Air Mask program/annual mask FIT testing. Its response areas include Canyon Crest, and portions of Mission Grove, Sycamore Canyon, and Alessandro. It is in fair condition and will need some improvements for modern firefighting operations.					
Structure						
Date of Original Construction	1971					
General Condition	FAIR					
Seismic Protection	NO					
Auxiliary Power	YES					
ADA Compliant	NO					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	4,247					
Facilities Available						
Sleeping Quarters	Bedrooms	4	Beds	4	Dorm Beds	4
Maximum Staffing Capability	4	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	NO					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	NO					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	NO					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 47: Fire Station 10

Station Name/Number:	STATION 10
Address/Physical Location:	2590 JEFFERSON AVE., RIVERSIDE, CA 92504

General Description:

Fire Station 10 is located on Jefferson St., Arlington Heights. It is a single engine company station. It facilitates the Fire Hose Program. Its response areas include Casa Blanca, and portions of Presidential Park, Arlington Heights, Hawarden Hills, and Alessandro Heights. It is in poor condition and needs improvements for firefighting operations.

Structure							
Date of Original Construction	1975						
General Condition	POOR						
Seismic Protection	NO						
Auxiliary Power	YES						
ADA Compliant	NO						
Number of Apparatus Bays	Drive-Throughs	0	Back-Ins	1	Total Bays:	1	
Total Square Footage	3,109						
Facilities Available							
Sleeping Quarters	Bedrooms	4	Beds	4	Dorm Beds	4	
Maximum Staffing Capability	4	(Total number of staff that can be housed at station)					
Bathroom/Shower Facilities	YES						
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y	
Exercise/Workout Facilities	YES						
Kitchen Facilities	YES						
Individual Lockers Assigned	YES						
Training/Meeting Rooms	NO						
Washer/Dryer/Extractor	YES						
Safety & Security							
Station Sprinklered	NO						
Smoke & CO Detection	YES						
Decon. & Biological Disposal	NO						
Security System	NO						
Apparatus Exhaust System	YES						

Figure 48: Fire Station 11

Station Name/Number:	STATION 11					
Address/Physical Location:	19595 ORANGE TERRACE PKWY., RIVERSIDE, CA 92508					
	**General Description:** Fire Station 11 is located on Orange Terrace Parkway, Orangecrest. It is a single engine company station. Engine 11 is cross-staffed with Cal-OES Engine 353. It serves Orangecrest, and portions of Alessandro Heights, Mission Grove, and Meridian JPA. It is in good condition and will need improvements for modern firefighting operations.					
Structure						
Date of Original Construction	1991					
General Condition	GOOD					
Seismic Protection	YES					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	5,364					
Facilities Available						
Sleeping Quarters	Bedrooms	7	Beds	4	Dorm Beds	4
Maximum Staffing Capability	7	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	NO					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	NO					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 49: Fire Station 12

Station Name/Number:	STATION 12					
Address/Physical Location:	10692 INDIANA AVE., RIVERSIDE, CA 92503					
	**General Description:** Fire Station 12 is located on Indiana Ave, La Sierra South. It is a single engine company station. Engine 12 is cross-staffed with Decon 12. It serves La Sierra South and portions of La Sierra, Arlington South, and Arlington Heights. It is in good condition and will need improvements for future modern firefighting operations.					
Structure						
Date of Original Construction	1996					
General Condition	GOOD					
Seismic Protection	YES					
Auxiliary Power	YES					
ADA Compliant	YES					
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2
Total Square Footage	12,000					
Facilities Available						
Sleeping Quarters	Bedrooms	8	Beds	7	Dorm Beds	7
Maximum Staffing Capability	8	(Total number of staff that can be housed at station)				
Bathroom/Shower Facilities	YES					
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y
Exercise/Workout Facilities	YES					
Kitchen Facilities	YES					
Individual Lockers Assigned	YES					
Training/Meeting Rooms	YES					
Washer/Dryer/Extractor	YES					
Safety & Security						
Station Sprinklered	YES					
Smoke & CO Detection	YES					
Decon. & Biological Disposal	NO					
Security System	NO					
Apparatus Exhaust System	YES					

Figure 50: Fire Station 13

Station Name/Number:	STATION 13
Address/Physical Location:	6490 SYCAMORE CANYON BLVD., RIVERSIDE, CA 92507

General Description:

Fire Station 13 is located on Sycamore Canyon Blvd., Sycamore Canyon. It is a single engine company station. It facilitates Fire Nozzles and Uniforms programs. It serves portions of Sycamore Canyon, Canyon Crest, Meridian JPA, and Canyon Springs. It is in good condition and needs improvements for modern firefighting operations.

Structure							
Date of Original Construction	2012						
General Condition	GOOD						
Seismic Protection	YES						
Auxiliary Power	YES						
ADA Compliant	YES						
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2	
Total Square Footage	7,161						
Facilities Available							
Sleeping Quarters	Bedrooms	6	Beds	4	Dorm Beds	4	
Maximum Staffing Capability	6	(Total number of staff that can be housed at station)					
Bathroom/Shower Facilities	YES						
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y	
Exercise/Workout Facilities	YES						
Kitchen Facilities	YES						
Individual Lockers Assigned	YES						
Training/Meeting Rooms	NO						
Washer/Dryer/Extractor	YES						
Safety & Security							
Station Sprinklered	YES						
Smoke & CO Detection	YES						
Decon. & Biological Disposal	NO						
Security System	NO						
Apparatus Exhaust System	YES						

Figure 51: Fire Station 14

Station Name/Number:	STATION 14						
Address/Physical Location:	725 CENTRAL AVE., RIVERSIDE, CA 92507						
	**General Description:** Fire Station 14 is located on Central Ave, Canyon Crest. It is a single engine company station. Engine 14 is cross-staffed with Cal-OES Engine 8635. On duty Station 14 personnel include: one captain, one engineer, one firefighter, and one firefighter/paramedic. It serves Canyon Crest, and portions of Sycamore Canyon Park and University.						
Structure							
Date of Original Construction	2012						
General Condition	EXCELLENT						
Seismic Protection	YES						
Auxiliary Power	YES						
ADA Compliant	YES						
Number of Apparatus Bays	Drive-Throughs	2	Back-Ins	0	Total Bays:	2	
Total Square Footage	7,161						
Facilities Available							
Sleeping Quarters	Bedrooms	6	Beds	4	Dorm Beds	4	
Maximum Staffing Capability	6	(Total number of staff that can be housed at station)					
Bathroom/Shower Facilities	YES						
Gender Segregation (Y/N)	Bathrooms	Y	Showers	Y	Bedrooms	Y	
Exercise/Workout Facilities	YES						
Kitchen Facilities	YES						
Individual Lockers Assigned	YES						
Training/Meeting Rooms	NO						
Washer/Dryer/Extractor	YES						
Safety & Security							
Station Sprinklered	YES						
Smoke & CO Detection	YES						
Decon. & Biological Disposal	NO						
Security System	NO						
Apparatus Exhaust System	YES						

Fire Stations Discussion

Only one of RFD's fire stations was rated as "Poor" condition. Six fire stations were rated as "Fair" condition, while three were rated in "Good" condition and four in "Excellent" condition. The ages of the fire stations range from 12 to 63 years. The following figure summarizes the features of RFD's fire stations.

Figure 52: Summary of RFD's Fire Stations

Fire Station	Square Footage	Apparatus Bays	Staffing Capacity	General Condition	Station Age
Station 1	30,412	4	14	Excellent	12 years
Station 2	7,558	3	11	Fair	54 years
Station 3	10,606	3	10	Fair	63 years
Station 4	4,363	2	5	Fair	63 years
Station 5	9,000	3	7	Excellent	20 years
Station 6	7,161	2	6	Excellent	13 years
Station 7	3,902	2	5	Fair	58 years
Station 8	5,719	2	5	Fair	48 years
Station 9	4,247	2	4	Fair	54 years
Station 10	3,109	1	4	Poor	50 years
Station 11	5,364	2	7	Good	34 years
Station 12	12,000	2	8	Good	29 years
Station 13	7,161	2	6	Good	13 years
Station 14	7,161	2	6	Excellent	13 years

The fire stations were evaluated based on the National Fire Protection Association (NFPA) 1500 Standard on Fire Department Occupational Safety, Health, and Wellness Program and information provided by the RFD. A walk-through inspection of each facility was completed in 2025.

Fire Station 1

Fire Station 1 was built in 2013 and meets modern fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. This station is Battalion 1's headquarters. It is rated as "Excellent" condition. The space and design are sufficient for current and future modern firefighting operations.

Fire Station 2

Fire Station 2 was built in 1971 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. This station is Battalion 2's headquarters. It also facilitates the Hazardous Materials Team. It is rated as "Fair" condition. Because of its age, it will need some improvements for current and future modern firefighting operations.

Fire Station 3

Fire Station 3 was built in 1962 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. This station facilitates the technical rescue team. It is rated as "Fair" condition. Because of its age, it will need some improvements for current and future modern firefighting operations.

Fire Station 4

Fire Station 4 was built in 1962 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. It is rated as "Fair" condition. It will need some improvements for current and future modern firefighting operations.

Fire Station 5

Fire Station 5 was built in 2005 and meets modern fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. It is rated as "Excellent" condition. The facilities are sufficient for current and future modern firefighting operations.

Fire Station 6

Fire Station 6 was built in 2012 and meets modern fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. It is rated as "Excellent" condition. The facilities are sufficient for current and future modern firefighting operations.

Fire Station 7

Fire Station 7 was built in 1967 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The fire station does not have training/meeting rooms. It is rated as "Fair" condition. Because of its age, it will need some improvements for current and future modern firefighting operations.

Fire Station 8

Fire Station 8 was built in 1977 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The station does not have training/meeting rooms. It is rated as "Fair" condition. It will need some improvements for future modern firefighting operations.

Fire Station 9

Fire Station 9 was built in 1971 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The station does not have training/meeting rooms. It is rated as "Fair" condition. It will need some improvements for future modern firefighting operations.

Fire Station 10

Fire Station 10 was built in 1975 and barely meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The station does not have training/meeting rooms. It is the only fire station in Riverside that is rated as "Poor" condition. Because of its age and condition, it will need thorough improvements for current and future modern firefighting operations.

Fire Station 11

Fire Station 11 was built in 1991 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The station does not have training/meeting rooms. It is rated as "Good" condition. It will need some improvements for future modern firefighting operations.

Fire Station 12

Fire Station 12 was built in 1996 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, a gym, and a training room. It is rated as "Good" condition. It will need some improvements for future modern firefighting operations.

Fire Station 13

Fire Station 13 was built in 2012 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The station does not have training/meeting rooms. It is rated as "Good" condition. It will need some improvements for future modern firefighting operations.

Fire Station 14

Fire Station 14 was built in 2012 and meets fire service needs. It provides separate spaces for turnout gear, individual showers, individual rooms, kitchen facilities, and a gym. The station does not have training/meeting rooms. It is rated as "Excellent" condition. The space and design are sufficient for current and future modern firefighting operations.

Facility Replacement and Improvements

Most of RFD's fire stations are in good condition and meet the needs of modern fire services. As the firefighting environment has evolved, so have the technology, equipment, and safety systems required to meet new demands. Older buildings often lack the space or engineered systems to accommodate these updated requirements. While all buildings require routine maintenance, fire stations need even more attention due to their continuous occupancy. Despite an active maintenance program, evidence shows that Fire Station 10 will require maintenance and remodeling. Overall, the stations were clean and organized, suggesting that the crews take pride in maintaining their fire stations and facilities.

In 2012, the RFD successfully constructed several new fire stations. Fire Stations 3 and 4 are now the oldest and need upgrades. It is essential to have a maintenance schedule or capital improvement plan to address the necessary improvements for these two stations and maintain the others. Regular maintenance and the scheduled replacement of specialized equipment are critical to keeping the stations in good condition. Planning for updates and repairs to systems such as heating and air conditioning (HVAC), generators, roofs, driveways, parking areas, security gates, painting, carpet replacement, and small appliances can help control costs and extend the service life of the buildings. Additionally, establishing a facility replacement and maintenance plan allows the RFD to manage the ongoing needs of each station more efficiently.

CAPITAL APPARATUS & EQUIPMENT

Fire departments rely on their ability to safely transport personnel and equipment to the scene of an emergency incident. Fire apparatus, ambulances, command units, and other emergency response vehicles must be reliable enough to transport firefighters and equipment quickly and safely to the incident scene. Additionally, these vehicles must be properly equipped and fully functional to ensure the delivery of emergency services is not compromised. The equipment must be appropriate, serviceable, dependable, and ready to function when needed.

As part of this study, AP Triton requested that the RFD provide a complete inventory of its fleet (including suppression apparatus, command and support vehicles, specialty units, etc.). For each vehicle listed, the RFD was asked to rate its condition using the criteria described in the following figure, which will be shown in the subsequent apparatus inventory figures.

Figure 53: Vehicle Condition Criteria

Evaluation Components	Points Assignment Criteria	
Age:	One point for every year of chronological age, based on in-service date.	
Miles/Hours:	One point for each 10,000 miles or 1,000 hours.	
Service:	1, 3, or 5 points are assigned based on service-type received (e.g., a pumper would be given a 5 since it is classified as severe duty service).	
Condition:	This category takes into consideration body condition, rust interior condition, accident history, anticipated repairs, etc. The better the condition, the lower the assignment of points.	
Reliability:	Points are assigned as 1, 3, or 5, depending on the frequency a vehicle is in for repair (e.g., a 5 would be assigned to a vehicle in the shop two or more times per month on average; while a 1 would be assigned to a vehicle in the shop on average of once every 3 months or less.	
Point Ranges	**Condition Rating**	**Condition Description**
Under 18 points	Condition I	Excellent
18–22 points	Condition II	Good
23–27 points	Condition III	Fair (consider replacement)
28 points or higher	Condition IV	Poor (immediate replacement)

As requested, the RFD completed an evaluation of its apparatus and vehicles. The following figure is a detailed list of the frontline fire suppression apparatus and their condition.

Figure 54: RFD Frontline Fire Apparatus

Apparatus	Type	Manufacturer	Year	Condition	Mileage	Location
E448	Engine	Pierce	2019	Good	56,630	Station 1
E413	Engine	KME	2011	Fair	101,453	Station 2
E440	Engine	KME	2016	Fair	89,178	Station 3
E441	Engine	KME	2016	Fair	100,141	Station 4
E449	Engine	Pierce	2019	Good	57,322	Station 5
E453	Engine	Pierce	2019	Good	58,410	Station 6
E450	Engine	Pierce	2019	Good	60,555	Station 7
E451	Engine	Pierce	2019	Good	61,906	Station 8
E454	Engine	Pierce	2019	Good	49,159	Station 9
E484	Engine	Pierce	2022	Excellent	12,824	Station 10
E452	Engine	Pierce	2019	Good	49,635	Station 11
E455	Engine	Pierce	2019	Good	72,160	Station 12
E483	Engine	Pierce	2022	Excellent	16,482	Station 14
T020	Truck	Pierce	2019	Good	30,521	Station 1
T024	Truck	Pierce	2020	Good	25,073	Station 2
T022	Truck	Pierce	2019	Good	35,617	Station 3
T021	Truck	Pierce	2019	Good	42,174	Station 13

The RFD maintained 13 frontline engines and four trucks when this study was conducted. Two frontline engines were in "Excellent" condition, eight were in "Good" condition, and three were in "Fair" condition, while all the four trucks were in "Good" condition. Frontline apparatus classified as "Fair" or "Poor" condition should be considered for replacement. The RFD's frontline engines range in age from 3 to 14 years, with an average age of 6.5 years. Three frontline trucks are 6 years old, while one is 5 years old.

In addition to the frontline fire apparatus, the RFD maintains seven reserve engines and a reserve truck. These apparatuses are placed into service when the frontline apparatus is out of service. The following figure is a detailed list of the reserve fire apparatus and their condition.

Figure 55: RFD Reserve Fire Apparatus

Apparatus	Type	Manufacturer	Year	Condition	Mileage	Location
E360	Engine	KME	2009	Poor	175,089	Shop
E344	Engine	KME	2005	Poor	159,802	Shop
E343	Engine	KME	2005	Poor	162,312	Shop
E348	Engine	KME	2006	Poor	134,980	Shop
E359	Engine	KME	2008	Poor	144,536	Shop
E378	Engine	KME	2009	Fair	118,194	Shop
E349	Engine	KME	2006	Poor	139,128	Shop
T019	Truck	American Lafrance	2006	Poor	79,319	Shop

All of the reserve fire apparatus are in poor condition except one engine. While reserve apparatuses are not permanently assigned as frontline units, they may be used as replacement engines for extended periods or to increase staffing when surge capacity is needed. Keeping apparatus in poor condition, even in reserve status, is not recommended by NFPA 1900: Standard for Aircraft Rescue and Firefighting Vehicles, Automotive Fire Apparatus, Wildland Fire Apparatus, and Automotive Ambulances. Fire apparatus classified as “Fair” or “Poor” condition should be considered for replacement.

The remainder of the RFD's fleet is designated to support response and prevention efforts or is utilized by command and chief officers. The following figure provides a list of RFD's vehicles and their conditions.

Figure 56: RFD Command & Support Vehicles

Assignment	Type	Chassis/Manufacturer	Year	Condition	Mileage	Location
C1523	PU	Ford F350	2019	Good	33,904	Station 1
C1524	PU	Ford F350	2019	Good	35,406	Station 2
C1626	SUV	Ford Expedition	2022	Good	48,414	Admin
C1372	SUV	Ford Explorer	2017	Fair	91,000	Admin
C1373	SUV	Ford Explorer	2017	Poor	149,517	Admin
C1374	SUV	Ford Explorer	2017	Poor	128,788	Training
C1375	SUV	Ford Explorer	2017	Fair	83,872	Prevention
C1244	PU	Chevrolet Suburban	2013	Poor	109,662	Operations

Most of the RFD's command and support vehicles are in varied conditions. Two PUs are in "Good" condition, while one is in "Poor" condition. One SUV is in "Good" condition, while two SUVs are in "Fair" condition and two are in "Poor" condition. The vehicles in "Fair" condition or in "Poor" condition should be considered for replacement. None of the command and support vehicles is in "Excellent" condition.

Apparatus Maintenance & Replacement Planning

No piece of mechanical equipment or vehicle can be expected to last indefinitely. Every vehicle or equipment will eventually require service, repairs, and replacement. Repairs tend to become more frequent and complex as apparatus and vehicles age. Due to the critical role of fire apparatus in the community, maintenance becomes more urgent and costlier and requires specialized skills. Parts may become more difficult to obtain, and downtime for repairs and maintenance typically increases.

Fire apparatus are unique, heavy-duty vehicles, typically equipped with large engines, heavy-duty suspensions, and specialized components. Ambulances are outfitted with medical equipment and are larger and heavier than standard pickup trucks. Utility and command vehicles also need special attention due to their additional electronic systems.

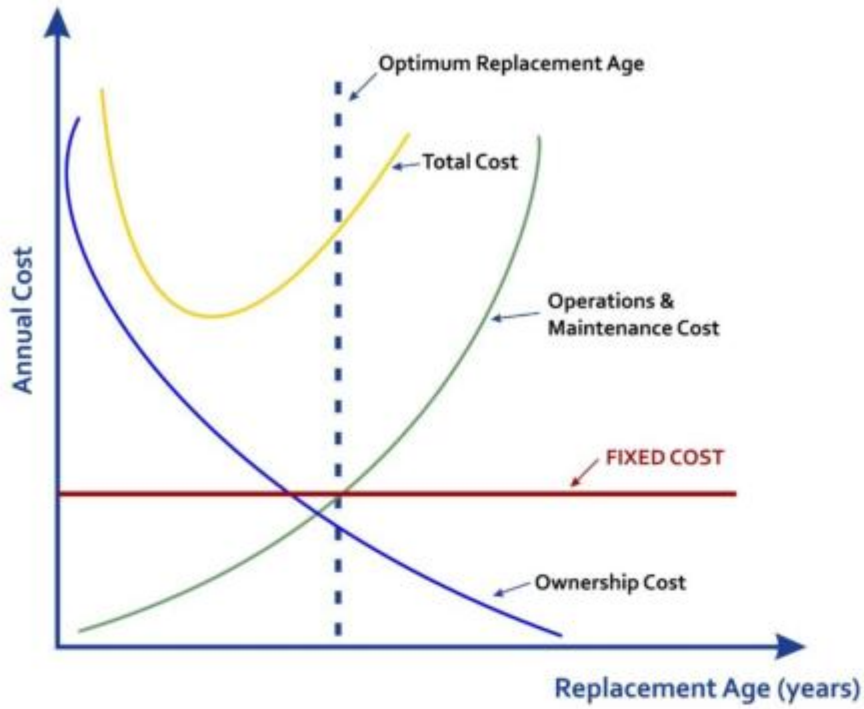
Since fire protection, emergency medical services, and other emergency responses are essential to the community, minimizing downtime is a key reason for replacing apparatus.

Because fire apparatus and ambulances are expensive, most fire departments and cities develop replacement plans. To facilitate such planning, fire departments often use the accepted practice of establishing a life cycle for each apparatus, resulting in an anticipated replacement date for each vehicle.

Apparatus and vehicles have distinct life cycle phases. The first is when the apparatus or vehicle reaches the end of its serviceability, which can be predicted based on vehicle type, call volume, age, and maintenance needs. The second is when the apparatus or vehicle exceeds its technical lifespan. The final consideration in the lifecycle is the economic viability of the vehicle. NFPA 1910: Standard for the Inspection, Maintenance, Refurbishment, Testing, and Retirement on In-Service Emergency Vehicles and Marine Firefighting Vessels (2024), recommends that vehicles over 15 years old, even if still in good working order, be placed into reserve status and no longer used as frontline apparatus. Furthermore, NFPA 1910 advises replacing apparatus once they exceed 25 years of age to meet current technological standards.

A well-managed fleet program must continuously evaluate vehicles and apparatus and plan for replacement before they become less economically viable than a new purchase. Fleet management software and other programs can assist with this process. RFD has a recently updated replacement fund for apparatus or light vehicles. The following figure graphically represents the economic theory of Vehicle Replacement.

Figure 57: Economic Theory of Vehicle Replacement



Reducing the replacement cycle allows the fire department to replace the apparatus at optimal savings. Fire and city officials who assume that deferring replacement purchases is a good tactic for balancing the budget need to understand the potential outcomes of such decisions. If an organization does not regularly replace apparatus and vehicles in a timely manner, any savings from delaying replacements can quickly be offset by increasing maintenance and repair costs.

Establishing a life cycle for planning purposes, such as budgeting for replacement, and using a maintenance and performance review to determine the replacement date may be more effective. This approach can help achieve greater cost-effectiveness when possible.

Capital Medical Equipment

The RFD maintains an inventory of medical equipment. The department has 26 LifePak Model 15 Cardiac Monitor/Defibrillators and/or Automated External Defibrillators (AED) (2018). These capital items are not on a replacement schedule but are replaced through the annual operating budget as needed.

EMERGENCY MEDICAL **SERVICES & TRANSPORT**

The Riverside Fire Department provides prehospital emergency medical care through a medical first response (MFR) system at both the Basic Life Support (BLS) and Advanced Life Support (ALS) levels.

STATE & LOCAL ADMINISTRATION & OVERSIGHT

Riverside County's Emergency Medical Services (EMS) system functions within a dual oversight framework that integrates both state and local authorities to ensure regulatory compliance and the effective delivery of prehospital care. At the state level, the **California Emergency Medical Services Authority (EMSA)** provides broad regulation and oversight of EMS systems throughout California. EMSA establishes minimum standards governing ambulance operations, paramedic licensure, ambulance equipment, patient care protocols, and quality improvement initiatives. The agency is also responsible for licensing ambulance providers and ensuring compliance with the California Health and Safety Code and Title 22 regulations. Additionally, EMSA mandates systematic data reporting, adherence to performance benchmarks, and participation in statewide programs, including trauma system planning and disaster preparedness.

Figure 58: Riverside County EMS Oversight

At the local level, the **Riverside County EMS Agency (REMSA)** serves as the designated local EMS authority (LEMSA), tasked with planning, coordinating, and regulating EMS services within the county. REMSA's responsibilities encompass prehospital care, ambulance transport, and paramedic services. The agency develops and implements EMS policies, protocols, and clinical guidelines, certifies EMTs and paramedics, and oversees continuing education to maintain workforce competency. REMSA also approves and monitors ambulance providers—including public, private, and fire-based services—to ensure response capabilities meet community needs. The agency conducts quality improvement programs, audits, and incident reviews to uphold patient care standards, while coordinating closely with local fire departments, hospitals, and other first responders to maintain system-wide efficiency. Furthermore, REMSA manages county-wide EMS resource allocation, dispatch coordination, and disaster response planning in collaboration with local municipalities.

The integration of state and local oversight creates a collaborative EMS framework in Riverside County. While the state establishes regulatory standards and licensure requirements, the local EMS agency ensures operational implementation and coordination. Together, these layers of oversight safeguard patient safety, promote timely emergency response, and support standardized prehospital care throughout the county.

EMS ADMINISTRATION & MEDICAL CONTROL

The Riverside Fire Department maintains a dual oversight system for the EMS Division under the direction of the Administration Division Chief and Training Division Chief. The Division staffs two: the EMS Captain and the EMS Coordinator, supervised by the Training Chief. Emergency medical services rarely constitute definitive treatment. Instead, they represent the initial and critical phase in a continuum of care that extends from the pre-hospital environment to definitive treatment at an appropriate medical facility. Positive patient outcomes rely on seamless coordination throughout this continuum.

Currently, paramedics operate within a protocol-driven system established by the Medical Director. Direct physician intervention is typically reserved for situations beyond standard protocols—such as rapidly evolving myocardial infarctions, severe strokes, or complex trauma cases. In critical trauma scenarios requiring Level I or II care, transport may be facilitated via air ambulance (helicopter or fixed-wing aircraft), depending on acuity and geography.

If RFD assumes responsibility for **ambulance transport services**, the department recently hired a designated Medical Director who **will provide oversight and support for future service delivery**. This individual should be actively engaged in field operations, forward-thinking in clinical practice, and committed to designing a dynamic EMS oversight system that aligns with the evolving demands of pre-hospital care.

Currently, RFD's oversight practices are largely **reactive**, with reviews often triggered by patient complaints or adverse outcomes. This reactive posture presents an opportunity for improvement. Proactive, structured oversight can enhance medication administration practices, operational protocols, and patient care outcomes while ensuring alignment with fiscal and legal responsibilities.

UTILIZATION OF MEDICATIONS & PROCEDURES PERFORMED

Like numerous EMS agencies nationwide, the RFD has an opportunity to assess its staffing levels, clinical protocols, medications, and operational procedures. Effective emergency medical services require a careful balance between fiscal responsibility and the delivery of high-quality care. Every element of staffing, equipment, and supplies acquired by RFD that is not mandated by law or established industry standards should undergo a thorough cost-benefit evaluation. The following three figures illustrate the utilization patterns of procedures and medications within the RFD EMS system.

Figure 59: RFD EMS System Medication Utilization (July 2024–June 2025)

Medication	Utilization
Acetaminophen (Tylenol) (161)	227
Adenosine (Adenocard) (296)	35
Albuterol (Proventil) (435)	437
Albuterol/Ipratropium (Combivent, DuoNeb) (214199)	114
Amiodarone (Cordarone) (703)	22
Aspirin (1191)	1,310
Atropine (1223)	58
Calcium Chloride (1901)	16
Dextrose 10% (D10) (244099)	258
Diazepam (Valium) (3322)	2
Diphenhydramine (Benadryl) (3498)	91
Epinephrine (Epipen) Auto-Injector (0.15 mg) (727386)	4
Epinephrine (Epipen) Auto-Injector (0.3 mg) (727347)	5
Epinephrine 1:1,000 (1 mg/mL) (328316)	13
Epinephrine 1:10,000 (0.1 mg/mL) (317361)	46
Epinephrine 1:100,000 (Push Dose Epi) (330545)	35
Fentanyl (Sublimaze) (4337)	2,197
Glucagon (4832)	53
Glucose (4850)	145
Ipratropium (Atrovent) (7213)	91
Ketamine (6130)	81
Lidocaine (Xylocaine) (6387)	17
Midazolam (Versed) (6960)	200
Naloxone (Narcan) (7242)	283
Naloxone (Narcan) Auto-Injector (727348)	5
Nitroglycerin (0.4 mg) (316365)	888
Nitroglycerin (4917)	16
Nitroglycerin Paste 2% (242946)	294
Normal Saline (313002)	10,564
Ondansetron (Zofran) (26225)	2,526
Oxygen (7806)	4,070
Sodium Bicarbonate 8.4% (237363)	25
Toradol (35827)	230
Tranexamic Acid (TXA, Lysteda) (10691)	5

Figure 60: RFD EMS System Procedure Utilization (July 2024–June 2025)

Procedures	Utilization
12 Lead ECG (268400002)	11,544
Active External Cooling (431774007)	7
Active External Warming (431949004)	6
Airway Opened (232664002)	6
Airway Suctioned (230040009)	61
Automated External Defibrillator Placement (463194009)	8
Cardiac Monitor Surveillance (88140007)	54
Cardiac Pacing (18590009)	12
Cervical Collar Applied (49689007)	866
Childbirth (236973005)	4
CPAP (47545007)	107
Defibrillation (426220008)	54
Direct Pressure for Bleeding (447686008)	18
Electrocardiographic monitoring (46825001)	44,978
ETCO2 Colorimetric Detection (428482009)	11
ETCO2 Digital Capnography (425543005)	1,468
Eye Bandaging (225692006)	2
Eye Irrigation (49999004)	5
Finger-prick (278450005)	1,859
Hand Ventilation by Bag Valve Mask (425447009)	65
Heimlich Maneuver (Airway) (23690002)	3
iGel Insertion (405640005)	18
Initial Patient Assessment (315639002)	240
Intraosseous (IO) (430824005)	137
Intravenous (IV) (392230005)	10,664
Manual CPR (89666000)	126
Mouth-to-Mask/Mouth Ventilation (243180002)	4
Nasopharyngeal Airway (182692007)	66
Needle Chest Decompression (182705007)	12
Occlusive Wound Dressing (22206003)	4
Orogastric Tube Insertion (235425002)	5
Oropharyngeal Airway (7443007)	79
Orotracheal Intubation (232674004)	61

Figure 61: RFD EMS System Procedure Utilization (July 2024–June 2025)

Procedures Continued	Utilization
Physical Restraint (386423001)	324
Pressure Dressing for Bleeding (26906007)	10
Pressure to Artery for Bleeding (233419004)	2
Pulse Oximetry Monitoring (284034009)	1,989
Sling Applied (182558000)	15
Splint Applied (79321009)	73
Suction Endotracheal Tube (225715000)	7
Suction Newborn (18540005)	2
Tourniquet for Bleeding (20655006)	16
Traction Splint Applied (302488007)	6
Vagal Maneuver (128968000)	13
Venous Puncture (396540005)	64
Wound Dressing (182531007)	149
Wound Irrigation (225116006)	32
Suction Endotracheal Tube (225715000)	7
Suction Newborn (18540005)	2
Tourniquet for Bleeding (20655006)	16
Traction Splint Applied (302488007)	6
Vagal Maneuver (128968000)	13
Venous Puncture (396540005)	64
Wound Dressing (182531007)	149
Wound Irrigation (225116006)	32

The above procedures and medications should be evaluated based on a seven-step analysis. The next section will outline the process for the cost-benefit analysis.

STRUCTURED COST-BENEFIT EVALUATION FOR EMS RESOURCES

To guide decision-making related to personnel, equipment, and medical supplies—particularly when these exceed minimum statutory or industry standards—RFD should implement a **structured seven-step cost-benefit analysis**. This process ensures efficient and responsible resource allocation across the EMS system.

1. **Identify Total Cost**
   Assess the complete financial impact of the proposed resource, including acquisition, maintenance, training, and operational costs.
2. **Assess Utilization**
   Use statistical data to determine how often the resource will be deployed, avoiding underutilization or excess.
3. **Evaluate Geographic Applicability**
   Consider differences in need and usage between urban, suburban, and rural response areas.
4. **Consider Perishability**
   Factor in the shelf life and obsolescence risk of consumable items (e.g., medications) and capital equipment (e.g., cardiac monitors).
5. **Assess Liability**
   Evaluate the legal and operational risks associated with deploying a specific resource or performing a procedure.
6. **Analyze Technological Reliability**
   Review the effectiveness, maintenance requirements, and obsolescence risks of technology-based equipment.
7. **Evaluate Effectiveness**
   Conduct a data-driven review of the resource's overall impact on patient outcomes and operational performance.

Collaborative Decision-Making and Oversight

This structured evaluation must involve key stakeholders, including:

- The Medical Director
- RFD Leadership
- Hospital Emergency Department Personnel

By involving these parties in the decision-making process, RFD can more accurately define appropriate **service levels**, determine **resource allocations**, and ensure that the selection and use of EMS equipment and medications are **clinically justified, operationally sound, and cost-effective**.

This proactive model will strengthen medical oversight, improve system accountability, and support RFD's mission to deliver high-quality, responsive EMS care to the community.

EMS DOCUMENTATION & QUALITY IMPROVEMENT PROCESSES

Patient Care Documentation

RFD utilizes ImageTrend® Elite™ records management system (RMS) to document its electronic patient care reports (ePCR). ImageTrend® is compliant with the current *National Emergency Medical Services Information System* (NEMSIS) standard and capable of downloading computer-aided dispatch (CAD) data and electronically sending ePCR data to hospitals.

Continuous Quality Improvement

As previously noted, the Riverside City Fire Department (RFD) responds to a significant volume of EMS requests. With the potential expansion of pre-hospital services on the horizon, it is important to note that RFD's current Quality Assurance/Quality Improvement (QA/QI) processes are limited in scope.

To support the scale and complexity of expanded EMS operations, AP Triton recommends that RFD invest in dedicated internal staff focused on QA/QI. These personnel would ensure the systematic review of patient care and help advance the department's clinical oversight capabilities.

A strong QA/QI program begins with the consistent capture of accurate, comprehensive patient care data. While RFD utilizes ImageTrend® for electronic patient care reporting (ePCR), the ability to export this data to Excel offers an opportunity for more robust analytics—provided that documentation is consistently completed.

One of the most common challenges across EMS systems is the absence of objective, evidence-based data to evaluate clinical performance and system efficiency. Without this data, departments struggle to identify performance gaps, determine training needs, or justify budgetary allocations. AP Triton has identified several opportunities for RFD to enhance its internal data collection and analytics strategy to support more objective, data-driven decision-making.

The following outlines a recommended approach to EMS quality evaluation, built on three interdependent study types:

Time Study

Focus: Efficiency of care delivery

Data Sets Include:

- Medication usage
- Procedures performed
- Transport type (BLS, ALS, Refusals, Treat & Release)
- Medication expiration (waste)

Key Evaluation Questions:

- How quickly do patients receive ALS care?
- What is the time interval between BLS and ALS arrival?
- Are critical patients experiencing transport delays due to ambulance availability?
- What is the average on-scene and transport time for key incident types (e.g., trauma, cardiac arrest)?
- How quickly and consistently are time-sensitive medications administered?

Efficacy Study

Focus: Quality of clinical care and outcomes

Data Sets Include:

- Vital signs
- Treatment success/failure
- $ETCO_2$, ECG, Pulse Oximetry
- Advanced airway use
- Patient outcomes

Key Evaluation Questions:

- Were inadequate vital signs managed in a timely manner?
- What are the success and failure rates for clinical procedures?
- Were respiratory emergencies appropriately treated ($ETCO_2$)?
- Was CPR effective ($ETCO_2$)?

- Was ACLS correctly implemented?
- What was the ultimate hospital disposition?

Utilization Study

Focus: Resource allocation and system deployment

Data Sets Include:

- Travel and scene times
- ALS/BLS on-scene presence
- Ambulance arrival and destination
- Medication and procedure timestamps
- Average on-scene time

Key Evaluation Questions:

- What medications and supplies are being used, and what volume is needed for inventory?
- What is the breakdown of ALS vs. BLS transports?
- What volume of treat-and-release encounters exist (useful for assessing community paramedic opportunities)?

Along with the Medical Director, the EMS Coordinator participates in reviews of ePCRs, and feedback is provided to the Firefighter/Paramedics. RFD has a formal CQI committee of peer reviewers. Based on limited resources, only 21% of incidents undergo CQI review. Any consideration for increasing EMS services provided needs to include additional staff for review.

Expanding RFD's EMS capabilities must include an internal quality management program grounded in objective, evidence-based data. By formalizing its approach to documentation and adopting a structured QA/QI framework—like the Time, Efficacy, and Utilization Study model shown above—RFD can make more informed decisions, improve patient care, and ensure system accountability.

EMS Training & Continuing Medical Education

The Training Chief is responsible for ensuring that RFD Firefighters are provided with the required EMS Operational Training and Continuing Medical Education (CME). Detailed discussion of the EMS training program can be found in the Training Section.

Logistical Support

A comprehensive utilization study conducted on a routine basis would allow the Riverside City Fire Department to identify inefficiencies and opportunities to enhance inventory management. At present, RFD depends on American Medical Response (AMR) for station supply caches and a medical supply exchange program. As EMS responsibilities expand, reliance on external partners will become insufficient. The department will need to develop internal logistical systems to ensure consistent availability, accountability, and control of medical supplies and equipment.

RFD is currently in the process of implementing PS Tracks®, an electronic logistics management platform designed to support the tracking of assets, inventory, and maintenance schedules. To support this transition, AP Triton recommends adopting a partially automated inventory control system, tailored to the department's size and operational complexity. Additionally, this analysis identified significant limitations relating to warehouse space to accommodate potential future expansion of EMS services.

This type of system offers multiple benefits:

- **Cost-effectiveness:** Reduces administrative burden and frees up staff time for other critical functions.
- **Enhanced readiness:** Provides real-time inventory visibility to help personnel quickly locate equipment and supplies.
- **Operational efficiency:** Streamlines restocking processes and reduces the risk of expired or misplaced items.
- **Supports QA/QI efforts:** Enables integration with quality assurance workflows, helping ensure that critical resources are available when needed.

In addition to improving operational efficiency, the implementation of a robust inventory system could allow the department to reallocate resources toward the development of an internal EMS Quality Assurance (QA) position—further strengthening RFD's clinical oversight and system performance.

EMS OPERATIONS & DEPLOYMENT

As previously stated, the Riverside Fire Department deploys its apparatus, other vehicles, and personnel from 14 full-time stations. The department utilizes engines, squads, and other vehicles to provide medical first response at the BLS and ALS levels. The next figure lists each station and its respective EMS capability.

Figure 62: RFD EMS Response Capability

Station	Apparatus	Daily Staffed Paramedics	Station EMS Response Level
1	EO1 T1 S1	3	ALS
2	EO2 T2 S2	3	ALS
3	EO3 T3	2	ALS
4	EO4	1	ALS
5	EO5 S5	2	ALS
6	EO6	1	ALS
7	EO7	1	ALS
8	EO8	1	ALS
9	EO9	1	ALS
10	EO10	1	ALS
11	EO11	1	ALS
12	EO12	1	ALS
13	T13	1	ALS
14	EO14	1	ALS

RFD does not utilize a dynamic deployment model but instead deploys its resources from its 14 fixed facilities. Each ALS apparatus is equipped with a full complement of Advanced Life Support medications and equipment.

EMS Staffing

Engines and trucks are staffed with a minimum of one Level 1 Firefighter/Paramedic, while Squads are staffed with at least one.

EMS INCIDENT ANALYSES

During the one-year study period of July 1, 2024, to June 30, 2025, the Riverside Fire Department documented 28,142 EMS incidents.

Figure 63: Top 90% Most Common RFD Provider Impressions (July 2024–June 2025)

Primary Impression[A]	Qty.	% Total
Traumatic Injury (T14.90)	4,923	17%
Abdominal Pain/Problems (GI/GU) (R10.84)	2,024	7%
General Weakness (R53.1)	1,705	6%
Pain, Non-Traumatic Body Pain (Acute) (G89.1)	1,656	6%
Respiratory Distress – Other (J80)	1,562	6%
Altered Mental Status (R41.82)	1,551	6%
Behavioral/Psychiatric Disorder [Mental Disorder] (F99)	1,284	5%
Chest Pain – Suspected Cardiac (I20.9)	1,126	4%
Seizure – Postictal (G40.909)	950	3%
Syncope/Fainting [Syncope and Collapse (Fainting)] (R55)	908	3%
No Medical Complaint (Z00.00)	888	3%
Pain, Non-Traumatic Body Pain (Chronic) (G89.2)	861	3%
Alcohol Intoxication (F10.92)	739	3%
Dizziness/Vertigo (R42)	707	3%
Overdose/Poisoning/Ingestion (F19)	523	2%
Complications of Prior Surgical or Medical Care, Unspecified	501	2%
Cold/Flu Symptom (J00)	485	2%
Nausea With Vomiting, Unspecified (R11.2)	482	2%

[A]PExcludes those "Not Recorded." [B]Percentages rounded to the nearest integer.

As shown in the preceding figure, "Traumatic Injuries" represented the most frequent provider impress followed by "Abdominal Pain/Problems." The criticality of the above analysis supports the level of advanced life support provided by the department. It also supports the necessity of rapid transport to definitive care (hospital).

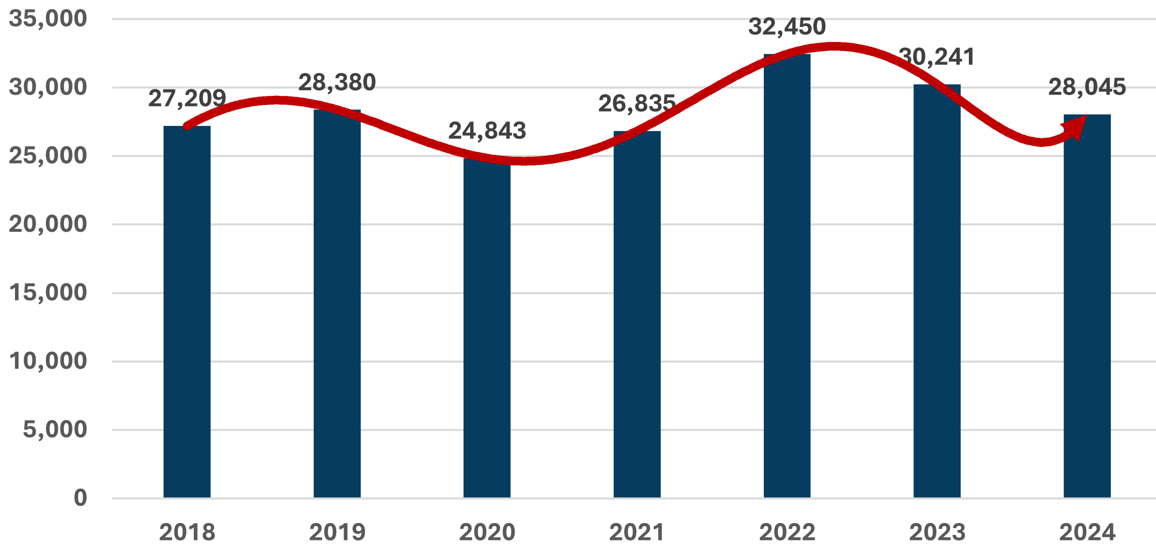
The following figure shows a comparison of the most common incidents in 2022 compared to 2024.

Figure 64: EMS Incident Comparison 2022 and 2024

Incident Type	2022		July 2024–June 2025	
	Count	% of Total	Count	% of Total
Traumatic Injury	4,247	17%	4,923	17%
General Weakness/Malaise	2,751	11%	1,705	6%
Cardiac Arrest—Non-traumatic	1,801	7%	311	1%
Chest Pain—Suspected Cardiac	1,396	6%	1,126	4%
Respiratory Distress/Other	1,343	5%	1,562	6%
ALOC—(Not Hypoglycemia or Seizure)	1,263	5%	1,551	6%
Syncope/Near Syncope	1,197	5%	908	3%
Abdominal Pain/Problems (GI/GU)	1,104	4%	2,024	7%
Behavioral/Psychiatric Crisis	835	3%	1,284	5%
Seizure—Post	650	3%	1,093	4%
Non-Traumatic Body Pain	620	2%	861	3%
Nausea/Vomiting	610	2%	482	2%
Pain/Swelling—Extremity (Non-Traumatic)	604	2%	421	1%
Dizziness/Vertigo	553	2%	707	3%
Overdose/Poisoning/Ingestion	488	2%	523	2%

Incident volume has remained fairly consistent over the past two years, but the criticality appears to be increasing. The next figure is a graphic illustration comparing the difference in EMS incident volumes annually between from 2018 through 2024.

Figure 65: Comparison of the Number of Annual EMS Incidents



PATIENT TRANSPORT

Ground Emergency Medical Transport

In Riverside County, Ground Emergency Medical Transport (GEMT) services are provided by American Medical Response (AMR).

Riverside County has continuously contracted with private ambulance service providers since 1970. In January 2024, following a series of legal challenges by the county, the Court of Appeal of the State of California affirmed that the City of Riverside has rights under section 1797.201. The existing ambulance transport contract between the City of Riverside and AMR expires in 2027. During this analysis, an opportunity for improvement was identified relating to incident data collection and the judication of AMR's response times. Currently, the ambulance contract (2025) between AMR and Riverside County requires a 12-minute, 15 seconds response at a 90% metric for all metro areas. The ambulance provider can request an exemption for delayed response through REMSA. At the time of this analysis, RFD was unable to gather the specific criteria for exemptions when AMR failed to respond within the 12-minute, 15-second contractional metric. A previous study, Emergency Ambulance Optimization Study (2022), conducted by AP Triton, showed that AMR was granted exemptions for 94% of the delayed responses. For this study, AMR was requested to provide one year of patient care reporting (PCR) incidents. The first data set was delivered in July 2025 and did not have complete time stamps (missing seconds). Following a second request, AMR provided a data set for the same period where 6,232 "cancelled incidents" had the addition of on scene arrival times. The additional time stamps added to the second set of data resulted in changing the response time metric (90^{th} percentile) from 13 minutes, 0 seconds to 11 minutes, 48 seconds.

The inconsistency of data sets provided by AMR and the inability of the City of Riverside to specifically measure ambulance response time, prevents accurate measurement of the contractional requirements between the city and AMR. AP Triton recommends that the city establish a system to track all time stamps involving AMR ambulances and judicate failure to meet response requirements.

Transports by Medic Unit

The next figure lists the 15 busiest medic units (based on data provided by AMR) in the RFD service area. The numbers in the figure are for all EMS incidents during the period.

Figure 66: Top 15 Busiest Medic Units (July 2024–June 2025)

Medic Unit	No. of Calls	% of Total[A]
3366	2,397	6%
3331	2,206	6%
3301	1,722	4%
3305	1,722	4%
3330	1,599	4%
3312	1,572	4%
3303	1,449	4%
3336	1,290	3%
3339	1,216	3%
3332	1,173	3%
3335	1,130	3%
3344	1,023	3%
3318	999	3%
3342	915	2%
3388	858	2%

HOSPITALS & CLINICAL FACILITIES

There are six primary destination hospitals and clinical facilities in the Riverside County region. The next figure lists the destinations of patients transported by ambulance by hospital or clinical facility. Combined, these represented 99% of the destinations from July 2024 to June 2025.

Figure 67: Top Six Patient Transport Destinations (July 2024–June 2025)

Facility	No. of Calls	% of Total[A]
Riverside Community Hospital	13,402	52%
Parkview Community Hospital—Riverside	6,342	25%
Kaiser Hospital Riverside	3,819	15%
Riverside University Health System	1,087	4%
Corona Regional Medical Center	413	2%
Loma Linda University	283	1%

UPDATED EMS FINANCIAL ANALYSIS (2025)

In 2022, AP Triton conducted a comprehensive valuation and deployment analysis for Riverside's emergency medical services. Building on that work, this 2025 update presents an updated financial model and valuation projection for the city's EMS transport system over a five-year period, spanning 2025 through 2029. The purpose of this analysis is to support planning and budgeting by evaluating anticipated call volume growth, payer mix, projected reimbursements, and overall revenue from EMS transport services. In addition, the model incorporates potential reimbursement enhancements available to public providers through California's GEMT (Ground Emergency Medical Transport) and QAF (Quality Assurance Fee) programs.

The forecast begins with a baseline of 18,128 EMS transports in 2025, projecting an annual growth rate of approximately 3%, which results in 20,403 transports by 2029. Of these transports, roughly 40% are Advanced Life Support (ALS), while the remaining 60% are Basic Life Support (BLS), with this ratio held constant throughout the forecast period.

Payer mix assumptions are based on 2025 data, with Medicare accounting for 45% of transports (8,158 calls), Medi-Cal (Medicaid) 28% (5,076 calls), commercial insurance 15% (2,719 calls), and private pay (self-pay) 12% (2,175 calls). These proportions remain fixed in the model, with each payer category reflecting distinct reimbursement characteristics that influence the projected revenues.

The average charge for both ALS and BLS transports in 2025 is calculated at $3,370.20, composed of a base rate of $2,871.71, mileage for an assumed five miles at $349.15, and oxygen charges of $149.34 applied to 50% of transports. To account for inflation and rising service costs, annual charge increases of 5% are applied, resulting in projected average charges of $3,538.70 in 2026, $3,715.64 in 2027, $3,901.42 in 2028, and $4,096.49 in 2029.

Despite the growth in gross billing, net collections are projected to remain below 30% due to limitations imposed by payer-specific reimbursement policies. Detailed projections for total billing, adjustments, and collections for each year are included in the accompanying financial tables, providing a framework to guide strategic planning, resource allocation, and revenue management for the City of Riverside's EMS transport system.

Figure 68: Net Collections and Revenue Estimates

Year	Gross Billing	Adjustments	Net Collections	Collection Rate
2025	$61.1M	$43.5M	$17.6M	29.38%
2026	$66.1M	$47.5M	$18.6M	28.58%
2027	$71.5M	$51.9M	$19.5M	27.82%
2028	$77.3M	$56.7M	$20.6M	27.10%
2029	$83.6M	$61.9M	$21.7M	26.41%

Reimbursement Programs and Enhancements

Medi-Cal and PP-GEMT Revenue Analysis

The updated financial model incorporates revenues from the Public Provider Ground Emergency Medical Transport (PP-GEMT) program and associated Quality Assurance Fees (QAF), which together significantly enhance Medi-Cal reimbursements. In 2025, the base Medi-Cal payment of $118 per transport is supplemented by a PP-GEMT add-on of $339, as well as QAF and state fee recoveries averaging approximately $349.02 per transport. These enhancements result in a total projected Medi-Cal recovery of roughly $5.88 million, with an additional $2.1 million anticipated from GEMT recoveries, making Medi-Cal transports financially viable and contributing meaningfully to overall system revenue.

Reimbursements from Medicare and other payers, by contrast, are lower and largely fixed by federal CMS allowable rates. ALS1 transports are reimbursed at $598.58, ALS2 at $866.37, and BLS transports at $504.07, with mileage reimbursed at $8.94 per mile. Private insurance yields the highest collection rate at approximately 80%, while self-pay (private pay) transports result in minimal recovery, around 5%.

The financial implications of these projections reveal several key insights. Gross billing is expected to grow substantially over the five-year forecast period due to increasing transport volume and rate inflation. However, net collection rates are projected to decline slightly year-over-year, influenced by the payer mix and the fixed nature of federal reimbursements. Participation in programs such as PP-GEMT and QAF is therefore critical to maintaining the financial viability of the EMS system, as these programs transform Medi-Cal transports into a sustainable revenue source.

Overall, this five-year EMS valuation underscores the importance of accurate forecasting, optimized billing practices, and strategic participation in supplemental reimbursement programs. While Medicare and private pay collections remain limited, maximizing Medi-Cal revenues through PP-GEMT and QAF provides Riverside City with a meaningful, dependable revenue stream, supporting long-term fiscal sustainability for its EMS transport system.

Future Availability in GEMT Programs

The founders of AP Triton pioneered the Nation's first Ground Emergency Medical Transport (GEMT) program, setting the standard for how municipalities could leverage federal reimbursement opportunities to stabilize emergency medical services. Since that time, AP Triton has developed nearly a dozen additional GEMT programs, with several more currently in progress across the country. These programs are structured specifically for public providers and operate as *entitlement programs*, meaning that if a provider meets the eligibility criteria, funding must be made available. This model ensures sustainability for municipal agencies that cannot otherwise recoup the full cost of ambulance transport under traditional Medicaid and Medicare reimbursement rates.

Provider Tax Programs

It is important to understand the critical distinction between GEMT programs and provider tax programs:

- **Provider Tax Programs:** These programs apply to both public and private providers and are capped by federal regulation. Providers pay a tax that is then used by the state to draw down federal supplemental reimbursement. In California, the two most notable provider tax programs are:
- The **Hospital Managed Care Organization (MCO) tax**, which applies to major managed care providers such as Kaiser, Blue Cross Blue Shield, and others.
- The **Quality Assurance Fee (QAF) program**, which is specific to private ambulance providers. Both mechanisms generate supplemental funding, but they also impose a tax burden on participating providers and have been criticized for disproportionately subsidizing private, for-profit entities.

GEMT Programs

By contrast, GEMT and its public provider extension (PP-GEMT) are not provider tax programs. They are entitlement programs that ensure supplemental reimbursement flows directly to public agencies. Municipal fire departments and EMS agencies are statutorily prohibited from generating a profit. Therefore, supplemental reimbursements protect local taxpayers by covering the shortfall created when low-paying government payors (Medicare and Medicaid) fail to meet the true cost of service delivery.

The "Medicaid Loophole" Debate

Federal policymakers are currently scrutinizing what they have labeled the "Medicaid loophole," a reference to state practices that use provider tax programs to generate unallocated revenue. For example, in California, the hospital MCO tax carries a 10% state administration fee, generating roughly $40 million. The state submits this amount to the Centers for Medicare and Medicaid Services (CMS) for a Federal Medical Assistance Percentage (FMAP) match, which effectively doubles the amount to $80 million. However, the additional funding is not earmarked for a specific Medicaid program. Critics argue this allows states to subsidize non-Medicaid priorities, such as covering healthcare costs for federally ineligible immigrants.

These concerns do not apply to GEMT or PP-GEMT. Because they are entitlement programs specific to public providers, the funds are tied directly to service delivery and cannot be diverted. This makes GEMT and PP-GEMT examples of sound public policy, focused on protecting taxpayers and ensuring continuity of emergency medical services.

Fiscal Stability and System Safeguards

While the PP-GEMT program generates approximately $340 million annually in California, it represents only a small portion of the broader CMS portfolio. Its alignment with hospital funding mechanisms provides additional resilience, as hospitals secure reimbursement levels far greater than those achievable by ambulance providers. This creates a degree of protection for PP-GEMT participants, as any large-scale restructuring of CMS programs would necessarily impact hospital systems first—providing a buffer to public ambulance providers.

In addition, public providers benefit from structural safeguards embedded in local agreements:

- **Contractual Protections**: Agreements between agencies and contractors—or between agencies and counties—typically include clauses that allow contracts to be reopened in the event of significant changes. These may include shifts in system economics, payer mix, call volume, or future integration that materially impacts cost structures.
- **Statutory Obligations**: Counties are legally obligated to ensure the provision and financing of emergency ambulance services. This obligation ensures that, even under fiscal pressure, the system remains solvent and services remain uninterrupted.
- **201 Providers**: Agencies designated as "201 providers" under California Health and Safety Code §201 have full authority to adjust their systems in response to changes, providing an added layer of local control and long-term sustainability.

There is no plausible scenario where robust emergency ambulance transport services disappear. The system cannot function without fair and reasonable reimbursement, but entitlement programs such as GEMT and PP-GEMT provide essential stability. While adjustments to Medicaid programs are inevitable over time, the structure of GEMT ensures public providers remain protected, local taxpayers are shielded from additional burdens, and communities continue to receive reliable, high-quality emergency medical transport services.

CURRENT **EMS VALUATION**

The following section provides a current overview of the financial and operational model for valuing Riverside City's EMS system under a public provider model. The original system valuation was completed in 2022, and the following summary provides updated information for comparison. It projects transport volume, revenue, and net collections across five years (2025–2029), incorporating reimbursement mechanisms such as **PP-GEMT** (Public Provider Ground Emergency Medical Transport) and **QAF** (Quality Assurance Fee).

KEY COMPONENTS

- **Call Volume and Transport Forecast**
  - Total annual medical call volume: **30,559**
  - Total transports: **18,128**
- **ALS** (Advanced Life Support): 40% (7,251)
- **BLS** (Basic Life Support): 60% (10,877)
- Annual transport volume increases by **3%** per year starting in 2026, reaching **20,403 transports** by 2029.

PAYER MIX

The following figure shows the payer mix for 2025. The analysis showed a minimal change since the EMS Optimization was completed by AP Triton in 2022.

Figure 69: Riverside City Payer Mix (2025)

Cost Center	Percent of Transport	Number of Transport
Medicare/Medicare HMO	45.00%	8,158
Medi-Cal/Medi-Cal HMO	28.00%	5,076
Commercial Insurance	15.00%	2,719
Self-Pay	12.00%	2,175
Total	**100%**	**18,128**

The next figure shows the authorized patient charges for 2025.

Figure 70: Authorized Riverside City Rates

Service	ALS Rate	BLS Rates
Base Rate	$2,804.66	$2,634.16
Oxygen	$291.69	$291.69
Mileage	$68.20	$68.20

The preceding figure shows an average ALS and BLS charge of $3,370.20 which Includes base rate, oxygen, and mileage. The rate demonstrates an annual rate increase: **5% per year,** reaching **$4,096.49** by 2029.

The following figure shows the transportation reimbursement calculation for each payer mix.

Figure 71: Transportation Reimbursement Calculation

Cost Center	Estimated ALS Recovery	Estimated BLS Recovery
Medicare/Medicare HMO Reimbursement per Transport	$522	$481
Medi-Cal/Medi-Cal HMO Reimbursement per Transport	$1,158	$1,158
Commercial Insurance per Transport @ 80%	$2,696	$2,696
Self/Private Pay per Transport @ 5%	$168	$141

ADDITIONAL COST RECOVERY

The Public Provider Ground Emergency Medical Transport (PP-GEMT) and Quality Assurance Fee (QAF) programs provide significant opportunities for supplemental recovery. Under the PP-GEMT program, reimbursement per Medi-Cal transport is projected at $413.92, resulting in an estimated $2.1 million in total payments for 2025. The QAF mechanism, which applies specifically to private provider models, operates under slightly different recovery assumptions but nonetheless contributes additional financial support. When combined, the GEMT and QAF programs substantially improve Medi-Cal net collections, raising them from approximately 10% of billed charges to more than 30%, thereby strengthening the overall financial position of the system.

FINANCIAL VALUATION (NET COLLECTIONS)

The annual total system valuations, after factoring in reimbursements and adjustments, demonstrate steady growth over the five-year projection period. In 2025, the system is valued at $15.85 million, increasing to $16.72 million in 2026, $17.65 million in 2027, $18.64 million in 2028, and reaching $19.71 million by 2029. Throughout this period, net collections consistently account for approximately 26 to 29% of gross billing. On a per-transport basis, total revenue averages between $990 and $1,082, with variations influenced by shifts in payer mix and scheduled charge increases. This trend highlights both the stability and the incremental financial improvement anticipated for the system. The following figure charts the net collection amount by payer and projected EMS system value.

Figure 72: Payer Mix Reimbursement

Cost Center	Net Collection Amount
Medicare/Medicare HMO	$4,054,915
Medi-Cal/Medi-Cal HMO	$5,878,330
Commercial Insurance	$7,331,387
Self/Private Pay	$366,569
Additional 30% Medicare Collection	*$319,125*
Total Estimated Payer Mix Reimbursement	**$17,950,327**
PP-GEMT Payment + 10% Fee + Non-Payer	**($2,100,992)**
Estimated System Value	**$15,849,335**

BILLING COSTS

Billing service costs estimated at ~4% of collections (e.g., $718K in 2025), but **excluded from final valuation**, allowing clean modeling of gross-to-net revenue conversion.

CONCLUSION

This document offers Riverside City a scalable financial forecast for EMS operations under a public delivery model. By combining accurate transport projections, real-world payer data, and California-specific reimbursement programs like PP-GEMT, the model quantifies expected revenue, net system value, and cost recovery over five years. It supports strategic planning, contract negotiations, and fiscal assessments for municipal ambulance services.

LIFE SAFETY SERVICES & **PUBLIC EDUCATION**

The Riverside Fire Department provides a comprehensive and proactive fire and life safety program that addresses fire prevention, public education, and fire investigation. These services are coordinated through the Fire Prevention Division under the leadership of the Deputy Chief of Administration.

FIRE PREVENTION

The department enforces the 2022 Fire Code, along with adopted local ordinances and amendments. A sprinkler ordinance has been in place since 1993. Fire personnel are actively involved in:

- Plan reviews for new construction, occupancy changes, and tenant improvements
- Fire and life safety inspections for both new and existing occupancies
- Special risk inspections, including hazardous materials and high-piled storage
- Storage tank inspections and key-box entry coordination (Knox brand)

Inspection services are managed through the ImageTrend software platform. There are 12 dedicated personnel assigned to inspections, supported by a fee-based structure for various inspection types, including after-hours and specialty permits. The inspection cycle is typically every four years unless annual inspections are mandated by the state. Administrative citations are issued under city code for non-compliance.

PUBLIC EDUCATION AND OUTREACH

The department maintains a public education program facilitated by a designated Public Education Coordinator. Topics covered include:

- Calling 9-1-1 and emergency preparedness
- Exit drills in the home (EDITH)
- Fire safety (cooking, chimney, electrical, etc.)
- Injury prevention (falls, burns, helmet safety)

- Fire extinguisher education (non-live demonstrations, CERT live-fire when applicable)
- Elderly safety presentations and senior center outreach
- School programs utilizing materials from NFPA, FEMA Ready Campaign, and USFA
  CPR courses at community events
- Juvenile fire-setter intervention (available but not currently utilized)
- Wildland-urban interface (WUI) education is under development

Bilingual information is provided upon request, and annual fire prevention reports are distributed. Educational materials and publications are also made available to the public.

Data Collection and Risk Analysis

The department collects and analyzes data on fire incidents, causes, response times, dispatch methods, and more. This information is used to support strategic planning and resource allocation. While no full-time employees are solely assigned to data analysis, computer-based systems ensure consistent recordkeeping and trend identification.

Administration and Staffing

The Fire Prevention Division is led by the Fire Marshal and includes:

- 12 Fire Inspectors
- 3 Plan Reviewers
- 1 Deputy Fire Marshal
- 1 CUPA (Certified Unified Program Agency) Administrative Analyst
- 3 Administrative Assistants

Code Enforcement Officers are not housed within the fire department. Staffing levels and resources allow the department to maintain a proactive and community-oriented approach to fire and life safety.

FIRE INVESTIGATIONS

The Fire Investigations/Arson Task Force operates under the direction of the fire department and is supervised by an assigned Fire Captain. This multi-agency organization leverages the collective skills and expertise of its members to deliver a highly effective investigative service to the community.

Each cross-sworn Fire Investigator receives extensive training in arson investigation techniques and is empowered to enforce the California Fire Code, California Penal Code, Riverside Municipal Code, National Fire Protection Association (NFPA) Standards, and the California Health and Safety Code.

In July 2024, the department implemented full-time dedicated Fire Investigator positions, enabling 24/7 investigative coverage for fire-related incidents. The Investigations Supervisor also serves as the Custodian of Records for the department with the California Department of Justice.

In addition to determining fire origins and causes, the Task Force conducts background investigations for new hire applicants and occasionally assists with internal investigations within the department. Recently, the team was assigned the responsibility of developing a Wildland-Urban Interface (WUI) Defensible Space Inspection process, which will ensure enforcement of State-mandated fire-safety guidelines on both public and private lands within the City's jurisdiction.

When a fire is determined to be intentionally set, Fire Investigators process the scene, collect and preserve evidence, and prepare comprehensive criminal case files for submission to the Riverside County District Attorney's Office. The program follows nationally recognized standards, including NFPA 921: Guide for Fire and Explosion Investigations and NFPA 1033: Standard for Professional Qualifications for Fire Investigators, and adheres to the California Office of the State Fire Marshal's Investigator Certification Standards.

Aligned with the 2023–2028 Strategic Plan, the Task Force has made significant progress in improving coordination between Fire Prevention, Fire Investigations, and Public Education. This includes quarterly meetings, a collaborative team approach to community outreach, and the development of new Riverside Municipal Codes (RMCs) as needed.

In January 2024, the Task Force incorporated the department's Continuous Quality Improvement (CQI) process for all fire response incidents. Ongoing data collection and analysis continue to identify trends and enhance program effectiveness. Furthermore, all arson-related cases are now fully integrated into the Riverside Police Department's Report Management System, streamlining case documentation and interagency communication.

The department's participation in the Public Safety Engagement Team (PSET) concluded in July 2024. Since that transition, the fire department has observed an increase in responses to incidents within the Santa Ana River Bottom, reflecting the continued need for coordinated field operations and investigative resources in that area.

Figure 73: RFD Investigations/Arson Statistics (2023–2025 YTD)

Reference	2023	2024	2025 (YTD)
Calls for Service	134	241	446
INV Cases	96	164	205
Arrest	28	48	19
New Hire Background Checks	16	32	19

Current Challenges

The following challenges were identified for the RFD Arson Task Force. Future planning should consider the following:

- Creation of MOA with the Riverside Police Department.
- Outside training opportunities have been limited and an increase in opportunities should be considered in the future.
- The task force has limited facility space at Station 12.

COMMUNICATIONS & DISPATCH

Emergency communications and dispatch services are provided to the RFD by the City of Riverside Public Safety Communications Center. The center serves as the primary Public Safety Answering Point (PSAP) for the fire and police departments. Located in the police department, the center has 18 consoles and processed an annual average of over 186,000 911 and 382,000 incoming 10-digit telephone calls between 2022 and 2024.

Figure 74: Communications Center Telephone Call Summary

Call Type	2022	2023	2024
911	181,070	195,677	181,567
10-Digit Phone	288,773	414,544	444,299
Answer Time less than 20 seconds %	90.71%	92.68%	91.57%

Figure 75: Communications Center Daily Staffing

Position	Daily Staffing
Radio Operator	3
Call-Taker	6
Supervisor	1

Communications Center Discussion

During the course of reviewing existing material and speaking with both RFD and communications supervisors, several critical issues were identified, including:

- Immediate need for additional fire-based dispatcher (currently one position exists).
- Recruitment and retention challenges are impacting the combined police/fire dispatch function. Communications center supervisors shared that single-function dispatch facilities have less turnover.
- Consideration of future EMS ambulance dispatch—an additional three FTEs would be required to facilitate this additional service need. The staff would be cross trained to support both fire and EMS resource needs. The existing center appears to be large enough to support the future staff.

These discussion items will be addressed in the Master Plan section of this report.

HAZARDOUS **MATERIALS SERVICES**

The Riverside Fire Department provides advanced hazardous materials (HazMat) response to protect life, property, and the environment. Designated as a **Cal OES Type 1 HazMat Team**, RFD can manage complex chemical, biological, radiological, nuclear, and explosive (CBRNE) incidents. The team serves Riverside and is a regional resource, capable of mutual aid deployment across California. Riverside has the only Type 1 HazMat Team in Riverside County.

HAZMAT RISK PROFILE

Riverside faces significant hazardous materials risks due to:

- **Transportation Corridors:** Major freight rail lines (Union Pacific, BNSF; ~128 daily trains) and freeways (SR 91, SR 60, I-215) carry diverse hazardous materials.
- **Industrial & Municipal Facilities:** Over 1,600 businesses maintain Hazardous Materials Business Plans, including manufacturers, water treatment facilities, and aerospace companies.
- **Emerging Threats:** Lithium-ion battery systems, renewable energy installations, and evolving industrial processes.

TEAM STRUCTURE AND CAPABILITIES

- **Specialized Units:** Dedicated Hazardous Materials Response Team (HMRT) with specialized apparatus, detection instruments, decontamination units, and full Level A/B/C PPE.
- **Personnel:** Cross-trained firefighters and officers certified as HazMat Technicians, Specialists, Incident Commanders, and Assistant Safety Officers.
- **Response Functions:** Initial containment, assessment, mitigation, decontamination, and disposal coordination with regulatory agencies.

RESPONSE PROTOCOL

- **Initial Dispatch:** Engine companies provide scene safety and preliminary assessment.
- **Team Activation:** HMRT responds to confirmed or complex HazMat incidents.
- **Command Structure:** Operates under NIMS framework with defined command, safety, operations, and logistics roles.

- **Interagency Coordination:** Works with Cal OES, CAL FIRE, EPA, and other local, state, and federal agencies.

TRAINING AND READINESS

- **Certification Requirements:** NFPA 1072, OSHA HAZWOPER, Title 19 CCR-compliant training for Technicians, Specialists, and Incident Command.
- **Exercises:** Regular multi-agency drills simulating industrial accidents, spills, and CBRNE threats.
- **Annual Requirements:** Knowledge, Skills, and Abilities (KSA) training, medical surveillance, and equipment calibration.
- **Public Outreach:** Education programs for businesses and residents on HazMat risks and safety procedures.

NOTABLE ACCOMPLISHMENTS

- Rapid response to industrial chemical spills, railcar incidents, and emergency decontamination operations.
- Mutual aid support for CAL FIRE and other agencies, including high-profile incidents like the March Air Force Reserve Base F-16 crash.
- Recognized regional asset with partnerships enhancing preparedness, situational awareness, and risk mitigation.

SERVICE DEMAND

RFD has seen fluctuating incident volumes over the past four years. Although the total number of incidents are between 300 and 500 per year, the complexity and impact on the community is significant. The following analysis shows the specific type of HazMat incident and volume between 2021 and 2024.

Figure 76: HazMat Incidents (2021–2024)

HazMat Incident	2021	2022	2023	2024	Grand Total
Combustible/Flammable Gas/Liquid Condition, Other	6	8	7	2	23
Gasoline or Other Flammable Liquid Spill	28	42	32	11	113
Gas Leak (Natural Gas or LPG)	66	92	82	73	313
Oil or Other Combustible Liquid Spill	17	20	11	9	57
Toxic Condition, Other	4	3	3	5	15
Chemical Hazard (No Spill or Leak)	18	8	9	4	39
Chemical Spill or Leak	13	14	11	15	53
Refrigeration Leak	3	1	1	1	6
Carbon Monoxide Incident	22	37	42	26	127
Electrical Wiring/Equipment Problem, Other	33	28	31	22	114
Heat From Short Circuit (Wiring), Defective/Worn	13	15	12	8	48
Overheated Motor	10	24	23	17	74
Breakdown of Light Ballast	2	—	3	1	6
Power Line Down	105	68	75	61	309
Arcing, Shorted Electrical Equipment	49	60	48	44	201
Biological Hazard, Confirmed or Suspected	23	15	4	1	43
Accident, Potential Accident, Other	3	—	—	2	5
Building or Structure Weakened or Collapsed	2	4	4	4	14
Aircraft Standby	5	5	3	2	15
Vehicle Accident, General Cleanup	5	4	5	2	16
Explosive, Bomb Removal (For Bomb Scare, Use 721)	2	1	—	1	4
Grand Total	**429**	**449**	**406**	**311**	**1,595**

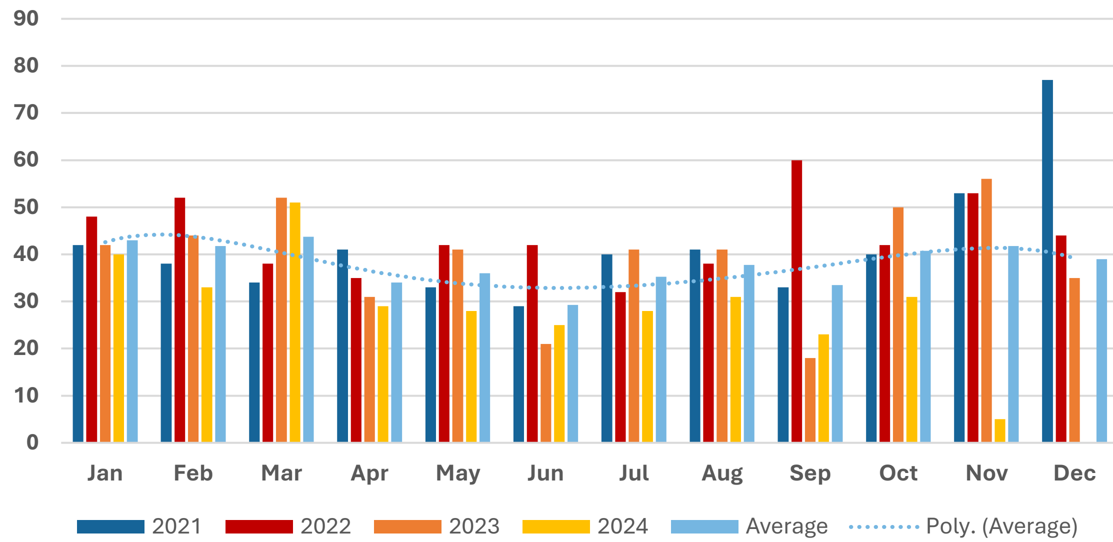
The following figure shows the temporal breakdown of HazMat incidents by hour and day of the week.

Figure 77: HazMat Incidents by Hour and Day

	Hazmat Call Volume						
	Sun	**Mon**	**Tues**	**Weds**	**Thurs**	**Fri**	**Sat**
12:00:00 AM	0	0	0	0	0	0	0
1:00:00 AM	8	4	4	6	11	7	9
2:00:00 AM	8	16	8	6	6	12	8
3:00:00 AM	9	18	24	21	18	21	21
4:00:00 AM	32	16	12	12	24	16	56
5:00:00 AM	25	30	35	0	25	15	45
6:00:00 AM	30	54	90	42	78	60	12
7:00:00 AM	91	140	84	119	119	70	56
8:00:00 AM	40	232	104	152	200	136	104
9:00:00 AM	144	306	243	234	189	171	81
10:00:00 AM	120	220	260	230	240	180	210
11:00:00 AM	187	341	275	330	231	308	275
12:00:00 PM	240	384	240	372	336	336	276
1:00:00 PM	247	325	494	260	273	351	260
2:00:00 PM	322	350	294	350	336	210	266
3:00:00 PM	255	345	360	420	420	285	210
4:00:00 PM	208	400	336	208	384	384	384
5:00:00 PM	442	442	408	289	340	425	238
6:00:00 PM	162	540	414	342	360	288	414
7:00:00 PM	304	437	380	323	380	399	380
8:00:00 PM	500	480	320	300	300	180	420
9:00:00 PM	315	315	273	441	294	315	294
10:00:00 PM	396	286	176	374	198	286	308
11:00:00 PM	184	230	414	184	184	253	207

The previous figure shows a pattern of HazMat incidents occurring in the afternoon and evening and an increase in volume early in the week, Sunday through Tuesday. To complete a temporal perspective, the following shows the breakdown of HazMat incidents by month.

Figure 78: HazMat Incidents by Month



Based on the preceding analysis, there is no opportunity for seasonal staffing of the HazMat team. Incidents are consistent throughout the year.

SPECIALIZED TECHNICAL **RESCUE SERVICES**

The Riverside Fire Department maintains a robust and highly trained Technical Rescue Program (TRT) designed to respond to complex, high-risk incidents across the City of Riverside and the surrounding region. The TRT program is designated as a **Cal OES Type 1 TRT Team.** This program enhances the department's all-hazards response, ensuring rapid, safe, and effective interventions in situations that exceed conventional firefighting or EMS capabilities.

PROGRAM SCOPE

The Technical Rescue Program addresses emergencies that require specialized skills, equipment, and training. Its mission is to protect life, property, and the environment by safely mitigating risks in challenging rescue scenarios, including structural collapse, confined space emergencies, swiftwater incidents, and high-angle operations. A Technical Rescue Team is critical for Riverside due to the city's diverse geography, infrastructure, and high-risk environments.

GEOGRAPHY AND INFRASTRUCTURE

Urban, suburban, and wildland areas, including canyons, rivers, and mountainous terrain, require specialized rescue capabilities for rope, swiftwater, and confined space operations. Industrial sites, multi-story buildings, bridges, and freeways present additional complexity.

- **High-Risk Incidents:** Earthquakes, floods, wildfires, major vehicle collisions, and industrial hazards necessitate specialized response skills to protect life and property.
- **Public Safety:** Rapid, trained TRT response reduces mortality, improves survival rates, and ensures compliance with NFPA standards, OSHA, and Cal-OSHA regulations.
- **Regional Mutual Aid:** Riverside serves as a regional hub, supporting CA-TF6 and other state and federal technical rescue operations, enhancing interagency coordination during large-scale incidents.
- **Long-Term Efficiency:** Investing in a TRT reduces reliance on external agencies, enables ongoing internal training, and ensures protection of city assets and infrastructure.

- **Community Confidence:** A trained TRT demonstrates proactive preparedness, fostering public trust and community safety awareness.

RESCUE DISCIPLINES AND CAPABILITIES

RFD's Technical Rescue Team is trained and equipped for multiple rescue disciplines:

- **Urban Search and Rescue (US&R):** Structural collapse, trench, and confined space rescue.
- **Rope Rescue:** High-angle and vertical rescues in urban or natural terrain.
- **Confined Space:** Confined space rescue is the technical and safety-oriented process of recovering a person from a confined space.
- **Trench Rescue:** Trench rescue is a specialized emergency response to extract individuals from collapsed trenches or excavations.
- **Water Rescue:** Swiftwater, flood, and surface water operations.
- **Vehicle Extrication:** Advanced techniques for motor vehicle collisions and industrial incidents.
- **Hazardous Materials Support:** Coordinated operations with HazMat teams during chemical, biological, or radiological incidents.
- **Specialty Teams:** Large Animal Rescue and Helo Hoist capabilities enhance operational versatility.

STAFFING AND TRAINING

- **Personnel:** Station 3 houses a dedicated Technical Rescue Team of 21 members, with 56 department-wide trained personnel.
- **Training Requirements:** 12 courses (9 mandatory, 3 optional) covering Confined Space, Trench, Rope Rescue, Structural Collapse, Swiftwater, Watercraft, Vehicle Extrication, Machinery Rescue, and Large Animal Rescue.
- **Training Investment:** Each course costs $1,100–$1,500 per student; average total training hours per TRT station exceed 225 hours. Ongoing refresher training ensures operational readiness.
- **National Standards Alignment:** Training meets NFPA 1670, 1006, 2500, 1858, and 1983, FEMA NIMS typing, FIRESCOPE operational and equipment requirements, and OSHA/Cal OSHA regulations.

EQUIPMENT AND RESOURCES

RFD maintains specialized apparatus and equipment for TRT operations:

- Rope and rigging systems, shoring, and confined space tools.
- Hydraulic and pneumatic extrication equipment.
- Swiftwater rescue gear, boats, personal rescue watercraft, and flotation devices.
- Structural collapse equipment and heavy rescue apparatus.
- Personal protective equipment (PPE) investment: $2,200 per member for technical PPE, $2,578 per member for water rescue PPE.

REGIONAL COLLABORATION & INTERAGENCY ENGAGEMENT

RFD's TRT actively participates in regional and national technical rescue initiatives, including:

- California Task Force 6 (US&R CA-TF6)
- State Fire Training Technical Rescue curriculum development
- FIRESCOPE Technical Search & Rescue and Swiftwater Working Groups

This collaboration ensures interoperability, consistent training, and integration with state and federal response systems.

RESPONSE CAPABILITIES

RFD's Technical Rescue Team can deploy rapidly for local emergencies or regional mutual aid incidents. The team is capable of managing large-scale events, natural disasters, and other high-risk situations that demand advanced rescue operations.

Service Demand

The following figure shows the technical rescue incidents 2021–2024.

Figure 79: Technical Rescue Service Demand (2021–2024)

Technical Rescue Incidents	2021	2022	2023	2024	Grand Total
Extrication, Rescue, Other	7	7	6	9	29
Extrication of Victim(s) From Building/Structure	1	3	1	2	7
Extrication of Victim(s) From Vehicle	7	3	13	12	35
Removal of Victim(s) From Stalled Elevator	47	47	56	62	212
Trench/Below-Grade Rescue	1	—	2	1	4
Confined Space Rescue	—	—	—	1	1
High-Angle Rescue	3	1	1	—	5
Extrication of Victim(s) From Machinery	3	4	3	2	12
Water & Ice-Related Rescue, Other	—	—	2	—	2
Swimming/Recreational Water Areas Rescue	—	—	—	1	1
Swift Water Rescue	1	—	1	3	5
Grand Total	**70**	**65**	**85**	**93**	**313**

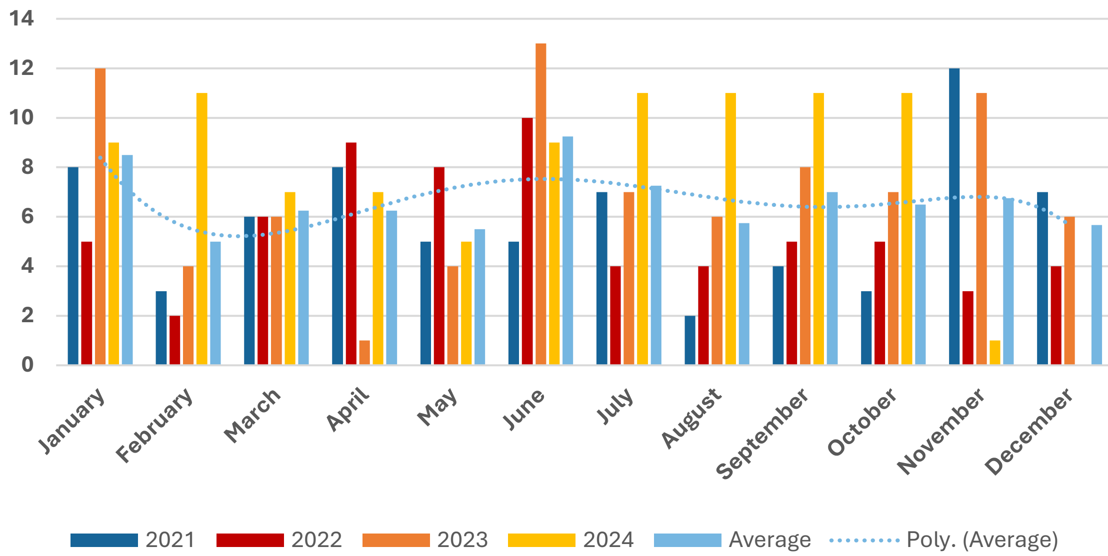
The following figure shows the temporal breakdown of technical rescue incidents by hour and day of the week.

Figure 80: Technical Rescue Incidents by Hour and Day

	Tech Rescue Call Volume						
	Sunday	**Mon**	**Tues**	**Weds**	**Thurs**	**Fri**	**Sat**
12:00:00 AM	0	0	0	0	0	0	0
1:00:00 AM	2	1	1	1	0	1	2
2:00:00 AM	4	0	2	0	2	2	2
3:00:00 AM	3	3	3	3	3	3	0
4:00:00 AM	4	0	0	4	0	4	4
5:00:00 AM	10	5	5	0	5	20	10
6:00:00 AM	0	24	12	6	6	0	24
7:00:00 AM	0	0	21	21	14	28	21
8:00:00 AM	16	48	16	16	8	32	24
9:00:00 AM	27	18	9	45	45	27	9
10:00:00 AM	60	30	30	0	10	20	60
11:00:00 AM	33	77	33	44	33	22	66
12:00:00 PM	0	84	12	24	48	48	84
1:00:00 PM	52	91	78	91	78	26	39
2:00:00 PM	56	56	42	42	70	70	140
3:00:00 PM	15	60	75	75	75	90	45
4:00:00 PM	64	48	112	48	48	64	80
5:00:00 PM	119	85	68	68	102	51	68
6:00:00 PM	144	108	54	54	72	90	72
7:00:00 PM	114	76	19	57	76	114	76
8:00:00 PM	40	120	120	60	40	40	60
9:00:00 PM	42	0	42	0	105	42	63
10:00:00 PM	88	0	22	44	22	44	66
11:00:00 PM	23	0	69	46	46	69	69

This analysis shows that the majority of technical rescue incidents are distributed evenly throughout the week; however, they occur more often in the late afternoon and evening. Due to the large volume of resources required for this type of emergency, training exercises would be more effective in the morning. To complete a temporal perspective, the following shows the breakdown of technical rescue incidents by month.

Figure 81: Technical Rescue Incidents by Month (2021–2024)



CALIFORNIA TASK FORCE 6

California Task Force 6 (CA-TF6) is a FEMA-certified Urban Search and Rescue (US&R) team based in Riverside and sponsored by the Riverside Fire Department. The task force is a multi-agency coalition composed of firefighters, structural engineers, medical personnel, canine units, heavy-rigging experts, and logistics specialists drawn from Riverside and partner agencies throughout the region. It serves as both a state mutual-aid resource under California's US&R system and as a national asset activated by FEMA for large-scale emergencies.

This program has a significant impact on the organization, providing training and funding that benefit the City of Riverside, the region, and the state. It serves as a valuable resource by strengthening response capabilities, rescue operations, emergency response, and equipment.

Over the past five years, CA-TF6 and the broader California US&R system have been repeatedly mobilized to major incidents across the United States and the Pacific. Deployments have included pre-positioning for Tropical Cyclone Douglas, wildfire response and recovery operations following the devastating Hawaii wildfires and nearby Oregon incidents, multiple Atlantic hurricane activations—including Hurricanes Helene and Milton—and flood search operations in Kerr County, Texas. These missions have encompassed a wide range of capabilities, from heavy search and rescue and structural assessment to water and swift-water operations, as well as incident planning, logistics, and liaison assignments supporting both state and federal mutual-aid efforts. The following figure shows the utilization over the past five and a half years.

Figure 82: CA-TF6 Utilization (2020–YTD 2025)

Year	Event
2020	Hurricane Douglas Oregon Wildfires Hurricane Delta and Zeta
2021	Hurricane Henri and Ida
2022	Hurricane Fiona Hurricane Ian
2023	Hawaii Wildfires
2024	Hurricane Helene Hurricane Milton Hurricane Beryl
2025	Kerr County Texas Floods

EMERGENCY **MANAGEMENT**

The Office of Emergency Management (OEM) is responsible for developing and maintaining an all-hazards response strategy for the City of Riverside. The essential elements of preparedness—planning, risk mitigation, response, and recovery—require ongoing training, public education, and coordination with multiple city departments, external agencies, the business community, and non-governmental organizations.

OEM staff support operations within the Emergency Operations Center (EOC), which is co-located with the Training Division at the City Corporation Yard. However, the current EOC facility presents several limitations. It is located within 200 feet of an active freight railway line and was not designed for scalable incident management. The site lacks critical features such as billeting and feeding areas, which are necessary to support sustained emergency operations.

OEM also administers the Community Emergency Response Team (CERT) program, which provides 20 hours of training to residents to help them become self-sufficient in the aftermath of a major disaster. The CERT program also fosters community engagement by encouraging participants to assist with public education efforts and to support first responders during significant public events.

The organization maintains and deploys multiple trailers containing essential emergency supplies and equipment. As previously noted, the Fire Department would benefit from a dedicated warehouse facility to provide weather protection, security, and adequate storage space for these assets.

Like many other emergency management organizations, several OEM positions are either partially or fully grant funded. In March 2025, President Trump issued an executive order titled, "Achieving Efficiency Through State and Local Preparedness."[17] The order directs a review of federal preparedness responsibilities with the goal of shifting greater accountability to state, county, and local jurisdictions. Although the order does not specify funding implications, in FY 2025 the Riverside Operational Area received a total of $8,282,536 in grant allocations, distributed as follows:

[17] https://www.whitehouse.gov/presidential-actions/2025/03/achieving-efficiency-through-state-and-local-preparedness/.

Figure 83: Federal Grant Summary

Grant Program	35% LE*	Award Amount	Total Award
State Homeland Security Program (SHSP)	$833,852	$1,548,582	$2,382,434
Urban Areas Security Initiative (UASI)	2,065,036	3,835,066	5,900,102
GRAND TOTAL	**$2,898,888**	**$5,383,648**	**$8,282,536**

*Law Enforcement allocation of these funds is required to be at least 35% of the total award.

While these grant funding amounts are for the entire operational area, any reduction in funding would be significant to the City of Riverside OEM.

Emergency Management Discussion

The current staffing of OEM is largely dependent on the funding presented previously. As an example, the following figure reflects existing positions and whether they are partially or completely grant funded.

Figure 84: OEM Position Funding Sources

Position	Partially Grant Funded	Fully Grant Funded	General Fund
Emergency Services Administrator	X		X
Emergency Services Coordinator			X
Grants Manager/Sr. Management Analyst	X		X
Sr. Office Specialist/Account Clerk	X		X
Community Preparedness Coordinator		X	
UASI Homeland Security Planner		X	
UASI Training Coordinator		X	

Due to the recent Executive Order from the President of the United States, the future organizational structure of the Federal Emergency Management Agency (FEMA), and the continued access to grant funding presents a significant impact to the Office of Emergency Management. Specific staffing and other needs will be discussed in the recommendations section of this report.

TRAINING & CONTINUING **MEDICAL EDUCATION**

Training serves as the cornerstone of all emergency services. The effectiveness with which personnel deploy resources and operate equipment is directly tied to the quality and depth of training provided by the organization. The following section presents an overview of the current training program, including its equipment, facilities, delivery methods, and overall effectiveness.

TRAINING STAFF

Training is a critical element in maintaining an efficient and capable department. The RFD training program, however, shows areas where improvements could be made. Currently, a Training Chief, two Training Captains, one EMS Captain, and an EMS Coordinator oversee operational functions. Despite the limited staffing, the division is responsible for delivering the full spectrum of EMS training and education, including the department's first responder programs and internal training requirements.

GENERAL TRAINING COMPETENCIES

The following figure outlines the key training topics and certification levels provided by RFD. Currently, the department has well developed set of Training Standard Operating Policies (SOPs), each defining the minimum hours required to achieve and maintain certification.

Figure 85: General Training Competencies by RFD

Training Competencies	RFD
Incident command system–cert levels defined?	YES – ICS/NIMS Certifications
Personnel accountability training in place?	YES – SOP 3.42 and Command & Control (12hrs Annually)
Formal SOGs on training in place?	YES – SOP 1.53, Probationary & Certification Manuals
Training safety procedures in place?	YES – SOP 3.06, Safety Messages, and Probationary & Certification Manuals
Recruit academy (internal or external)?	INTERNAL: 5 Day and 10 Day
Special rescue (high-angle, TRT, etc.)?	YES
Hazardous materials certification level?	YES – OES TYPE 1: Hazmat Specialist, Hazmat Technicians, Hazmat IC
Wildland firefighter (certification level)?	YES – NWCG/CICCS
Vehicle extrication?	YES – Tiller/Tractor Certification
Defensive driving? (program used; frequency?)	YES – Vector Solutions Course
Use, safety, & care of small tools?	YES
Use, safety, & care of power equipment?	YES
Radio communications & dispatch protocols?	YES – Several SOPs that need updating
EMS Training	
Initial EMT and Paramedic training completed by:	Outside
CME provided by who & what methods?	EMS Coordinator/Captain and Vector Solutions. In Person & Online.
BLS & ALS skills practice?	YES – ALS & BLS
Other EMS-related training:	YES – ACLS/PALS/PHTLS/SCV/PUC/BLS

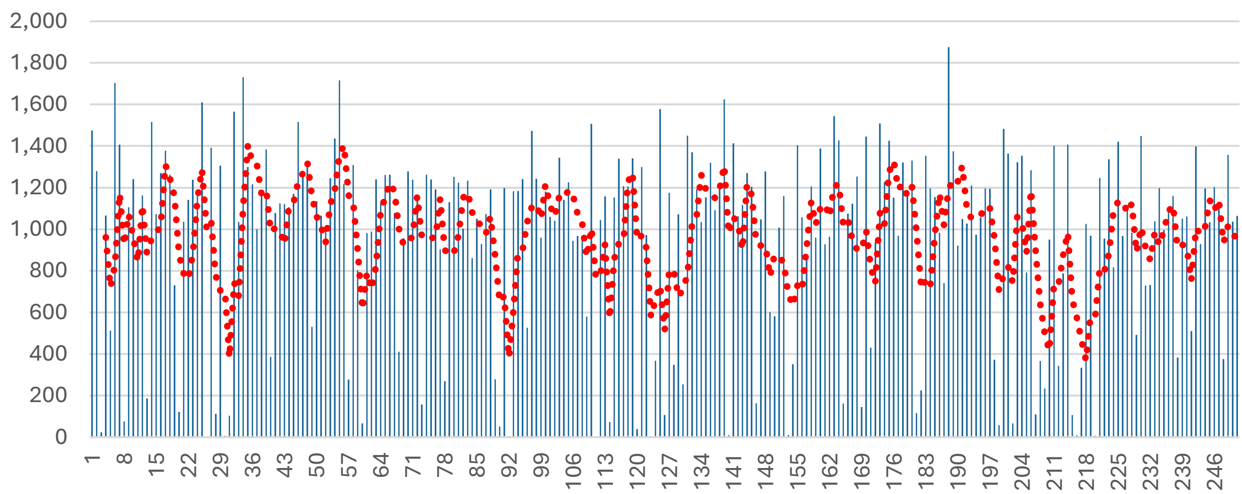
RFD has consistently demonstrated the capability to manage critical incidents through the integration of advanced equipment and highly trained personnel. The department maintains foundational competencies by completing the continuing medical education (CME) requirements mandated by the National Registry and the State of California. However, without a robust system to regularly verify individual skills in the field, there is a risk that proficiency may vary across personnel, potentially affecting response effectiveness and patient outcomes. Implementing a comprehensive random check-off program would provide documented assurance of skill competency, enhancing both operational readiness and the quality of care delivered.

Evaluation under this system would focus on the following criteria:

- Recognition of the necessity for the medical procedure.
- Gathering appropriate equipment and supplies for the procedure.
- Procedural requirements including identifying anatomical sites.
- Recognition of the efficacy or complications relating to the procedure.
- Appropriate documentation.

RFD should consider implementing a formal policy that requires annual skill check-offs, ensuring that all critical competencies are assessed and maintained within a two-year cycle. Current training data indicates an inconsistent level of instruction among paramedics throughout the year, which may lead to variability in field performance and impact patient care outcomes. The following figures detail the total number of training hours each paramedic completed in 2024, highlighting areas where additional oversight and structured skill reinforcement could enhance overall proficiency and operational readiness. The x-axis shows individual firefighters and the y-axis shows the number of training hours.

Figure 86: Individual Training Analysis (Hours)



The training program should continue efforts to maintain consistent training hours per individual firefighter/paramedic/EMT.

TRAINING TOPICS DISCUSSION

The following figure summarizes the percentage of training topics compared to service demand in 2024.

Figure 87: RFD Training Emphasis Comparison to Service Demand (2023–2024)

Incident Type	Training	Incident Percentage
EMS	3%	60%
Fire	60%	3%
Haz-mat	2%	1%
Other	33%	34%
Rescue	0%	0%
Wildland	1%	2%

The preceding figure underscores a clear opportunity to strengthen the department's annual training program. While 60% of all incidents involve EMS, only 3% of training hours are currently devoted to patient care. RFD operates a progressive advanced life support response program, yet the current allocation of training hours does not align with operational demands. Given the number of Paramedics on staff, increasing EMS-focused training is essential to maintain proficiency, ensure consistent patient care, and mitigate the risk of skill gaps during critical incidents.

EMS TRAINING ASSESSMENT AND RECOMMENDATIONS

Training is a critical component of an effective fire department, directly influencing personnel proficiency, operational readiness, and patient outcomes. RFD has demonstrated the ability to manage critical incidents through advanced equipment and highly trained personnel. The department maintains baseline competencies by meeting continuing medical education (CME) requirements mandated by the National Registry and the State of California. However, a comprehensive review of the EMS training program reveals multiple opportunities to enhance skill proficiency, operational alignment, and overall departmental readiness.

Currently, the RFD EMS training program is primarily computer-based CME, supplemented by monthly hands-on skill sessions scheduled as availability allows. All training occurs at the RFD Training Center, which creates logistical challenges and necessitates off-duty overtime for personnel. Analysis of 2024 training data indicates variability in total hours completed by paramedics, and while 60% of all incidents involve EMS, only 3% of training hours are dedicated to patient care. Given the number of Paramedics and the department's progressive advanced life support response program, an increase in EMS-focused training is warranted.

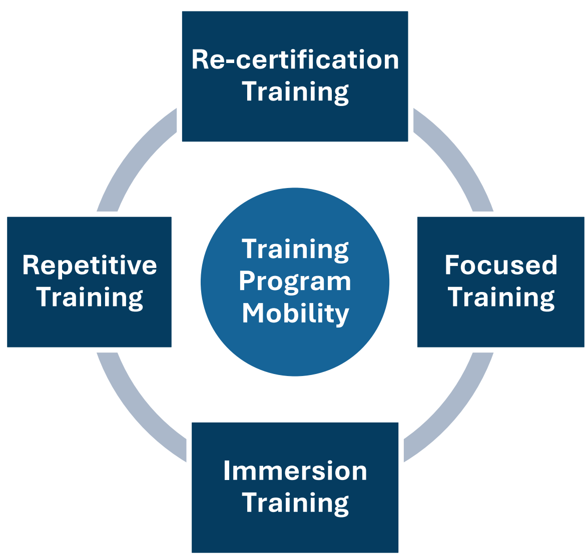
Skill Verification and Check-Offs

AP Triton recommends implementing annual skill check-offs to ensure all critical competencies are assessed and reinforced within a two-year cycle. A robust random check-off system would provide documented assurance of individual proficiency, reduce variability across personnel, and improve consistency in patient care delivery.

Balanced EMS Training Program

A comprehensive EMS training program should integrate targeted skill development, mandatory re-certification, immersive hands-on experiences, repetitive practice, and focused training. This approach strengthens individual proficiency, reinforces proper sequencing of critical interventions, and supports overall departmental readiness.

Figure 88: Balanced Training Program



Focused Training

Another key component of a balanced training program is focused training, where an organization allocates training time based on retrospective analysis of actual incident data. Training schedules should reflect the department's operational realities, identifying areas for improvement and aligning training emphasis with service demand. The preceding figure, *"RFD Training Emphasis Comparison to Service Demand,"* illustrates the alignment between incident volume and training allocation. While the gap is minimal compared to similar-sized organizations—often due to regional and state certification requirements—there remains an opportunity to prioritize training based on operational need when possible.

For example, regional EMS agencies implemented specific training in response to the COVID-19 pandemic, emphasizing enhanced body substance isolation, triage protocols, and critical interventions specific to the virus. Similarly, current incident data showing an increased number of patients aged 65 and older suggests opportunities for additional patient care training or specialized service delivery.

Recertification Training

Regional and state certification requirements are mandatory and non-negotiable; however, optional certifications should be evaluated using a cost-benefit framework to determine value to the department. Organizations should strategically select optional certifications that enhance readiness, improve patient care, or address emerging service demands.

Decentralization and Access

Decentralizing training cycles and deploying a surge-capacity vehicle to cover operational districts can reduce off-duty overtime, improve participation rates, and provide more flexible access to hands-on training. This is particularly important for a department of 142 paramedics, where centralized training presents scheduling and resource challenges.

Immersion Training

Research supports immersion training as an effective method for preparing personnel for high-stress scenarios. Exercises that simulate real-world events—such as active shooter drills using volunteer victims in "cut suits"—allow paramedics to practice advanced procedures under realistic conditions, improving skill retention, decision-making, and confidence. While large-scale immersion exercises can be labor-intensive and costly, smaller-scale, mobile scenarios can deliver meaningful, scenario-based training with reduced logistical and financial burden.

Manikin-Based Skills Training

Lessons from King County, Washington, demonstrate that repetitive skills training is critical to mastery of advanced procedures, including airway management. High-fidelity simulators provide excellent real-time feedback but are costly ($60,000–$110,000), require extensive maintenance, and lack mobility. A practical alternative is mid-fidelity manikins, which can be purchased in multiples and deployed throughout the organization, allowing decentralized, repetitive skill practice. Mid-fidelity manikins also support proper sequencing of interventions, a key factor in successful patient outcomes. Currently, RFD's EMS training resources are limited: the training center has one full-capacity ALS manikin nearing replacement and relies on expired medications and medical kits for simulation. Mid-fidelity manikins would expand access, improve skill repetition, and reduce the reliance on centralized, off-duty training sessions.

Summary of Recommendations

By implementing these strategies—annual skill check-offs, a balanced EMS training program with focused and recertification components, decentralized access, immersion exercises, and mid-fidelity manikin training—RFD can:

- Reduce variability in Paramedic proficiency.
- Align training with operational demands and incident profiles.
- Enhance readiness and patient care outcomes.
- Optimize resources and reduce overtime costs.

These measures will ensure that RFD's EMS training program not only meets regulatory requirements but also fosters a culture of continuous professional development and operational excellence.

Training Delivery & Scheduling

The following figure summarizes the training methodologies utilized by RFD.

Figure 89: Methodologies Utilized in Training

Training Methodologies	RFD
Manipulative Skills Exercised	YES – Monthly MCDs & Facility Training
Skill Performance Evaluations	YES – Annually (NFPA 1410 Drills)
Annual Fire & Other Training Hours Requirements	YES – SOP 1.53
Annual EMS Training Hours Requirements	YES – State/County EMS CE Requirements
Annual Training Hours Tracked	YES – By Supervisor (Captain)
Formal Lesson Plans Used	YES – Certification Manuals, Probationary Manuals, Practical Applications
Source of Lessons	In-House
Multi-Company Drills	YES – Monthly
Multi-Agency Drills	YES – Varies/Operational Area
Inter-Station Drills	NO – Requirement/Tracking
Disaster Drills Conducted	Monthly – Everbridge Test Annually – MCI/URVI, US&R/Technical Rescue/HazMat Monthly/Quarterly Drills
Pre-Fire Planning Included in Training	YES – "How To" Class and Training Bulletins, MCD Review as Applicable. Typically, Pre-Fire Planning Completed During Prevention Inspections.

RFD has seen limited turnover over the past year, supporting a level of experience necessary to provide service. The staffing challenges in the future will require a formalized and consistent training program.

TRAINING FACILITIES & RESOURCES

In modern EMS, trainers require a variety of resources to deliver realistic, practical, and measurable training. Renowned research consultant Gordan Graham has emphasized the importance of focusing on "high-risk, low-frequency" events—situations that occur rarely but carry significant consequences. This principle is evident when comparing the extensive training required for structure fires to the relatively low volume of actual fire calls. To ensure personnel are prepared for these infrequent yet high-risk incidents, an organization must maintain adequate training facilities and resources.

RFD currently provides a centralized training center that serves as the primary location for both EMS and fire training activities. The facility has reached its functional use and requires significant improvements to support the future of emergency response by the department. The burn building is no longer usable due to structural issues and risk from asbestos. The training tower is also in need of replacement and future design needs to focus on a structure that mimics the vertical growth of the city. There is limited classroom space and with the potential of increasing EMS services, there needs to be upgrades in the audio-visual capacities to support hands-on skill development, scenario-based exercises, and continuing education. The current system has limitations in both capacity and mobility.

Additionally, the centralized nature of the training facility necessitates off-duty participation for many personnel, creating challenges related to overtime costs, scheduling, and operational coverage. The current configuration also restricts the Department's ability to conduct decentralized or mobile training exercises, which could improve access, efficiency, and relevance by delivering training directly to operational districts.

Figure 90: Training Facilities & Resources

Facilities & Resources	RFD
Adequate Training Space	Limited
Driver's Course/Rodeo	Yes, with established recertification process
Adequate Classroom Facility	Limited
Computers & Simulations	Limited
EMS Equipment Assigned to Training	Need additional mid-fidelity manikins
Mobile Training Resources	None
Tower	Replace
Burn Building	Non-Operational

RFD's current EMS training resources are limited, and anticipated growth will necessitate expanded capacity. To ensure personnel maintain proficiency and meet the demands of a progressive advanced life support system, training must be both accessible and aligned with operational needs.

To enhance efficiency and promote fiscal responsibility, AP Triton recommends decentralizing training resources and developing mobile training units—such as dedicated training ambulances—that can be deployed throughout the city. These mobile units would allow paramedics to participate in hands-on, scenario-based training without the logistical challenges and overtime costs associated with centralized, off-duty sessions.

When combined with other recommended strategies—annual skill check-offs, focused training based on incident data, mid-fidelity manikin deployment, immersion exercises, and recertification training—mobile training units can provide a comprehensive, flexible, and scalable approach. This integrated strategy ensures RFD personnel maintain consistent skill proficiency, practice proper sequencing of critical interventions, and are prepared for both routine and high-risk, low-frequency events, ultimately improving patient care and operational readiness across the organization.

Section II: COMMUNITY RISK ASSESSMENT

COMMUNITY **PROFILE**

CITY OF RIVERSIDE

Riverside is a city in Riverside County, California, located in the Inland Empire metropolitan area, at the heart of Southern California. Situated approximately 50 miles southeast of downtown Los Angeles, Riverside is an integral part of the Greater Los Angeles region and serves as the county seat of Riverside County. The city derives its name from its location beside the Santa Ana River, which flows through the region. As the most populous city in both the Inland Empire and Riverside County, Riverside holds a prominent role in the region’s growth and identity.

Covering 81.5 square miles, Riverside is the sixth-largest city in Southern California. According to the U.S. Census Bureau, the city had a population of 317,624 in 2020, with a 2024 population estimate of 321,538 from the California Department of Finance. Riverside ranks as the 61st-most populous city in the United States and the 12th-most populous in California, home to a diverse and vibrant community. Were it not situated alongside Los Angeles, Orange, and San Diego counties, Riverside would stand as a major metropolitan center in its own right.

Incorporated in 1870, Riverside has a rich and influential history as the birthplace of California’s citrus industry. The city is also home to several institutions of higher learning, including University of California, Riverside, California Baptist University, and La Sierra University. An innovative and artistic spirit permeates the community, which offers the charm and hospitality of a hometown with the culture and diversity of a sophisticated metropolitan area.

Riverside operates under a Council–Manager form of government. The City Council consists of seven elected members, each representing one of the city’s seven wards, serving four-year terms. Each ward includes approximately one-seventh of the city’s population—about 45,000 residents. The Mayor and City Council provide strategic and policy direction to the City Manager, who oversees implementation through a workforce of approximately 2,700 city employees.

Riverside offers an excellent quality of life and continues to thrive, making it a highly desirable place to live. In a 2024 WalletHub study examining 29 key happiness indicators across U.S. cities, Riverside ranked 68th among the Happiest Cities in America. The city attracts a diverse population of creative and entrepreneurial residents, students, and visitors.

Riverside's commitment to technology, workforce development, digital inclusion, the arts, innovation, collaboration, and social capital continues to enhance its already exceptional quality of life. The city hosts the annual five-week Festival of Lights, drawing more than 750,000 attendees. Other notable attractions include the Mission Inn—the largest Mission Revival-style building in the U.S.—the Fox Performing Arts Center, Riverside Art Museum, California Museum of Photography, California Citrus State Historic Park, and the historic Parent Washington Navel Orange Tree.

The City of Riverside serves as the economic powerhouse of one of the fastest-growing regions in the nation. Its economy thrives on a diverse mix of industries, including advanced manufacturing, high-quality retail, innovative service companies, local agriculture, and related food enterprises. A rapidly expanding green-tech sector—spanning research, development, technology, and manufacturing—further strengthens the city's growth potential.

Riverside is also a key financial and professional hub, home to numerous top-rated firms in accounting, brokerage, architecture, engineering, law, sustainability, and banking. This strong professional base supports both established and emerging businesses. The city is also home to four major medical facilities and several institutions of higher education that attract talented students, academics, and scientists.

Riverside was ranked among the Top 50 Best Areas in the U.S. for Starting a Business by Inc. Magazine and placed in the Top 10 of the 2023 Digital Cities Survey. Its thriving business environment continues to draw investment from entrepreneurs, business owners, and investors across industries.

Major Neighborhoods of Riverside

The City of Riverside is comprised of 28 neighborhoods, which included Northside, Hunter Industrial Park, University, Eastside, Wood Streets, Grand, Victoria, Airport, Canyon Crest, Sycamore Canyon Park, Sycamore Canyon/Canyon Springs, Mission Grove, Hawarden Hills, Alessandro Heights, Orange Crest, Arlington Heights, Case Blanca, Presidential Park, Arlington South, Arlington, Ramona, Arlanza, La Sierra South, La Sierra, La Sierra Acres, and La Sierra Hills.

A few of the main neighborhoods include:

Downtown Riverside

As the historic and cultural core of the city, Downtown Riverside is home to civic buildings, historic landmarks (including the Mission Inn), and dense commercial development. Multi-story buildings, high pedestrian activity, and aging infrastructure create unique fire prevention and emergency response challenges. The area also has a significant homeless population and frequently hosts public events, increasing the need for special event safety planning and coordinated emergency preparedness.

Arlington Heights

Located in the southwest portion of the city, Arlington is a well-established residential community composed of single-family homes, small businesses, and schools. The neighborhood's mature housing stock may lack modern fire protection systems. Accessibility issues in older subdivisions and high volumes of medical and fire alarm calls are notable operational concerns.

La Sierra

Situated in the westernmost part of Riverside, La Sierra features both older and newer residential developments, retail centers, and proximity to the Santa Ana River. It includes medical facilities such as the Kaiser Permanente Riverside Medical Center. Wildland–urban interface (WUI) areas on the western edge of La Sierra increase wildfire risk, particularly during Santa Ana wind events.

Orangecrest

A master-planned community in the southeastern portion of the city, Orangecrest features newer suburban-style homes, parks, and schools. Wide roadways and modern infrastructure support efficient emergency response, but high call volumes for medical incidents and traffic collisions are common due to the area's continued population growth.

Canyon Crest

Canyon Crest is a diverse neighborhood with a mix of student housing, luxury residences, and high-density apartments. Located near the University of California, Riverside (UCR), the area experiences a transient population and elevated call volume during the academic year. The hilly terrain and canyon topography can hinder fire apparatus access, while proximity to open space contributes to WUI fire exposure.

Eastside

One of Riverside's oldest and most densely populated neighborhoods, Eastside is characterized by small-lot housing, aging infrastructure, and socioeconomic challenges. Fire risk is elevated due to older electrical systems, overcrowded dwellings, and limited defensible space. Targeted community risk reduction programs—such as public education, smoke alarm installations, and outreach—are especially important in this area.

Victoria

A historic and architecturally significant neighborhood, Victoria is known for its tree-lined streets, large single-family homes, and estates dating back to the early 20th century. The age of the structures and prevalence of combustible landscaping increase fire risk; however, the area's lower density and active neighborhood associations provide opportunities for proactive risk reduction initiatives.

University

Adjacent to the UCR campus, the University Neighborhood features student housing, apartment complexes, and rental properties. High tenant turnover and inconsistent property maintenance can impact fire safety. Traffic congestion and limited parking during peak academic periods may also impede emergency vehicle access.

Sycamore Canyon—Canyon Springs

Located in the northeast portion of the city, this area includes a mix of residential, industrial, and open space uses. Industrial parks and retail zones require regular inspections for hazardous materials and life safety compliance. Portions of this district border wildland areas, contributing to wildfire exposure and necessitating specialized pre-incident planning.

RIVERSIDE COUNTY

Riverside County is the fourth-largest county in California, covering more than 7,200 square miles. It was established in 1893, formed from a small portion of San Bernardino County and a larger portion of San Diego County, and takes its name from the City of Riverside.

Long before European settlement, the region was inhabited by several Native American tribes, including the Serrano, Luiseño, Cupeño, Chemehuevi, and Cahuilla peoples. In the late 18th century, Spanish missionaries began colonizing the area, utilizing the fertile interior valleys of what is now western Riverside County for grain and cattle production. During this era, Spain claimed all of California and Mexico. Following the Treaty of Guadalupe Hidalgo in 1848, California became a U.S. territory, and in 1850, it was admitted as a state.

The county’s early economy was rooted in agriculture, later expanding to include commerce, construction, manufacturing, transportation, and tourism—industries that contributed significantly to the region’s rapid development.

In recent decades, Riverside County has experienced dramatic population growth. Between 1980 and 1990, the population increased by more than 76 percent, making it the fastest-growing county in California at the time. By 1992, Riverside County’s population exceeded 1.3 million, larger than that of 13 entire U.S. states. Today, the county is home to approximately 2.3 million residents, ranking fourth in California and 10th in the nation by population.

Geographically, Riverside County stretches nearly 200 miles from west to east, encompassing fertile river valleys, low deserts, mountains, foothills, and rolling plains. It is bordered by Los Angeles County to the west, San Bernardino County to the north, and San Diego and Imperial Counties to the south. The county's western region experiences a Mediterranean climate, while its central and eastern areas are predominantly desert.

Riverside County is well connected by five major freeways, offering regional and interstate accessibility. Interstate 10 traverses the county from east to west, linking it to Los Angeles and Phoenix. Interstates 15 and 215 connect Riverside County with San Diego and San Bernardino Counties. The county is served by BNSF, Southern Pacific, and Union Pacific Railroads, as well as 12 general aviation airports and 17 total airports. Major air hubs include Ontario International Airport and Palm Springs International Airport.

Since 1980, Riverside County has experienced 49 federally declared disasters, the most recent occurring in September 2022 due to the Fairview Fire. Additionally, the county has faced 21 Governor-proclaimed state disasters. In 2022 alone, Riverside County endured flooding, high winds, extreme heat, and wildfires. These natural hazards recur frequently—often on an annual basis—underscoring the county's ongoing efforts, along with its cities (including the City of Riverside), to strengthen resilience and become a disaster-resistant operational area.

DEMOGRAPHIC **PROFILE**

POPULATION & DEMOGRAPHICS

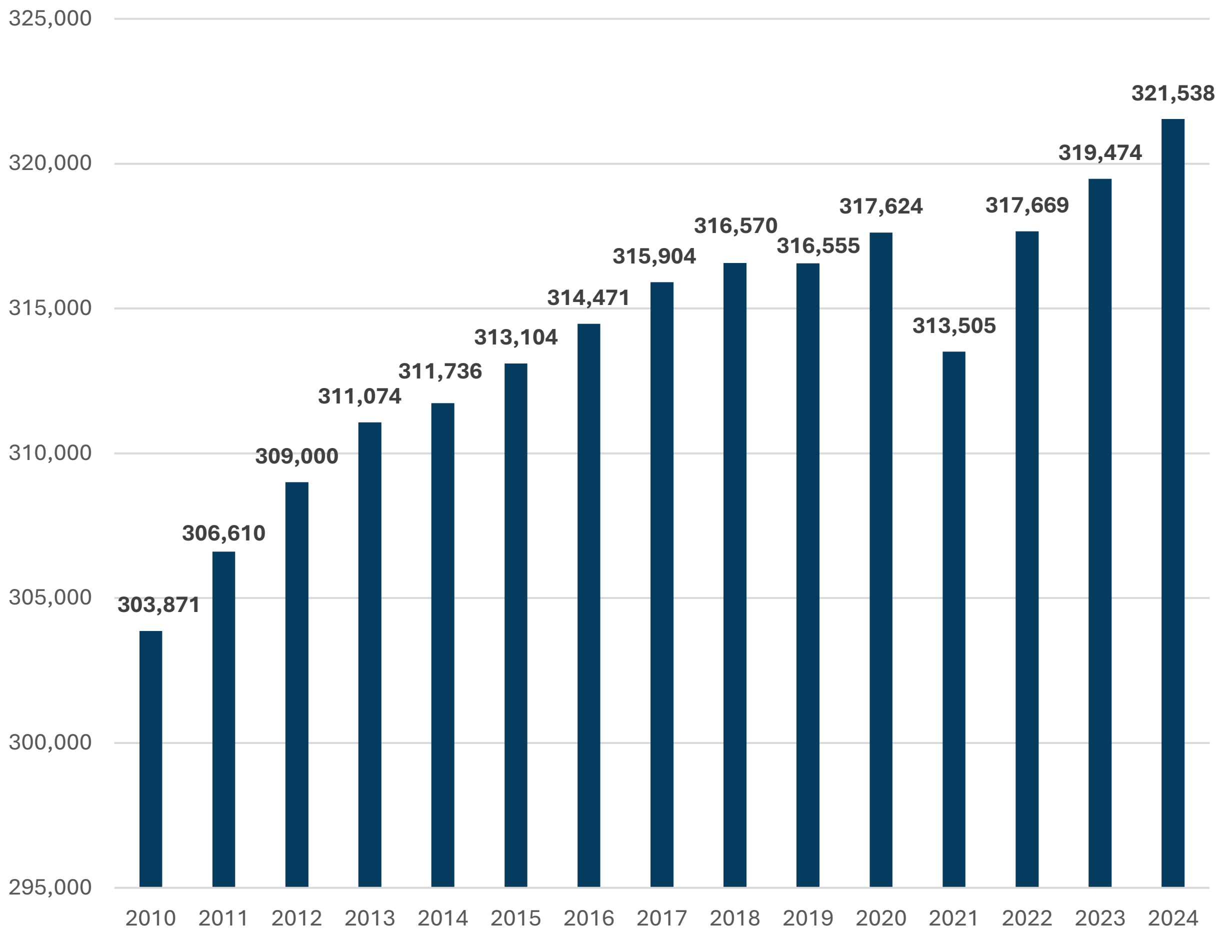
Population and demographic characteristics significantly influence the types of services a community requires. Social factors such as poverty levels, concentrations of high-risk areas, and housing types directly impact the service delivery demands placed on the Riverside Fire Department (RFD).

The city's population also directly affects the level and nature of services provided by RFD. According to data from the U.S. Census Bureau, Riverside's population increased from 303,871 in 2010 to an estimated 321,538 in 2024—a growth rate of 5.81%. The city has experienced steady population growth, contrasting with the State of California, which has declined by more than half a million residents since 2021, with only marginal improvement in 2024.[18]

The following figure illustrates population estimates for the City of Riverside from 2010 through 2024, based on data from the California Department of Finance.[19]

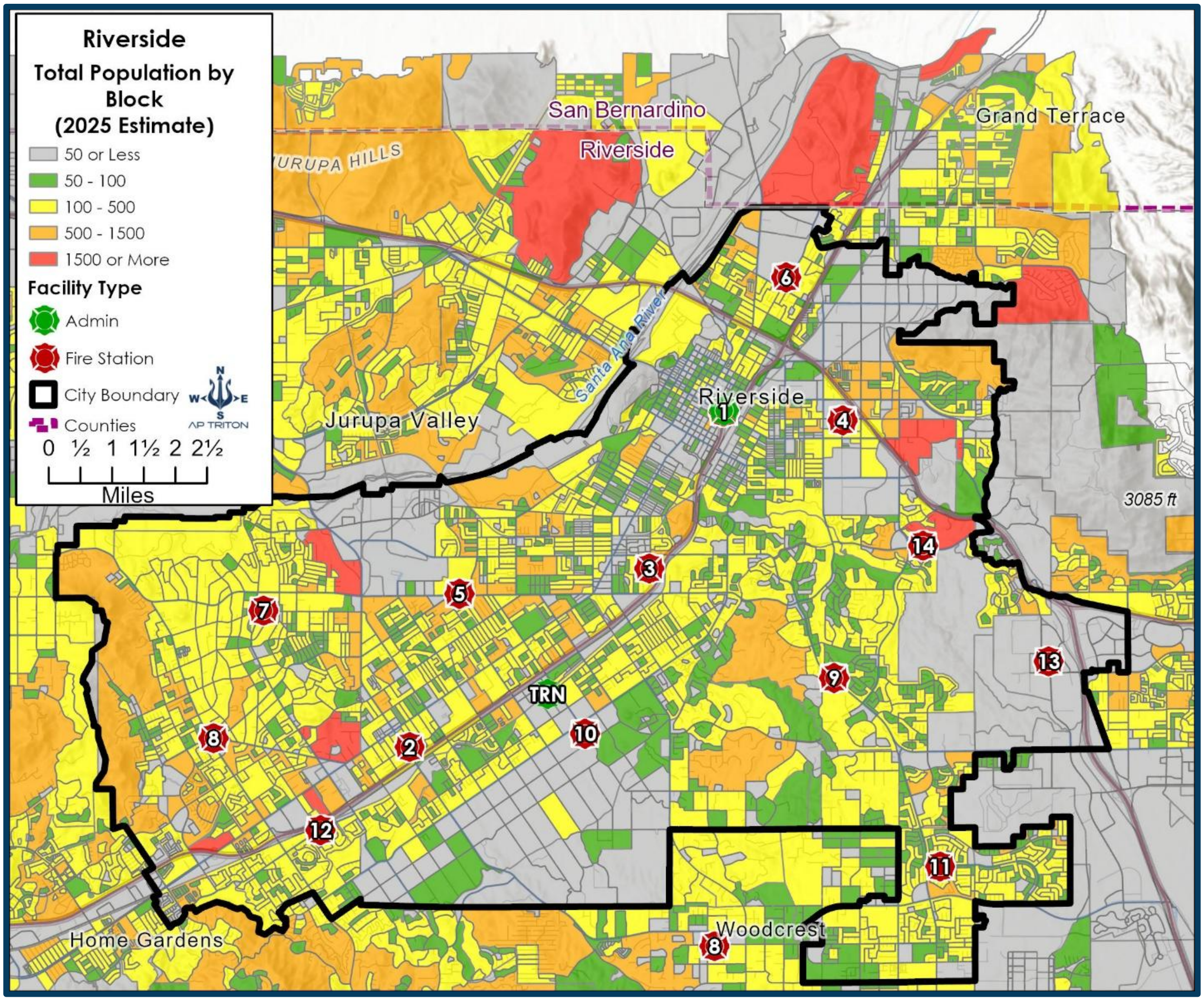
[18] California's population keeps shrinking, https://ktla.com/news/california/californias-population-keeps-shrinking.
[19] California Department of Finance Website, https://dof.ca.gov/Forecasting/Demographics/ Estimates/.

Figure 91: Population Estimates (2010–2024)



The following figure illustrates the population density distribution within the City of Riverside.

Figure 92: Population Density



At-Risk Populations

At-risk populations can place additional workload demands on emergency service organizations, increasing the overall need for service delivery. The National Fire Data Center identifies these groups as being at higher risk of injury or death in a fire:[20]

- **Young Children (Under 5 Years)**: Limited mobility, inability to respond appropriately to emergency situations, and dependence on caregivers place this group at elevated risk. Young children may be unable to self-evacuate during fires and often require specialized rescue techniques.
- **Older Adults (Over 55 Years)**: Age-related factors, including reduced mobility, slower reaction times, and a higher prevalence of medical conditions, contribute to increased vulnerability. This demographic often requires more complex EMS interventions and evacuation assistance.
- **Elderly Adults (Over 85 Years)**: This subset faces the highest fire mortality risk of any age group, with fatality rates approximately four times the national average. Factors include living alone, medication effects, cognitive impairments, and physical limitations.
- **Gender-Based Disparities**: Statistical analysis reveals gender-specific risk patterns, with males and females showing different vulnerability profiles across age groups and incident types.

According to the 2022 U.S. Census American Community Survey (ACS) five-year estimates, several groups within these categories are also more likely to require emergency medical services (EMS) than the general population.[21]

Age

A person's age within a high-risk group directly correlates to an increased likelihood of unintentional injury and fire-related death or injury. Older adults are 2.6 times more likely to die in a fire than the overall U.S. population. This elevated risk contributes to higher service demand, particularly for older adults who require additional medical care.[22]

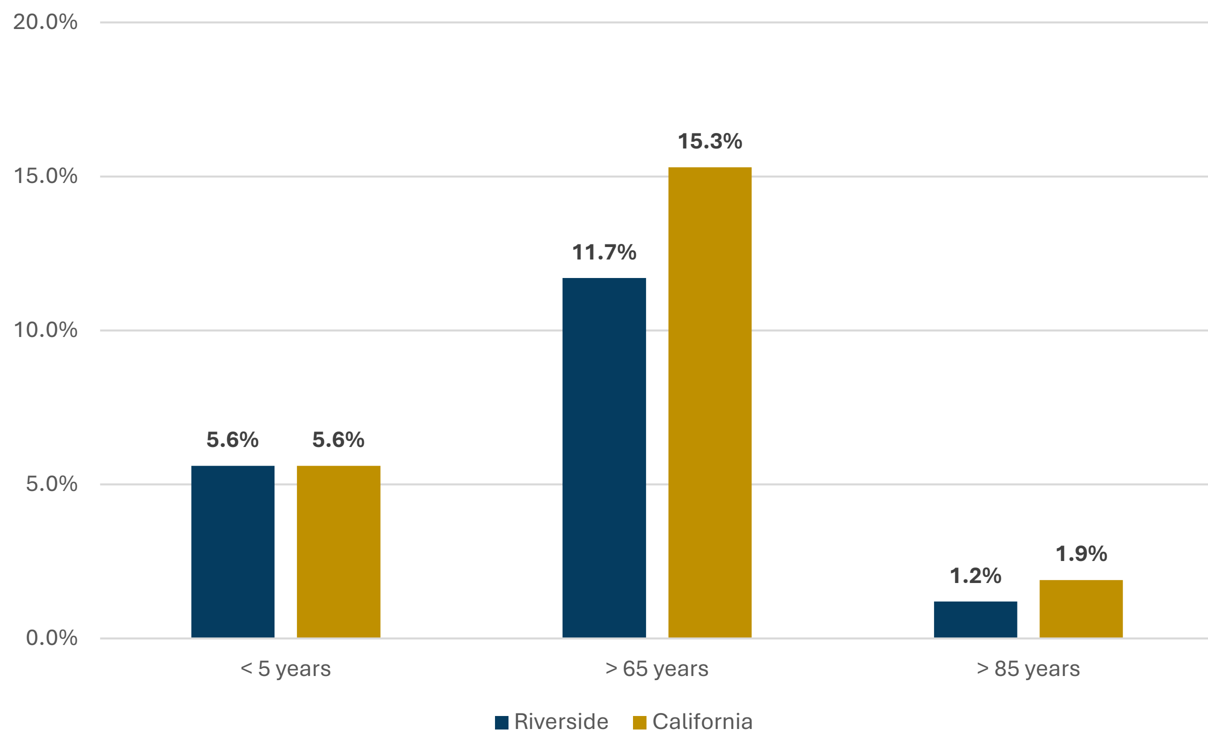
Children under the age of five are also at increased risk due to their dependence on others and limited ability to respond during emergencies. However, recent trend data (2018) from the U.S. Fire Administration indicates that the relative risk of dying in a fire for this age group has decreased by 30% over the past decade—largely attributed to enhanced fire prevention and education programs.

[20] United States Fire Administration, National Fire Data Center, Fire Risk in 2019.
[21] U.S. Census Bureau.
[22] U.S. Fire Administration website.

In the City of Riverside, demographic data show that children under five comprise 5.6% of the population, equal to the statewide rate of 5.6%. Adults aged 65 and older represent 11.7%, compared to 15.3% statewide, while adults aged 85 and older account for 1.2%, slightly lower than California's 1.9%.

The following figure illustrates the percentage of residents under five years old, 65 years and older, and 85 years and older within the City of Riverside.

Figure 93: Age-Related Risk



Gender

According to the U.S. Census Bureau, 51% of the U.S. population is female. However, national data from 2015 to 2019 indicate that 57% of fire-related deaths and 55% of fire injuries involved males—making males 1.3 times more likely than females to die or be injured in a fire. Fire department incident reports further show that 12% of males involved in fire incidents were impaired by alcohol, compared to 6% of females. Additionally, 20% of females with a disability died in home fires, compared to 16% of males. Middle-aged males experienced higher rates of death from intentionally set fires, while females aged 75 and older were more likely to be injured in cooking-related fires than males. These distinctions highlight how gender and age intersect to influence risk and service demand.[23]

The following figure presents the gender distribution by age for the City of Riverside, illustrating relatively balanced male-to-female proportions across age groups, with a gradual increase in the proportion of females in older age cohorts.

Figure 94: Gender by Age

Age Groups	Male	Female
Under 5 years	5.8%	5.5%
5 to 9 years	6.7%	5.7%
10 to 14 years	7.8%	6.4%
15 to 19 years	8.9%	8.7%
20 to 24 years	9.2%	9.5%
25 to 29 years	8.0%	8.2%
30 to 34 years	8.0%	7.0%
35 to 39 years	7.3%	6.9%
40 to 44 years	6.7%	6.6%
45 to 49 years	5.7%	6.1%
50 to 54 years	6.0%	5.5%
55 to 59 years	5.7%	5.3%
60 to 64 years	4.5%	5.0%
65 to 69 years	3.7%	4.6%
70 to 74 years	2.8%	3.7%
75 to 79 years	1.6%	2.3%
80 to 84 years	0.9%	1.4%
85 years and over	0.7%	1.7%

[23] National Fire Protection Association, Home Fire Victims by Age and Gender, December 2021.

Additional Demographics

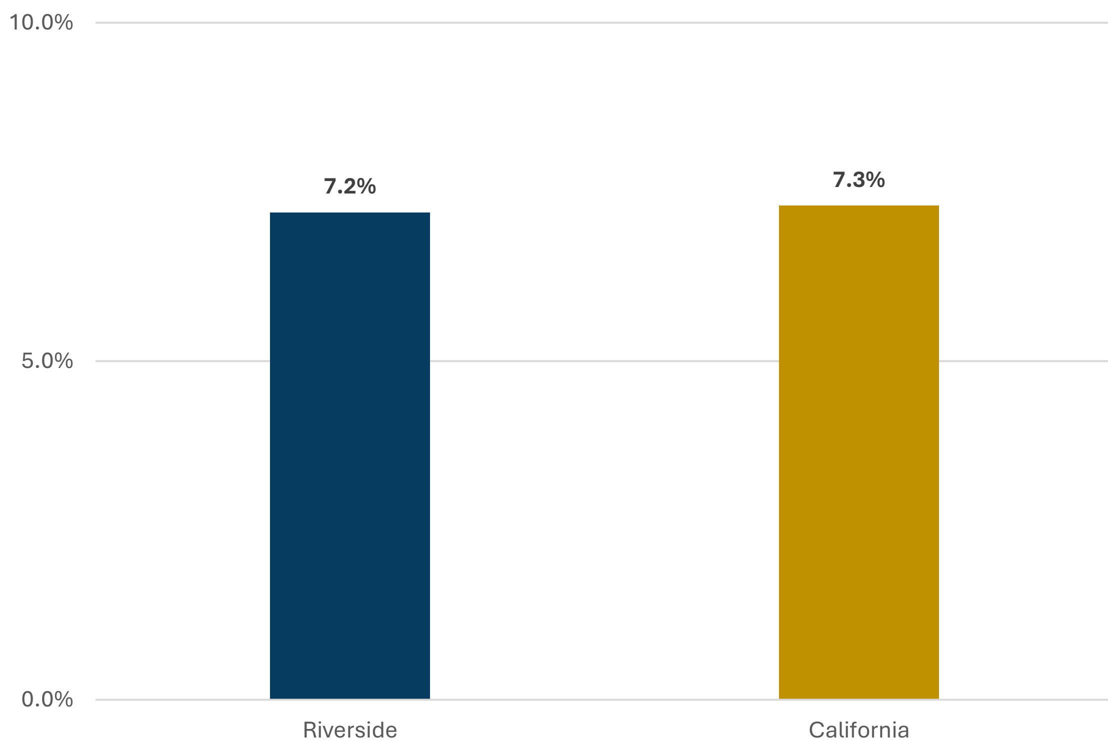
Disabilities

Individuals with disabilities represent an important consideration in community risk and emergency response planning. In the City of Riverside, 7.2% of the residential population has at least one disability, compared to 7.3% statewide.

This population group may face challenges in self-evacuation during emergencies and may require additional medical or rescue assistance due to physical, sensory, or cognitive limitations. As this population ages, the demand for medical and emergency services is expected to increase.

The following figure illustrates the percentage of persons with a disability within the City of Riverside.

Figure 95: Population with a Disability



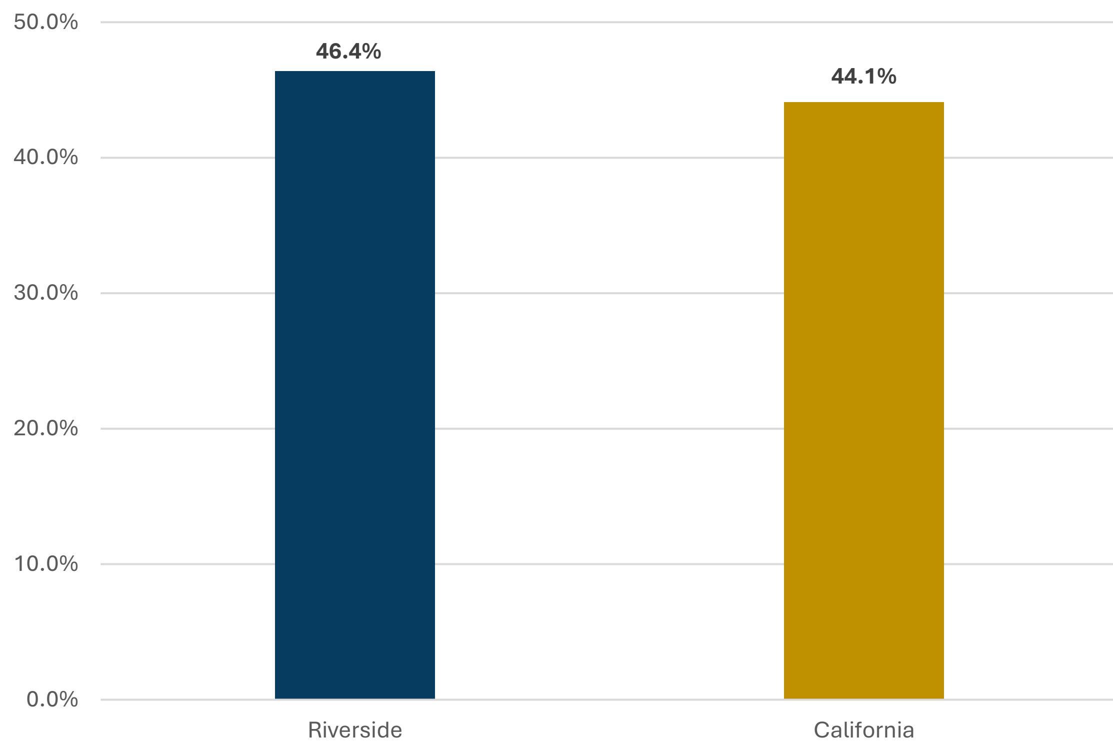
Language Barriers

RFD may encounter residents who require alternative forms of communication during emergencies or public education efforts. In the City of Riverside, approximately 46.4% of individuals over the age of five speak a language other than English at home, a rate higher than the state average of 44.1%.

Language barriers can hinder understanding of fire prevention messaging and safety technologies, such as smoke alarms and carbon monoxide detectors, which are designed to provide early warning during a fire. This lack of understanding may increase the risk of injury or death within affected households.

The following figure illustrates the percentage of residents with limited English proficiency within the City of Riverside.

Figure 96: Language Barriers



Poverty Rates

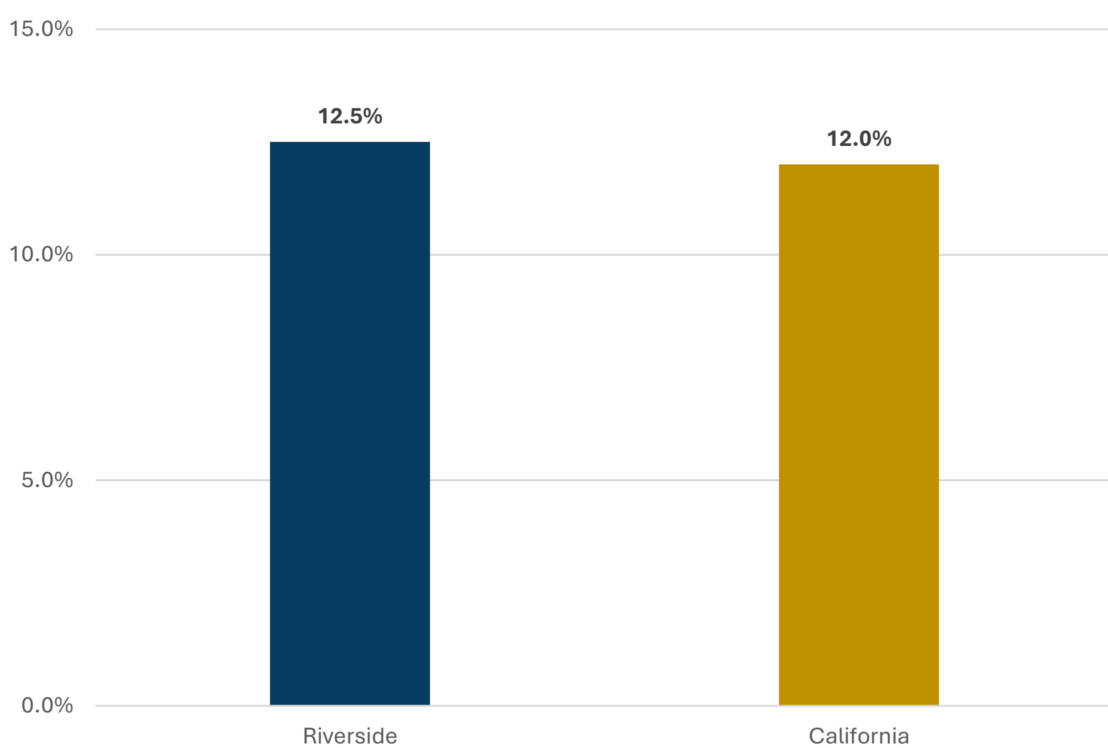
Low wages or limited income create challenges within a community that can contribute to poverty and increase overall risk. The ability to meet basic needs can help reduce the likelihood of fires, medical emergencies, and other preventable incidents.

Individuals and families living below the poverty level face heightened vulnerability, especially when combined with other factors such as limited education, disabilities, or unemployment. Low income impacts families with children by contributing to lower educational performance and mental health challenges. According to a report from the World Economic Forum, individuals with low incomes are nearly three times more likely to experience depression and anxiety than those with higher incomes. The COVID-19 pandemic further exacerbated these issues through school closures and limited childcare availability.

In the City of Riverside, 12.5% of residents live below the poverty line, compared to the statewide rate of 12.0%. These elevated poverty levels correlate with lower household incomes and increased demand for emergency and social support services.

The following figure illustrates the poverty rate within the City of Riverside.

Figure 97: Poverty Rate

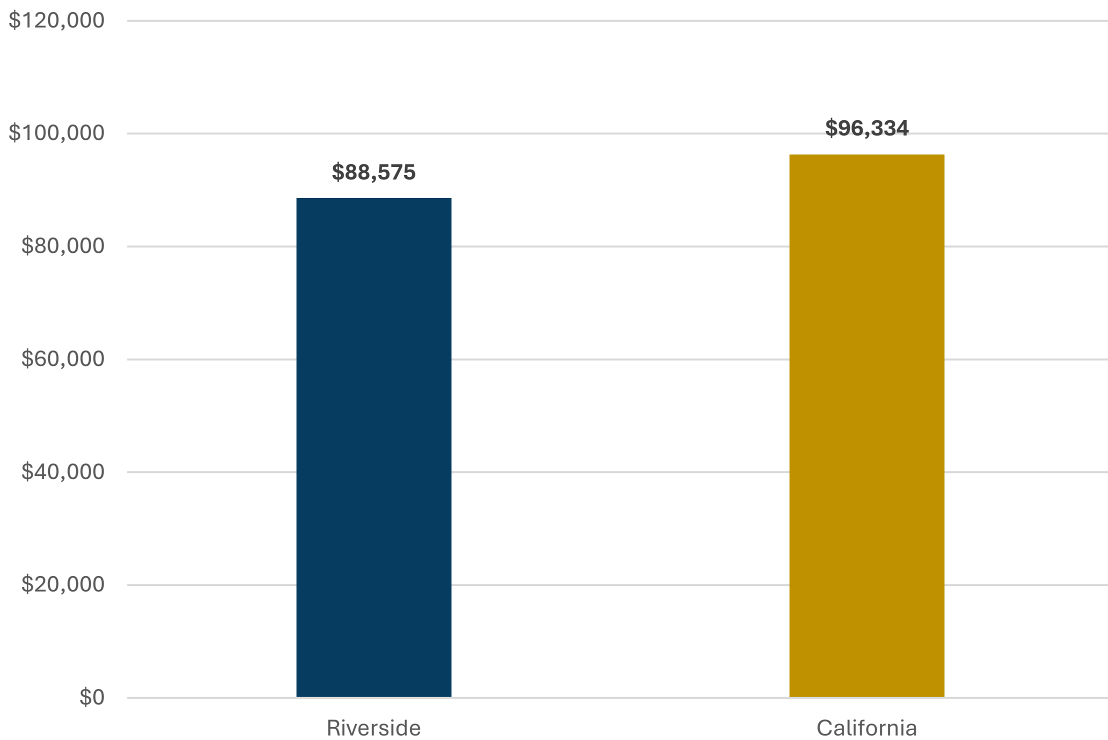


Income

In the City of Riverside, the median household income is $88,575, which is lower than the statewide median of $96,334. Lower household income levels can influence a community's access to resources, overall health, and vulnerability to emergencies, particularly when combined with other socioeconomic risk factors such as poverty and housing conditions.

The following figure illustrates the median household income for the City of Riverside.

Figure 98: Median Household Income



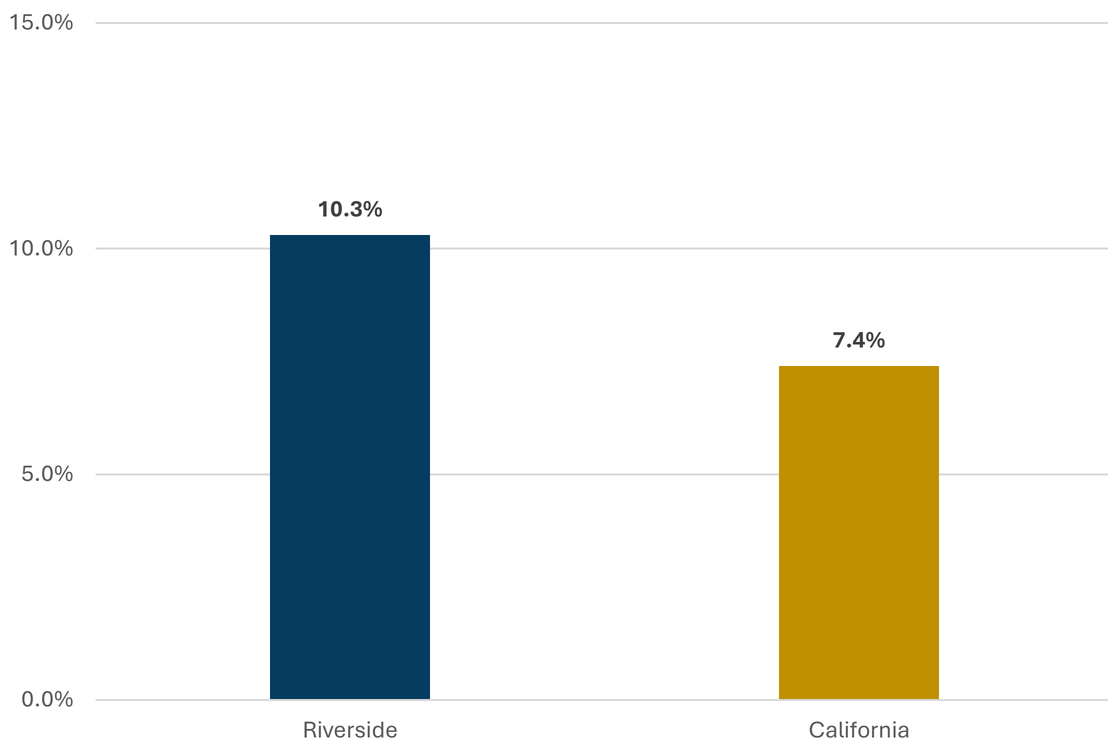
Persons Without Health Insurance

Populations lacking adequate health care coverage can place additional strain on emergency service systems and increase the frequency of medical incidents. Individuals without health insurance are less likely to seek preventive care or timely treatment, often resulting in more severe medical emergencies.

Lack of health insurance disproportionately affects lower-income populations, who may be unable to afford routine medical visits or prescription medications. In the City of Riverside, 10.3% of residents are without health insurance, compared to 7.4% statewide.

The following figure illustrates the percentage of residents without health insurance in the City of Riverside.

Figure 99: Population without Health Insurance



Education Levels

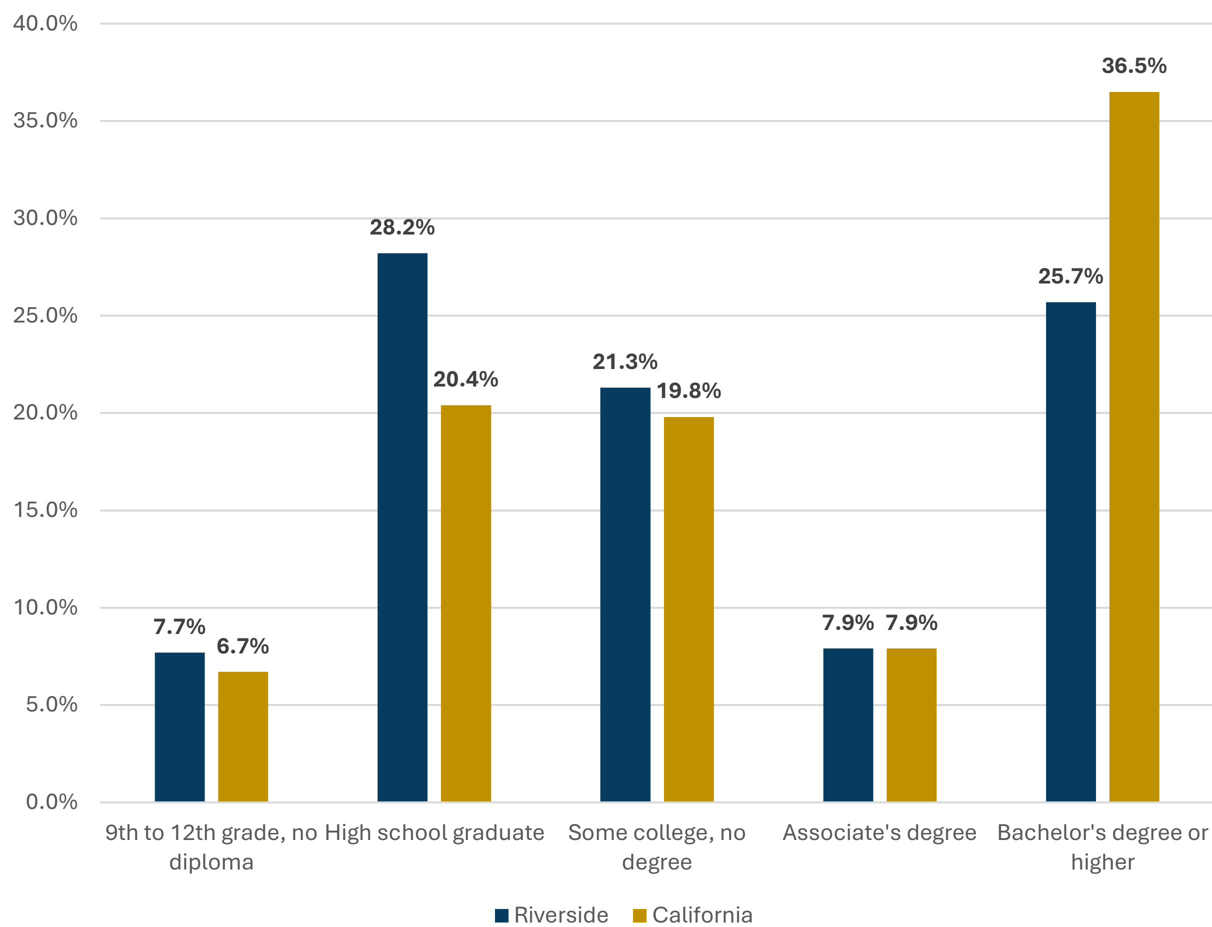
While educational attainment is not traditionally categorized as an at-risk population factor, it is an important socioeconomic indicator that influences community vulnerability and the design of fire and life safety education programs.

In the City of Riverside, 74.3% of residents have an educational attainment below the bachelor's degree level, a rate higher (less favorable) than the statewide average. Additionally, 9.2% of the population has less than a 9th-grade education, and only 25.7% hold a bachelor's degree or higher, compared to 36.5% statewide.

Lower education levels can affect health literacy, emergency preparedness, and awareness of fire prevention measures, underscoring the importance of targeted public outreach and education strategies.

The following figure illustrates the educational attainment levels of residents in the City of Riverside.

Figure 100: Education Levels



Race & Ethnicity

Race refers to a person's identification with one or more social groups, such as White, Black or African American, Asian, or American Indian and Alaska Native. Ethnicity identifies a person based on nationality, culture, language, or religion. Understanding the racial and ethnic composition of a community provides valuable context for evaluating service needs, outreach effectiveness, and community engagement strategies.

The following figure compares racial and ethnic representation in the City of Riverside to that of the State of California.

Figure 101: Race & Ethnicity

Race and Ethnicity	Riverside	California
White alone	39.2%	70.4%
Black alone	6.0%	6.5%
American Indian and Alaska Native alone	1.1%	1.7%
Asian alone	8.3%	16.5%
Native Hawaiian and Other Pacific Islander alone	0.4%	0.5%
Two or More Races	15.1%	4.3%
Hispanic or Latino	54.6%	40.4%
White alone, not Hispanic or Latino	27.4%	34.3%

Notes: (a) Alone includes persons reporting only one race. (b) Hispanics may be of any race, so they are also included in applicable race categories. Data were sourced directly from the U.S. Census QuickFacts page.

Housing Characteristics

Housing types vary across communities and provide valuable insight into ownership trends, building age, and residential density. Understanding these characteristics helps assess fire and life safety risks associated with different structures and occupancy types.

The City of Riverside has a notable number of vacant housing units, which can pose increased risks for both the fire department and the community. Vacant or unsecured structures may invite unauthorized entry, vandalism, or illegal activity, and deteriorating maintenance can compromise structural integrity, creating hazards for firefighters during emergency response.

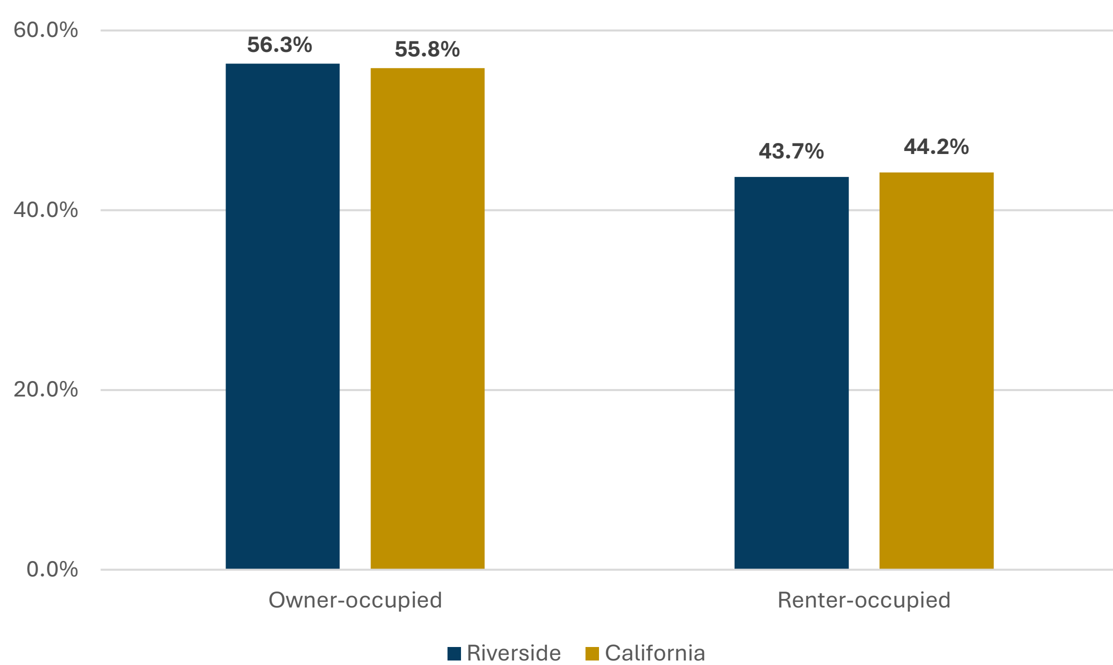
According to data from the National Fire Protection Association (NFPA), between 2015 and 2019, 75% of all fire deaths occurred in homes, with 57% of victims identified as male.

Housing Ownership

In the City of Riverside, homeownership stands at 56.3%, slightly higher than the state average of 55.8%. Ownership levels can influence community stability, fire prevention practices, and property maintenance, while rental occupancy may increase mobility and reduce long-term investment in fire safety measures.

The following figure illustrates the percentage of owner- and renter-occupied housing units in the City of Riverside compared to the State of California.

Figure 102: Owner- and Renter-Occupied Housing



Age of Housing

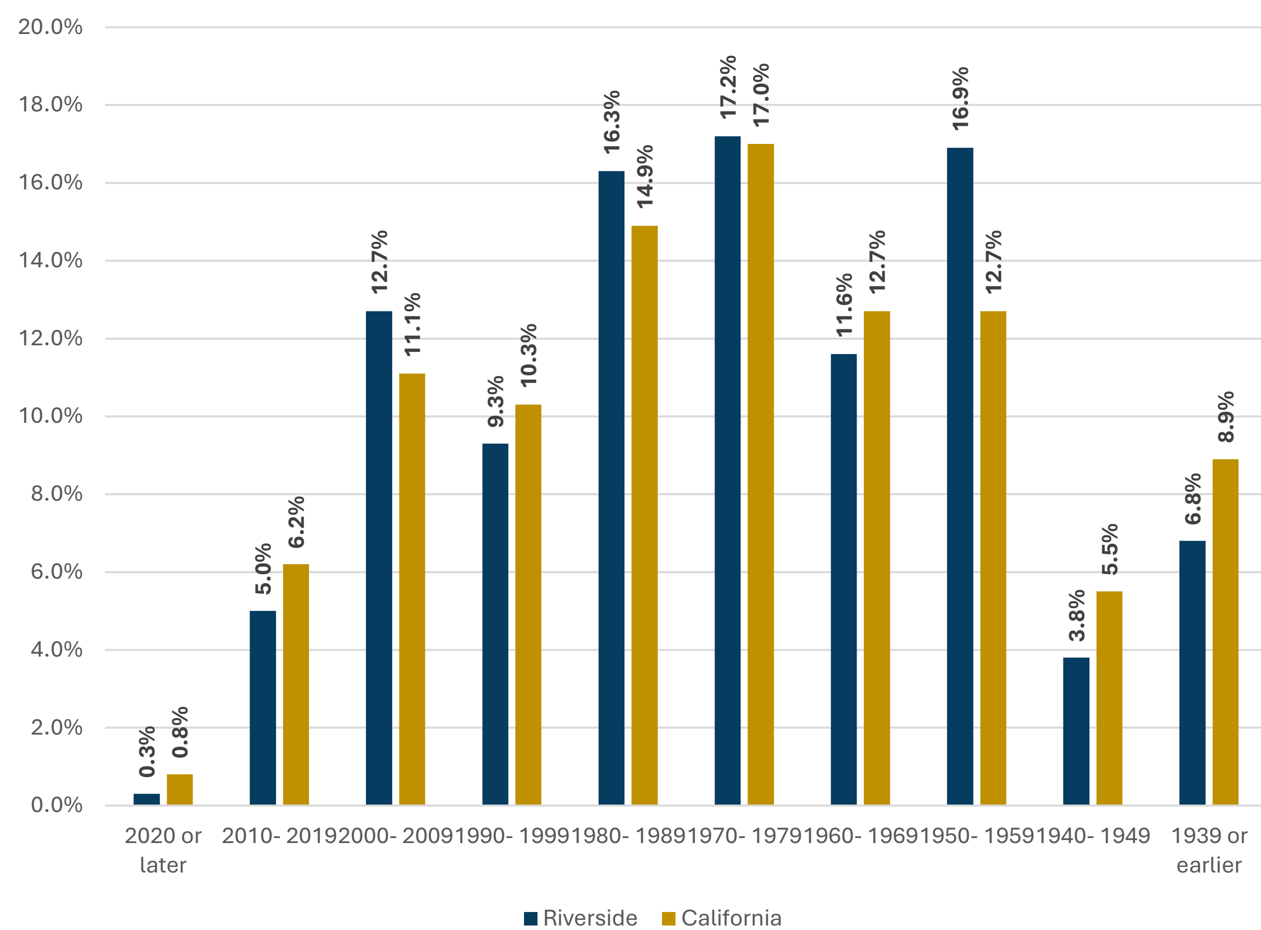
As buildings age, maintenance costs typically increase, and structural components may deteriorate if not properly maintained. Older homes also present additional fire risk factors, particularly those constructed before modern building and fire codes were implemented.

In the City of Riverside, 56.3% of homes were built before 1980, predating many of the building code requirements mandating the installation of smoke alarms. The absence or malfunction of smoke alarms significantly increases the likelihood of injury or death during a residential fire.

Working smoke alarms have been proven to reduce fire fatalities by providing early warning and allowing occupants more time to escape. Current building codes now require smoke alarms in every bedroom, hallway, and on each level of new residential properties.

The following figure illustrates the age of the housing stock by decade in the City of Riverside.

Figure 103: Age of Housing



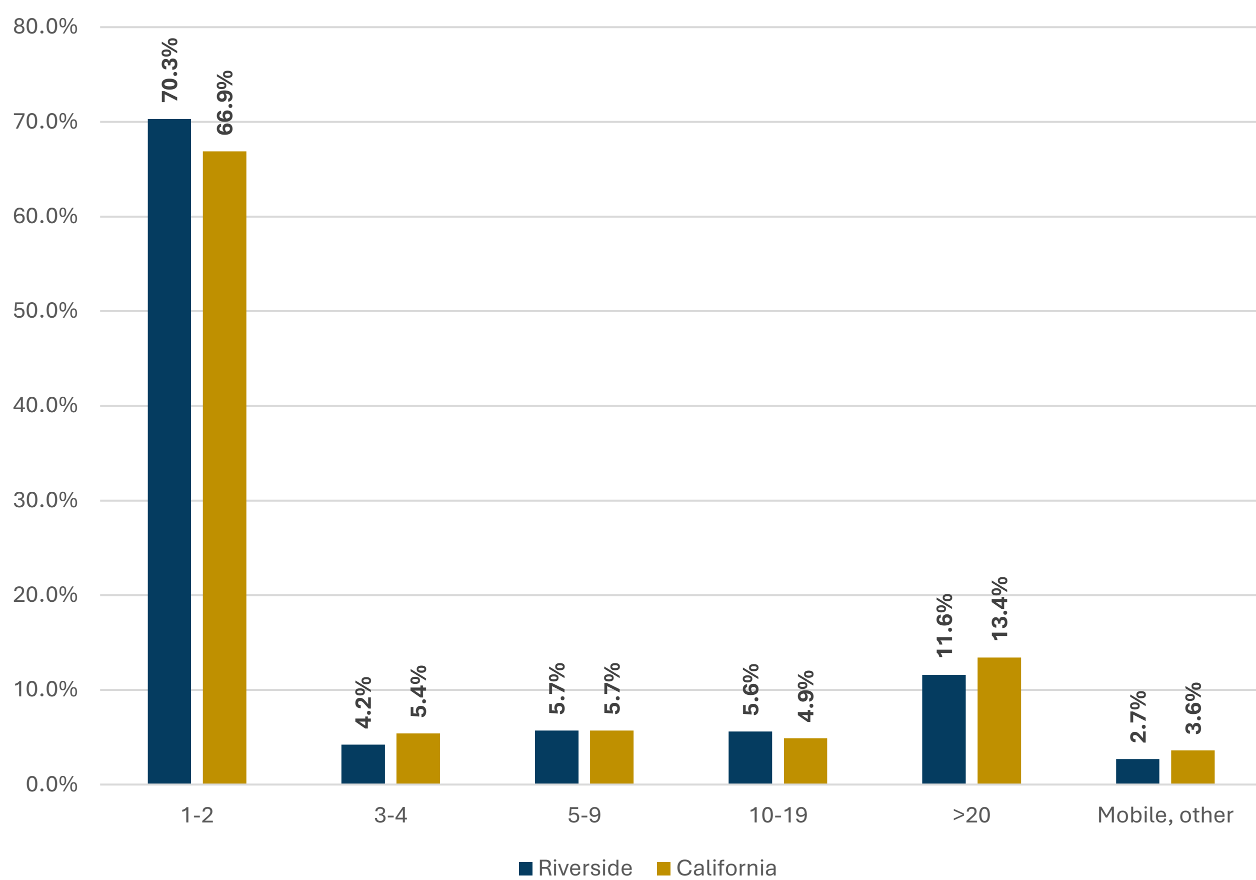
Housing Units

In the City of Riverside, 70.3% of residents live in one- or two-family dwellings, compared to 66.9% statewide. This higher percentage aligns with the city's relatively strong rate of homeownership and reflects its predominance of single-family residential development.

Conversely, 11.6% of housing units in Riverside are located in buildings with 20 or more units, slightly lower than the state average of 13.4%. The lower share of high-density housing may influence response patterns, as single-family homes often differ from multi-unit buildings in fire behavior, evacuation needs, and suppression strategies.

The following figure illustrates the percentage of housing units by building size in the City of Riverside.

Figure 104: Housing Units per Building



ENVIRONMENTAL **HAZARDS**

All communities face ongoing exposure to environmental and physical hazards that can threaten life, property, and infrastructure. These hazards may include wildfires, earthquakes, flooding from heavy rains, and droughts.

Effective mitigation planning helps both the public and emergency responders understand these risks and prepare for potential events. Riverside's diverse geography and climate conditions require year-round preparedness to respond to a wide range of natural hazards.

WEATHER CONDITIONS

Riverside's climate can influence emergency response operations throughout the year. Whether responding to thunderstorms, extreme heat, or other weather-related incidents, the Riverside Fire Department must remain adaptable to changing conditions that affect personnel safety, apparatus operation, and community vulnerability.

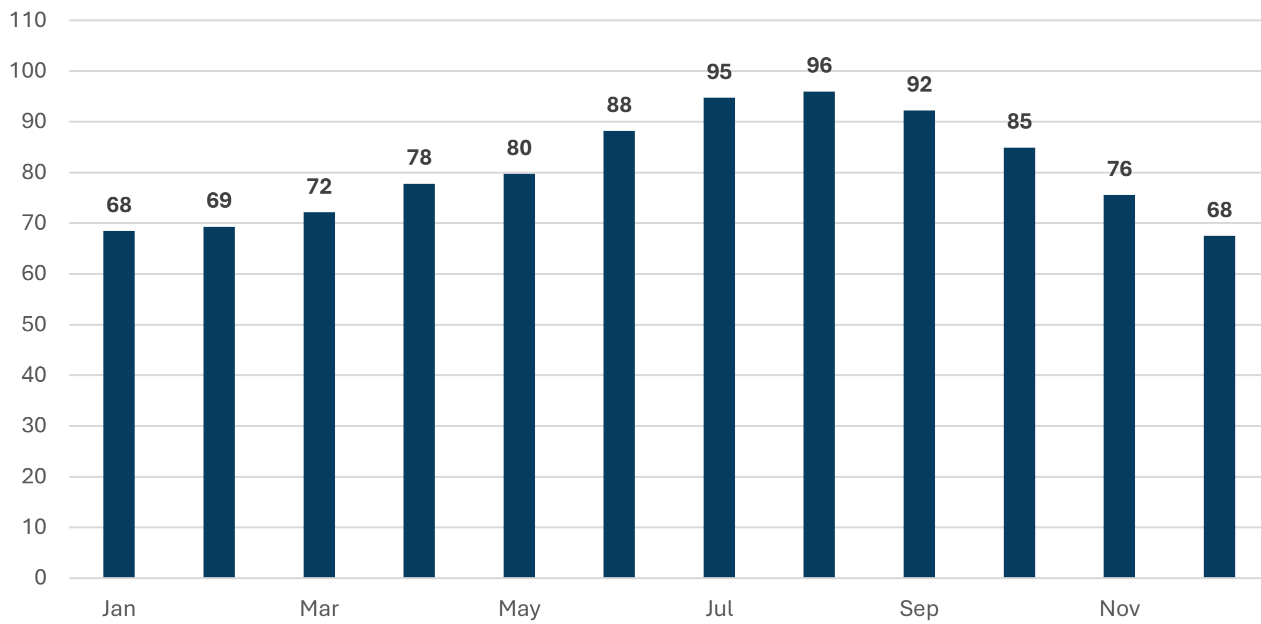
Temperature

Weather conditions have a direct impact on both the community and the fire department. High temperatures can stress firefighters during extended operations, requiring rehabilitation efforts to prevent heat exhaustion and other heat-related illnesses.[24]

Average monthly high temperatures in Riverside range from approximately 68°F in December and January to about 96°F in August. The following figure illustrates the average monthly high temperatures recorded between 2011 and 2024.

[24] Iowa Environmental Menoset website.

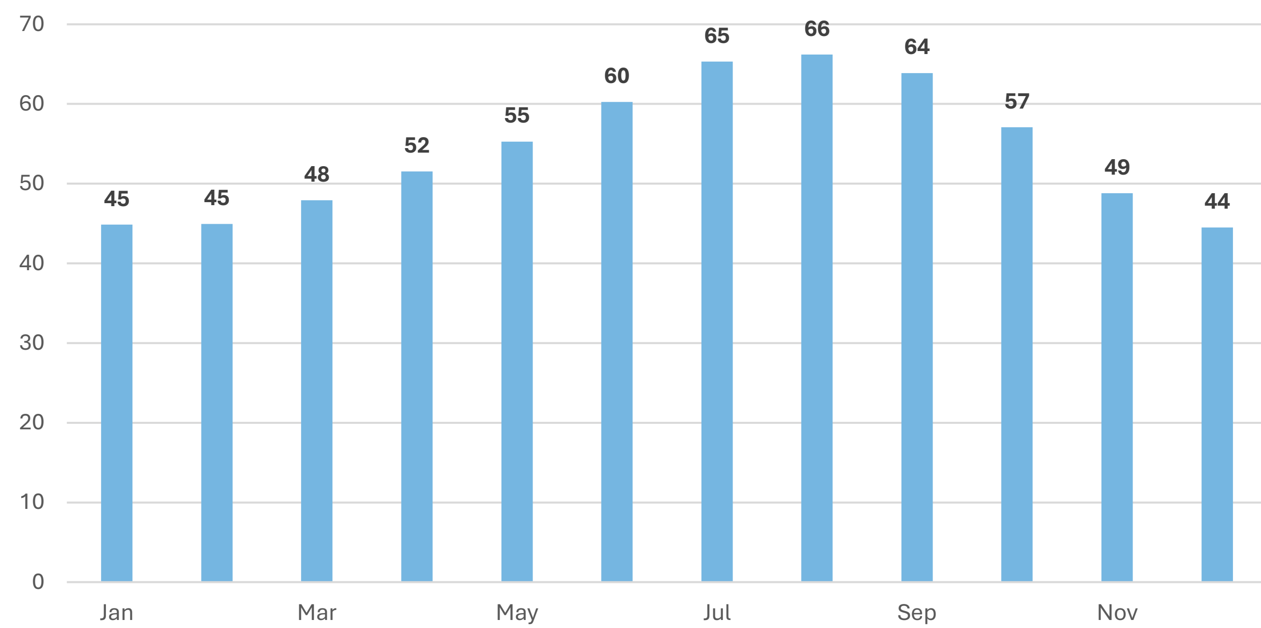
Figure 105: Average Monthly High Temperatures (2011–2024)



The average monthly low temperatures range from 44°F in December to 66°F in August.

The following figure illustrates the average monthly low temperatures for the same period.

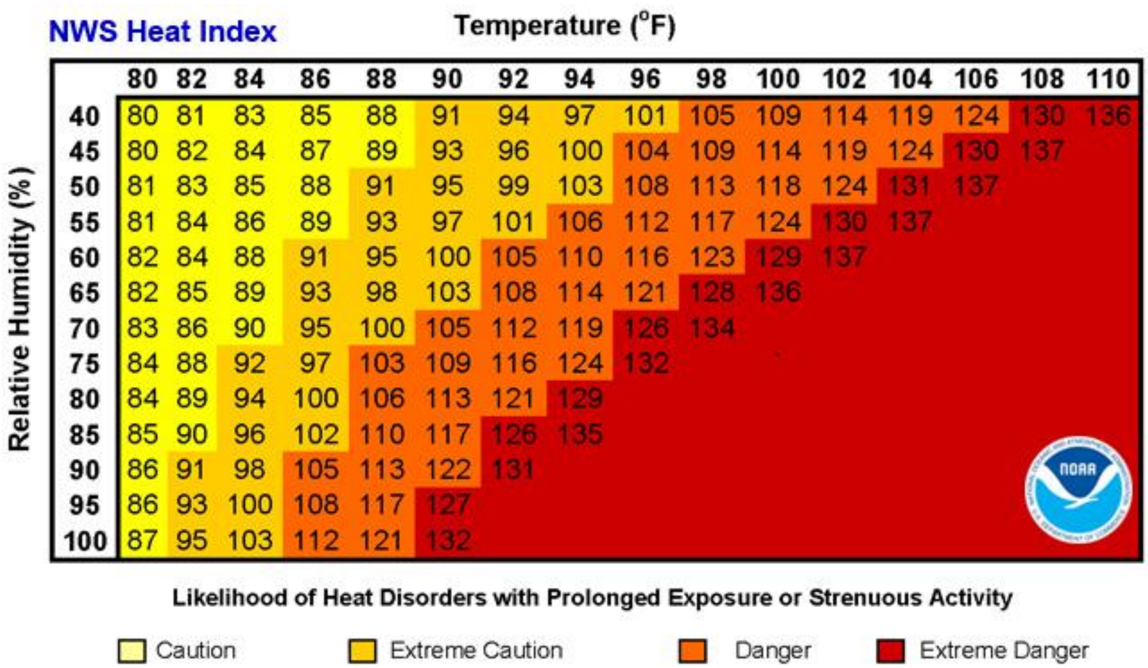
Figure 106: Average Monthly Low Temperature (2011–2024)



Heat can significantly affect fireground operations, especially when combined with high humidity, which raises the perceived temperature and increases physiological stress. Proper rehabilitation protocols are essential to maintaining firefighter safety during these events.

The following figure provides the National Weather Service Heat Index Chart, which identifies combinations of temperature and humidity that pose increased health risks.[25]

Figure 107: National Weather Service Heat Index Chart



	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

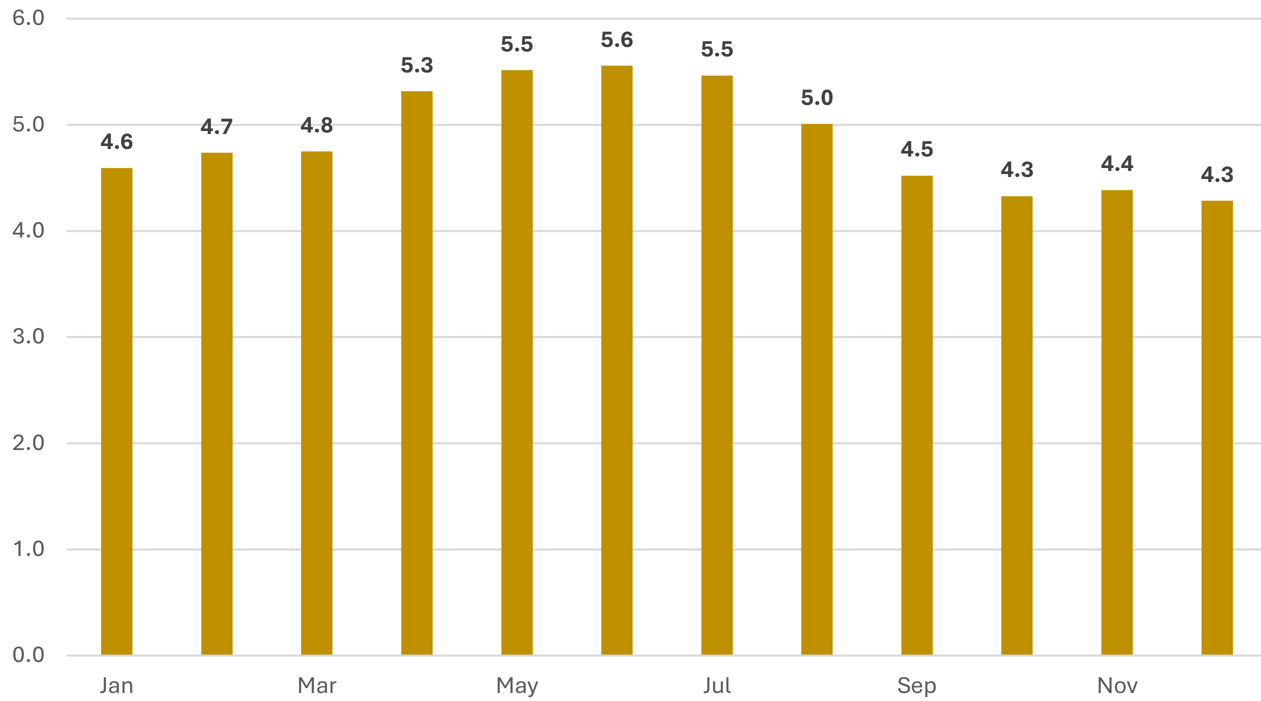
Winds

Wind speed and direction play a critical role in how the Riverside Fire Department (RFD) prepares for and manages emergency events, including wildfires, hazardous materials releases, and large-scale structure fires. Wind conditions influence the speed, intensity, and direction of fire spread as well as the dispersion of airborne contaminants, making them vital considerations in both tactical operations and long-term emergency planning.

According to data collected between 2011 and 2024, the highest average wind speeds in Riverside occur between May and July, peaking in June at 5.6 mph. Average monthly wind speeds remain relatively stable throughout the year, ranging from 4.3 to 5.6 mph, as illustrated in the following figure.

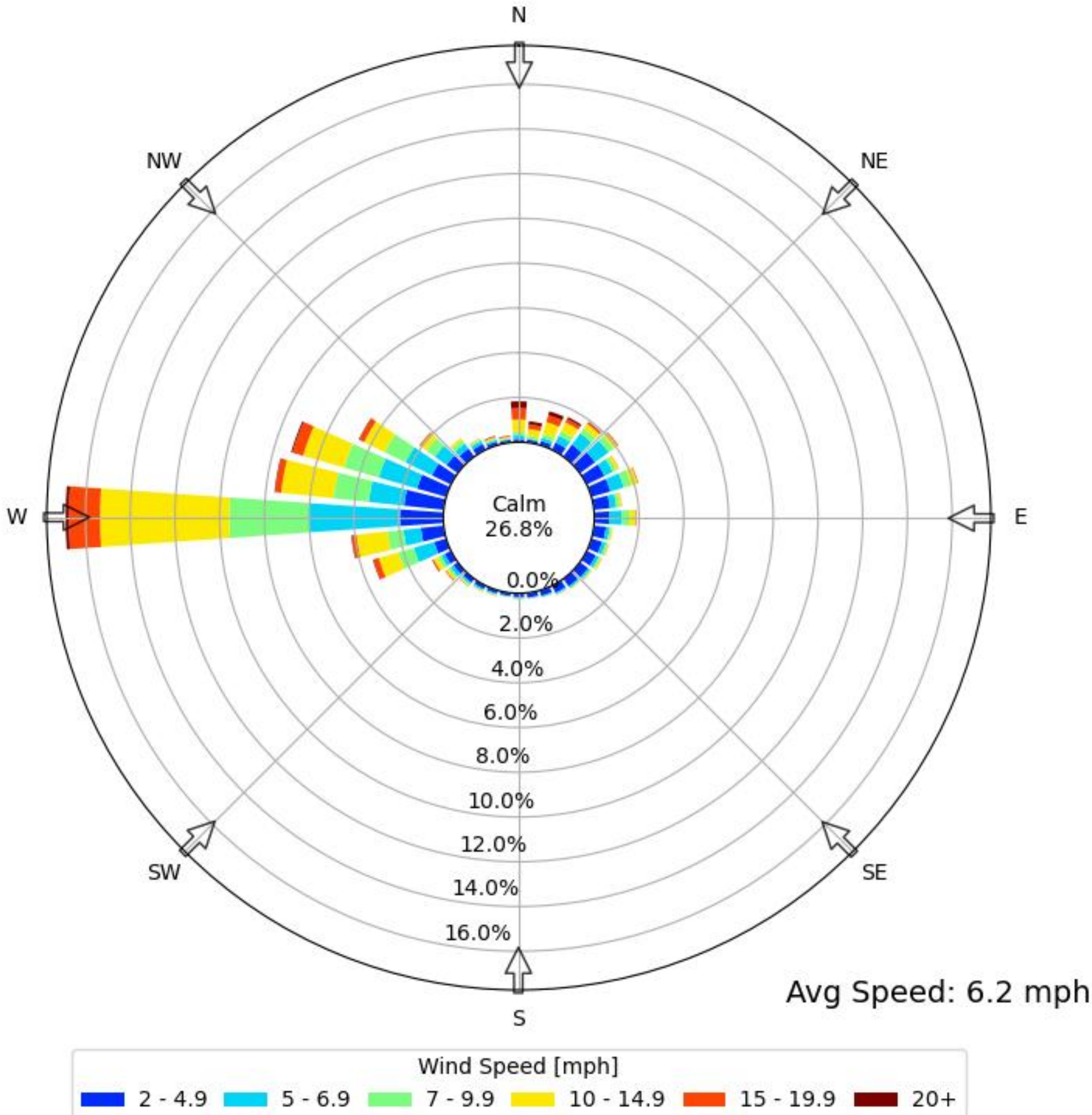
[25] National Weather Service website.

Figure 108: Average Monthly Wind Speeds (2011–2024)



Prevailing winds in Riverside generally originate from the west, as shown in the following figure based on long-term data from the Riverside Municipal Airport (RAL). This prevailing pattern can channel airborne threats or firebrands toward the more developed eastern portions of the city during certain times of the year, increasing exposure and operational challenges.

Figure 109: Wind Rose



Santa Ana Winds

In addition to the prevailing westerlies, Riverside is periodically affected by Santa Ana Winds, a well-documented meteorological phenomenon across Southern California. Santa Ana conditions typically occur between late fall and early spring (most often October through April) when high-pressure systems over the Great Basin drive hot, dry air from inland desert regions westward toward the coast. These winds commonly gust between 40 and 60 mph, with extreme events producing even higher velocities.

Santa Ana Winds are especially hazardous due to their combination of high velocity, low humidity, and elevated temperatures, which collectively accelerate wildfire ignition and spread. Embers can travel long distances ahead of the primary fire front, causing spot fires and rapid expansion of fire perimeters while significantly reducing containment effectiveness. Urban–Wildland Interface (WUI) areas in and around Riverside are particularly vulnerable during these events.

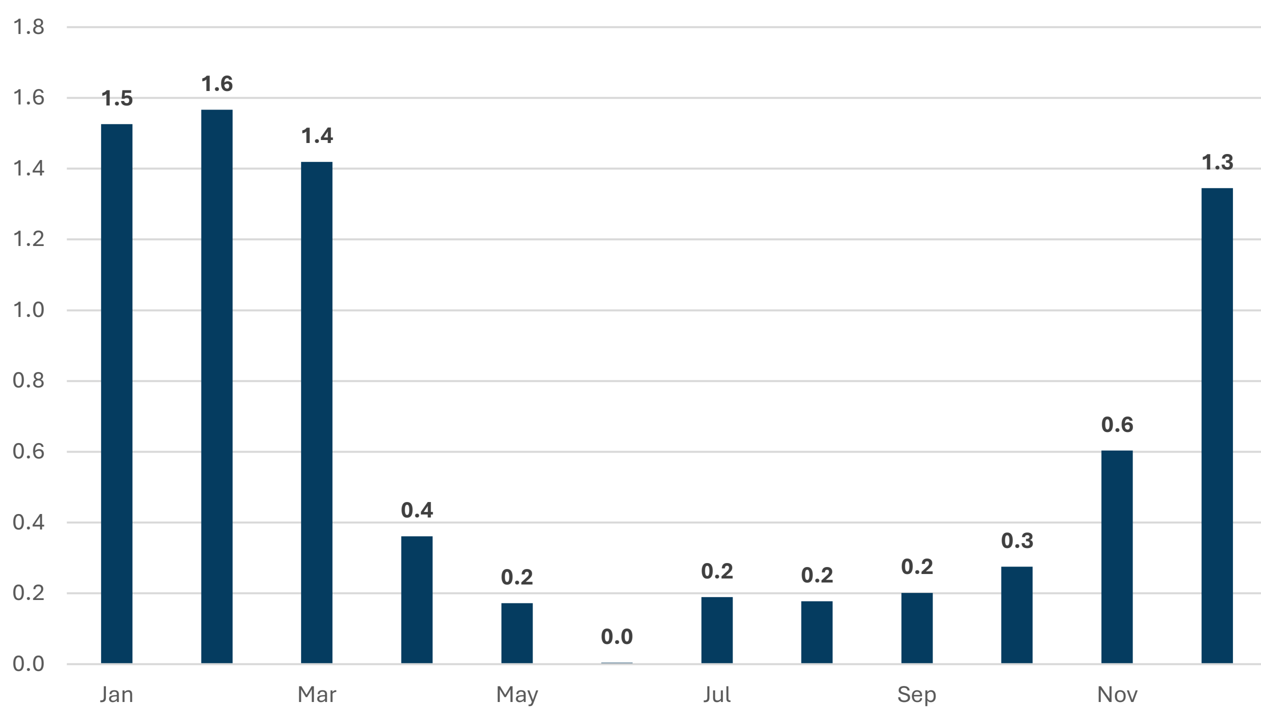
The Riverside Fire Department incorporates the threat of Santa Ana conditions into its planning and preparedness operations by implementing Red Flag staffing protocols, staging additional resources, conducting public outreach campaigns, and coordinating closely with CAL FIRE and the National Weather Service (NWS) to ensure timely communication and situational awareness.

Precipitation

Extended periods of limited precipitation can create significant challenges for a community. Drought conditions increase the risk of wildland fires as vegetation dries out and becomes more combustible. Insufficient rainfall also impacts agricultural productivity, landscaping, and water resource availability.

In the City of Riverside, the months with the highest average precipitation typically occur between January and March. These months account for the majority of annual rainfall, as illustrated in the following figure.

Figure 110: Average Monthly Precipitation (2011–2024)



Drought Conditions

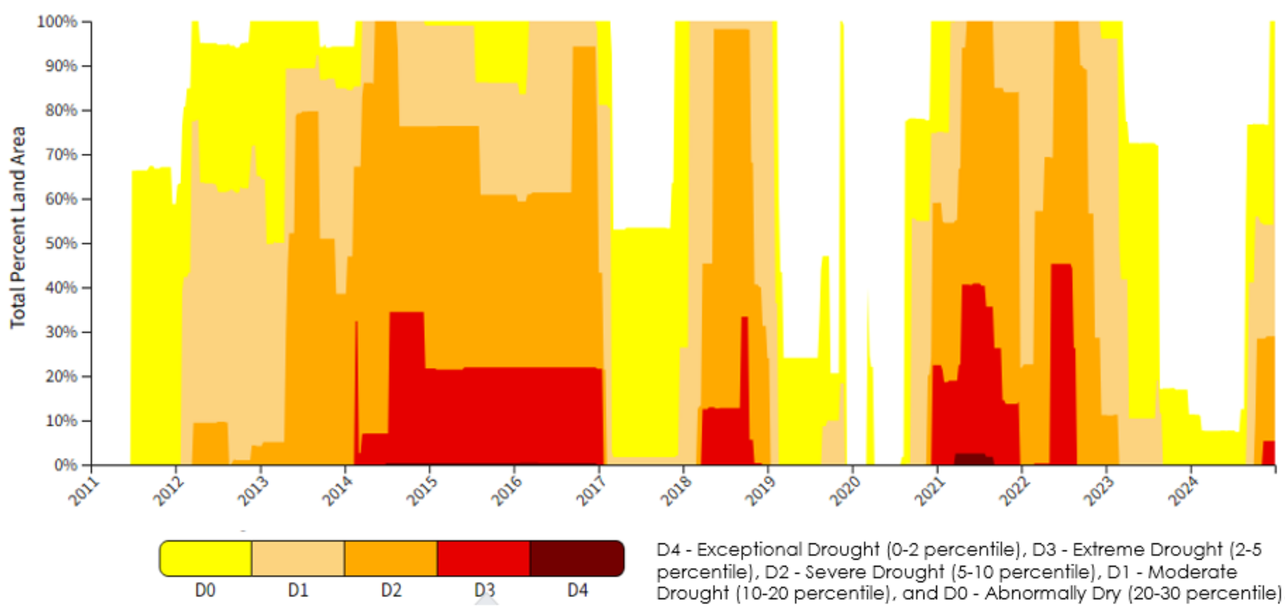
A drought is a prolonged period of below-average precipitation that results in a deficiency in water supply relative to typical conditions. Droughts are complex climatic phenomena influenced by numerous factors, including atmospheric and oceanic interactions, soil moisture levels, topography, and broader global weather systems. The duration and severity of droughts can range from several months to multiple decades.

The Riverside region is susceptible to varying degrees of drought. Average summer temperatures often reach the low 90s°F (around 32°C), with higher extremes not uncommon. Drought conditions impact the local environment, economy, and fire risk, particularly by reducing soil and vegetation moisture levels.

Although the City of Riverside is not primarily an agricultural community, the broader Riverside County area has experienced repeated drought periods over the past decade. Several of these reached U.S. Drought Monitor (USDM) categories D4 – Exceptional Drought (0–2 percentile) and D3 – Extreme Drought (2–5 percentile), reflecting severely limited moisture availability and elevated fire risk.

The following figure depicts drought conditions in the City of Riverside and Riverside County between 2011 and 2024.

Figure 111: Drought Conditions (2011–2024)



PHYSICAL HAZARDS

A physical hazard refers to a natural disaster or weather-related event that poses a threat to a community. Such events may last only a few hours or persist for extended periods, as in the case of heatwaves or droughts. The National Weather Service (NWS) issues advisories, watches, and warnings for these hazards when conditions exist or are forecasted to occur.

Based on historical incidents and regional risk assessments, the City of Riverside is most likely to experience hazards related to wildfire, earthquake, extreme heat, drought, and flooding. Other hazards exist but are considered to present lower levels of vulnerability.

Wildland Fires

A wildfire is an uncontrolled fire burning on undeveloped land that requires fire suppression. While wildfires can occur naturally and are essential to certain ecosystem processes, most are caused by human activity. The second most common cause of wildfires is lightning.

Fire probability is influenced by weather conditions, human activity (e.g., camping, debris burning, or construction), and public cooperation with fire prevention measures. Extended drought conditions and other natural events—such as high winds or severe storms—increase wildfire likelihood by creating dry fuel loads in both urban and rural settings. Approximately 90% of all wildfires in California are believed to be human-caused, primarily due to debris burning and other preventable behaviors.

Wildfire represents a high-significance hazard for the City of Riverside. In recent years, fire seasons have become longer and more intense, straining firefighting resources. Severe fire weather in and around Riverside—driven by wind, humidity, and temperature—creates conditions favorable for ignition and spread. A high density of wildland fire ignitions has been recorded within and adjacent to city limits, threatening residences, businesses, and critical infrastructure.

The City of Riverside lies adjacent to multiple wildland areas, positioning it directly within the wildland–urban interface (WUI) where developed and undeveloped lands meet. The city's valley setting, surrounded on three sides by foothill terrain, increases its exposure to wildland fire risk.

The Riverside Fire Department is responsible for wildland fire protection across large open spaces such as the Santa Ana River bottom, Sycamore Canyon, and La Sierra Hills. Firefighting operations in areas such as Mt. Rubidoux, Woodcrest, Lake Hills, Mockingbird Canyon, Monroe Hills, La Sierra, Norco Hills, and Box Springs Mountain are complicated by limited apparatus access and restricted water supply.

Over the past decade, Riverside has experienced 22 wildland fires of 20 acres or more, in addition to numerous smaller events. The Santa Ana River corridor, characterized by natural vegetation, presents a high fire threat due to both environmental and human-caused factors, including encampments within dense foliage.

The City Administration and Riverside Fire Department take a proactive approach to wildland and residential fire management. RFD maintains and regularly updates the Emergency Operations Plan, coordinates emergency response activities through the Emergency Operations Center (EOC), and collaborates with county, state, and federal partners to enhance planning, training, and response capabilities.

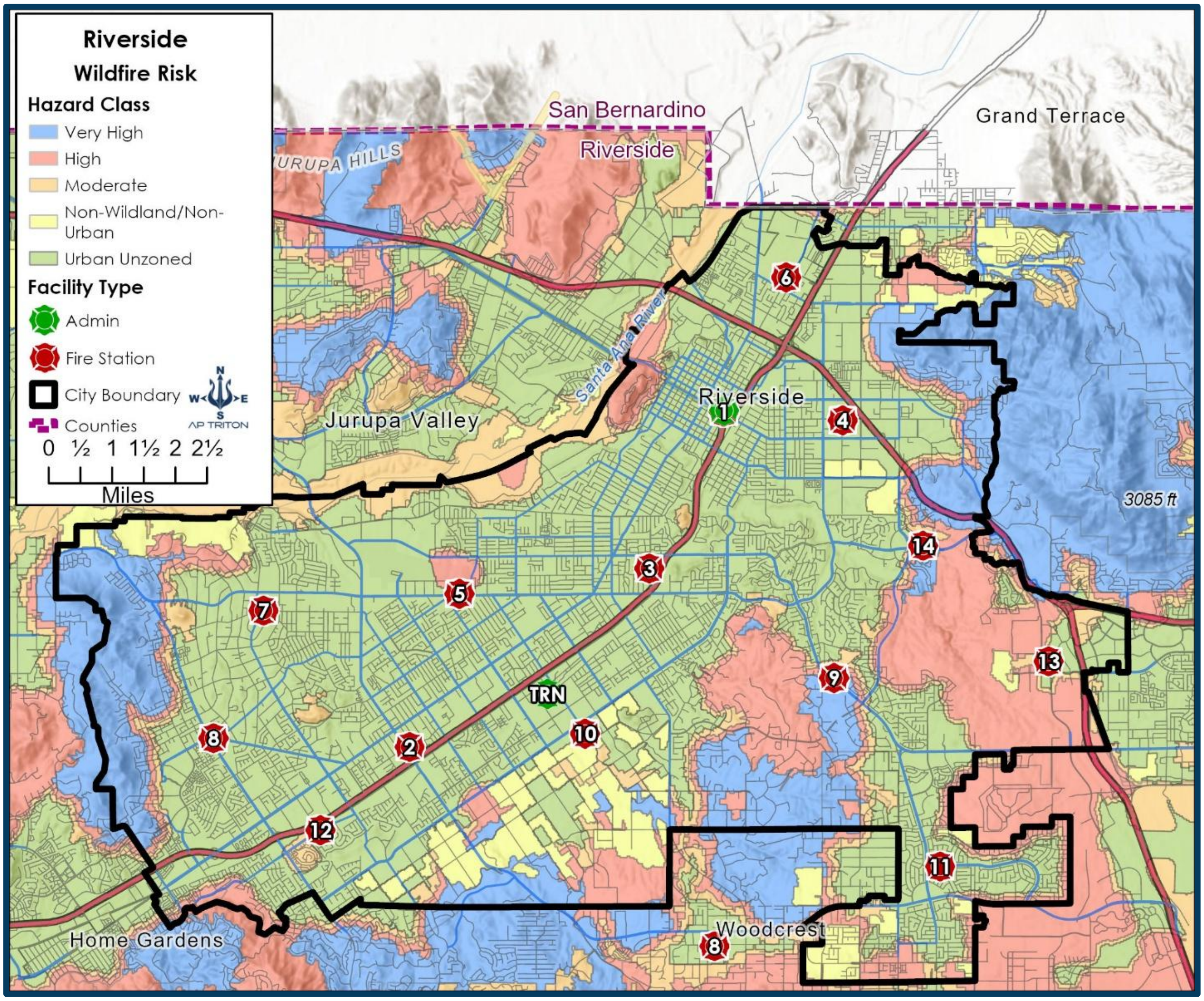
The department also emphasizes hazard awareness and mitigation measures that address fire causes, containment strategies, and fire protection in alignment with local, state, and national regulations. These efforts prioritize public safety, property conservation, and environmental protection.

Wildfire-prone areas must be considered in hazard analysis, emergency response planning, mitigation strategies, and future land-use decisions. Development within High Fire Hazard Severity Zones should incorporate fire-resistant design and construction standards consistent with applicable state, county, and city fire codes.

Given the city's continued population and development growth, maintaining adequate fire department capacity and staffing levels remains essential to effectively manage wildland fire risk and sustain operational readiness.

The following figure shows the locations of fire hazard severity zones, highlighting areas of elevated wildfire risk and potential fire intensity within the City of Riverside.

Figure 112: Fire Hazard Severity Zones



Flooding

Based on historical incidents and risk assessments, flooding is among the most likely hazards to affect the City of Riverside. Flood events can cause structural damage, disrupt economic activity, and endanger public safety. Within the city, flooding typically occurs during periods of heavy rainfall, often exacerbated by inadequate drainage capacity.

Flooding poses risks not only to residential and commercial structures but also to agriculture, manufacturing, and critical infrastructure. These events represent a vulnerability to the city's economy, property, and residents' well-being.

The principal types of flood hazards in Riverside include:

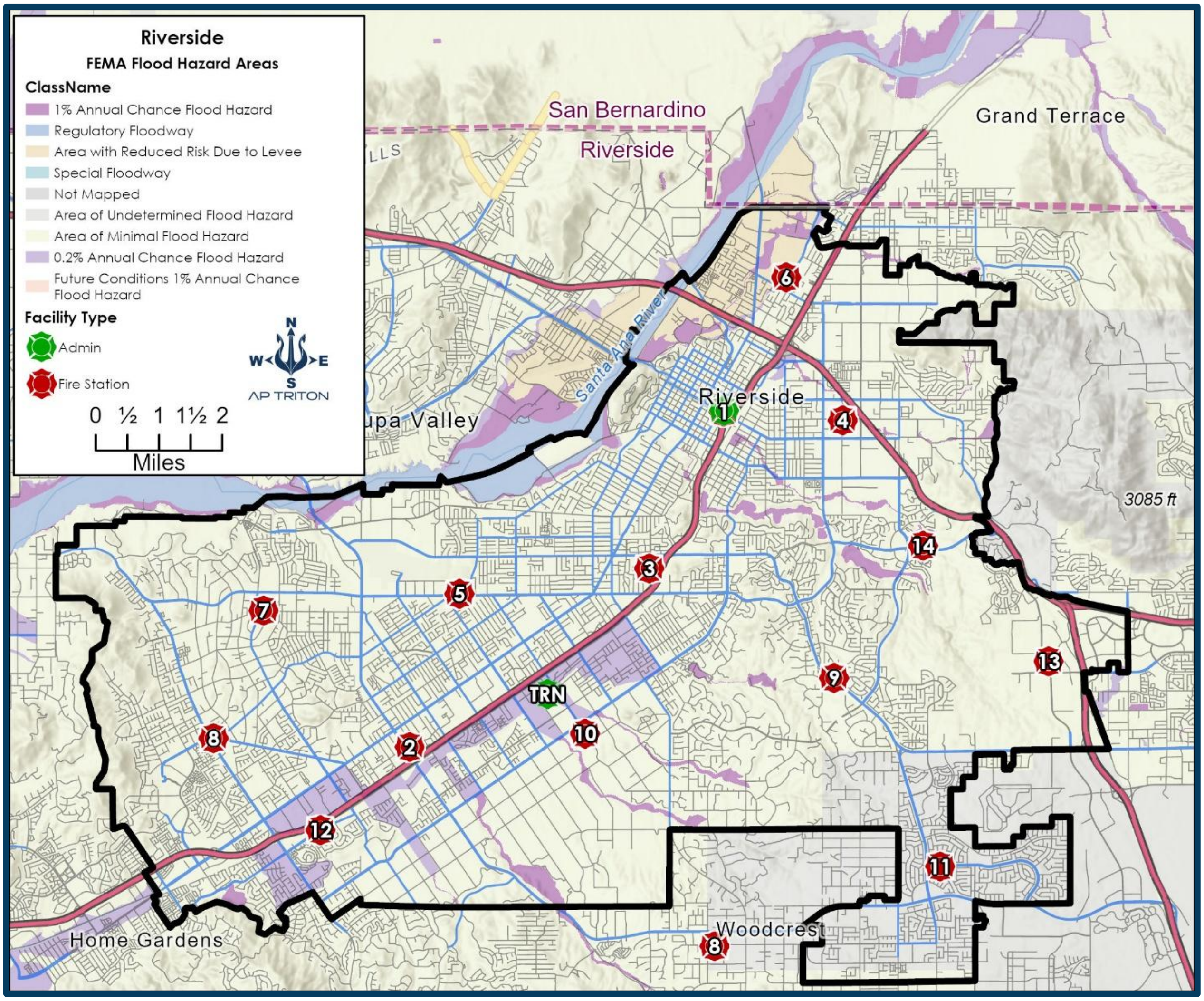
- Stream flooding
- Bridge scours
- Dam inundation
- Earthquake-induced flooding

The Santa Ana River and several smaller waterways throughout the city present the greatest flood concern. Natural flooding is primarily driven by heavy rainfall events, particularly in areas adjacent to the Santa Ana River, which are most susceptible to overflow. However, the city's topography and the presence of large aboveground water storage tanks also create localized risks in other areas.

Several neighborhoods in Riverside are also prone to urban flooding, which occurs when storm drains, flood control channels, or basins become obstructed by debris or overwhelmed by runoff. Contributing factors include outdated drainage systems, overburdened sewage pumping stations, and low-lying terrain, which together heighten the city's flood exposure during major storms.

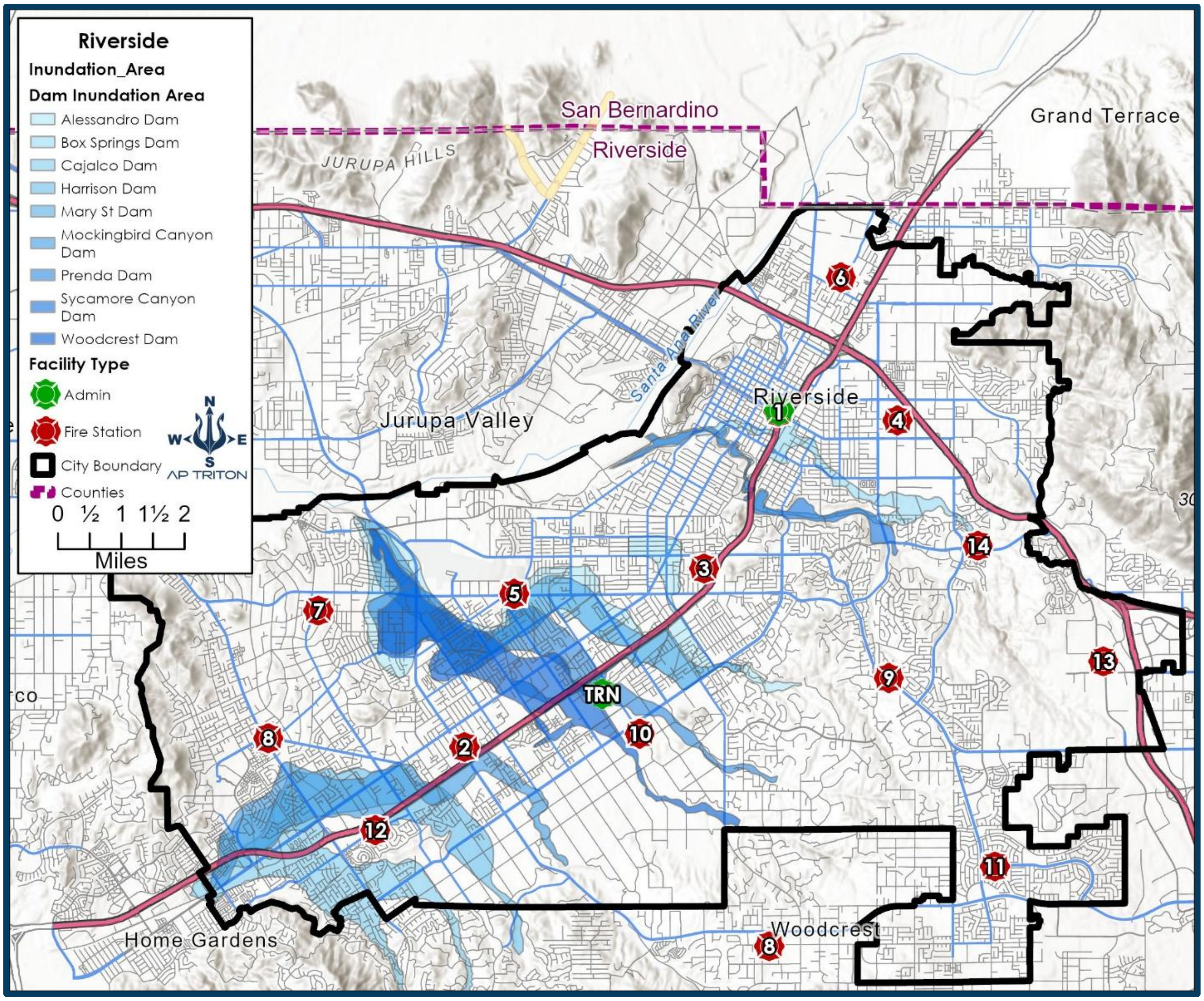
The following figure illustrates the FEMA-designated flood zones within the City of Riverside.

Figure 113: FEMA Flood Zones



The potential failure of dams, reservoirs, or water tanks could also lead to significant flooding. The following figure depicts flood hazard risks and dam inundation area floodplains, identifying locations where floodwaters could propagate following structural failure.

Figure 114: Flood Hazard: Dam Inundation Area



Flood risk remains a significant concern for the City of Riverside due to its proximity to the Santa Ana River, the number of dams and reservoirs in and around the city, the network of canals and arroyos that traverse the area, and low-lying zones that routinely flood during periods of heavy rainfall.

Riverside is vulnerable to both riverine flooding and urban flooding, including street and flash flooding in developed areas. As land use has transitioned from rural and agricultural to urban and high-density, the potential for urban drainage flooding has increased. The two primary factors influencing flood frequency and intensity are rainfall duration and intensity, though topography, soil composition, and groundcover also play key roles.

To mitigate these vulnerabilities, the city's flood mitigation strategy emphasizes the construction and modernization of storm drain infrastructure and the maintenance of flood control systems to reduce flood risk in affected areas.

Earthquakes

An earthquake can cause widespread damage to infrastructure, buildings, and critical lifelines, depending on its magnitude, depth, and proximity to populated areas. The impacts of a major seismic event may include structural damage, loss of utilities, transportation disruptions, injuries, and loss of life. Damage to roads and highways could delay the arrival of mutual aid and emergency assistance, significantly affecting community response and recovery efforts. Secondary effects such as fires, hazardous material spills, and landslides can further compound earthquake impacts.

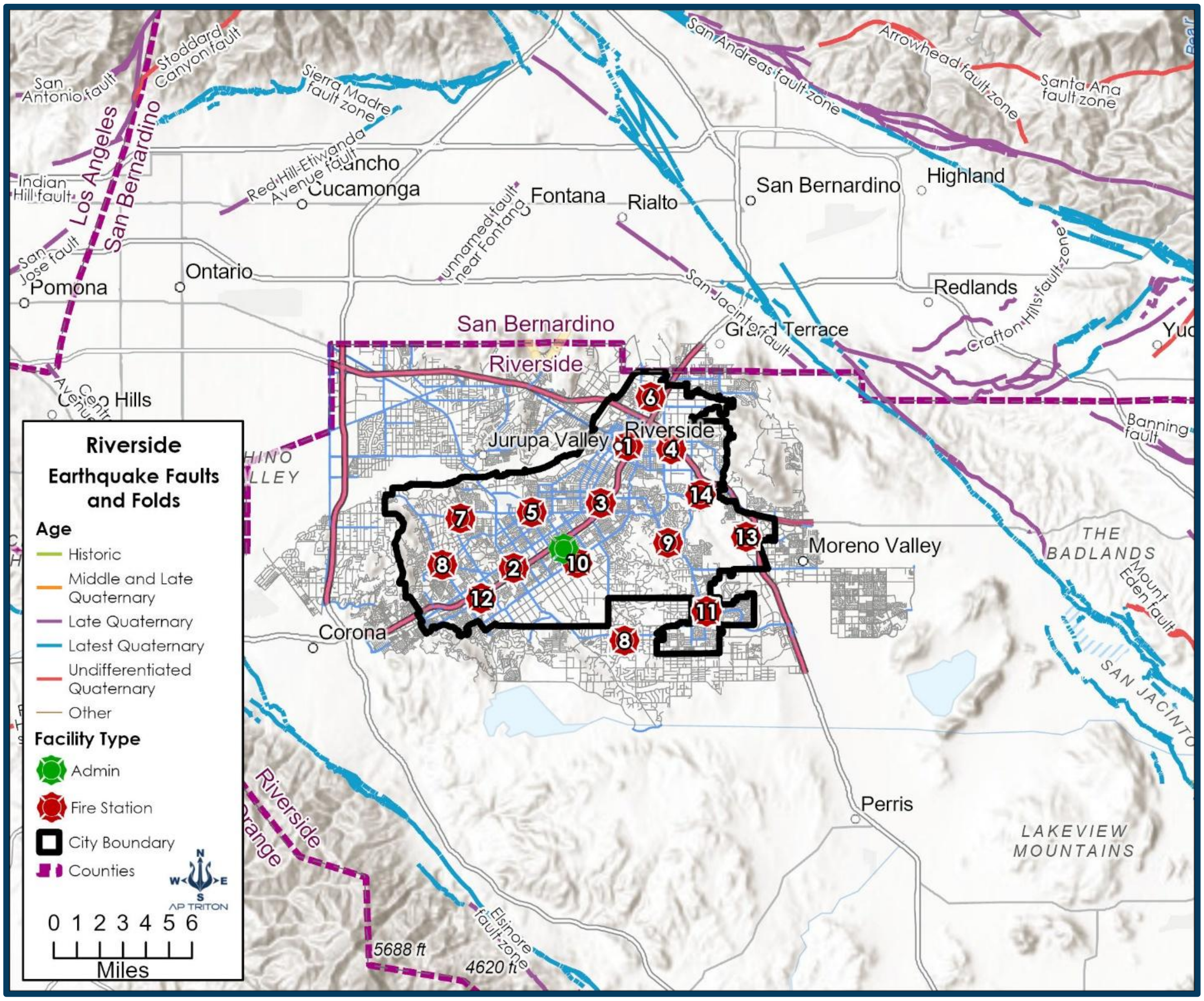
The Multi-Jurisdictional Hazard Mitigation Plan identifies earthquakes as a likely hazard for the City of Riverside. Areas located near major active faults experience stronger and more frequent ground shaking, and even modern, well-engineered buildings can sustain damage during a large event.

The Riverside area lies within a high-risk seismic zone, surrounded by several major fault systems that pose significant threats to life and property. A strong earthquake in or near the city could result in devastating consequences, including loss of life, serious injuries, extensive property damage, fires, and hazardous materials releases.

Several active and potentially active faults traverse Riverside County, including the San Andreas Fault, San Jacinto Fault, and Elsinore Fault—all capable of producing major earthquakes (magnitude 6.0 or greater).

The following figure illustrates the earthquake fault zones affecting the City of Riverside.

Figure 115: Earthquake Fault Zones



The San Andreas Fault lies to the east of the City, with its closest point approximately eleven miles from Downtown Riverside, adjacent to the San Bernardino Mountains. This fault is capable of producing an earthquake of up to magnitude 8.3 (M8.3).

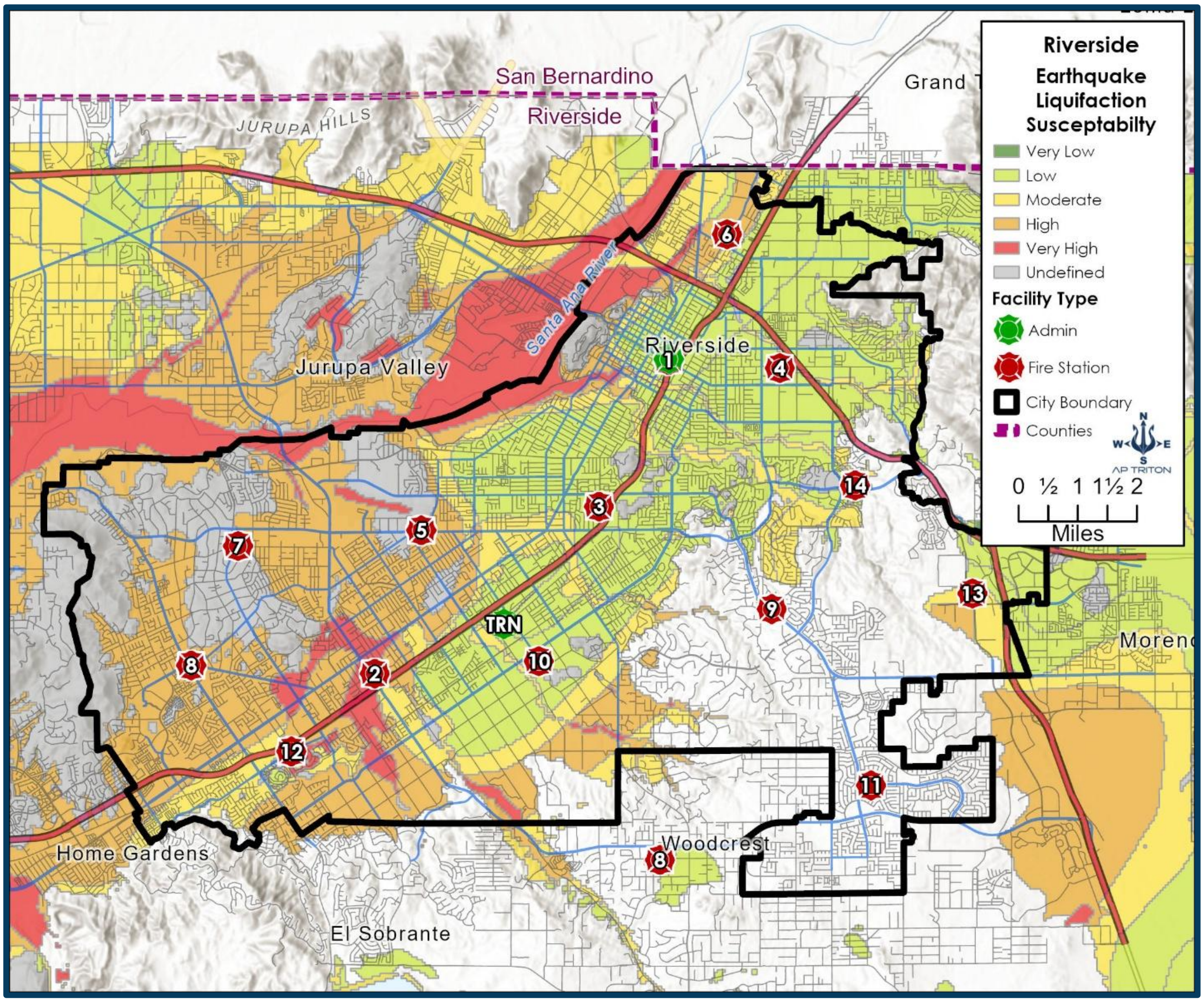
The San Jacinto Fault also lies to the east of the City, with its nearest point approximately seven miles from Downtown. It passes through the intersection of Interstates 10 and 215, the City of Loma Linda, and the Box Springs Mountains. This fault has the potential to generate an earthquake of up to magnitude 7.0 (M7.0).

The Elsinore Fault lies within approximately thirteen miles of Downtown Riverside, extending about four miles west of Lake Mathews and Corona, and continuing south into the City of Lake Elsinore. This northwest–southwest-trending fault is capable of producing an earthquake of up to magnitude 6.0 (M6.0).

The City of Riverside sits in a valley surrounded by smaller foothills and larger mountain ranges, including the San Jacinto and San Bernardino Mountains. In the event of an earthquake, the location of the epicenter, as well as the time of day and season of the year, would have a significant influence on the extent of casualties, property damage, and emergency response challenges.

The following figure illustrates earthquake susceptibility and shaking potential within the City of Riverside.

Figure 116: Earthquake Liquefaction



CRITICAL INFRASTRUCTURE

Critical infrastructure and key resources (CIKR) explain what is crucial for a community to function in a modern economy. Critical infrastructure is defined as a sector "whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof." There are sixteen defined Critical Infrastructure Sectors (CIS):[26]

- Chemical Sector
- Commercial Facilities Sector
- Communications Sector
- Critical Manufacturing Sector
- Dams Sector
- Defense Industrial Base Sector
- Emergency Services Sector
- Energy Sector
- Financial Services Sector
- Food and Agriculture Sector
- Government Facilities Sector
- Healthcare and Public Health Sector
- Information Technology Sector
- Nuclear Reactors, Materials, and Waste Sector
- Transportation Systems Sector
- Water and Wastewater Systems Sector

All these sectors may not be in the City of Riverside; each community must determine critical infrastructure locations and develop pre-incident plans for responding personnel.

Other buildings to consider as target hazards could include occupancies with a potential for a significant loss of life, such as places of public assembly, schools, childcare centers, medical and residential care facilities, and multi-family dwellings. Other considerations include buildings with substantial value to the community—economic loss, replacement cost, or historical significance—that, if damaged or destroyed, would have a significant negative impact.

[26] Infrastructure Security, Department of Homeland Security.

Target Hazards

A target hazard is a location or facility that poses a risk to the community. The CIKR provides a list of sectors that are critical to a community. Target hazards also include high-value buildings and historic or cultural sites. Identifying these locations allows a fire department to prepare for potential emergencies and ensure they have the appropriate resources and strategies to prevent, respond, and mitigate risks.

The following figure shows the locations of the various target hazards identified by RFD.

Figure 117: Critical Facilities

Critical Facilities Type	Number
Airports	1
Communications Centers	3
Detention Centers	3
Emergency Command Centers	2
Police Stations	6
Fire Stations	14
Primary Care Hospitals	3
Federal Law Enforcement/Court Facilities	9
Maintenance Yards	2
Schools and Day Care Facilities	121
Public Utilities — Water Facilities	33
Public Utilities — Electric Facilities	19
Water Treatment Plants	2
Dams/Reservoirs	11
Primary City Buildings	13
Primary County Buildings	30
Courts	4
Community Centers (shelters)	15
Non-Governmental Buildings	25
Totals	**316**

Hazardous Materials

Events that occur without warning or that involve technological failure or human error are classified as technological hazards. Examples include industrial accidents, hazardous chemical releases, and transportation-related spills. Each community should develop contingency plans for these specific risks, including permitting, periodic fire and life safety inspections, and pre-incident planning. These activities help reduce risk, improve situational awareness, and ensure that fire department personnel are familiar with on-site hazards before an emergency occurs.

Facilities that store, manufacture, or process hazardous materials may require the use of specialized personal protective equipment (PPE) and hazard mitigation procedures to safely control incidents. Facilities that maintain hazardous materials above certain thresholds—defined by the Environmental Protection Agency (EPA)—are required to file Tier II reports. These reports are submitted annually to local jurisdictions, Local Emergency Planning Committees (LEPCs), and the State Emergency Response Commission, as mandated by the Emergency Planning and Community Right-to-Know Act of 1986 (SARA Title III).

Thresholds that trigger reporting include:

- 10,000 pounds for hazardous chemicals.
- The lesser of 500 pounds or the threshold planning quantity for extremely hazardous substances.
- In California, additional reporting and handling thresholds apply under a five-tier hazardous waste system, which governs treatment, storage, and disposal authorization levels.

Riverside Fire Department personnel are trained in hazardous materials response at the awareness, operations, and technician levels, ensuring a scalable and effective response capability.

The frequency of occurrence for hazardous materials incidents in Riverside is considered "likely," meaning there is a 10–100% probability of occurrence within a given year or at least one event within a ten-year period. Potential incident locations are widespread, as hazardous materials are present in varying quantities throughout the city—most notably in industrial and commercial areas.

A hazardous chemical release in the City of Riverside would most likely involve either:

- The legal transportation of chemicals by railroad or commercial truck carrier, or
- The handling and storage of chemicals at a licensed facility.

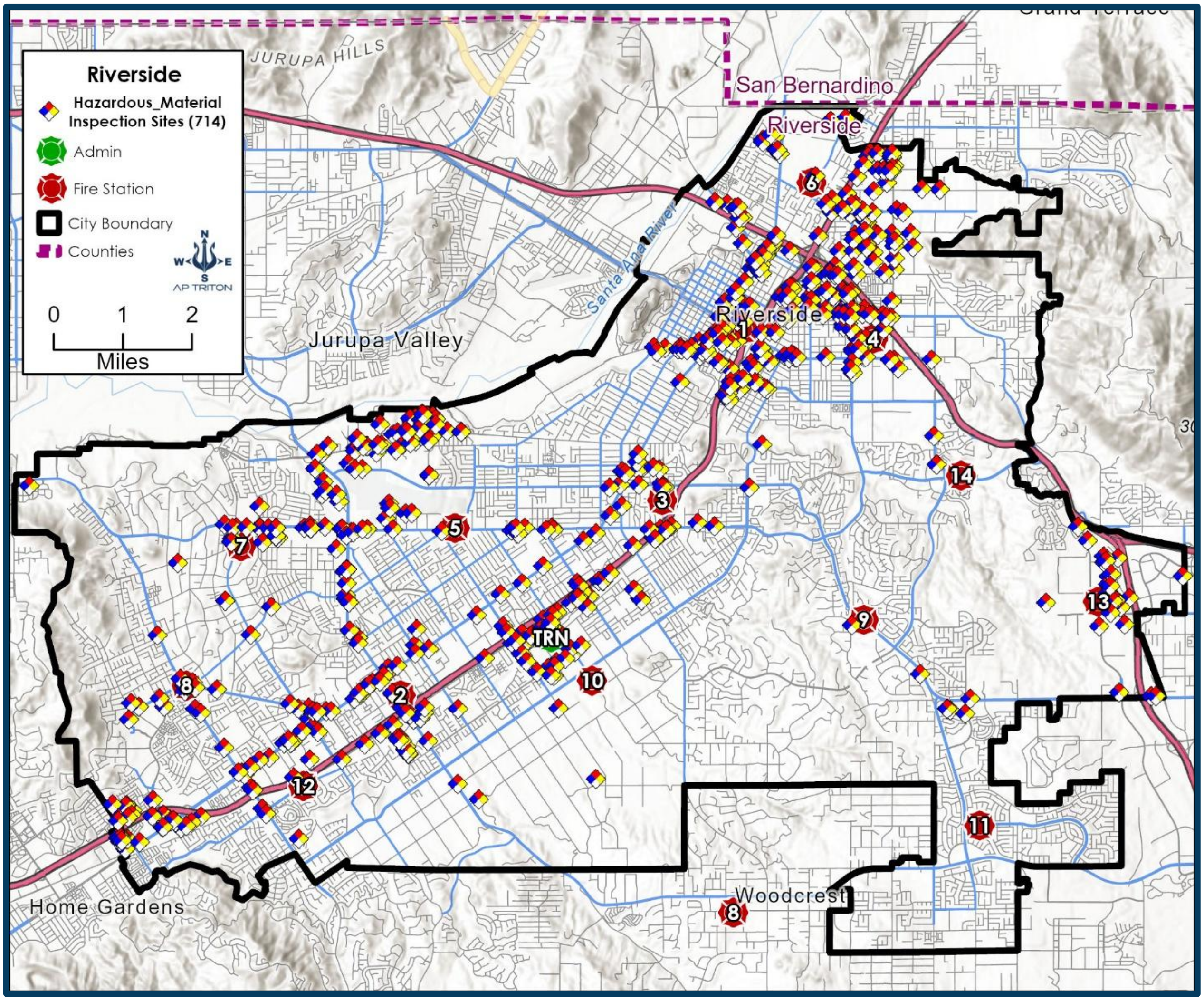
However, illegal activities such as clandestine laboratories and illegal dumping of chemical waste have also been identified as ongoing threats. The city has not experienced a major hazardous materials release or spill in the past ten years, though several illegal laboratories have been discovered. Additionally, the city contains one EPA Superfund site within its boundaries and two additional sites within its sphere of influence.

There are approximately 700 licensed hazardous materials sites within the City of Riverside, including both large-quantity and small-quantity users.

- Small-quantity users include school laboratories, department stores, and home improvement centers.
- Large-quantity users include gas stations, chemical manufacturers, warehouses, and industrial refrigeration facilities.

Several locations within the city also use or store radioactive materials for medical and research purposes. The following figure illustrates the significant hazardous materials locations within the City of Riverside.

Figure 118: Hazardous Materials Locations



Transportation Networks

Highways & Roads

Efficient transportation networks are essential for emergency response operations. A well-connected system of roads and highways enables rapid access to incidents and multiple alternative routes if primary access points become unavailable. Delayed response times can occur when road interconnectivity is limited.

Many streets in the City of Riverside follow a grid layout, particularly in older urban neighborhoods, while newer residential developments include winding streets and cul-de-sacs with single points of access. The city's roadway network also includes designated truck routes that support local businesses, regional industries, and goods movement.

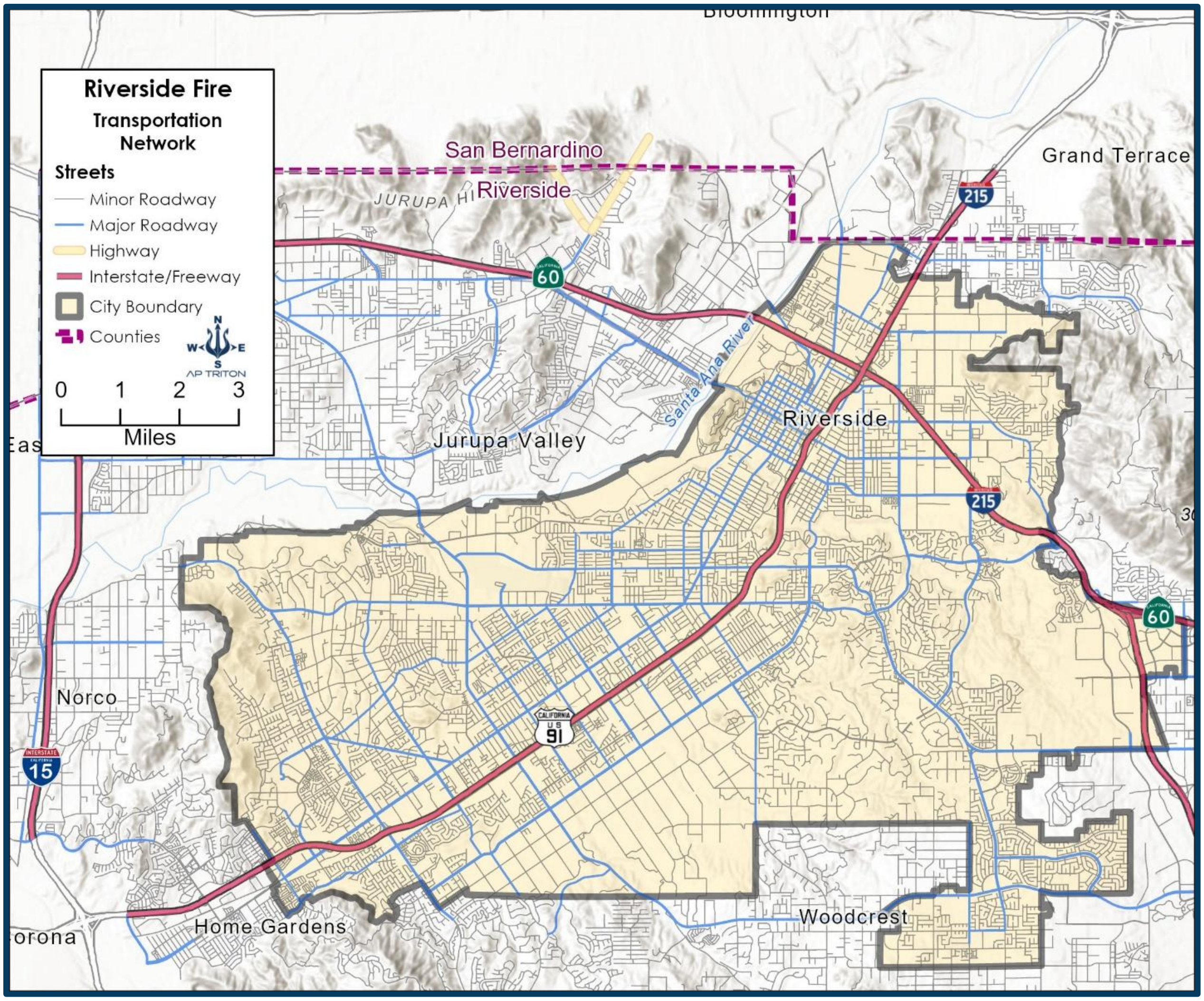
Riverside's strategic location in western Riverside County provides access to several major regional transportation corridors. The city is served by multiple interstate and state highways, which connect Riverside to nearby metropolitan areas and surrounding counties. Key routes include:

- **Interstate 215 (I-215):** Runs north–south through Riverside, connecting to San Bernardino to the north and Murrieta and Temecula to the south.
- **State Route 91 (SR-91):** An east–west freeway linking Riverside to Orange County and Los Angeles to the west and to Interstate 10 and Interstate 215 to the east.
- **State Route 60 (SR-60):** Extends east–west through the city, connecting the Inland Empire to Los Angeles and the Coachella Valley.
- **Interstate 10 (I-10):** Located north of the city, providing a major east–west connection across southern California and beyond.

These routes make Riverside a regional logistics hub for freight movement and commuter travel across Southern California. High freight volumes, however, place pressure on existing infrastructure, contributing to traffic congestion and roadway wear that can affect emergency response mobility.

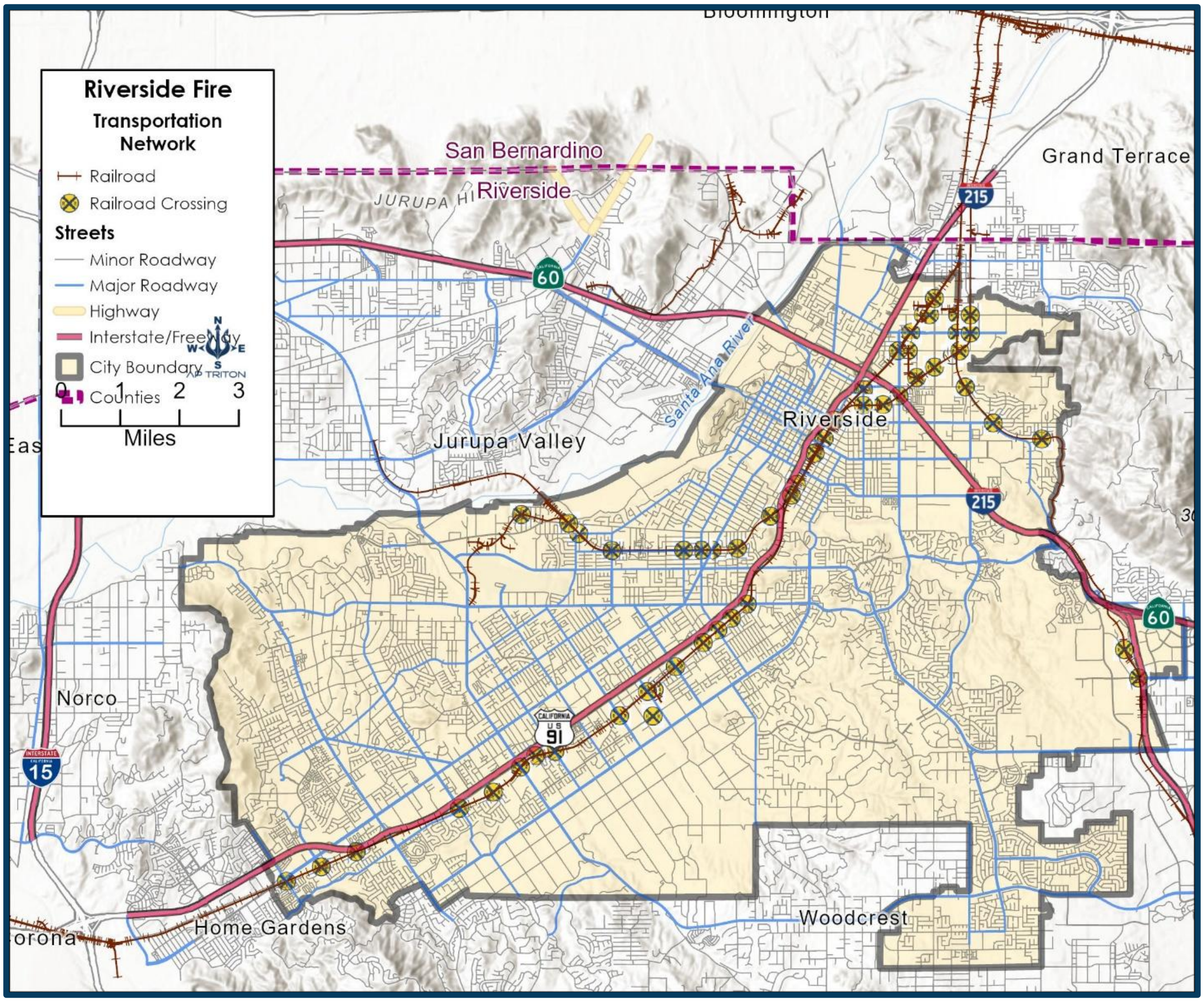
The following figure illustrates the major roads in the City of Riverside.

Figure 119: Major Roads of Riverside



The following figure shows the Riverside area road network and primary transit routes.

Figure 120: Riverside Area Road Network and Transit System



Major arterial roads within Riverside include Van Buren Boulevard, Arlington Avenue, Magnolia Avenue, University Avenue, La Sierra Avenue, Central Avenue, and Jurupa Avenue. These corridors connect residential neighborhoods with commercial, industrial, and institutional areas.

Riverside is served by the Riverside Transit Agency (RTA), which provides fixed-route bus service throughout the city and neighboring communities. RTA service connects Riverside residents to regional transit centers, including Metrolink rail stations, enabling access to employment, education, and medical destinations across the Inland Empire and beyond.

Energy

The reliable provision of energy is essential to sustaining a thriving community. The City of Riverside depends on a range of energy sources and systems, including electric power generation and transmission, fuel distribution and storage, and natural gas pipelines and regulator stations.

Electricity

Residents and businesses in Riverside receive electric service primarily through Riverside Public Utilities (RPU). Established in 1895, RPU is a community-owned electric utility governed by a board of community volunteers and the Riverside City Council. The Public Utilities Commission of California provides oversight and ensures that consumers have access to reliable and equitable service options.

RPU's electric service territory encompasses approximately 81.5 square miles, covering most areas in the city. Southern California Edison does have some overlapping services within the city. The utility owns and maintains its own transmission, distribution, and generation assets and, as of January 31, 2024, served 113,083 electric customer accounts.

Several high-voltage transmission lines operated by regional energy providers pass through or terminate within Riverside. Both near-term and long-term Summer Peak scenarios have identified potential thermal overload contingencies, prompting RPU to schedule reconductoring projects and infrastructure upgrades to maintain required capacity under summer normal and emergency conditions.

RPU also operates multiple electrical substations to step down transmission voltage for residential and commercial use. During incidents involving substations, Riverside Fire Department personnel exercise extreme caution and do not enter affected facilities until authorized personnel from RPU or the responsible utility provider arrive on scene and declare the site safe.

In addition to power delivery, RPU offers energy conservation programs, low-income assistance plans, and rebates for energy-efficient appliances, lighting, and heating and cooling systems. These initiatives support sustainability and affordability throughout the community.

Natural Gas

Southern California Gas Company (SoCalGas) provides most of Riverside's natural gas service through an interconnected network of transmission pipelines, high-pressure distribution lines, and storage facilities. These systems deliver natural gas for both residential and commercial consumption.

Some infrastructure within the city connects directly to Riverside Public Utilities' broader energy network, which integrates natural gas distribution with other local energy systems to ensure reliability and redundancy.

Gasoline

Gasoline remains the most common transportation fuel in the City of Riverside, with the majority consumed by light-duty vehicles, including passenger cars, pickup trucks, and sport utility vehicles. The city's gasoline distribution network includes fuel stations, tanker trucks, and underground pipelines.

Many petroleum pipelines traversing Riverside originate in refinery areas of Los Angeles County, supplying tank farms and rail distribution centers within Riverside and across state lines. These pipelines typically range in diameter from 6 to 14 inches and serve as a vital link in the region's energy supply chain.

Airport

Riverside Municipal Airport (KRAL), located approximately four miles southwest of downtown Riverside, is a publicly owned general aviation facility operated by the City of Riverside. The airport spans roughly 525 acres and features two asphalt runways—Runway 9/27 (5,401 × 100 ft) and Runway 16/34 (2,850 × 48 ft)—along with a single helipad. The airport is equipped with Instrument Landing System (ILS), VOR, GPS approaches, and visual guidance tools such as PAPI on multiple runways.[27]

KRAL serves as one of California's busiest FAA Federal Contract Towers, ranking 116th nationwide in total operations and overseeing nearly 144,000 annual aircraft movements. It supports a wide range of aviation activities, including flight training, mechanical education, and corporate aviation. The airport houses seven aviation schools and provides a full-service Fixed-Base Operator (FBO) offering pilot services and hangar leasing.[28]

The airport's proximity to populated neighborhoods increases potential risk exposure for the surrounding community in the event of aircraft-related incidents. Emergency planning considerations include rapid access for fire and EMS units, fuel and hazardous material management, and wildfire preparedness. KRAL's mix of high activity, educational facilities, and corporate aviation underscores the importance of coordinated emergency response planning and integration with citywide Community Risk Reduction strategies.

The following figure shows the location of the Riverside Municipal Airport.

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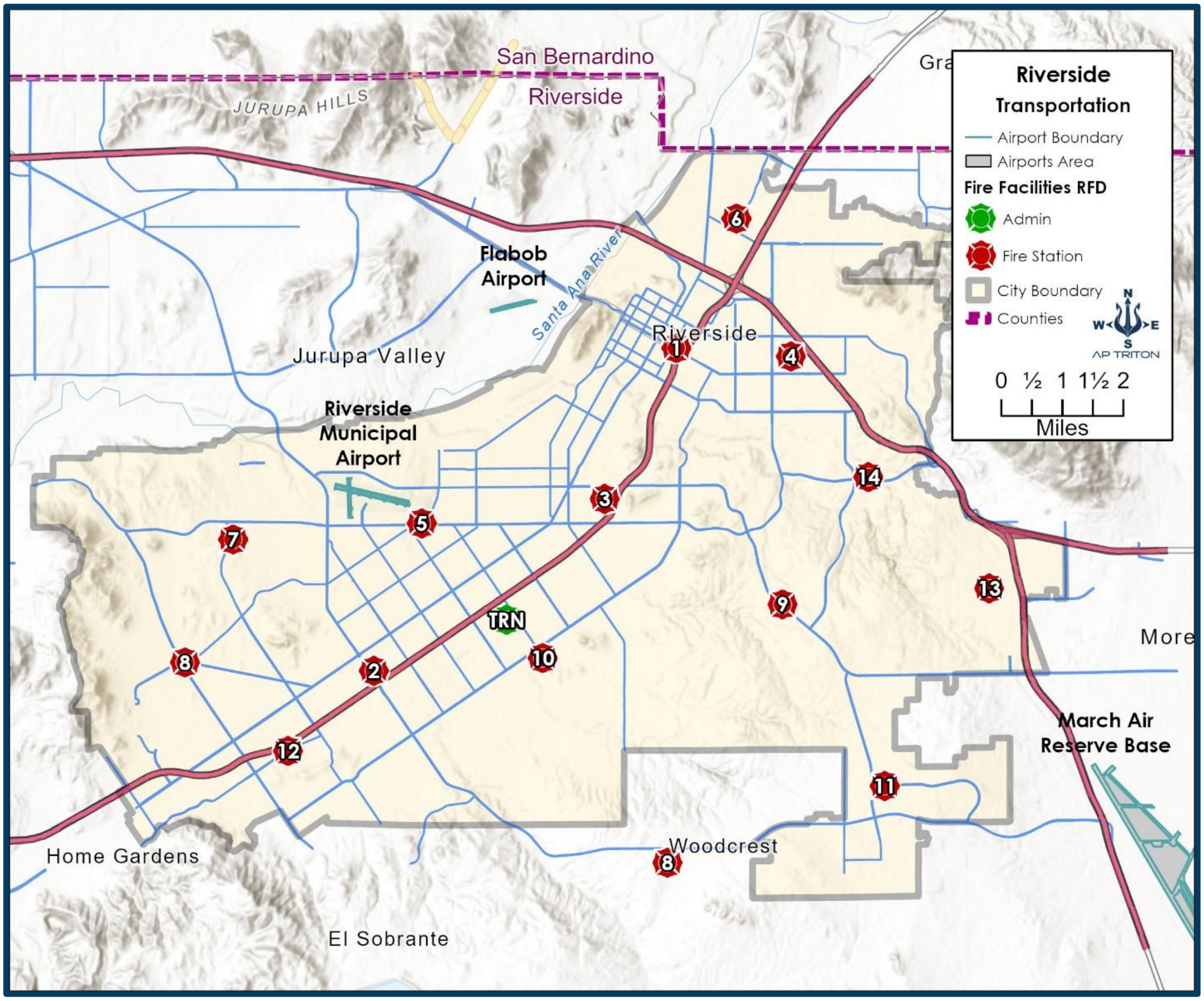
[27] https://airnav.com/airport/KRAL.
[28] https://riversideca.gov/airport/.

Figure 121: Riverside Municipal Airport



Railways

The City of Riverside is situated along a major railroad network that plays a vital role in the regional and national transportation system. The city is served by two mainline freight railroads, which operate along approximately 17 miles of rail corridors within the city limits.

These rail lines generally parallel the State Route 91 and Interstate 215 corridors and support both freight and passenger rail services. There are 26 mainline at-grade crossings where the railroads intersect with city streets, and approximately 128 trains—averaging 100 cars each—pass through Riverside daily.

The Union Pacific Railroad (UP) line serves as a major transcontinental route, connecting the Pacific Coast to Texas and the Midwest. The Burlington Northern Santa Fe (BNSF) line functions as a critical freight artery linking the Ports of Los Angeles and Long Beach with destinations across the United States.

In addition to freight operations, the Metrolink commuter rail system provides passenger service connecting Riverside to Los Angeles, Orange, and San Bernardino Counties, as well as other destinations within Riverside County.

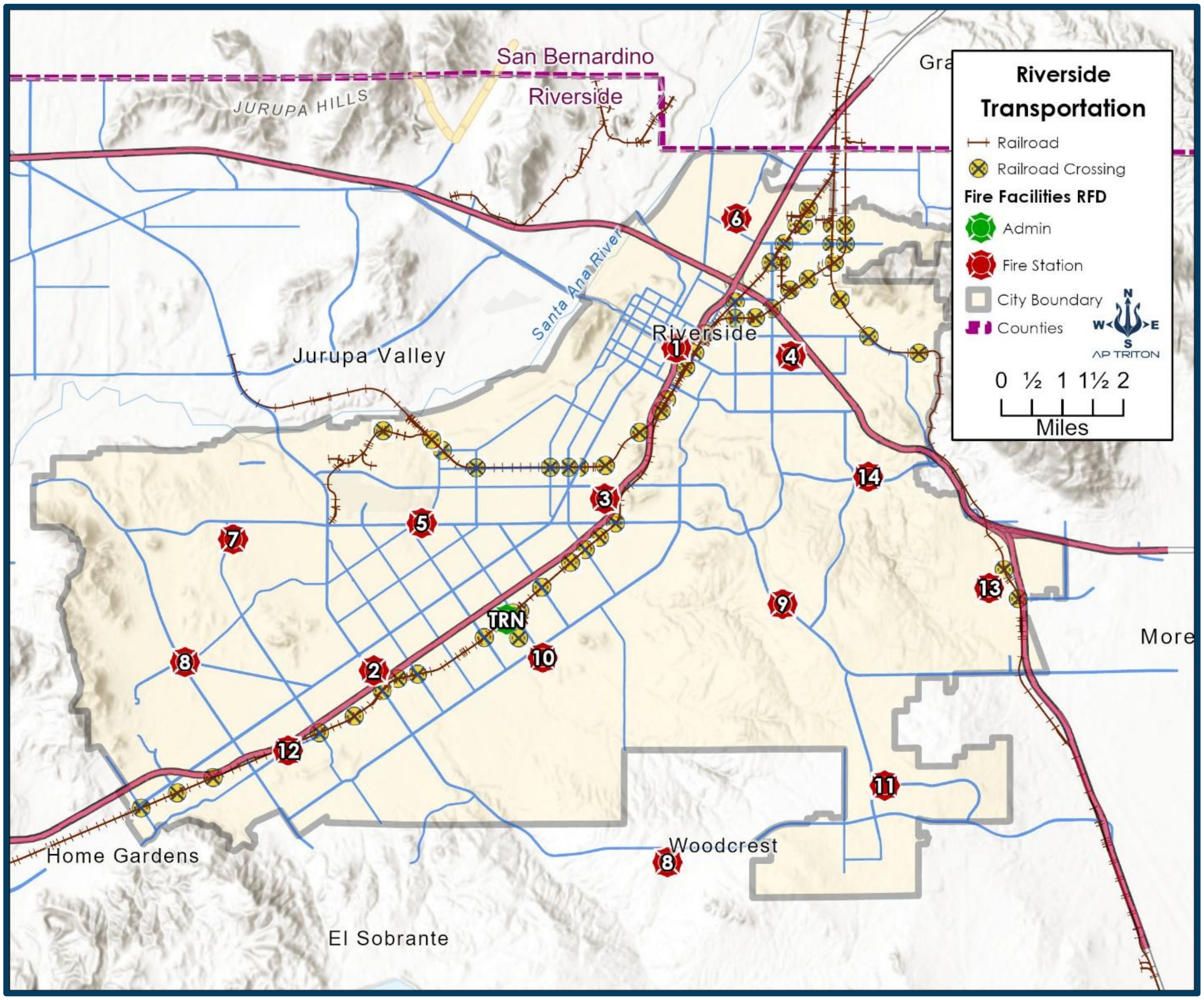
Amtrak's national rail service also operates through the city, with its Southwest Chief route running between Chicago and Los Angeles via the BNSF corridor, making two daily stops in Riverside.

Because these rail lines serve as primary conduits for port-related freight traffic, any disruption in service would have significant regional and national economic impacts. In addition to the mainline tracks, numerous industrial spurs and branch lines extend throughout Riverside to support local industries.

The Riverside Branch Line of Union Pacific connects Downtown Riverside to the Hunter Park area, linking with the San Jacinto Branch Line near Marlborough and running along the base of Box Springs Mountain.

The following figure illustrates the location of the railroad network in the City of Riverside.

Figure 122: Riverside Railroad



Dams

When a dam fails, it can cause devastating damage to property, result in injuries and loss of life, and lead to severe flooding downstream. Dam failure typically involves the unintended release or surge of impounded water, which can produce significant human, economic, and environmental consequences—including service disruption, property destruction, and long-term ecological impacts.

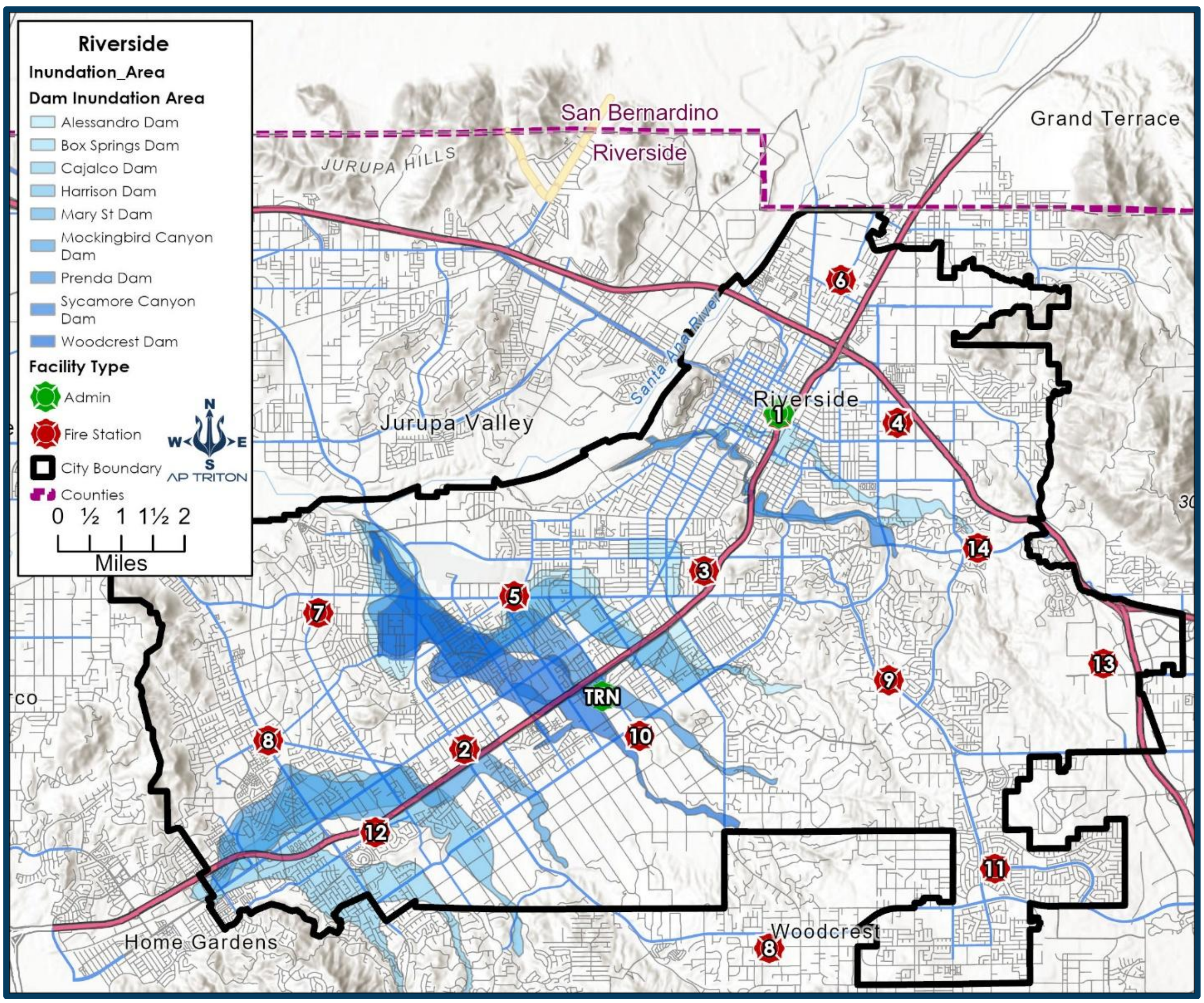
While a failure may involve the complete collapse of a dam, this is not always the case. Partial failures caused by damaged spillways, overtopping due to excessive rainfall, or other operational malfunctions can also create hazardous conditions. Because these events often occur without advance warning, failures triggered by earthquakes, landslides, or other natural disasters can be particularly severe.

According to the National Inventory of Dams, there are 30 dams located within Riverside County. Although there are no dams within the City of Riverside, the City is estimated to have some degree of exposure to potential dam failure flooding, given its downstream location relative to certain dams in the county. The potential depth and extent of flooding in such an event have not been fully determined.

There have been no recorded significant dam failures directly affecting the City of Riverside.

The following figure illustrates the dam inundation area associated with potential failure impacts in the surrounding region.

Figure 123: Dam Inundation Area



Water and Sewer Utilities

The Riverside Public Utilities (RPU) and the Public Works Department of the City of Riverside provide water, wastewater, sewer, and disposal services to the residents. The Riverside Public Utilities (RPU) provides water services. The Public Works Department is responsible for sewer and wastewater management.

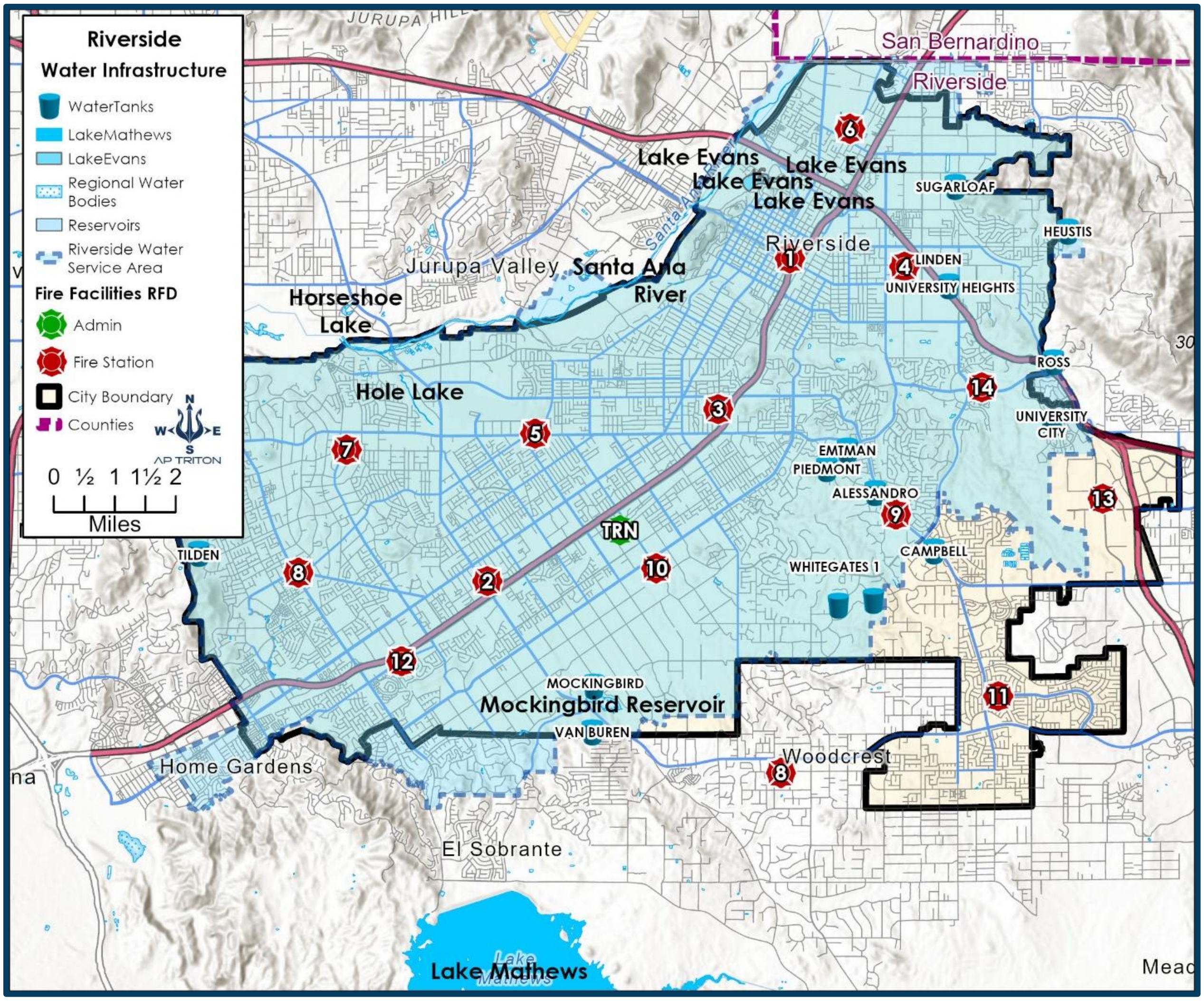
Water

Riverside obtains its water supply from groundwater stored in the Bunker Hill and Riverside groundwater basins. RPU provides water services to the residential, commercial, and irrigation customers in the City of Riverside. Established in 1895, Riverside Public Utilities is a customer-owned water utility governed by a board of community volunteers and the City Council of Riverside.

RPU met all of its water supply needs in 2024 by utilizing groundwater sources located in the Bunker Hill and Riverside Basins. RPU directly treats some of its wells and blends all water sources at a central location before entering into distribution. It manages operations and maintains the city's water supply and distribution system, providing high-quality water.

RPU provides an average of approximately 68 million gallons of water per day transported and distributed through approximately 967 miles of pipeline and stored in 16 reservoirs. Riverside's water system also includes 10 water treatment plants, 51 domestic wells, 39 booster pump stations, and 14 miles of canal. Local drinking water is obtained from water wells located in the City of San Bernardino. The city relies on pipelines running from wells in San Bernardino, across Interstate 10, through Grand Terrace, and into the filtration and treatment plants. Once the water reaches the city, it is either stored in one of the 16 above-ground water tanks or closed reservoirs or pushed out to the city through smaller distribution lines.

Figure 124: Water Line Locations



Controlling a fire becomes challenging without an adequate water supply and distribution system consisting of water storage, mains, and a fire hydrant system. A system of well-distributed hydrants and appropriately sized water mains are necessary to provide the required water for fire operations use.

The City of Riverside is generally well-covered by a fire hydrant system that allows for a hydrant with easy accessibility to most structures.

Wastewater/Sanitary Sewer Management

The City of Riverside Public Works Department provides wastewater, sewer, and disposal services to residents. The department is responsible for planning, organizing, and implementing projects related to the improvement and maintenance of the city's infrastructure systems, including drainage, sewer, wastewater collection, and treatment. It maintains, operates, and repairs the city's sewer and drainage systems to ensure a safe and clean environment for the community.

Wastewater and stormwater runoff from Riverside's residential, commercial, and industrial properties are collected through more than 820 miles of sewer mains and 414 miles of sewer lateral pipelines across five basins, all of which convey flow to the City's wastewater treatment plant.

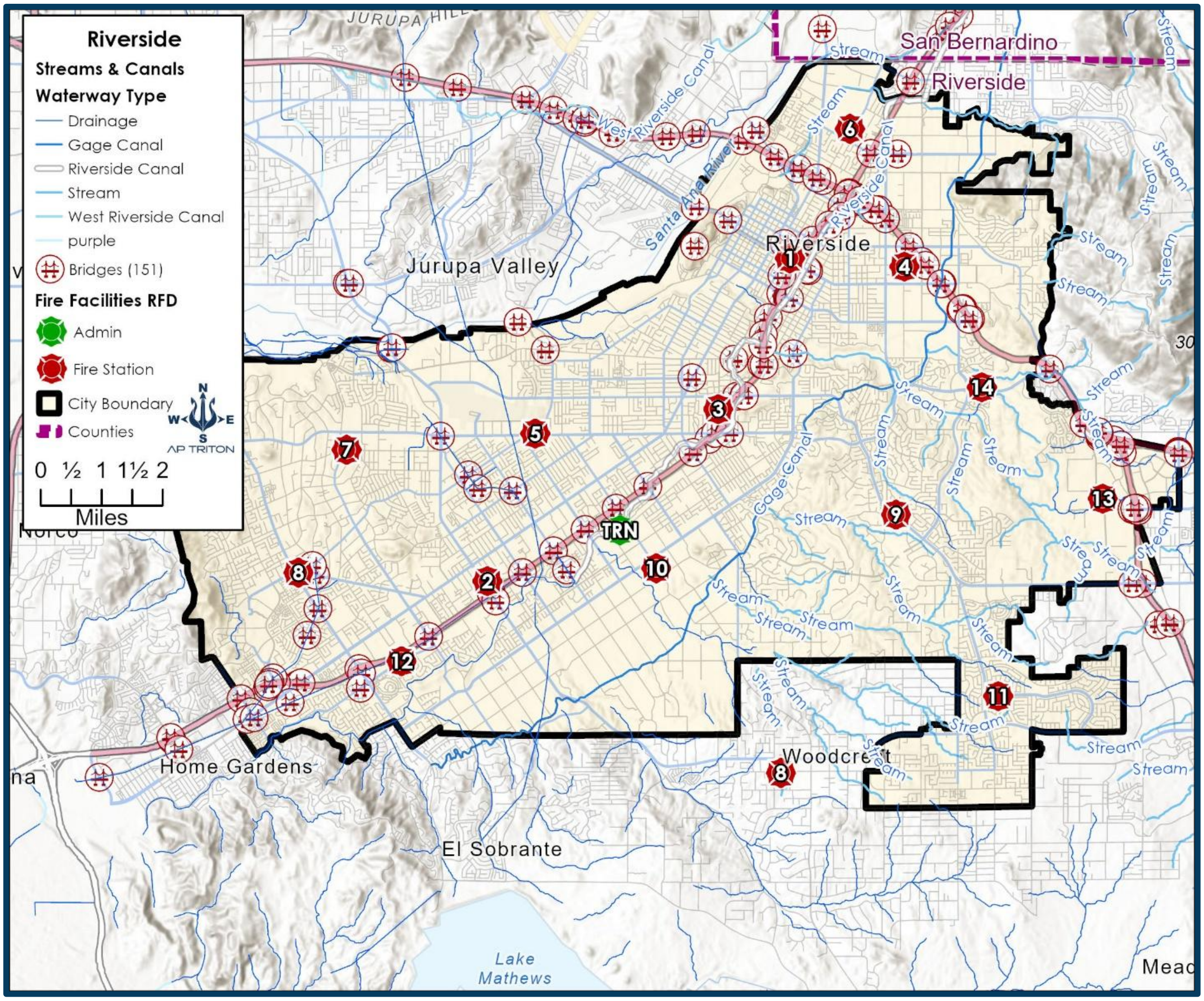
Proper stormwater drainage is essential to ensure that the necessary channels and structures are available to manage runoff effectively. The Public Works Department oversees the City's sanitary sewer operations, including:

- Operation and maintenance of lift stations.
- Repair and maintenance of sewer lines and manholes.
- Scheduled line cleaning programs.
- Standby crews available at all times to respond to sewer-related issues and emergencies.

These efforts ensure system reliability, reduce the risk of sewer overflows, and help maintain regulatory compliance with environmental and public health standards.

The following figure illustrates the streams and canals located throughout the City of Riverside.

Figure 125: Waterways and Associated Bridges



Communications

When an incident occurs, effective communications are essential for receiving and transmitting alarm and incident information and for ensuring timely coordination with emergency responders. A central communications center serves as the hub for dispatching resources and managing incident communications.

Beyond emergency communications, public telecommunications systems—including cellular phones, Voice over Internet Protocol (VoIP), and traditional landline networks—are critical for enabling residents to report emergencies. Internet services also play a vital role in supporting public communication, business operations, and emergency response coordination. Any failure or disruption of these systems can have a significant impact on the ability of emergency services and the community to function effectively.

The Riverside Fire Department provides fire suppression, rescue, fire prevention, hazardous materials response, and other emergency services within the city. Residents can report emergencies through the 911 system, accessible via cellular, VoIP, and landline telephones. For non-emergency inquiries, RFD can be contacted at (951) 826-5321 and (951) 826-5737, among other administrative lines.

RFD plans and coordinates local emergency response and relief activities through the city's Emergency Operations Center (EOC). The department works in close collaboration with county, state, and federal partners to support planning, training, and interagency coordination.

To continually improve its administrative and operational capabilities, RFD is enhancing its data management systems and analytical technologies. The department is working toward greater utilization of sophisticated software tools, advanced communications platforms, and integrated information systems to facilitate faster, more efficient emergency response.

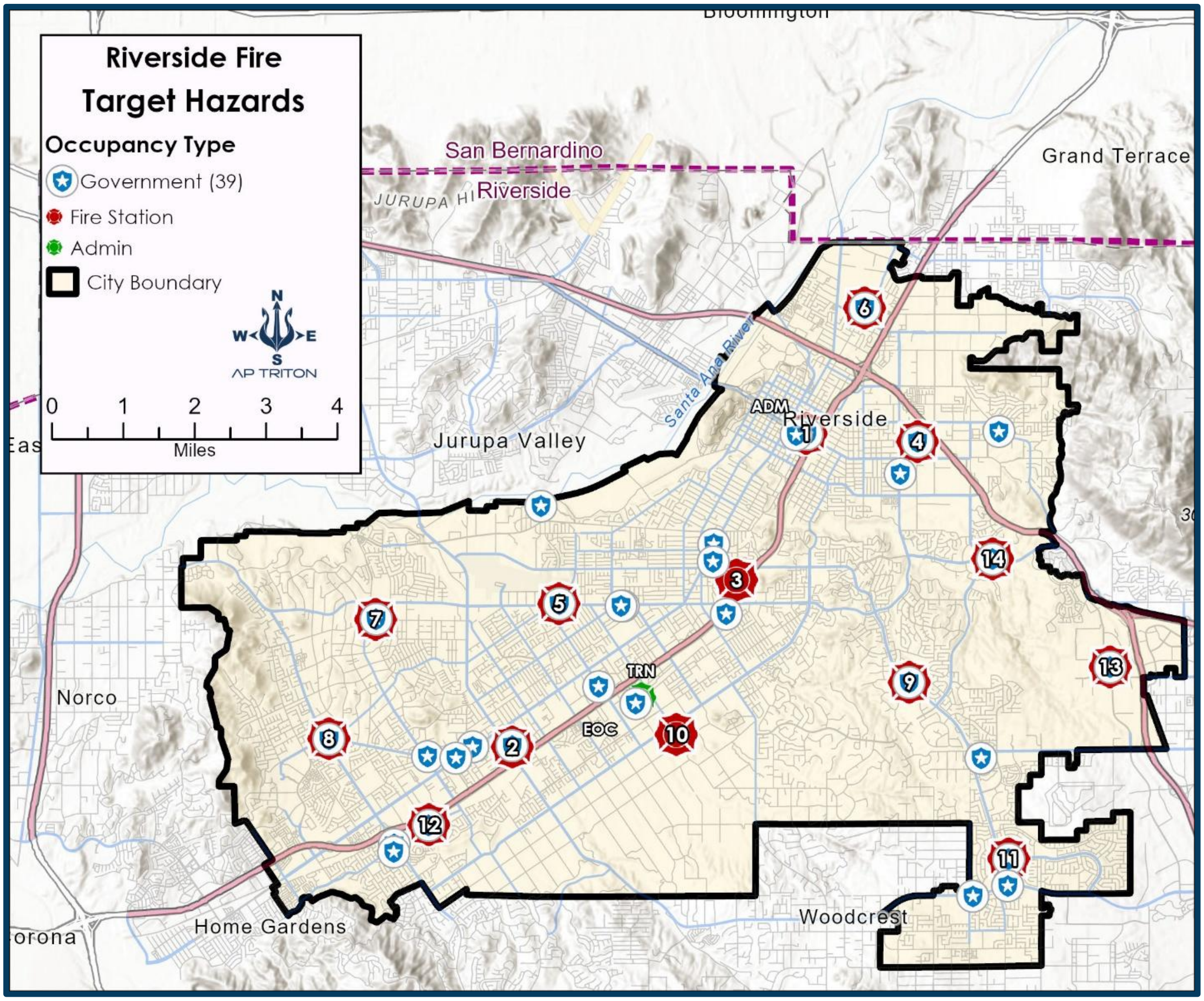
RFD's operations are carried out by highly trained professional staff under the direction of the Fire Marshal and Chief Officers, with personnel assigned to 24-hour shifts. The department provides emergency services from 14 strategically located fire stations throughout the city, ensuring that a sufficient number of firefighters are on duty at all times for immediate response.

Governmental Buildings

Governmental buildings are essential components of a community's critical infrastructure, housing the offices and facilities that support local, state, and federal operations. These structures are typically located near population and business centers to ensure efficient delivery of public services and accessibility for residents.

The following figure illustrates the locations of governmental buildings within the City of Riverside.

Figure 126: Governmental Buildings



COMMUNITY LAND USE

The concept of land use regulation is to provide attractive social and environmental outcomes to assist in the efficient management of development. Land use for a community is designed to assign a classification for properties within a geographical area generally under governmental control. Zoning areas may vary from one portion of the service area with a mixture of low-, moderate-, and high-risk properties.

- **Low Risk:** Areas zoned for agricultural purposes, open spaces, low-density residential and other low-intensity use.
- **Moderate Risk:** Areas zoned for medium-density single-family properties, small commercial and office uses, low-intensity retail sales, and similarly sized business activities.
- **High Risk:** High-intensity business districts, mixed-use areas, high-density residential, industrial, storage facilities, and large mercantile centers.

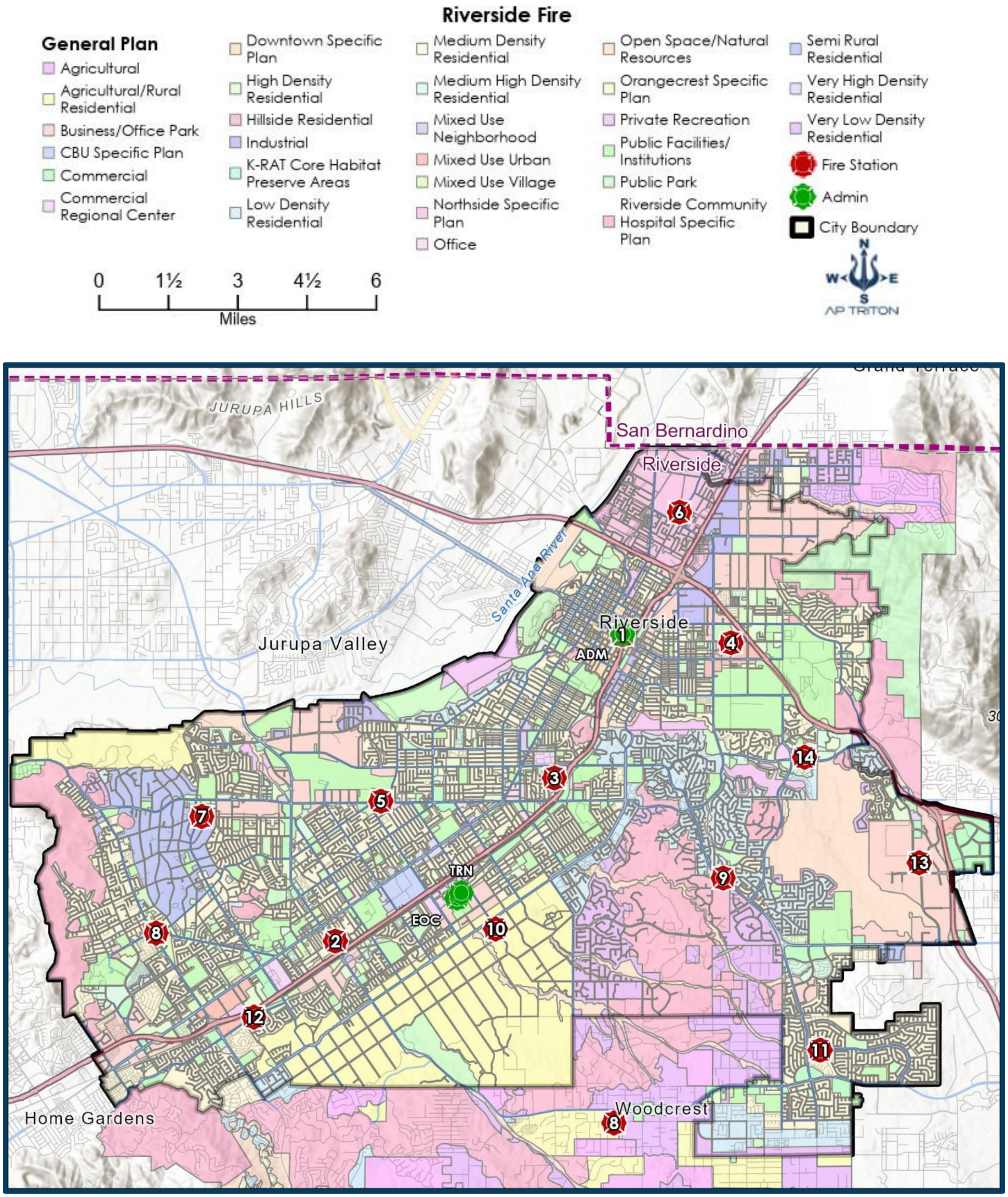
Riverside is a city in, and the county seat of, Riverside County, California, United States, located in the Inland Empire metropolitan area. It is named for its location beside the Santa Ana River, which flows through the region. As the most populous city in both the Inland Empire and Riverside County, Riverside holds a significant position within the region and is an integral part of the Greater Los Angeles area.

Situated approximately 50 miles southeast of downtown Los Angeles, Riverside plays a crucial role in the Southern California landscape. As the 61st-most populous city in the United States and the 12th-most populous city in California, Riverside is home to a diverse and vibrant community.

The city plans for future growth through the implementation of policies and standards set forth in its General Plan. The General Plan is a long-term, comprehensive framework to guide physical, social and economic development within the community's planning area. Riverside's General Plan is a long-range guide for attaining the city's goals within its ultimate service area and accommodating its population growth in the future.

The following figure provides the land use in the city.

Figure 127: Riverside City Land Use



Increased growth and density in Riverside affect how the fire department delivers service to the community.

PHYSICAL ASSETS

Commercial occupancies or properties are considered target hazards in every community because of the special or unique risks to emergency responders and the occupants during an incident or event. Each of these occupancies should have up-to-date pre-incident surveys completed annually. The surveys allow responders to become familiar with the building, property, and special hazards.

During an incident, these occupancies and facilities should have a current pre-incident plan for RFD operations personnel. The pre-incident plan informs emergency responders about potential hazards and can help them develop strategies and tactics during an incident. RFD utilizes Esri's ArcGIS solution for pre-incident planning. This software solution utilizes a computer or an application for a tablet or phone to collect and enter information for the property, such as the location of utilities or the fire department connection for the fire sprinkler system. This solution allows RFD to use the city's existing licensing to implement the new process. The software allows the user to place symbols on a map of existing city GIS data. The map is imported into Tablet Command and is available when responding to an incident. All target hazards and, ultimately, all commercial buildings should have up-to-date pre-incident plans.

Structural Risks

The risks created by residential or commercial occupancies for those in a building and emergency responders increase based on the type.

Educational and Childcare Facilities

Public and private schools and childcare facilities increase risks in any community and require substantial assistance during a significant event, such as a mass casualty or fire response. In the City of Riverside, numerous schools and childcare facilities require inspections and pre-incident plans to ensure the property is safe and that emergency responders are familiar with the location and site-specific hazards.

The following figures provide the location of schools and other education-related facilities in the City of Riverside.

Figure 128: School Locations

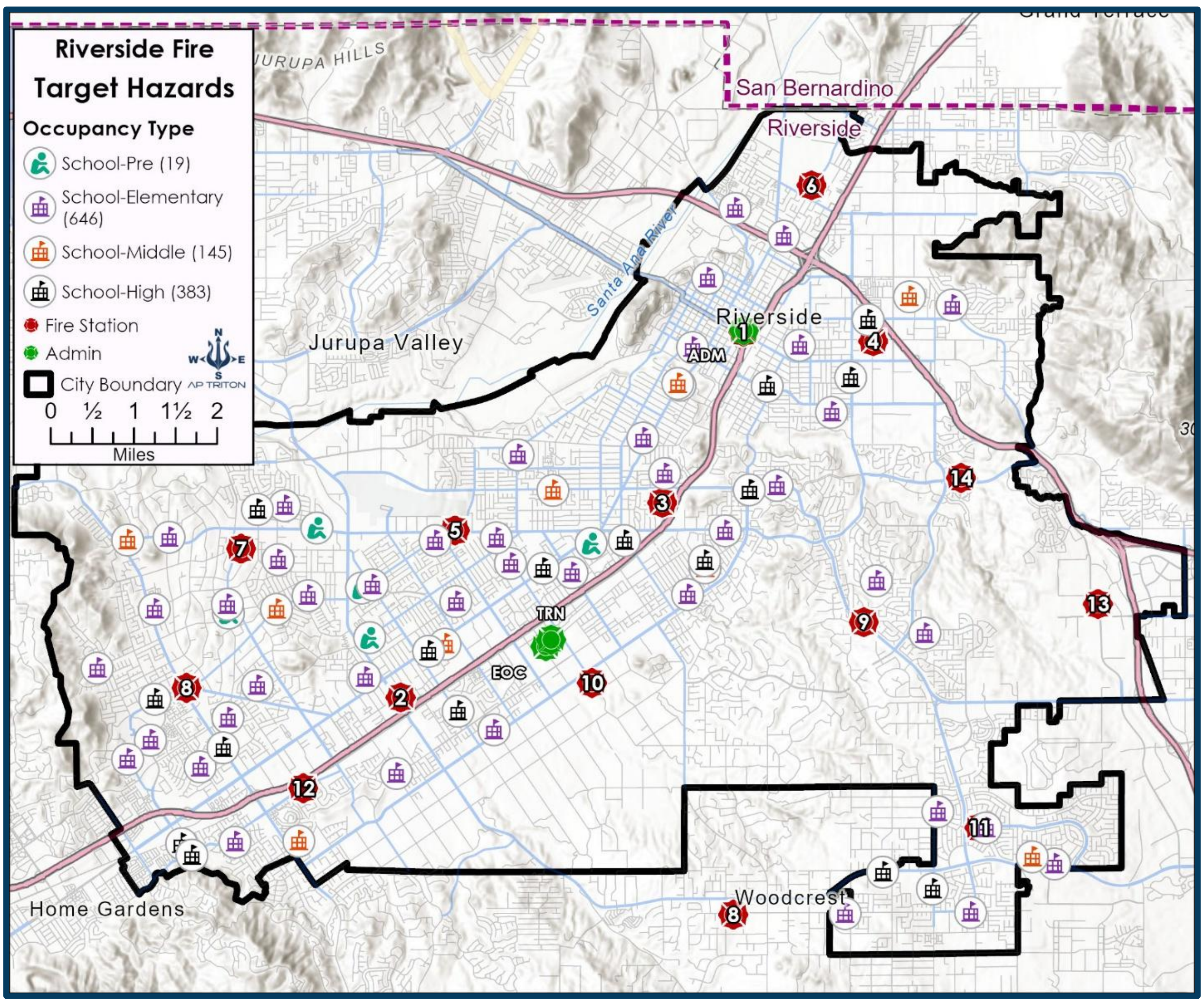


Figure 129: School Logistics

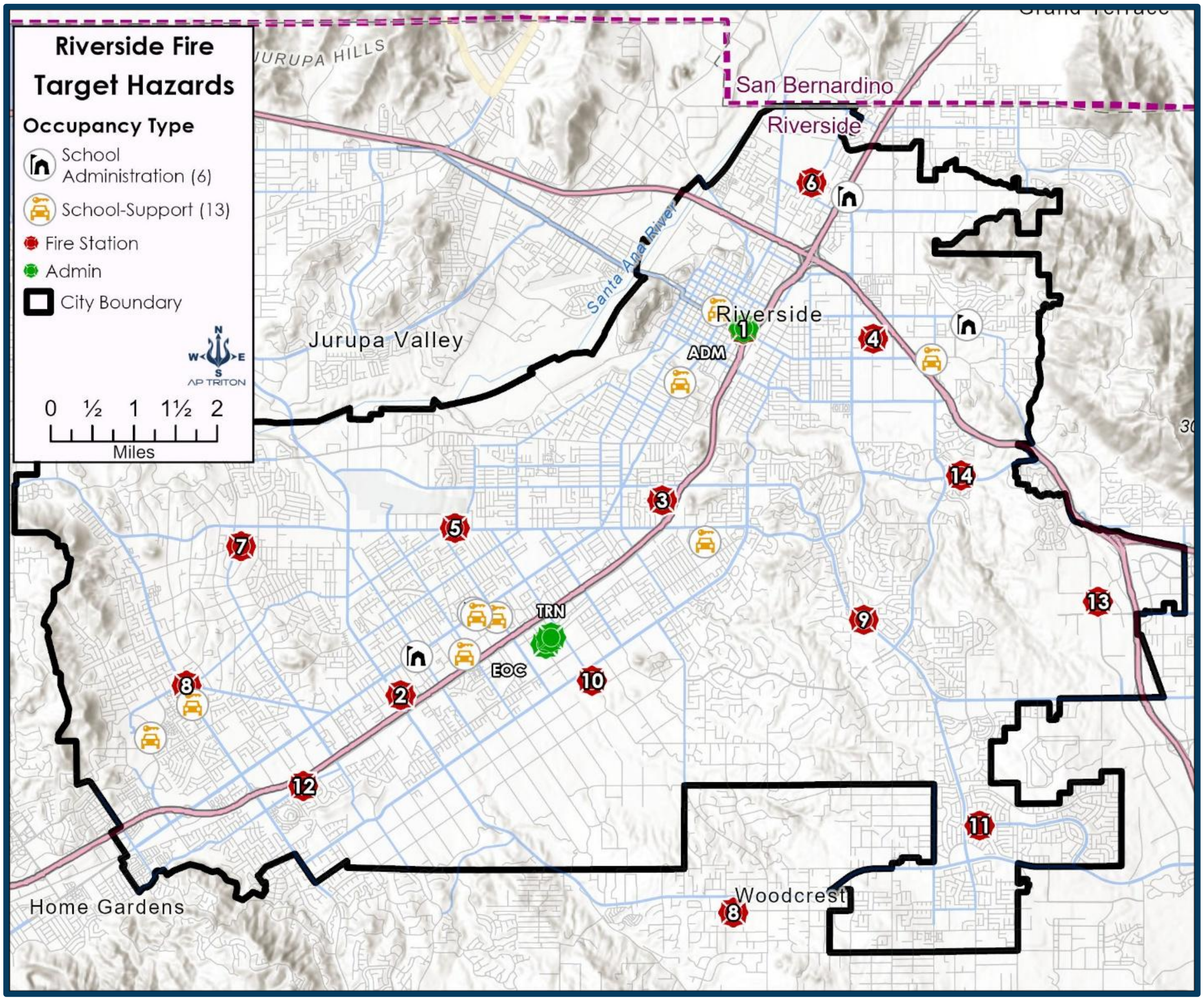


Figure 130: Alternative Schools

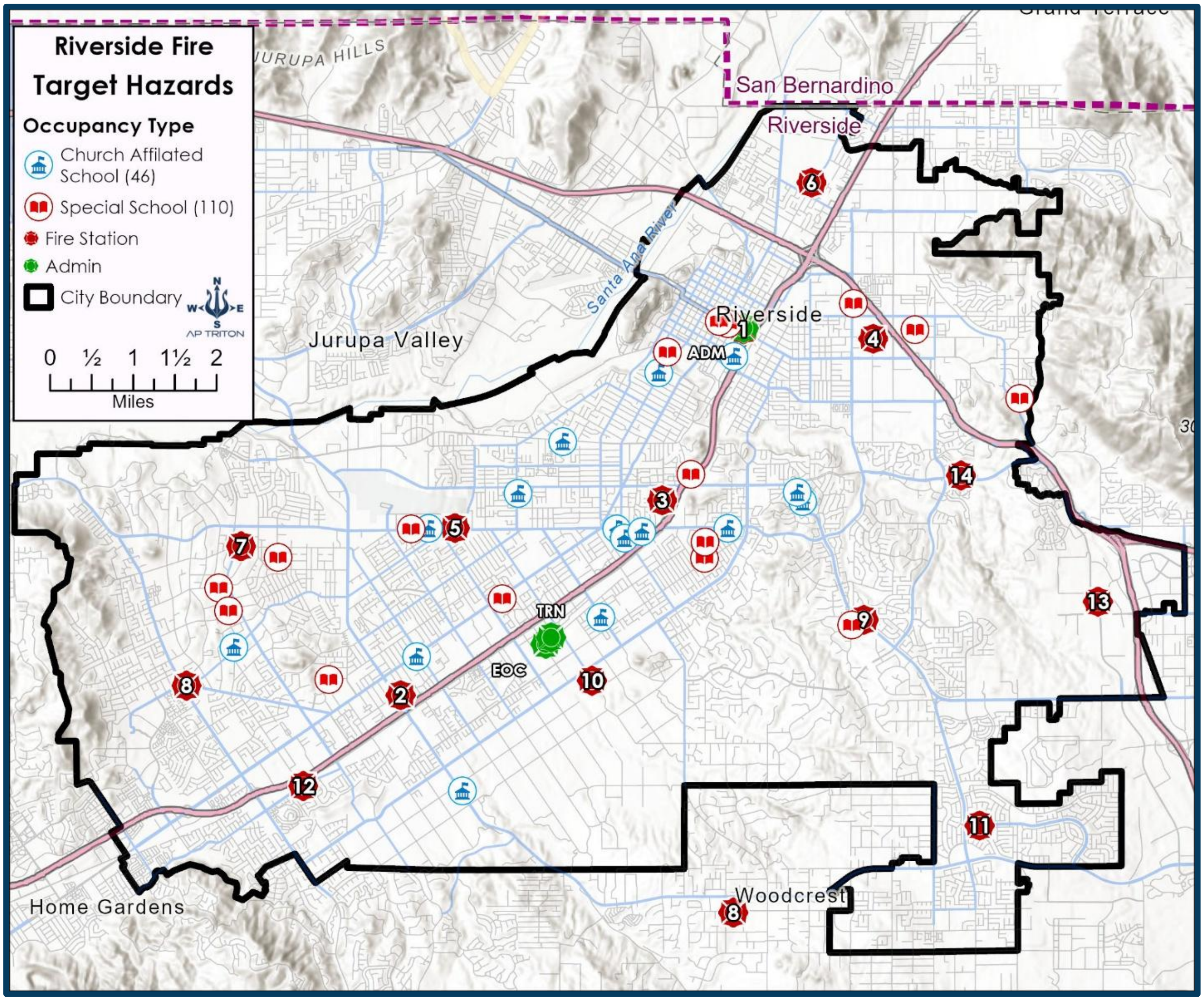


Figure 131: Universities

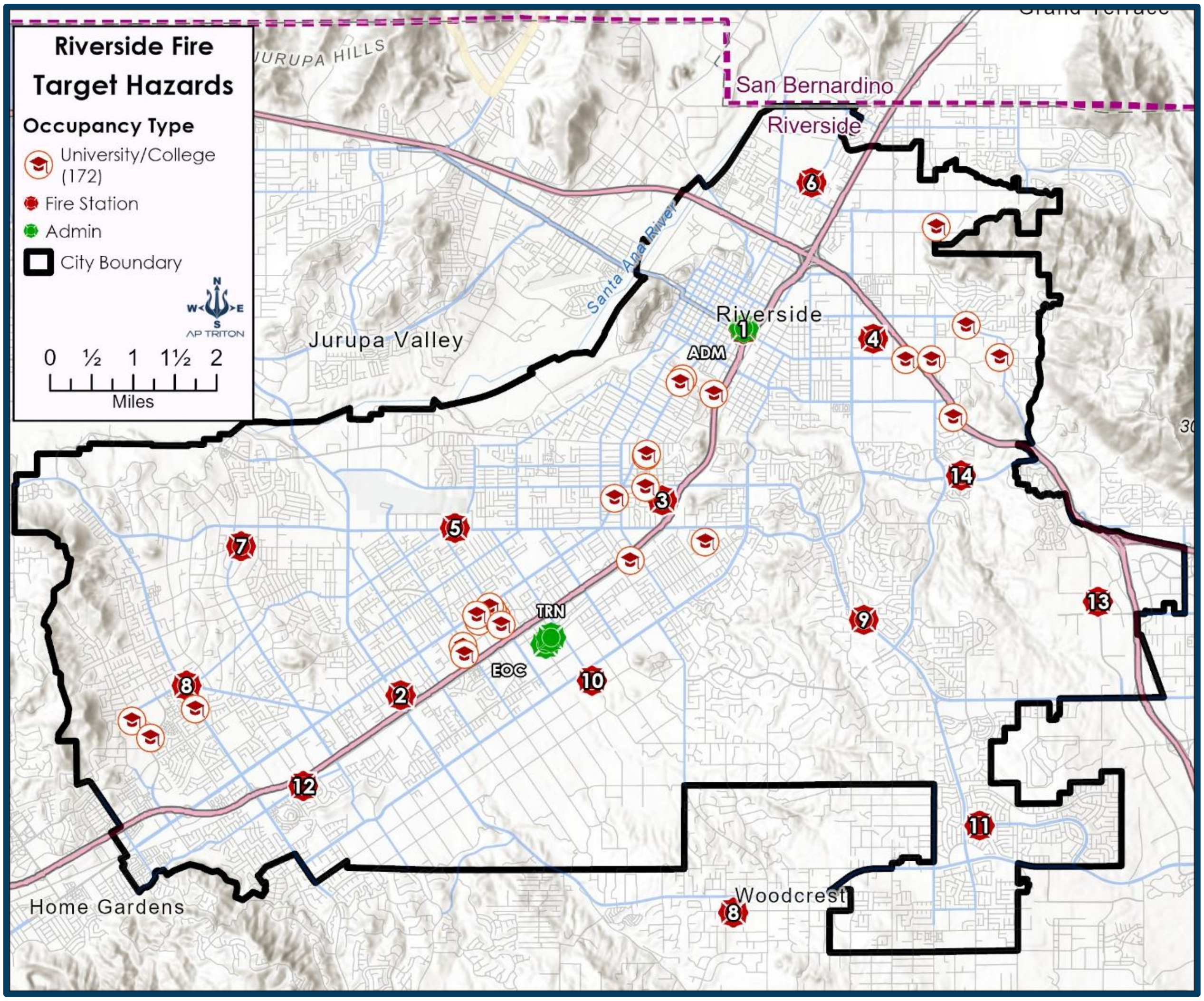
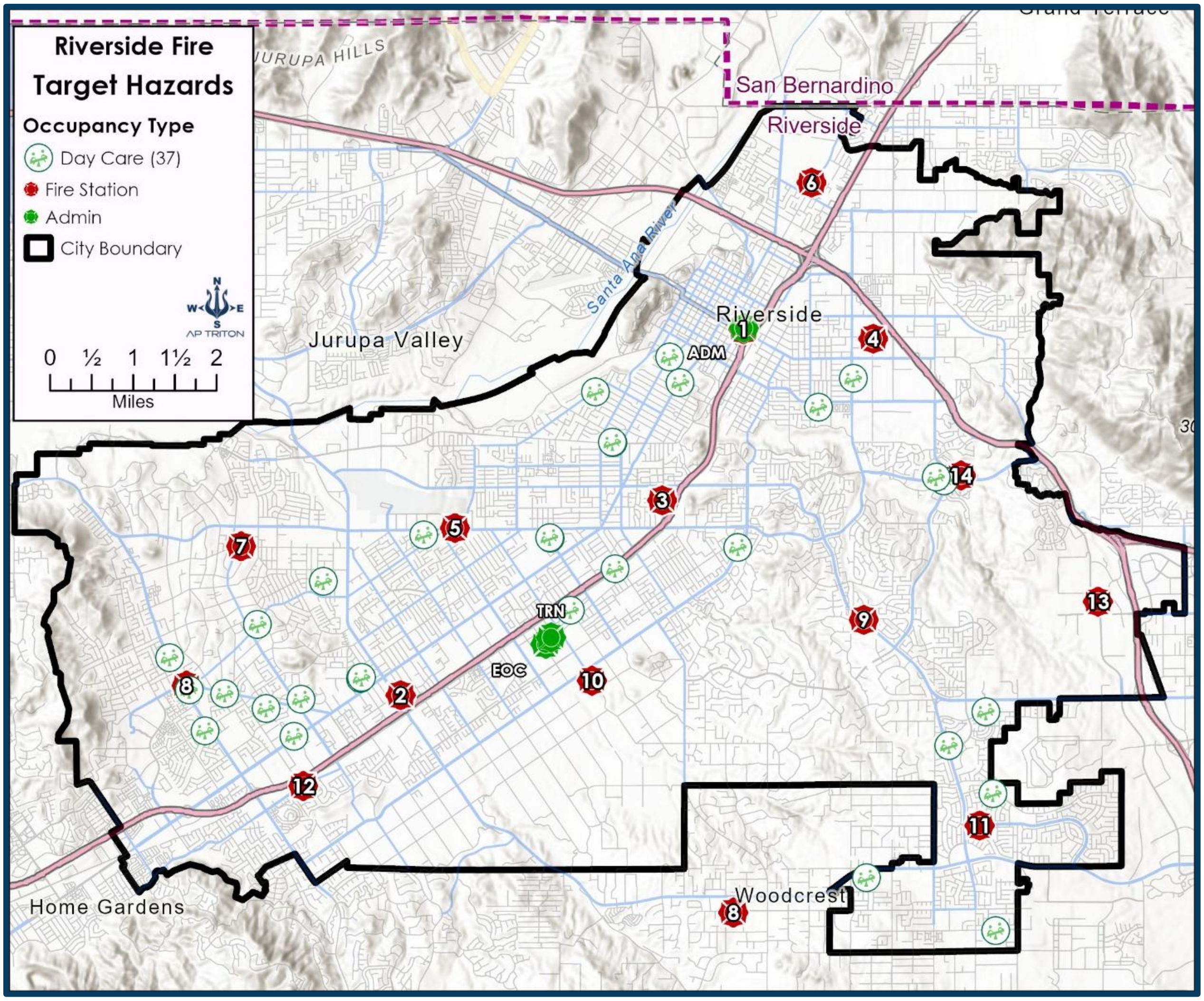


Figure 132: Day Care Facilities

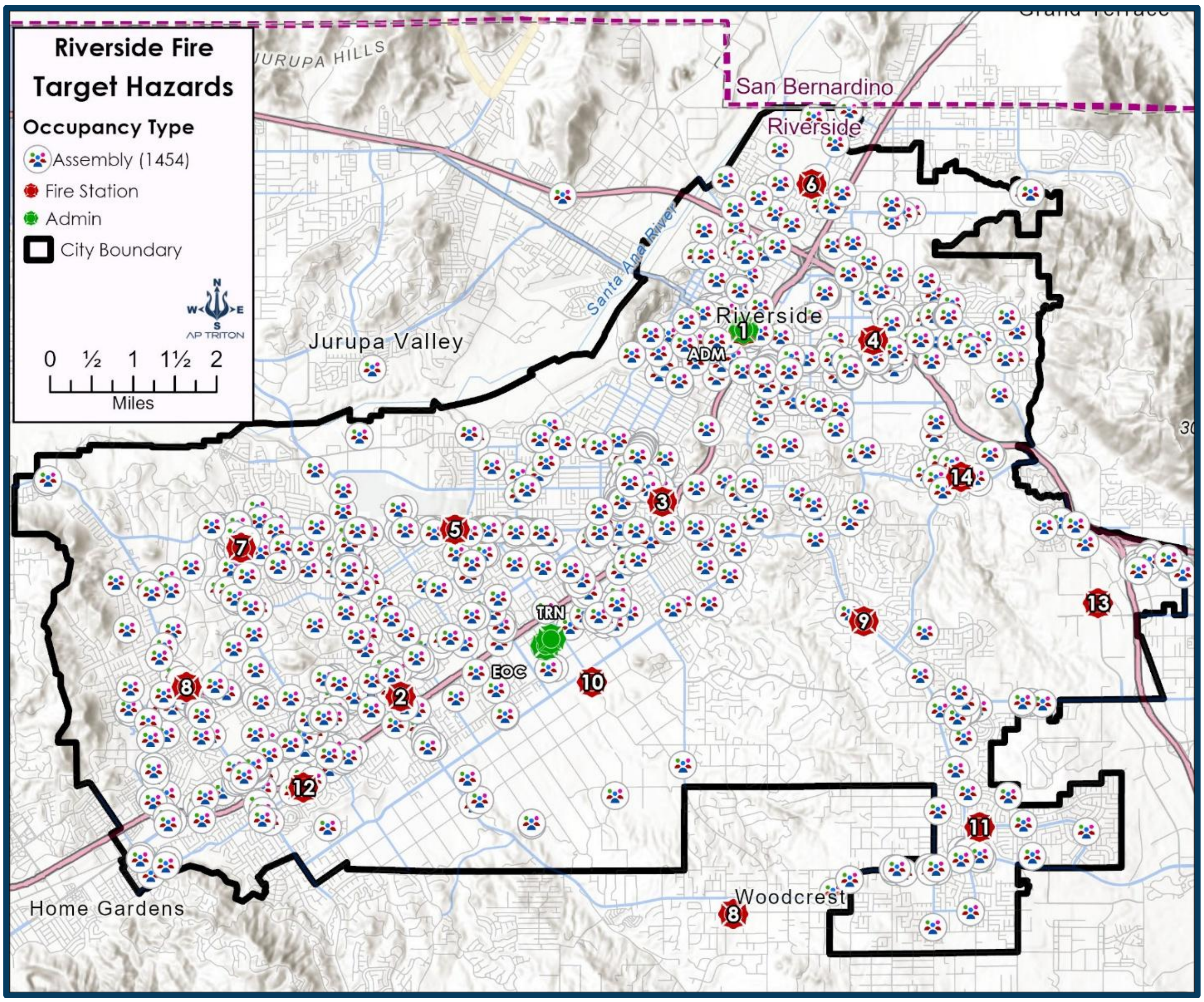


Assembly

Gathering large groups of people in a single location or building increases risk in places such as places of worship, entertainment venues, restaurants, or other public assembly spaces. Outdoor special events, such as street fairs or mass gatherings, may require a public safety plan as specified by the California Fire Code. This plan should include emergency vehicle access and egress, fire protection, emergency medical services, public assembly areas, vehicular and pedestrian traffic control, vendor and food concession management, law enforcement and fire/EMS staffing, and weather monitoring.

The following figure shows the locations of assembly occupancies within the RFD response area.

Figure 133: Assembly Occupancies



Health Care Facilities

Health care facilities are unique occupancies where patients or residents may be unable to evacuate without staff assistance. These buildings often contain medical gases and other specialized equipment that present additional risks to emergency responders during a fire or other emergency. Maintaining up-to-date pre-incident plans is essential to ensure responder safety and effective incident management.

The major health care facilities serving Riverside include Riverside Community Hospital, Parkview Community Hospital, and Kaiser Permanente Riverside Medical Center. These hospitals provide a wide range of medical services, including cardiology and cardiac catheterization, maternity and birth services, vascular and neuroscience care, radiology, oncology, and rehabilitation programs.

As the population ages, many residents may require specialized care in assisted living, memory care, or rehabilitation facilities. Depending on their mobility or cognitive conditions, these individuals may need additional assistance during an evacuation. Staff in such facilities must maintain comprehensive emergency and evacuation plans to ensure the safe movement of patients during emergencies.

These facilities are also equipped with enhanced fire protection and life safety systems to safeguard occupants. Special locking arrangements are permitted in secured memory care units housing patients with dementia or Alzheimer’s disease to prevent unauthorized egress while still allowing for safe evacuation in an emergency.

The following figures show the locations of major hospitals, health care, and senior care facilities within the City of Riverside.

Figure 134: Hospitals

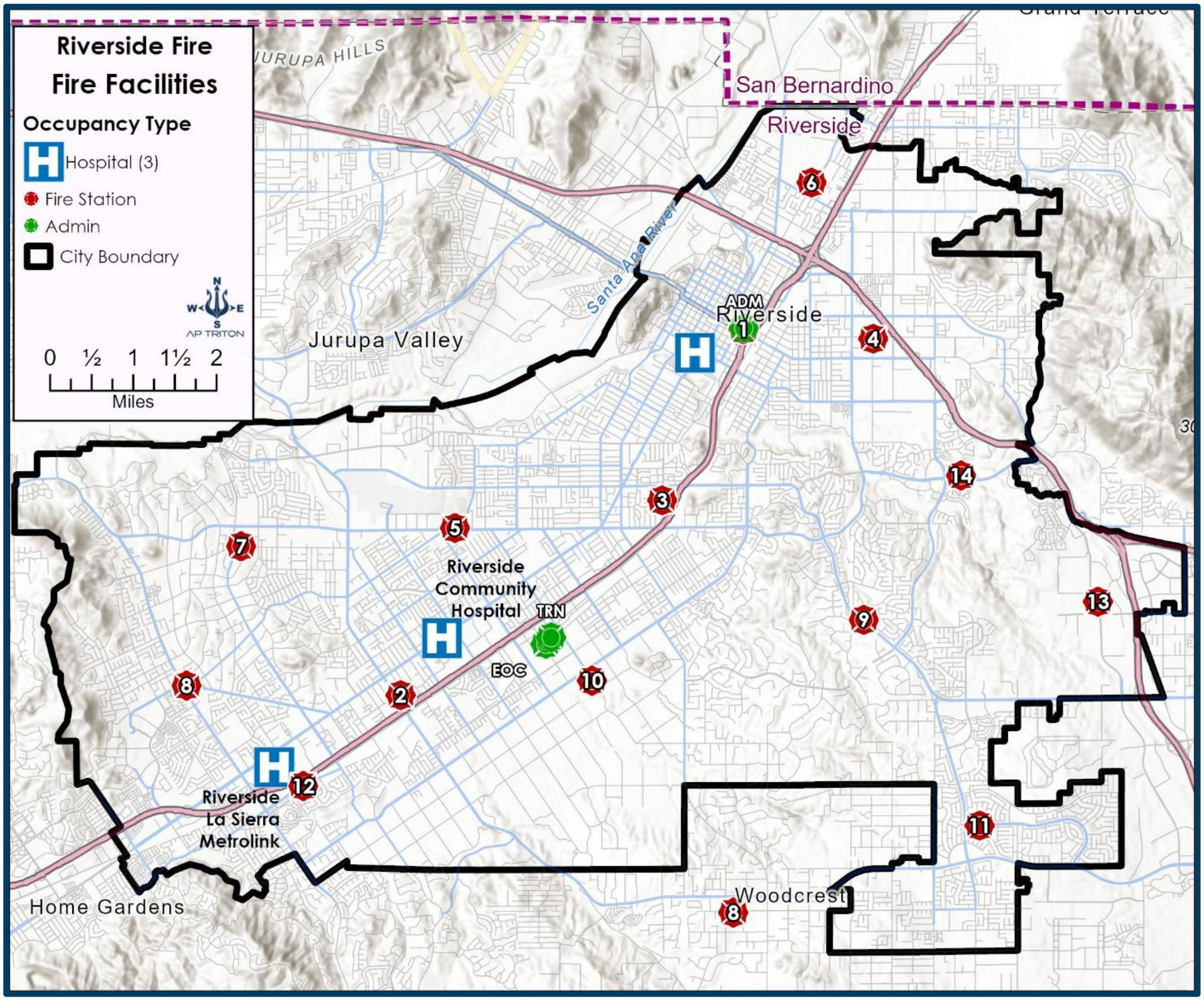


Figure 135: Medical Care Facilities

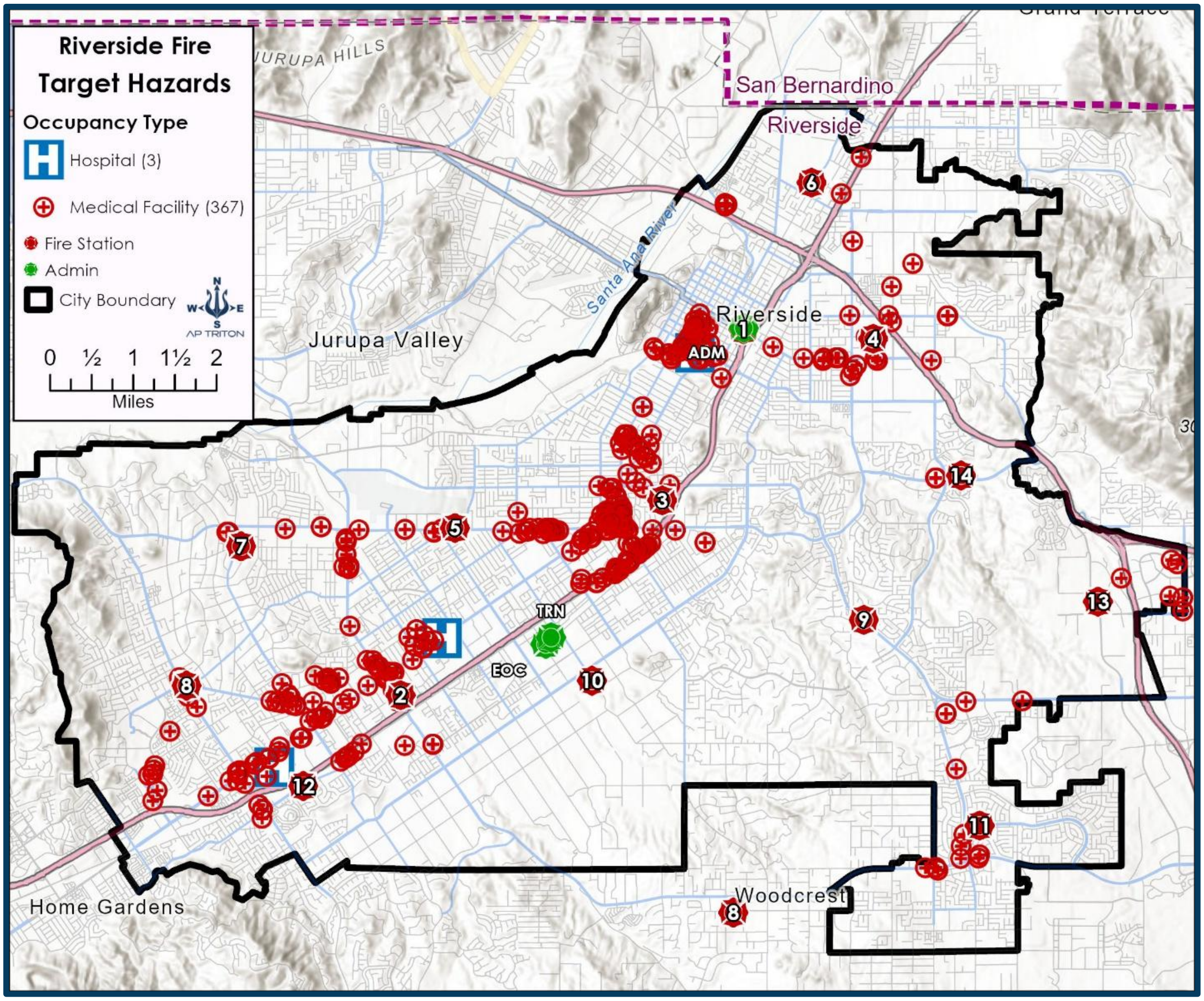
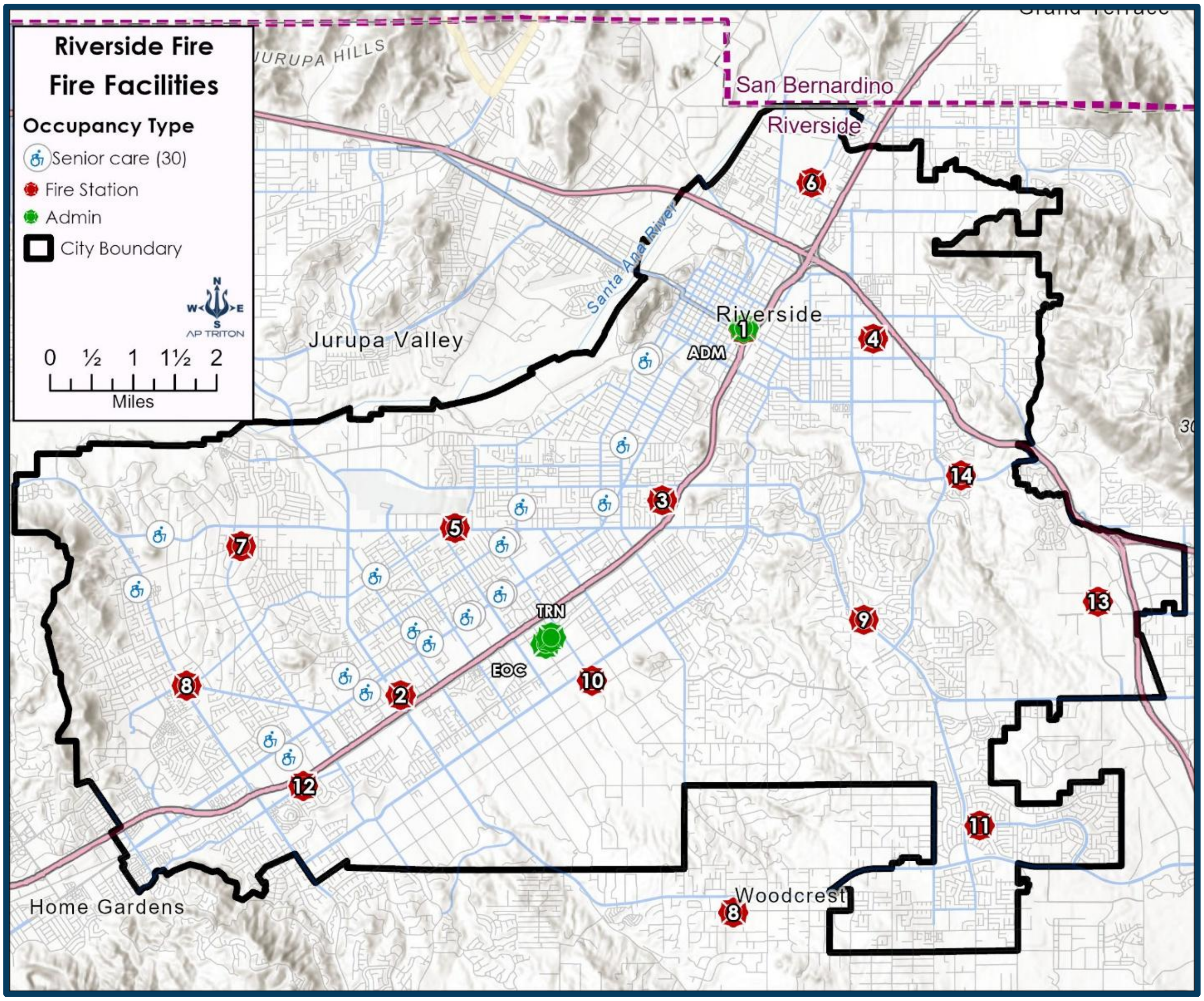


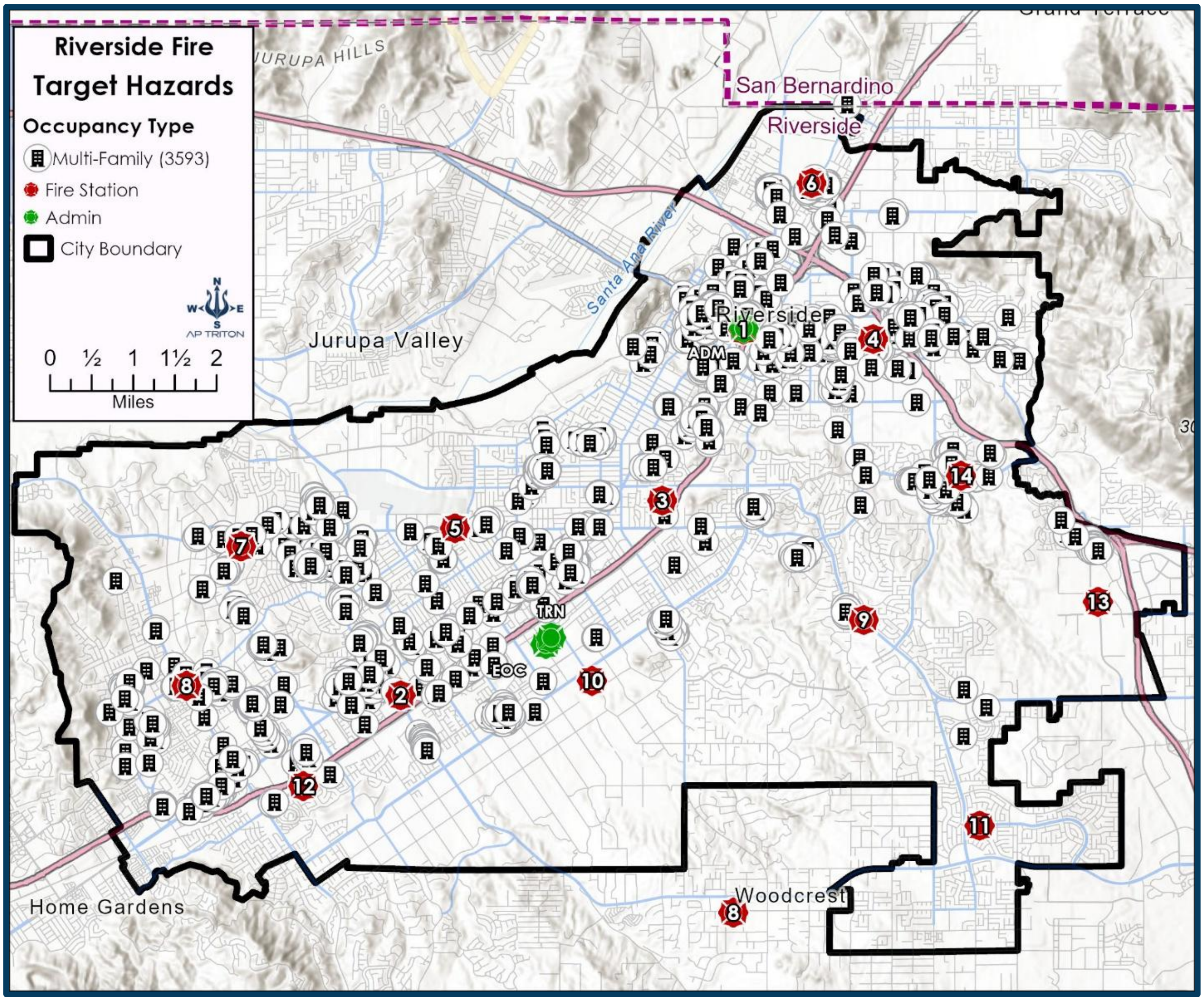
Figure 136: Senior Care



Multi-family Occupancies

Although multi-family housing has fewer fires caused by electrical or heating malfunctions, the risk of cooking fires is twice the rate of other types of building fires. Updated building and fire codes now require these buildings to have a residential fire sprinkler system installed and interconnected smoke alarms in all bedrooms, hallways, and floors. These fire protection systems are designed to provide enough time for the occupants to evacuate the building. The following figure shows the location of multi-family housing units in Riverside.

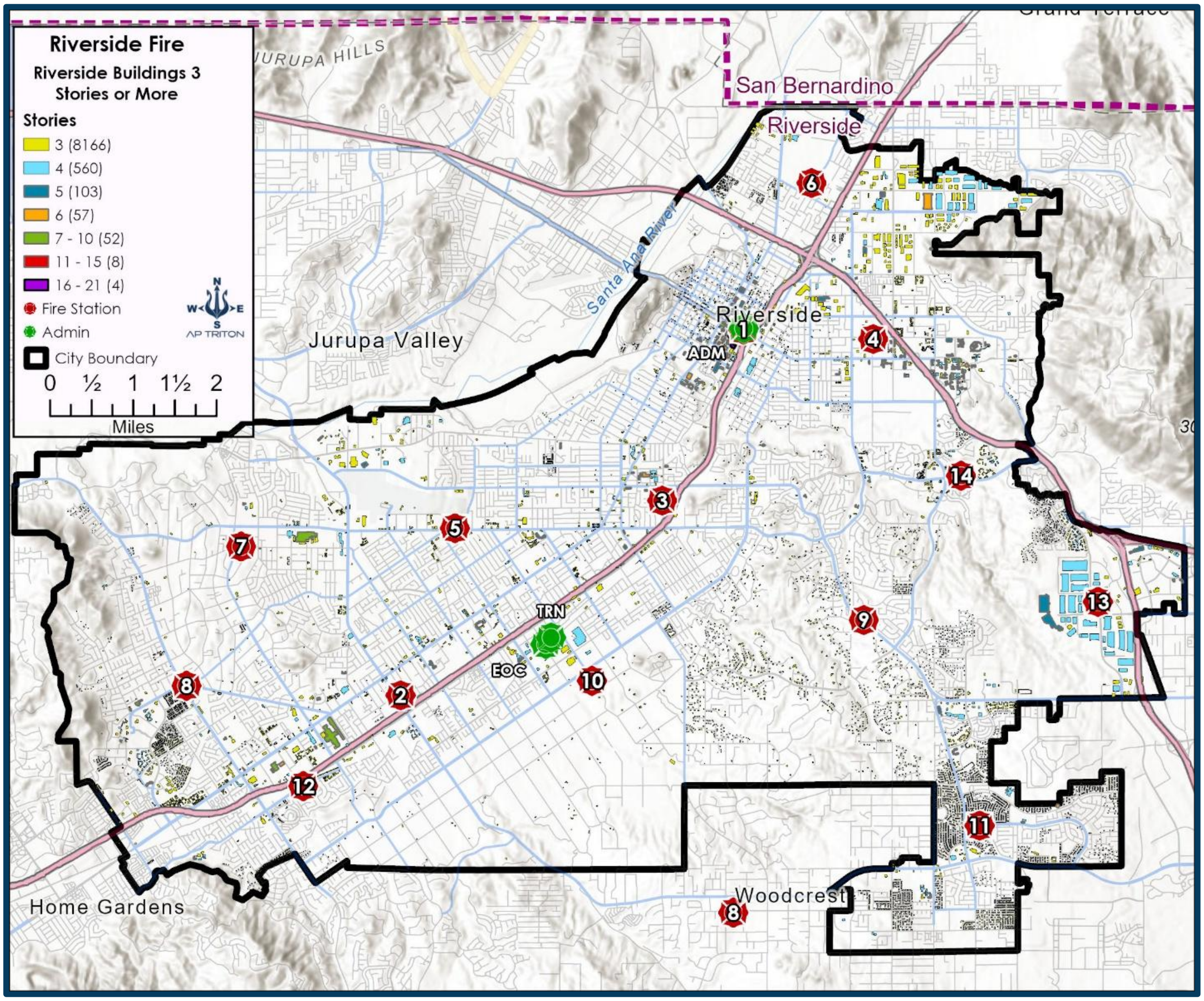
Figure 137: Multi-Family Housing Units



Buildings Three or More Stories in Height

Structures three or more stories in height require a response of an aerial apparatus with elevated master stream capabilities. The Insurance Services Office (ISO) reviews the coverage area for a ladder truck for all buildings within 2.5 miles. A ladder truck may be necessary to access these higher buildings' upper floors or roofs since most ground ladders cannot reach these heights. The following figure displays these buildings.

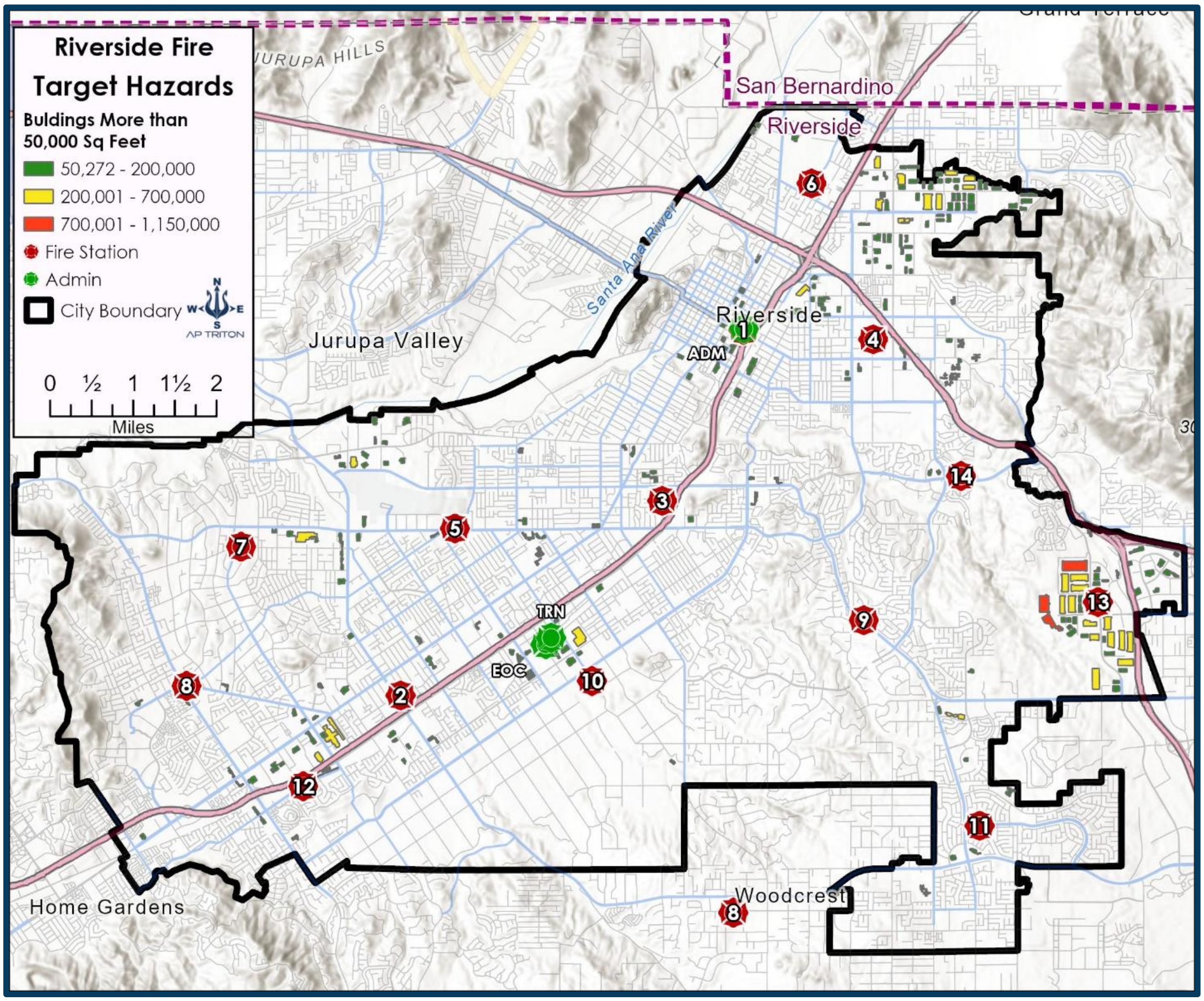
Figure 138: Buildings Three Stories or More



Large Square Footage Buildings

Large buildings, such as warehouses, strip malls, and large "box" stores, need greater volumes of water for firefighting and require more firefighters to advance hose lines long distances into the building. Although the number of large square footage buildings is low, the fire flow may be greater for smaller buildings because of construction type, distance to exposures, and lack of built-in fire protection systems such as fire sprinklers. The following figure shows the locations for buildings 50,000 square feet and larger.

Figure 139: Buildings 50,000 Square Feet and Greater



Hazards by Station

An analysis of hazards by station district can be found in the Station Location section in the appendices.

RISK ASSESSMENT **METHODOLOGY**

RISK CLASSIFICATION

Developing a risk score is essential for identifying and prioritizing the types of risks present within a community. This process enables an organization to establish appropriate response protocols and allocate resources effectively during an incident.

The Three-Axis Heron Model is used to quantify risk by evaluating three key dimensions: Probability, Consequence, and Impact. Each category is assigned a numerical score ranging from 2 to 10, with higher values indicating greater risk.[29]

The Three-Axis Heron Formula is expressed as follows:

$$\text{Risk} = \sqrt{\frac{(P * C)^2}{2} + \frac{(C * I)^2}{2} + \frac{(I * P)^2}{2}}$$

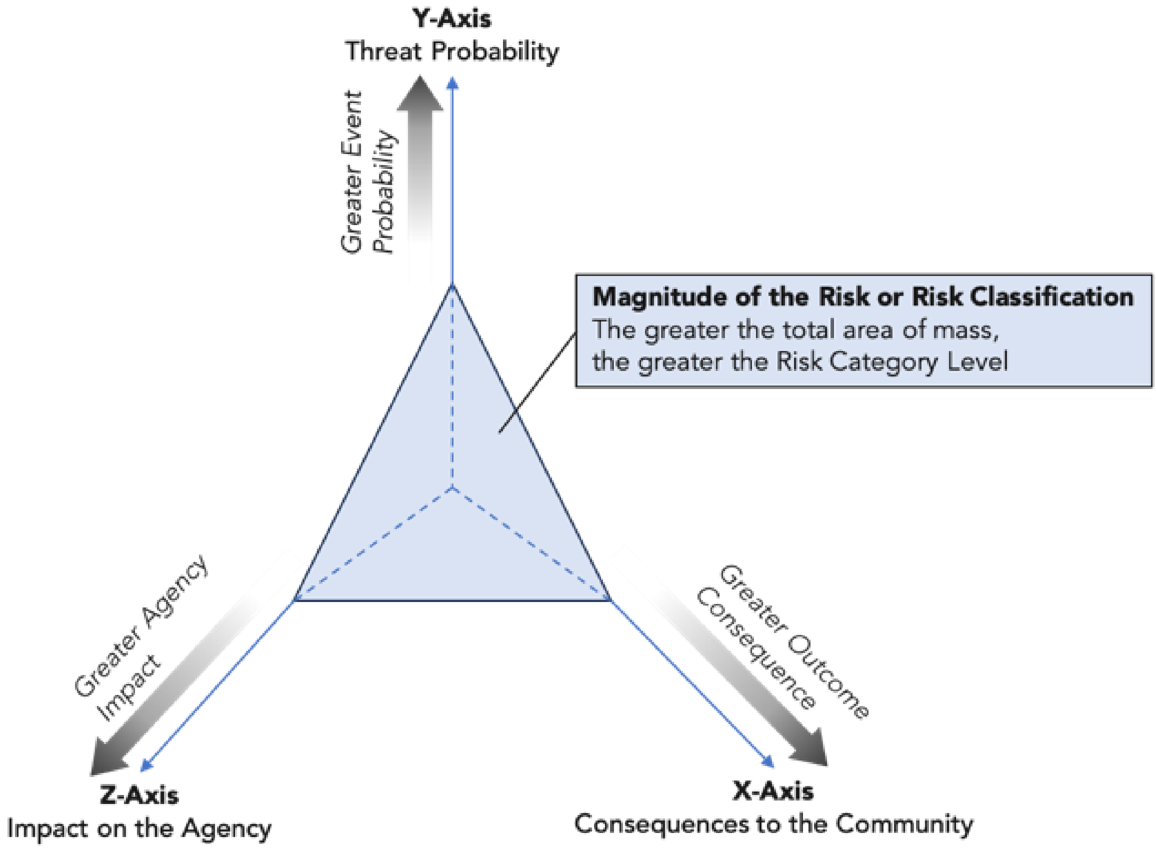
The risk is graphically illustrated through a three-axis model as follows:

- **P** = Probability (Y-Axis)
- **C** = Consequences (X-Axis)
- **I** = Impact (Z-Axis)

The following figure summarizes the three-axis risk classification process and how a score is developed.

[29] Quality Improvement for the Fire and Emergency Services.

Figure 140: Three-Axis Risk Classification Process



When developing the risk score, each of the three scoring components—Probability, Consequence, and Impact—is derived from incident data from the City of Riverside.

For example, a low-risk fire response is scored based on the likelihood of that incident type occurring. Most low-risk incidents occur frequently (often several times per day), but their consequence to the community and overall impact on the City are minimal. In this case, the probability of a low-risk incident is assigned a score of 8 (high), while consequence and impact are both scored at 2 (low). When these values are applied to the Three-Axis Heron Formula, the resulting score is 16.2.

Conversely, a maximum-risk incident produces a much higher score. Although its probability is low (2), the consequence to the community is significant (8), and the impact on the city is extreme (10), resulting in a score of 59.4.

These scores provide the Riverside Fire Department with valuable insight into the level of service required to meet community risk demands. The probability of an incident directly influences response capability, as simultaneous events can affect apparatus availability and response times. Even low-risk incidents can temporarily remove units from service, reducing system-wide capacity.

The higher the score, the greater the overall community risk. While the maximum theoretical score is 122.5, such events are rare, with a very low likelihood of occurrence.

The following sections provide additional detail on how Probability, Consequence, and Impact are defined and applied within the risk classification model.

Probability

Probability represents the likelihood of an incident occurring within the community over a given period. This axis measures how frequently a particular type of incident is expected to occur, thereby contributing to the overall risk level.

Several factors influence probability, including time of day, location, existing hazards, season, building construction and maintenance, demographic characteristics, and other contextual variables. Probability values range from rare events to those that occur frequently within the city.

The following figure defines the probability categories used in the risk classification model.

Figure 141: Probability or Likelihood of Occurrence

Score	Category	Probability or Likelihood
2	Minor	Unlikely: < 0.02% of total call volume. Expected to occur very rarely.
4	Low	Possible: 0.02%–0.07% of total call volume. Expected to occur rarely.
6	Moderate	Probable: 0.07%–0.3% of total call volume. Expected to occur monthly.
8	High	Likely: 0.3%–2% of total call volume. Expected to occur multiple times per week.
10	Extreme	Frequent: > 2% of total call volume. Expected to occur one or more times per day.

Consequence

The consequence of an incident refers to the severity of its effects on the community, which may range from minor injuries or property loss to significant destruction, including damage to critical infrastructure, historic sites, or facilities essential to community operations. Severe incidents may also result in large-scale loss of life, displacement, or economic disruption.

The following figure defines the consequence categories used in the risk classification model.

Figure 142: Consequence to the Community

Score	Category	Consequence to the Community
2	Minor	1–2 people affected (injuries/deaths). < $10,000 loss.
4	Low	< 5 people affected (injuries/deaths). < $500,000 loss.
6	Moderate	5–50 people affected (injuries/deaths). $500,000–$1,000,000 loss.
8	High	51–100 people affected (injuries/deaths). $1,000,000–$5,000,000 loss.
10	Extreme	> 100 people affected (injuries/deaths). > $5,000,000 loss.

Impact

The impact factor represents the fire department's operational capacity required to control or mitigate an incident. It considers the number of emergency responders and apparatus needed—whether available internally or through mutual or automatic aid.

This measure reflects the department's ability to manage a given incident while continuing to provide adequate service to the rest of the community. As incident complexity increases, more resources are required, reducing the department's remaining capacity for additional emergencies.

The following figure defines the impact categories used to evaluate operational force requirements.

Figure 143: Impact on Operational Forces

Score	Category	Impact on Operational Forces
2	Minor	≥ 90% Remaining Apparatus/Crews
4	Low	≥ 75% Remaining Apparatus/Crews
6	Moderate	≥ 50% Remaining Apparatus/Crews
8	High	≥ 25% Remaining Apparatus/Crews
10	Extreme	< 25% Remaining Apparatus/Crews

FIRE RESPONSE

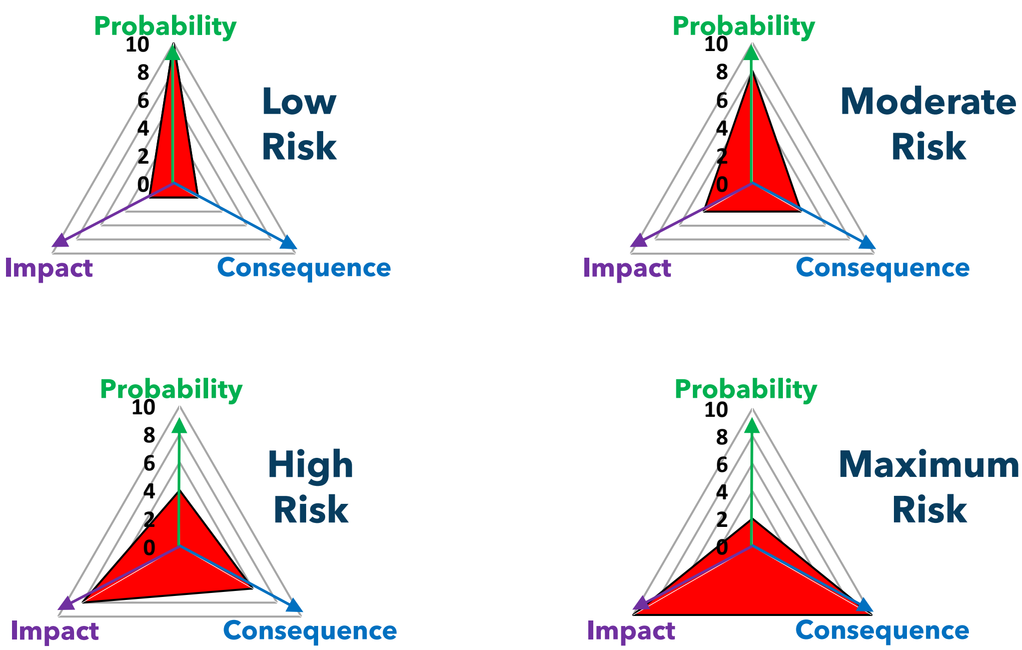
The Riverside Fire Department is the primary provider responsible for mitigating fire-related incidents within the city. These incidents range from low-risk events, such as vehicle fires, to maximum-risk incidents, such as structure fires involving schools or other high-occupancy facilities. A vehicle fire represents a relatively low-risk scenario, while a school fire—due to the presence of students and staff—constitutes a maximum-risk event with significantly greater potential for injury and loss.

The following figures illustrate the fire response risk assessment scores and corresponding Three-Axis Risk Classifications for RFD's operational area.

Figure 144: Fire Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	10	2	2	8	4	4	4	6	8	2	10	10
Score Assigned	20.2			33.9			44.2			73.5		

Figure 145: Fire Three-Axis Risk Classifications



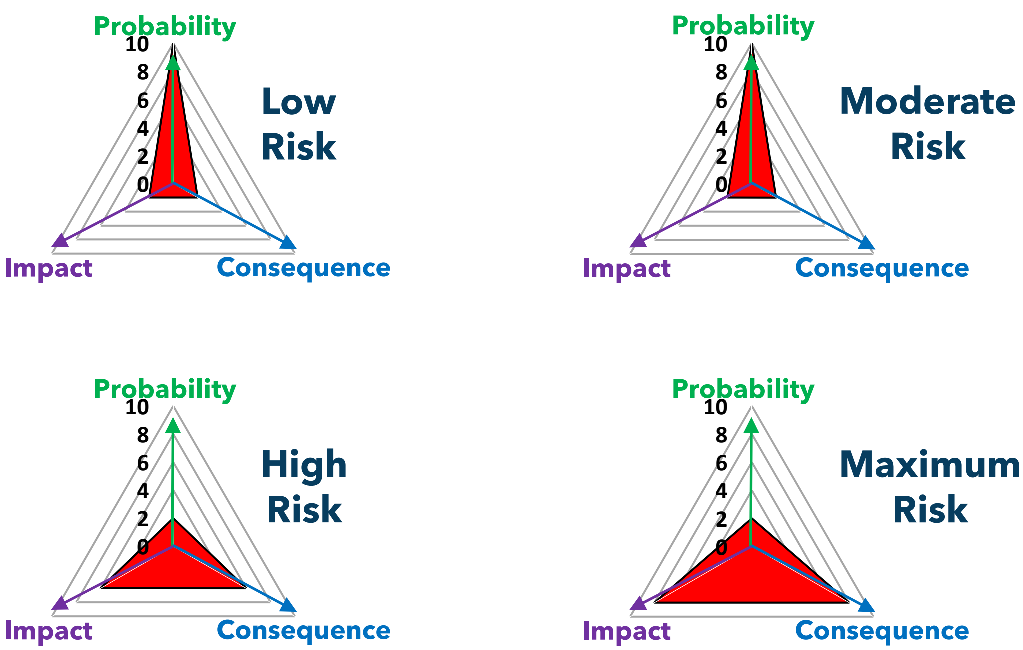
EMERGENCY MEDICAL SERVICES RESPONSE

RFD provides advanced life support and emergency medical care in the city. Low-risk incidents range from a medical assist to a maximum-risk incident for a multi-victim event. The following figures provide the risk score and classifications assigned to each type of EMS risk.

Figure 146: EMS Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	10	2	2	10	2	2	4	6	6	2	8	8
Score Assigned	20.2			20.2			35.0			48		

Figure 147: EMS Three-Axis Risk Classifications



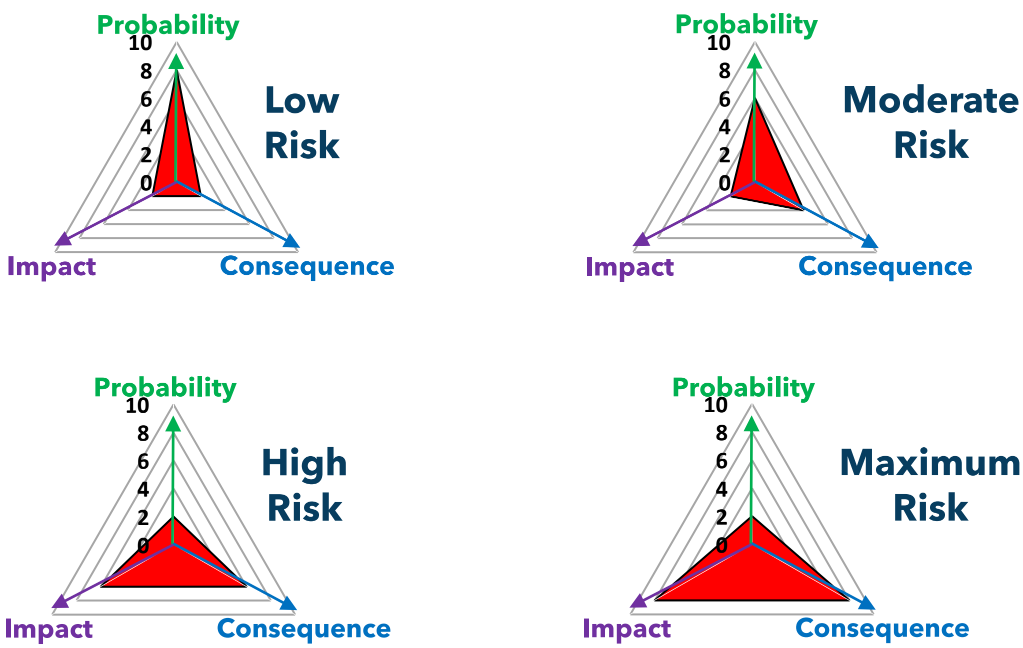
TECHNICAL RESCUE RESPONSE

Rescue services can vary from a low-risk incident, such as accessing a locked vehicle with a child inside, to a confined space incident (maximum risk) that potentially requires many personnel to mitigate the incident. The following figures provide the risk score and classifications assigned to each type of technical rescue risk in RFD's response area.

Figure 148: Technical Rescue Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	2	6	4	2	2	6	6	2	8	8
Score Assigned	16.2			19.8			28.1			48		

Figure 149: Technical Rescue Three-Axis Risk Classifications



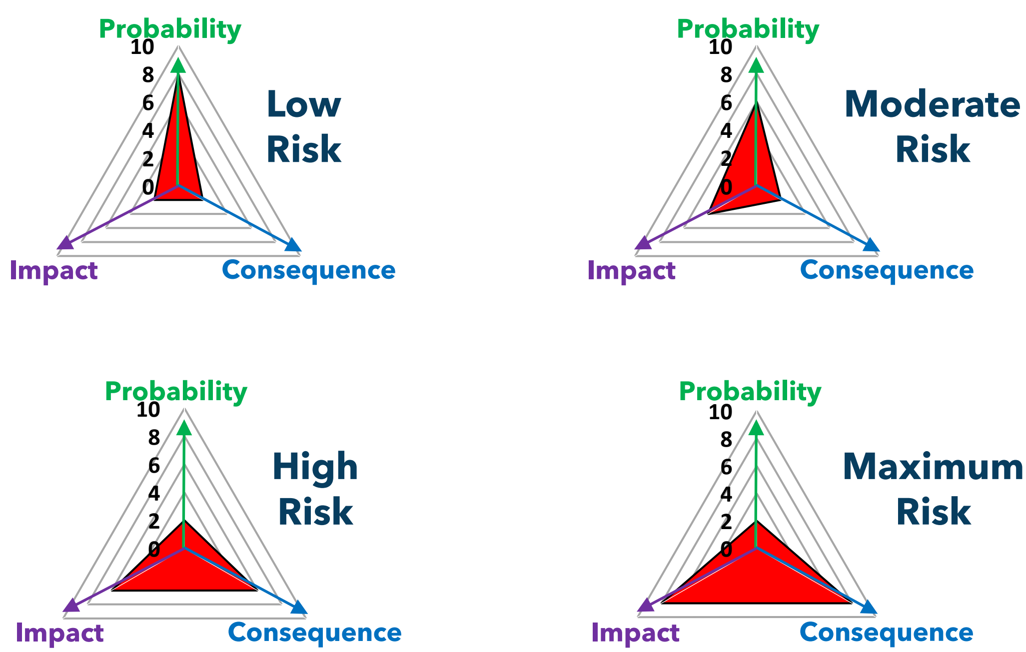
HAZARDOUS MATERIALS RESPONSE

Hazardous materials responses can vary from low-risk odor investigations to the maximum risk for a fuel tanker fire in highly populated areas. Most of these incidents can be managed by RFD, but higher risks may need assistance from outside resources. The following figures provide the risk score and classifications assigned to each type of hazardous materials risk.

Figure 150: Hazardous Materials Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	8	2	2	6	2	4	2	6	6	2	8	8
Score Assigned	16.2			19.8			28.1			48		

Figure 151: Hazardous Materials Three-Axis Risk Classifications



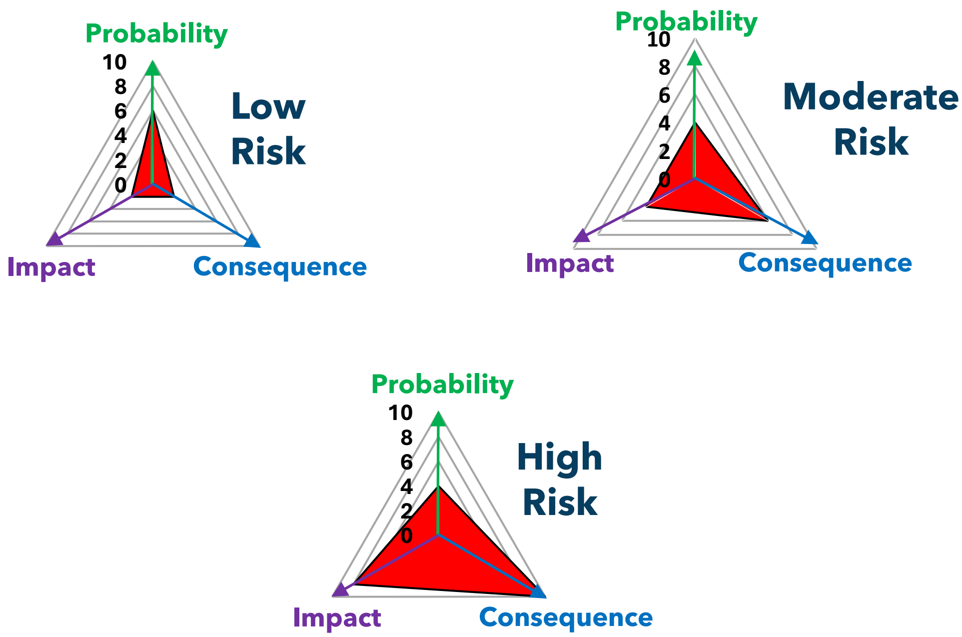
WILDLAND FIRES RESPONSE

The types of wildland fire risk vary from small grass fires to large forest fires requiring many internal and external resources. The wildland fire risk includes low, moderate, and high risks since a maximum risk would require a state and federal response. The score assigned for high risk (67.2) is significant because of the maximum score of ten for the consequence to the community and impact on Riverside. This type of incident will strain the community and emergency services. The following figures provide the risk score and classifications assigned to each type of wildland fire risk in RFD's response area.

Figure 152: Wildland Fires Response Risk Assessment

Description	Low			Moderate			High		
Risk Score	P	C	I	P	C	I	P	C	I
	6	2	2	4	6	4	4	10	8
Score Assigned	12.3			26.5			67.2		

Figure 153: Wildland Fires 3-Axis Risk Classifications



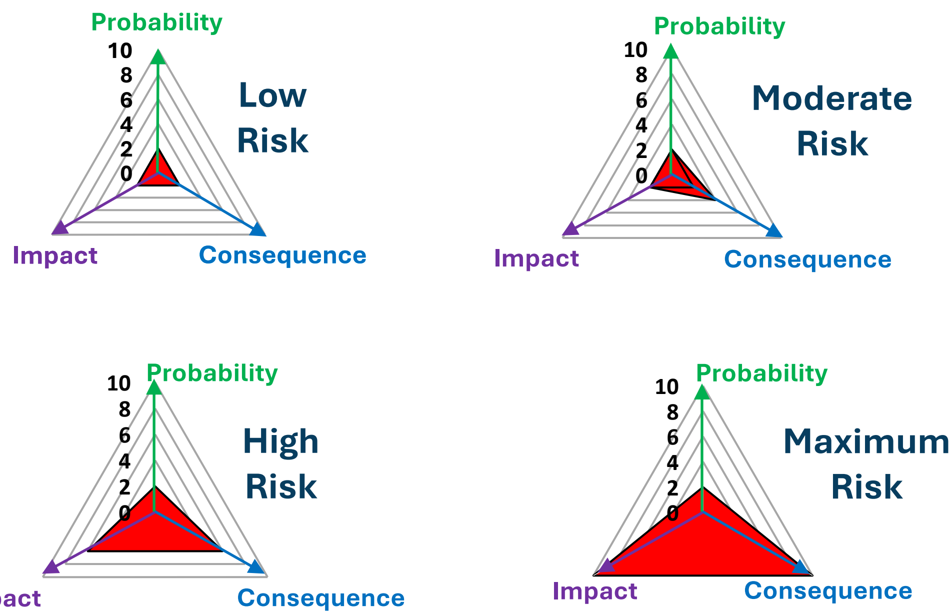
AIRCRAFT RESCUE & FIREFIGHTING (ARFF)

ARFF responses can vary from low-risk to maximum-risk ARFF incidents. These incidents require an Alert 1 response and high-risk responses for Alert 2 and 2A incidents. This would also include maximum-risk incidents for Alert 3 and 3A incidents, which are a full airport response supported by off-site fire suppression apparatus and staffing. RFD does not have any ARFF apparatus and manages any emergency with standard firefighting apparatus. There are also no on-site responders from the fire department. Apparatus would be called from the closest fire station to the emergency. Some of the minor ARFF incidents can be managed by RFD, but higher risks will need assistance from outside resources. The following figures provide the risk score and classifications assigned to each type of ARFF risk in RFD.

Figure 154: ARFF Response Risk Assessment

Description	Low			Moderate			High			Maximum		
Risk Score	P	C	I	P	C	I	P	C	I	P	C	I
	2	2	2	2	4	4	2	6	6	2	10	10
Score Assigned:	4.9			13.9			28.1			73.5		

Figure 155: ARFF Risk Classifications



COMPARISON OF **FIRE RISKS**

Fire Loss

In 2023, fire departments across the United States responded to more than 1.39 million fire incidents, resulting in 3,670 civilian fatalities, over 13,350 civilian injuries, and an estimated $23 billion in property damage. Fire loss varies from year to year, with 2020 recording the highest national property loss at $83.46 per capita.

The following figure illustrates the per capita property loss for both the City of Riverside and the United States. These values can fluctuate significantly, particularly in smaller jurisdictions. In Riverside, 2024 showed the highest recorded property loss at $112.17 per capita. It is important to note that property values in California—and Riverside in particular—are considerably higher than in many other parts of the nation, which can influence per capita loss calculations.

Figure 156: RFD Property Loss

Year	RFD Property Loss	U.S. Property Loss[30]
2020	$31.35	$77.65
2021	$33.22	$53.91
2022	$32.09	$56.46
2023	$71.07	$69.46
2024	$112.17	Not Available for U.S.

The number of fires per 1,000 population in the RFD response area remains higher than the national average, as shown in the following figure. Although 2024 showed a notable decrease compared to prior years, this presents an opportunity for increased public education and community outreach focused on fire prevention and risk reduction.

[30] Fire Loss in the United States, NFPA, 2018, 2019, 2020.

Figure 157: Fires per 1,000 Population

Year	RFD Fires per 1,000 Population	U.S. Fires per 1,000 Population[31]
2020	8.2	4.2
2021	8.8	4.1
2022	9.2	4.5
2023	9.2	4.2
2024	7.6	Not Available for U.S.

Intentionally Set Fires

Intentionally set fires, or in many cases considered arson, is defined as "any willful or malicious burning or attempt to burn, with or without intent to defraud, a dwelling house, public building, motor vehicle or aircraft, personal property of another.[32] The following figure lists the number of intentionally set fires recorded in Riverside from 2020 through 2024.

Figure 158: Intentionally Set Fires (2020–2024)

Year	Intentionally Set Fires
2020	69
2021	69
2022	68
2023	76
2024	305

[31] Ibid.

[32] Crime Data Explorer, Federal Bureau of Investigation.

PROJECTED GROWTH & **FIRE DEPARTMENT IMPLICATIONS**

Riverside, California, is projected to experience continued growth across population, housing, industrial, and commercial sectors. While these investments strengthen the city's economy and livability, they also place increasing demand on fire and emergency services, potentially outpacing current departmental resources.

HOUSING GROWTH

According to the State's 6th-Cycle Regional Housing Needs Allocation (RHNA), the City of Riverside must plan for at least 18,458 new housing units between 2021 and 2029, with city planning targets closer to 22,100 units.[33,34] This expansion will introduce new residential neighborhoods and multifamily developments, resulting in increased fire suppression, prevention, and emergency medical service demand.

INDUSTRIAL DEVELOPMENT

The Inland Empire region, including Riverside, remains a significant hub for logistics, advanced manufacturing, and warehouse development. Although some jurisdictions have slowed new approvals, Riverside continues to see millions of square feet of industrial space under construction. These occupancies present higher fire loads, hazardous materials risks, and specialized inspection and pre-incident planning requirements for the department.

[33]] Southern California Association of Governments (SCAG), Connect SoCal 2024 Regional Forecast. (https://scag.ca.gov/connect-socal).
[34] City of Riverside, 6th Cycle Housing Element, RHNA Allocation 2021–2029. (https://riversideca.gov/cedd/planning/housing-element).

STADIUMS AND ENTERTAINMENT PROJECTS

The Riverside Sports Complex and Entertainment District, currently under development at the former Ab Brown Sports Complex, will introduce substantial new assembly uses. Phase 1 includes a 5,000-seat soccer stadium and multiple fields, while future phases will add housing and retail components, further increasing assembly and special event risks.[35,36] Additionally, the Riverside Alive Downtown Redevelopment Plan includes a convention center expansion, hotel, residential units, and office space, intensifying call volume and special operations needs in the city's urban core.[37]

DOWNTOWN AND MULTI-STORY BUILDINGS

The adopted Downtown Specific Plan envisions intensification of the 640-acre downtown core through new multi-story mixed-use residential and office developments.[38] These projects increase demand for high-rise fire operations, including standpipe readiness, smoke control, and enhanced pre-fire planning.

IMPLICATIONS FOR THE FIRE DEPARTMENT

Collectively, these growth trends are expected to:

- Increase call volume and concurrent incidents;
- Expand fire prevention and inspection workloads;
- Elevate demand for specialized operations such as high-rise and large-assembly response;
- Require additional staffing, stations, and prevention personnel to maintain service equity and reliability.

Without phased staffing increases, station expansion, and targeted prevention resource growth, the city's rapid development is likely to outpace the Riverside Fire Department's capacity to sustain its current response performance and service delivery levels.

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[35] City of Riverside press release, Riverside Sports Complex & Entertainment District. (https://riversideca.gov/press/releases).
[36] Press Enterprise, reporting on Riverside soccer stadium development (2025). (https://www.pe.com/).
[37] Riverside Downtown Specific Plan and Riverside Alive redevelopment initiative. (https://riversideca.gov/dsp).
[38] City of Riverside Downtown Specific Plan (640 acres). (https://riversideca.gov/dsp).

Section III: STANDARDS OF COVER & DEPLOYMENT ANALYSIS

SERVICE DELIVERY & **PERFORMANCE**

PERFORMANCE REVIEW

When evaluating a system, having a set of objectives or standards against which to judge performance is helpful. While national and state standards may be recommended, in California, it is up to the authority having jurisdiction to adopt specific ones. In this case, the Riverside Fire Department has not adopted performance requirements.

National Fire Protection Association (NFPA) standards will be utilized as a reference where appropriate. This will include the NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (NFPA 1710). It will also include portions from NFPA 1225: *Standard for Emergency Services Communications* (NFPA 1225).

Evaluating overall performance requires an understanding of the lifecycle of an incident. It starts with a normal state and should end with a new normal state, but there are many measurable time segments in between. Some elements, such as call processing and turnout time, can be improved by tactical management techniques such as training and policy. However, other time segment performances, such as travel time, are typically managed by a strategic methodology, such as station location.

The following figure identifies each time segment in the incident lifecycle, an example of a key performance indicator (KPI), and the applicable NFPA standards.

Figure 159: Each Time Segment in the Incident Lifecycle

<table>
<tr><th>Segment</th><th colspan="2">Key Performance Metric</th><th>Standard</th><th>Comments</th></tr>
<tr><td>Normal State</td><td colspan="2">Community demographics</td><td rowspan="3">N/A</td><td rowspan="3">This base state needs to be defined. Prevention mainly affects this.</td></tr>
<tr><td>Incident Initiation</td><td colspan="2" rowspan="2">Incident Counts</td></tr>
<tr><td>Incident Detection</td></tr>
<tr><td>Notification Action</td><td colspan="2" rowspan="2">PSAP Answer</td><td rowspan="2">NFPA 1225 & 1710</td><td rowspan="2">Prevention and Education</td></tr>
<tr><td>PSAP Notification</td></tr>
<tr><td>PSAP Interrogation</td><td colspan="2" rowspan="2">PSAP Transfer & Agency Answer</td><td rowspan="2">NFPA 1225 & 1710</td><td rowspan="2">CAD-to-CAD Agreements</td></tr>
<tr><td>Agency Notification</td></tr>
<tr><td>Agency Interrogation</td><td rowspan="2">Call Processing</td><td rowspan="5">Total Response Time</td><td rowspan="2">NFPA 1225 & 1710</td><td rowspan="7">These segments should be evaluated at a minimum. Each segment should have an adopted performance standard.</td></tr>
<tr><td>FD Notified</td></tr>
<tr><td>FD Unit Dispatched</td><td>> Turnout Time</td><td rowspan="3">NFPA 1710</td></tr>
<tr><td>FD Unit Responding</td><td>> Travel Time</td></tr>
<tr><td>FD 1st Unit Arrives</td><td>Total time</td></tr>
<tr><td>FD ERF Dispatched</td><td colspan="2" rowspan="2">ERF Travel & Total Time</td><td rowspan="2">NFPA 1710</td></tr>
<tr><td>FD ERF Arrives</td></tr>
<tr><td>EMS to Destination</td><td colspan="2">> Destination Travel</td><td rowspan="3">N/A</td><td rowspan="3">Applicable to EMS transport agencies.</td></tr>
<tr><td>EMS at Destination</td><td colspan="2">> Wall or Turn Around Time</td></tr>
<tr><td>EMS Clears Destination</td><td colspan="2"></td></tr>
<tr><td>FD Units Clear Incident</td><td colspan="2">From dispatch to clear, total time translates into unit utilization.</td><td>N/A</td><td>Used to evaluate unit workload and availability.</td></tr>
<tr><td>Normal State</td><td colspan="4">The outcome of the incident response is the gold standard for service delivery analytics. However, this advanced study is outside the scope of this report and requires unconventional research and analytic methods.</td></tr>
</table>

The incident data provided did not allow for analysis of all time segments in the above list. However, enough information was provided to evaluate call processing, turnout, travel, and total response time. The NFPA standards will be used as a performance benchmark.

The time segment performance standards are evaluated as a percentile. This will allow RFD to compare its performance against other agencies and the standard with a similar statistical technique.

Call Processing Analysis

There are several time measures of a dispatch center. The metrics identified in NFPA 1225 and NFPA 1710 are ring time and call processing. Ring time measures the duration from when the phone in dispatch begins to ring until someone answers. NFPA 1225 requires the ring time to be less than 15 seconds, 90% of the time, and less than 20 seconds, 95% of the time. Call processing measures the time from a person answering the call for help until the first unit is notified of the incident. Unfortunately, ring time is typically captured in a separate system or at a different Public Safety Answering Point (PSAP) and was unavailable for this report. However, sufficient data were available to evaluate call processing.

Call processing begins when the phone is answered and ends when the first, preferably correct, unit has been notified of an incident in progress. However, there is typically a short period, usually seconds, from when the phone is answered to when the incident is started in the computer-aided dispatch system. For this analysis, it is assumed that this short period, while not captured, is inconsequential. The NFPA 1710 and 1225 standards require that a high-priority incident be processed within 60 seconds **90% of the time**.

While NFPA 1710 further defines specific call types to be processed within 90 seconds 90% of the time and 120 seconds 99% of the time, the new NFPA 1225 standard does not. However, NFPA 1225 states that some incidents are exempt from the high-priority incident time requirement. These incident types include those requiring emergency medical questioning, hazardous materials incidents, and technical rescue incidents. This additional time is available for persons needing translation, calls from devices used by hard-of-hearing individuals, text messages, and calls requiring location determination.

The data provided was evaluated for integrity and reliability. It was found that 1.5% of the data was statistically unreliable. In addition, the maximum call processing time was set at **342** seconds to remove some substantial anomalies that skewed the analysis. The methodology used was the Interquartile Range, which proved too aggressive in eliminating outliers. The alternative method for capturing more data was to use the 95th percentile of raw call-processing data (**166** seconds) and double it to set a 5-minute (342s) filter as a more reasonable threshold. Incidents that took longer than **342** seconds, or less than **0** seconds to process, were excluded as outliers.

Call processing times may be too low. The initially reported 911 date (time) may reflect the Police dispatcher simply recording the initial "911, what is your emergency?" and asking Police, Fire, and EMS triaging questions. The subsequent determination of routing to secondary functions may be based on the recorded "Notify" time, rather than the unit's notify time. However, this is the data provided, and it still proved helpful.

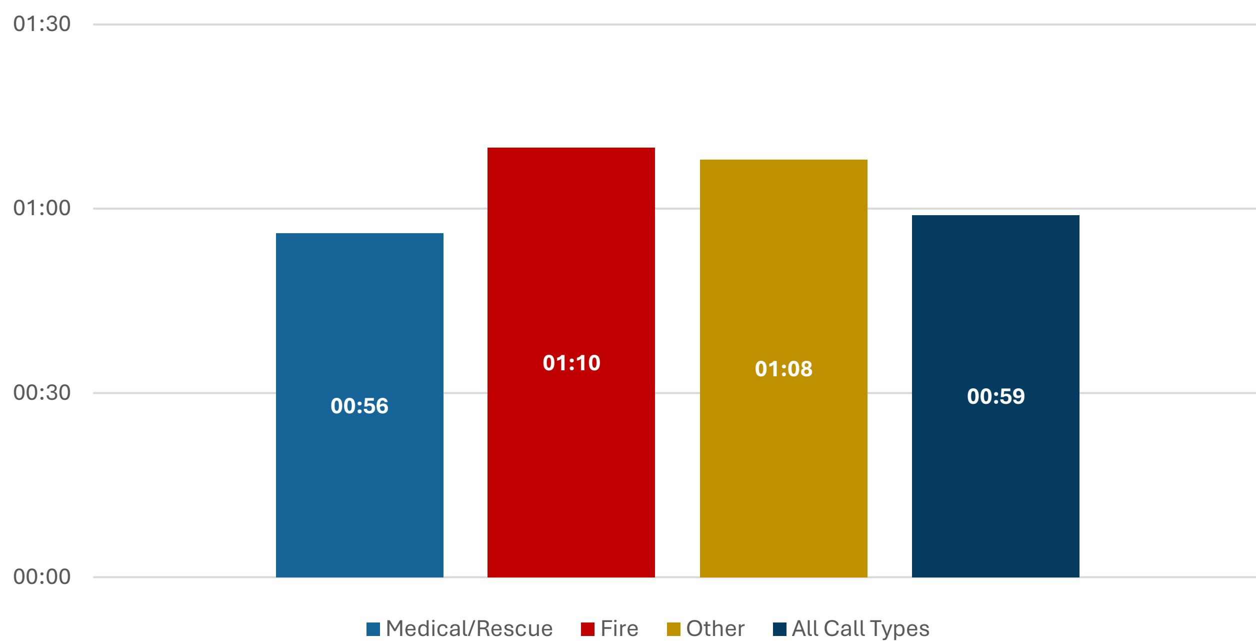
Evaluating the *raw* "Alarm Handling" data yielded **353,928** records, and the raw data's 90th percentile is **1** minute, **27** seconds. The maximum, minimum, and median values were examined to determine the raw data Skew.

The maximum call processing time was **720** hours, **0** minutes, and **37** seconds. The minimum value was a significant negative number, **-1,691** seconds. The median value of the raw data was **20** seconds.

The interquartile range (IQR) in statistics is a measure of statistical dispersion that represents the middle 50% of a dataset. It is calculated by subtracting the first quartile (Q1) from the third quartile (Q3). This methodology proved too aggressive, eliminating a disproportionately large percentage of incidents. Evaluating the 95th percentile provides insight into data variability while minimizing the influence of outliers. This statistical methodology proved essential for fairly assessing the Riverside Fire Department's data and for filtering it by Riverside Fire Units and the first-arriving unit left (unique incidents). The resulting dataset comprised **265,882** incidents for evaluation. This filtering step removed multi-unit responses, 2nd- and higher-arrival unit records, leaving **76%** of the data suitable for analysis.

The following figure shows the call processing time at the 90th percentile, grouped by incident classification (EMS, Fire, Other), for 2018 through 2024.[39]

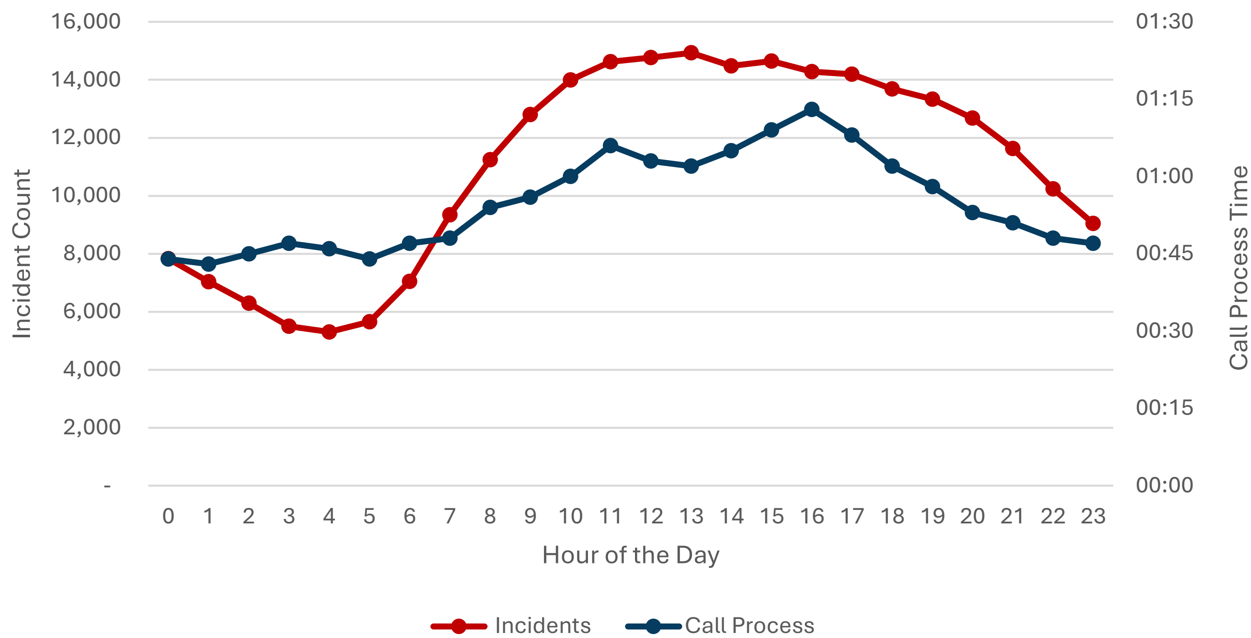
Figure 160: Call Processing By Incident Grouping Classification (2018–2024)



[39] False Alarm data, though present, was not evaluated for performance.

Another dimension of the call processing time is how incident workload affects dispatch center performance. The dispatch center manages the workload well, and call processing times are generally consistent throughout the day. The following figure shows the call processing times for medical incidents and all other incidents by hour of day, with the call load shown as a reference.

Figure 161: Call Processing Time by Hour (2018–2024)



Turnout Time Analysis

The turnout time segment begins when the unit is notified of an incident and ends when they start responding. NFPA 1710 indicates the performance measure for this time segment is **60 seconds for medical incidents and 80 seconds for fire incidents**. For this analysis, the incidents will be grouped by EMS, Fire, and others.

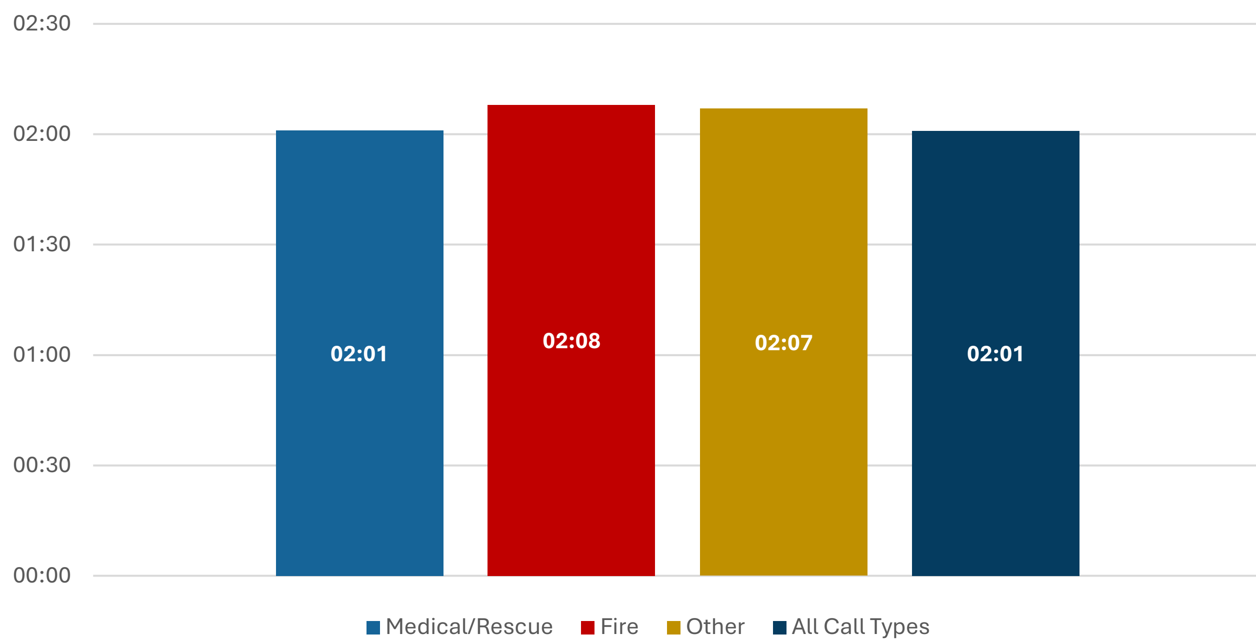
The data were analyzed for statistical reliability, with over **201,801** records available for measurement. The value used to filter outlier data was 4 minutes. This represents approximately **57%** of the recorded information, which is slightly better than the typical reliability for this data point.[40]

[40] Of 350,515 unit response records, this valid percentage includes the first unit to arrive on scene, and evaluates only the values less than the IRQ Max. Unique incidents, which catalogued the first unit to arrive on scene, were used for evaluation.

In addition, to ensure the responding crew was facing an urgent situation, only emergent responses were evaluated. Overall, RFD staffed apparatuses have a **2-minute, 1-second** turnout time **at the 90th percentile**. There was also a slight (7-second) difference between EMS incidents and other incidents. EMS call volume is the primary influence on overall turnout time performance.

The following figure displays the turnout time performance by call class.

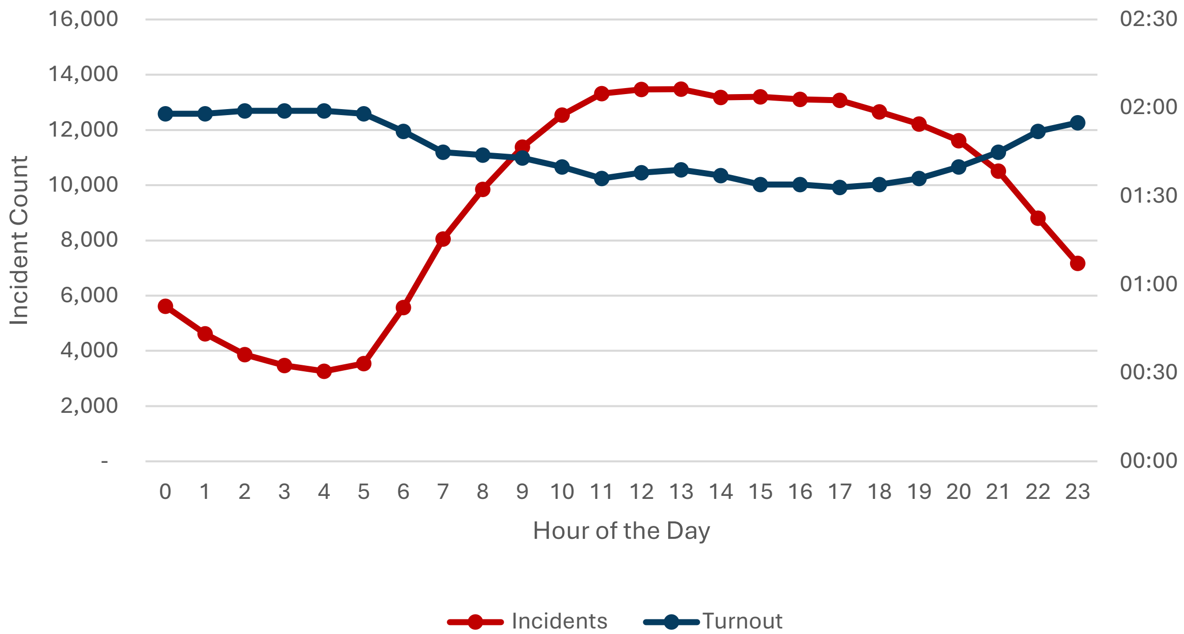
Figure 162: Turnout Time Performance by Call Class (2018–2024)



The turnout time for each response category reflects the complexity of the equipment and staffing needed. Generally, non-EMS responses using specialty apparatus and the donning of personal protective equipment (PPE) require the longest turnout time. The following figure shows the 90th percentile turnout time for each staffed unit grouped by hour. There is minimal variation during the 24 hours, indicating that procedures are consistent across the organization. The variation is observable in an inverse relation to the increase in incident volume during the day. But the decrease in turnout time is significant as incident volume increases.

One final dimension of the turnout time analysis is the changes in the percentile by hour of the day. Since RFD staffs its units 24 hours a day, it is expected that crews can try to sleep at night. However, the speed at which personnel can reach the apparatus and begin responding is impacted by their level of sleepiness. The following figure shows the turnout response by the hour of the day. Turnout times increase by approximately 30 seconds in sleep time periods.

Figure 163: Turnout Time vs Incident Performance (2018–2024)



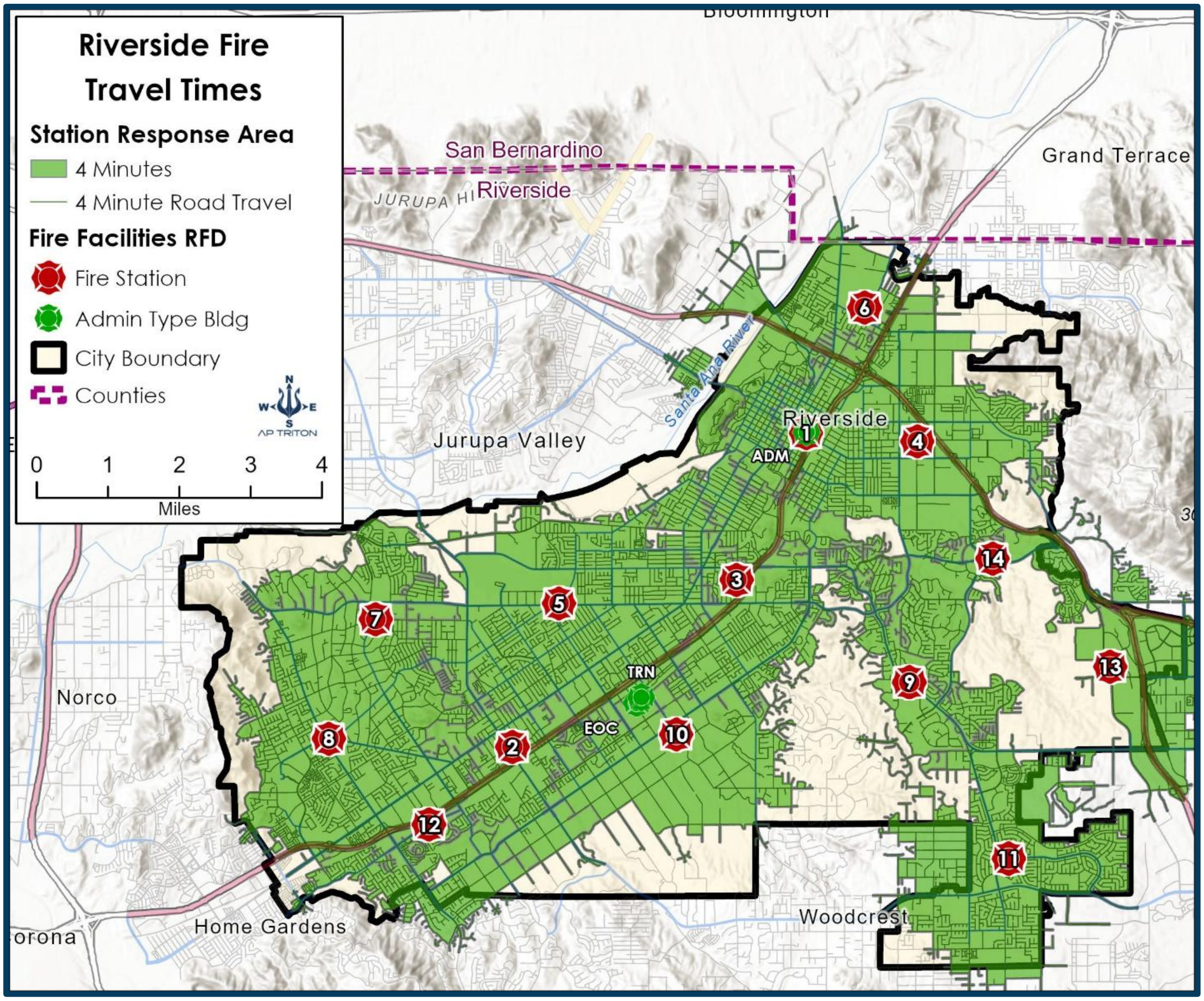
Travel Time Analysis

NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* lists several travel time requirements for apparatus. The first defined travel-time goal is four minutes for the first-arriving unit, which can be either an engine or a truck that can operate as an engine. The second-due engine should arrive within six minutes, and the first alarm should arrive within eight minutes for a moderate-risk structure fire.[41] However, the standard leaves the timing of the first alarm to the authority having jurisdiction.

Travel time is the difference between the time the apparatus marks en route and the time it arrives on the scene. The following figures show the theoretical four- and eight-minute travel times from RFD's fire stations.

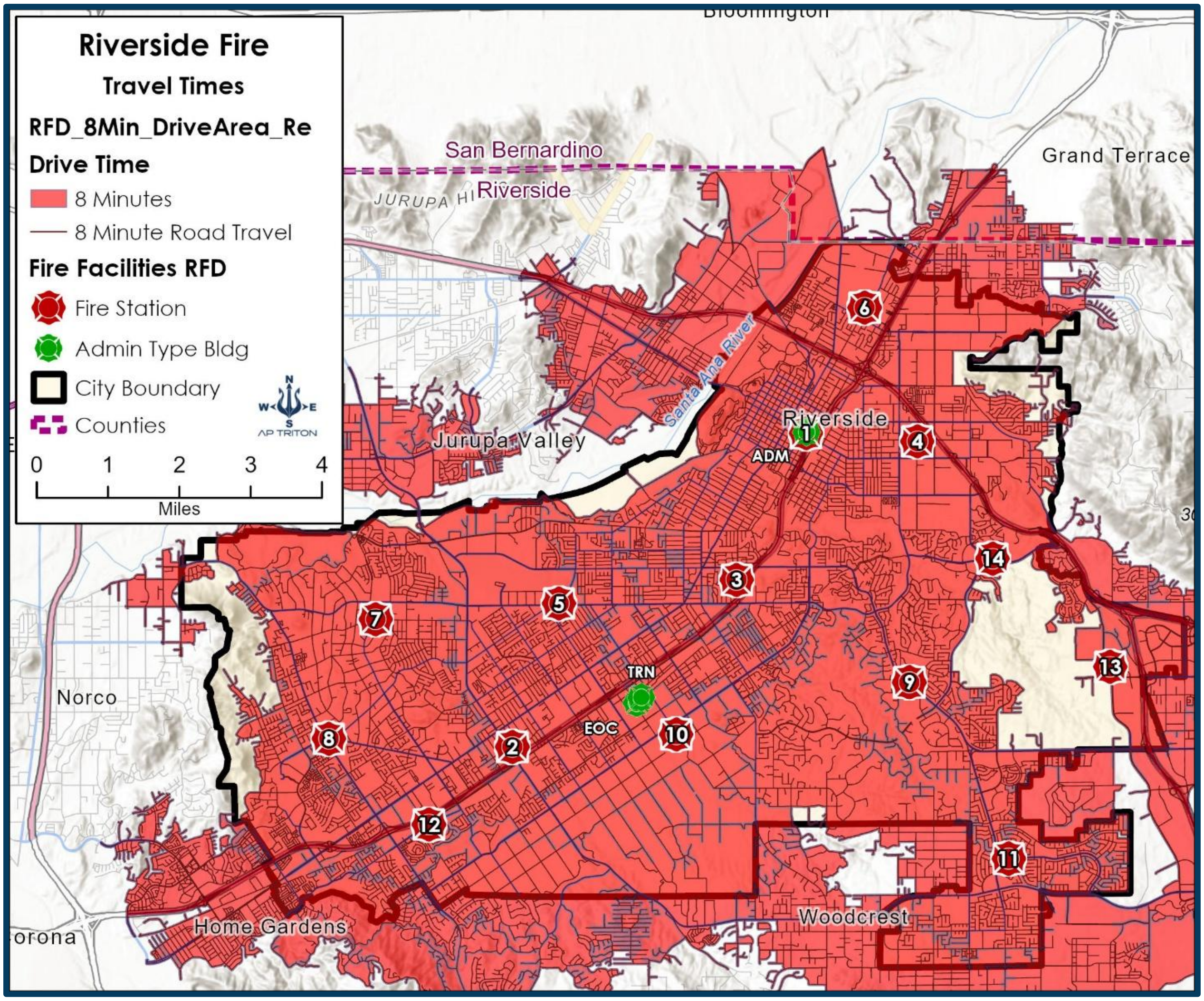
[41] National Fire Protection Association. *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Departments.* 2020 [Appendix D].

Figure 164: Four-Minute Travel Time from All RFD Stations[42]



[42] Administrative stations were not included in this four- and eight-minute travel time analysis.

Figure 165: Eight-Minute Travel Times from All RFD Stations



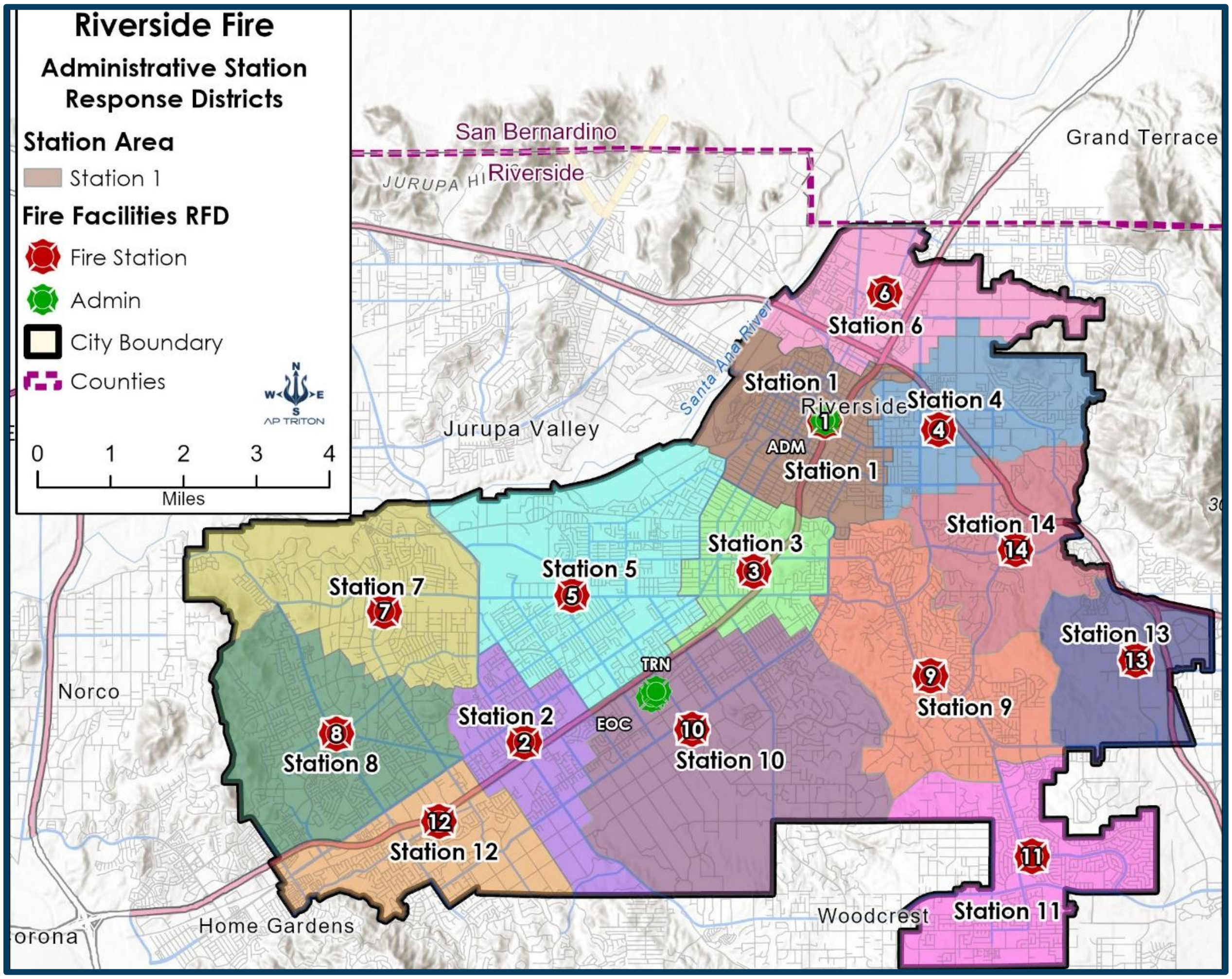
In theory, the four-minute coverage is sufficient for the most populous areas within the jurisdiction. However, areas southwest of Station 9 struggle to meet the four-minute travel time but have good coverage at the eight-minute mark. Areas to the west and all near Station 13 are likely terrain-limited.

Theoretical models are beneficial for evaluating potential outcomes. Consideration of actual performance may give a better understanding of what the agency can provide.

First Due Apparatus

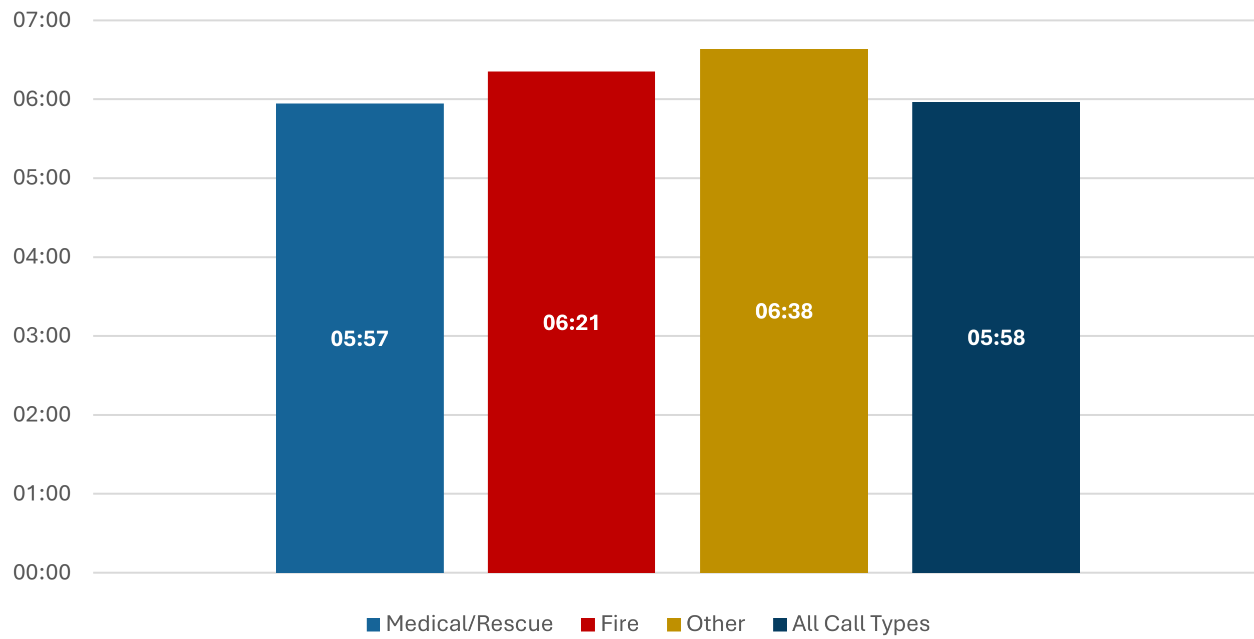
Understanding the agency's capabilities is more manageable when defining smaller geographic areas. CAD station response zones were provided in the data. There is some inconsistency in how incidents are coded by zone; however, for the most part, incidents are spatially grouped into geographic response zones, as shown in the following figure.

Figure 166: RFD Station Administrative Response Areas



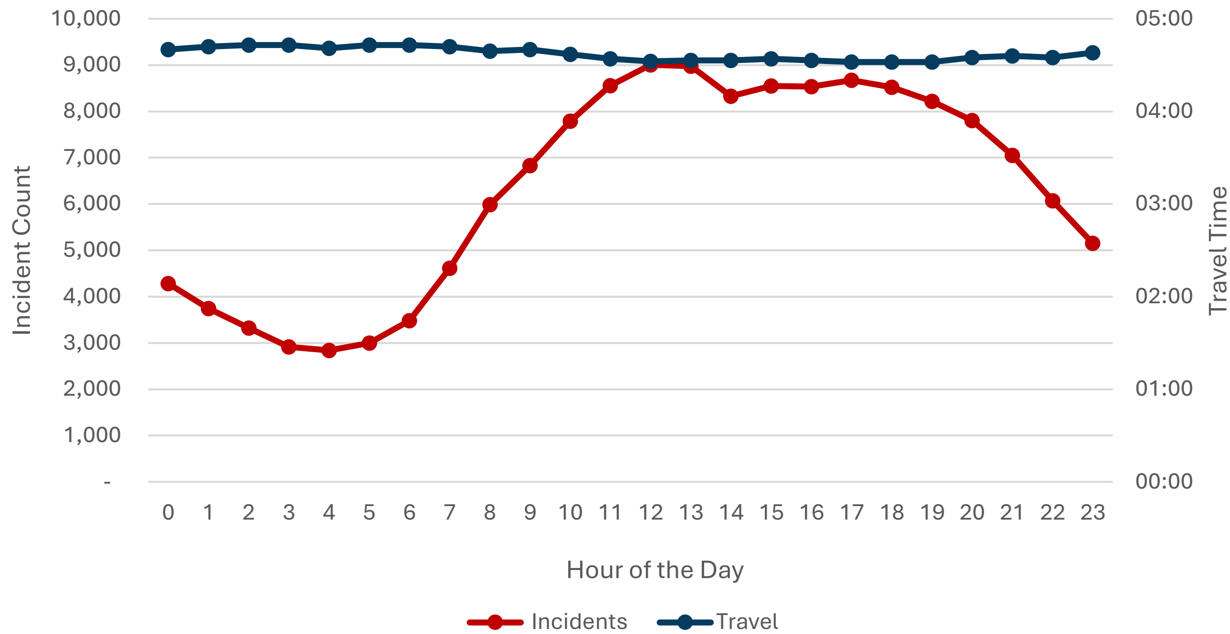
The evaluated data totaled **195,020** records, representing **55%** of the total response records. Outliers were filtered at **8 minutes, 58 seconds**. Travel times in RFD do not vary significantly across call classes, with the difference between classes falling within **44** seconds. EMS incidents are slightly faster for a first-due unit to arrive, and they impact overall travel times, as these types are the most numerous. This suggests that RFD has stations located in effective locations.

Figure 167: Travel Times by Call Class (2018–2024)



Time of day can have an enormous impact on travel times. Additionally, crew readiness, traffic patterns, and incident volume can all impact travel times. Nevertheless, RFD's travel times throughout the day remain relatively consistent. The following figure shows the first due travel times by hour, with the workload shown for reference. This further suggests that station placement is very effective.

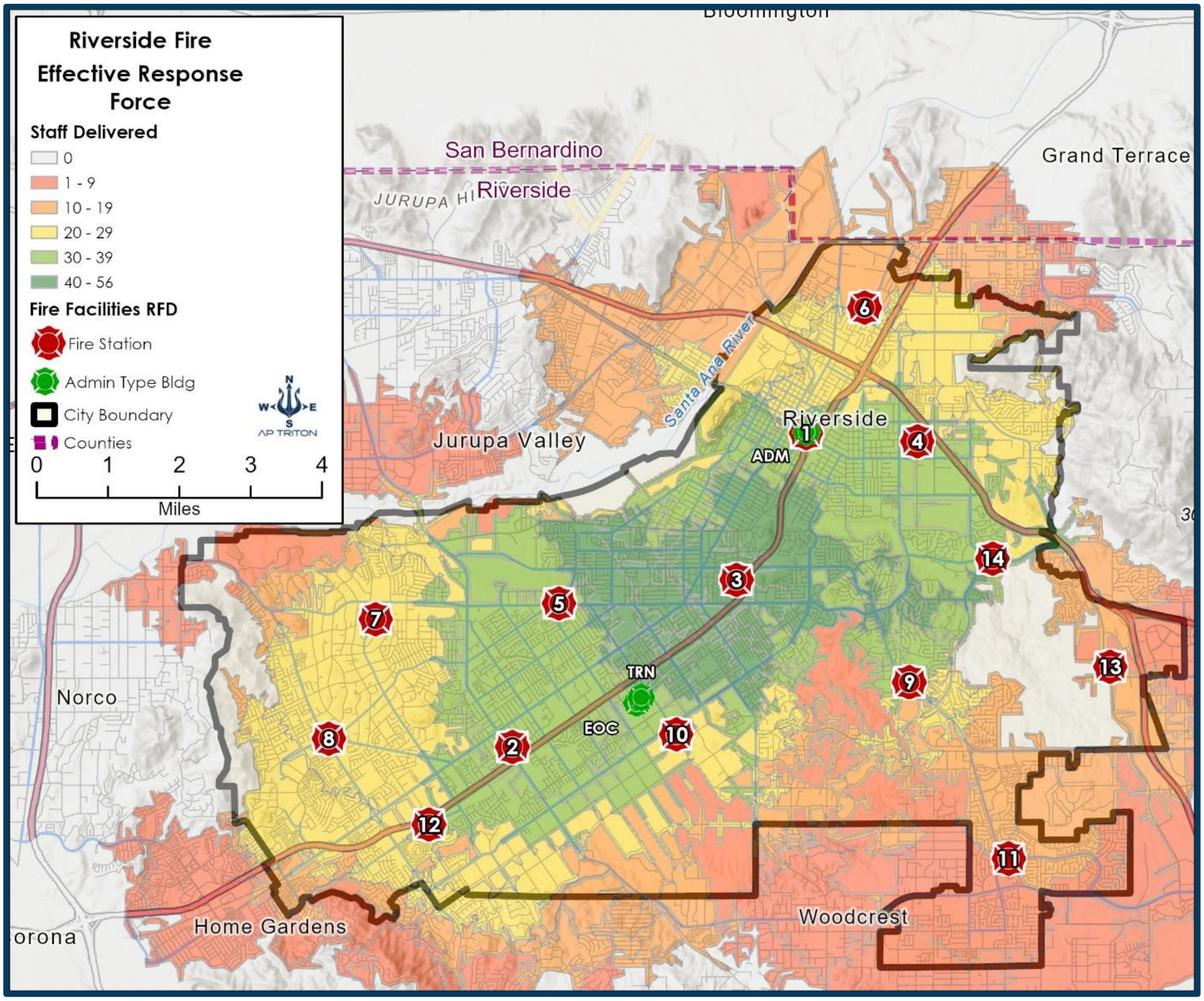
Figure 168: Travel Time Performance vs Incidents by Hour of the Day (2018–2024)



Effective Response Force

The second dimension of the travel time analysis is how effectively the effective response force (ERF) required for a particular incident can be assembled. ERFs change with the complexity and resources required of any incident. They can range from a single unit to multiple units, equipped with specialty equipment and a defined staffing level. The following figure illustrates the travel time needed to assemble 19 staff members to accomplish critical tasks for a Moderate Severity Fire incident.

Figure 169: Effective Staff Response Force



As with travel time evaluation, it is challenging to achieve a full complement for a moderate-risk structure fire, commonly referred to as a first alarm, in the southern and eastern portions of the city.

RFD can assemble an effective response force within most of the city limits; however, west of Stations 9, 11, and 13, staffing levels cannot be met.

The following figure displays the total response time by time segment, as required by CFAI-accredited agencies. City-wide, the effective response force assembly times are shown below, by year. The average assembly time across the entire time period is **22:04** minutes; however, 2018 and 2024 yielded higher assembly times.

Figure 170: Effective Response Force Assembly Times

Effective Response Force	2018	2019	2020	2021	2022	2023	2024	Grand Total
Structure Fires (Moderate)	129	89	131	153	113	104	93	812
ERF Apparatus Complement	66	45	75	86	66	60	48	446
ERF Apparatus Assembly Time (90th%)	27:55	20:08	23:33	21:22	19:39	15:11	23:57	21:41
ERF Staff (19)	66	46	80	87	68	63	50	460
ERF Staff Assembly Time (90th%)	26:48	18:27	19:46	21:14	18:42	17:53	31:40	22:04

Notes:

Apparatus Pattern for Moderate Fire = E, E, E, T, BC, R
Staff Required from the chosen apparatus (19)
There are examples of not meeting the response pattern for apparatus, but still meeting the number of staff from other kinds of units. This is why there are more staff ERF counts than Apparatus ERF.

The apparatus ERF for a Moderate Fire is Engine, Engine, Engine, Truck, Battalion Chief, Rescue (E, E, E, T, BC, R). When the ERF complement is satisfied, the last unit arriving will set the ERF time.

RFD's defined staff ERF for a moderate structure fire is 19 personnel. There are more times that RFD provided 19 staff than the first alarm apparatus pattern. This is due to other unit types arriving before the standard E, E, E, T, BC, R pattern is fulfilled.

Typically, the overall time segment evaluation focuses on a specific incident type, such as a moderate-risk fire. However, the incident data provided did not allow for discriminating incident severity. Therefore, all incidents with an ERF of 19 and classified as 'Structure Fire' in the NFIRS are examined. The ERF criteria are based on the RFD critical tasking for a moderate-risk structure fire, requiring the previously described apparatus complement.

CFAI charts would also include the benchmarks adopted by the agency. However, RFD has not adopted performance standards, so those benchmarks were left off. It also becomes apparent how data points can skew a 90th percentile figure when there are high values and a lower frequency.

Typically, the CFAI considers any data set with fewer than 100 statistically insignificant. The ultimate goal is to understand fire department performance from the customer's standpoint.

Response Time Analysis

Response time is measured from the moment a unit is notified of a service need to the time it arrives at the request location. Essentially, it is the sum of the elapsed times for Turnout and Travel time. This statistic is often reported as the principal measure of a department's performance.

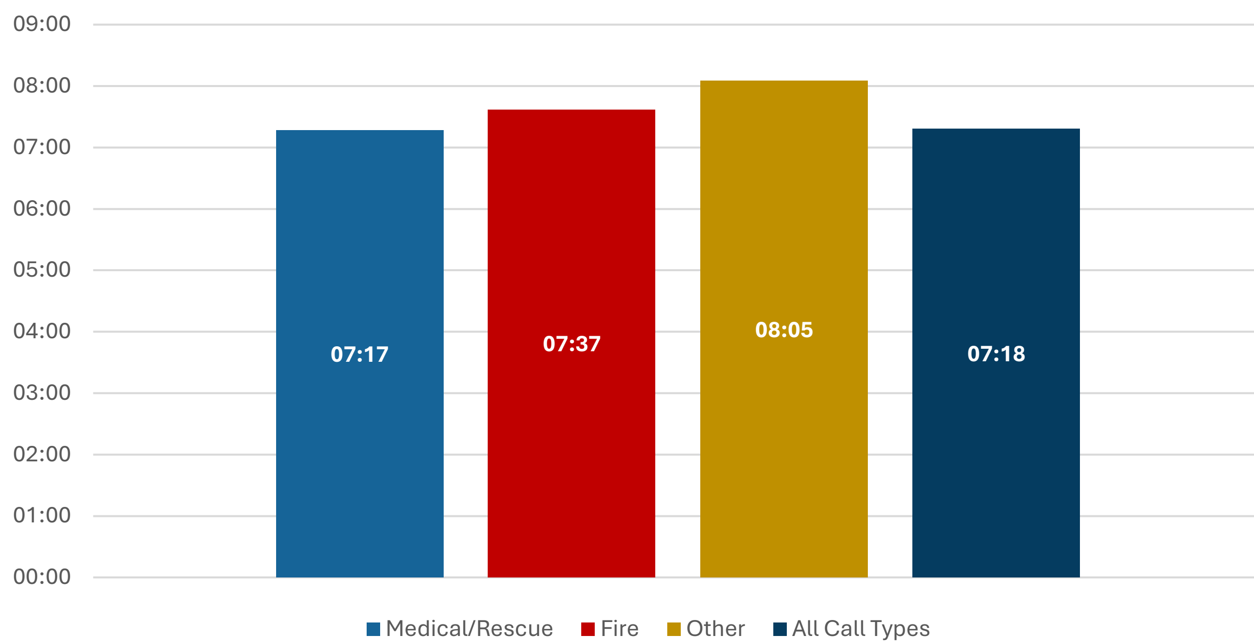
Figure 171: Response Time Analysis

Call Type	Seconds	Time	N=	%
Medical/Rescue	437	07:17	187,504	95%
Fire	457	07:37	8,302	4%
Other	485	08:05	566	0%
All Call Types	438	07:18	196,372	100%
Valid Percent			**55.7%**	

Includes Unique Incidents & Less than 95th % max values **(10 minutes ,17 seconds).**

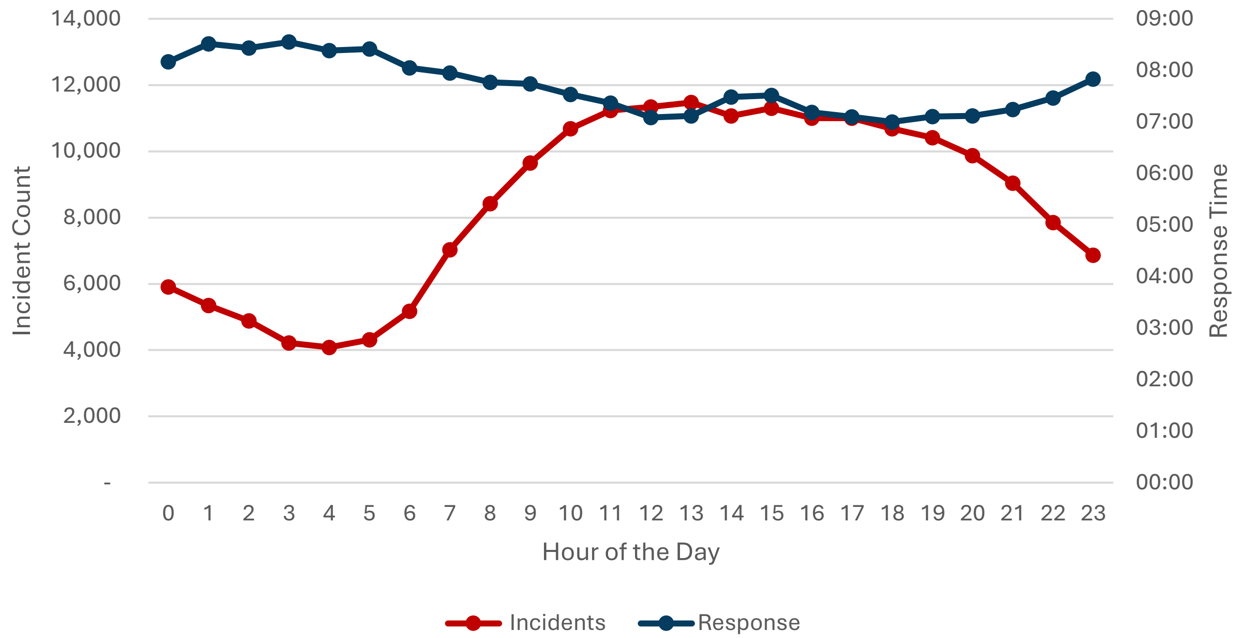
Response times are generally consistent across call classifications; however, "Other" call types take about **48** seconds longer to arrive than "Fire" and "Medical/Rescue" calls. The 90th percentile is used to evaluate performance, as averages are less accurate at reflecting actual response times.

Figure 172: Response Time by Class (2018–2024)



Similar to the impact on Travel Time, the hour of the day can present challenges to response. The following figure shows the relationship between incident volume and response time performance. Response time increases during overnight hours, when incident volume decreases.

Figure 173: Response Time by Hour of the Day (2018–2024)



Total Response Time Analysis

Each time segment—alarm handling, call processing, turnout, and travel time—is analyzed to identify where performance can be measured and improved. However, the primary indicator of overall performance is the total response time.

From the caller's perspective, this is the most valuable component and the true measure of the department's effectiveness. The person in need does not distinguish between call processing or turnout intervals; they experience the total time from initiating the 911 call until the arrival of help as RFD's performance.

It may appear that the 90th percentile total response time is simply the sum of the 90th percentile values for call processing, turnout, and travel times. However, this is not the case. Each time segment is analyzed independently, including the total response time, because the variability within each incident prevents accurate summation of individual percentiles.

One of the most effective methods for displaying total response time was developed by the Commission on Fire Accreditation International (CFAI). Accredited agencies are required to report performance annually by response program, using charts that display each incident time segment, culminating in the total response time of the first-arriving unit and the entire Effective Response Force (ERF).

While each element contributing to total response time—alarm handling, call processing, turnout, and travel—has been discussed previously, the total response time reflects the public's perception of RFD's overall performance.

RFD's total response time performance chart will be presented later in this section. The data used for this analysis is outlined in the following figure. The number of Other calls results from the majority of the data being flagged as "non-emergency." Only emergency incidents are evaluated for performance.

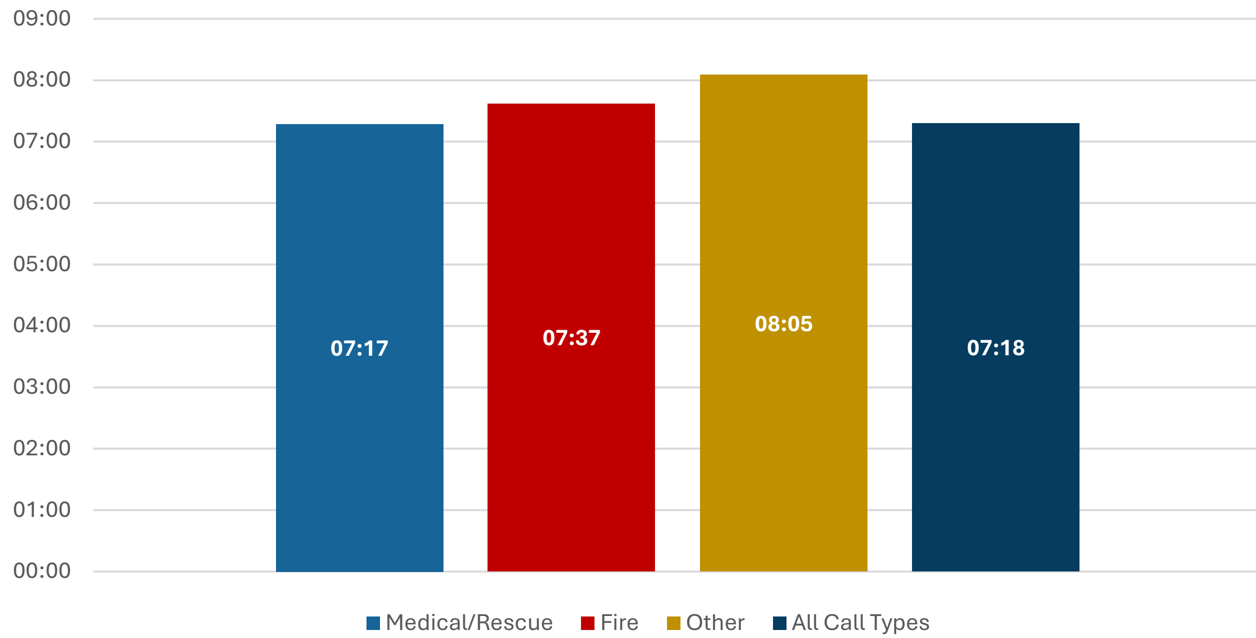
Figure 174: Data Analysis Overview

Call Type	Seconds	Time	*N* =	%
Medical/Rescue	473	07:53	188,811	95%
Fire	502	08:22	8,372	4%
Other	537	08:57	577	0%
All Call Types	**475**	**07:55**	**197,760**	**100%**
Valid Percent			**55.9%**	

Includes Unique Incidents & Less than 95th % max values. (**12 Minutes, 5 Seconds**)

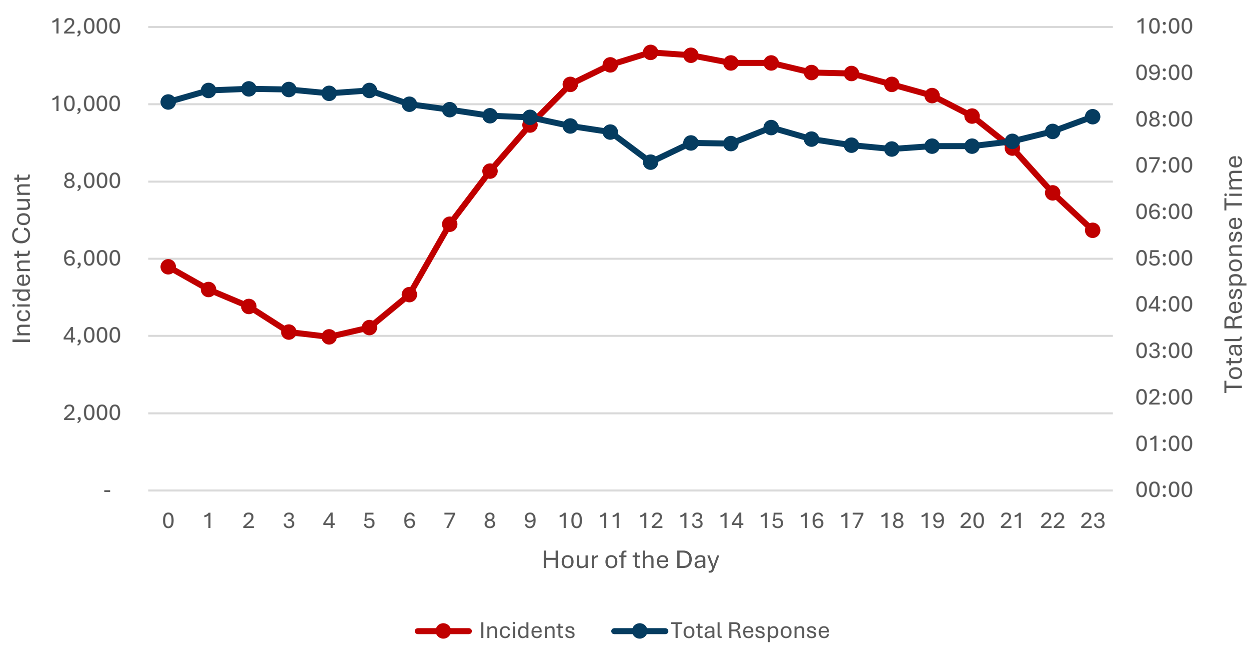
RFD's **90th percentile total response time performance is 7 minutes, 55 seconds**. This time segment encompasses the call processing time, first unit turnout, and travel times. The following figure shows incident types and their total response times. The data is heavily skewed toward EMS, which accounts for the bulk of the incidents.

Figure 175: Total Response Time Performance (2018–2024)



For RFD, the time of day does not drastically change the overall total response time. The following figure displays the total response time by hour, along with the corresponding workload percentages as a reference.

Figure 176: Total Response Time vs Incidents by Hour (2018–2024)



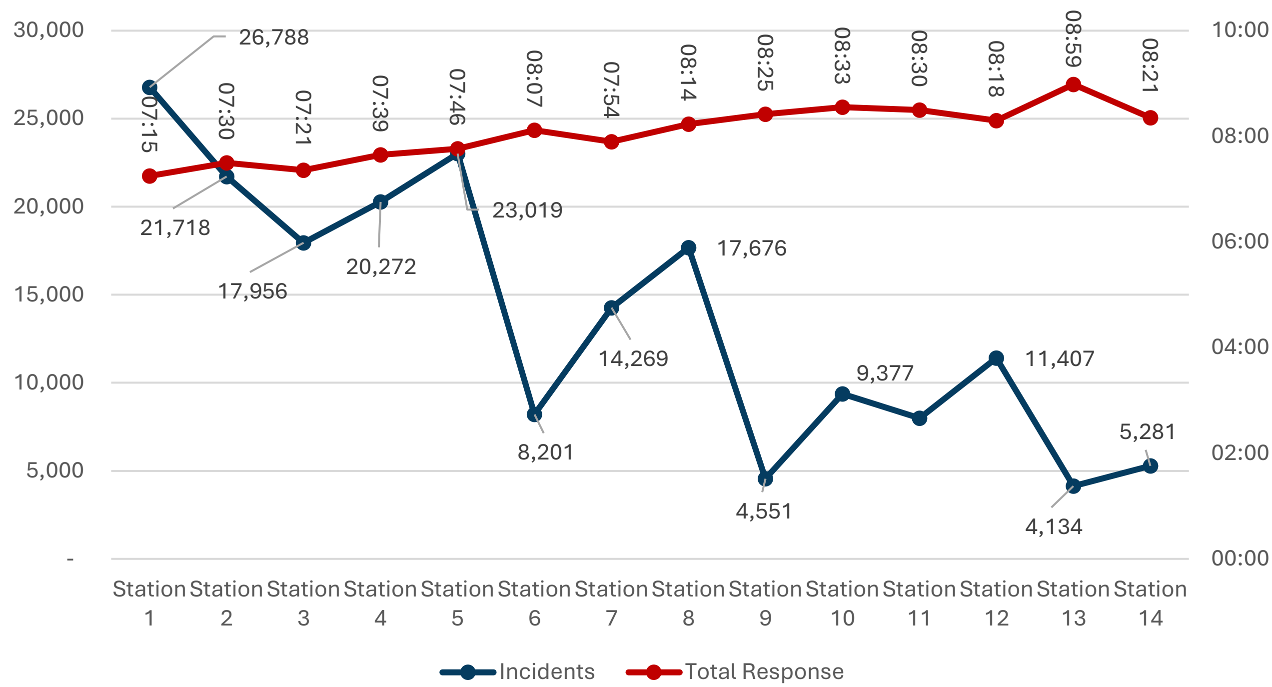
Presented here is the individual station performance for total response time. There is a 1 minute, 44 second difference between the fastest and the slowest stations in serving the request.

Figure 177: Station Performance for Total Response Time

Station	Total Response Time
Station 1	07:15
Station 2	07:30
Station 3	07:21
Station 4	07:39
Station 5	07:46
Station 6	08:07
Station 7	07:54
Station 8	08:14
Station 9	08:25
Station 10	08:33
Station 11	08:30
Station 12	08:18
Station 13	08:59
Station 14	08:21

The following figure displays this information graphically:

Figure 178: Station Total Response Performance (2018–2024)



One inference from the previous figure is that total response time is lower when more incidents occur in a station area. This could be a result of the station's assigned units being out of the station and immediately ready to respond to the following incident. The cause of the inverse relationship between incidents and total response time is speculative.

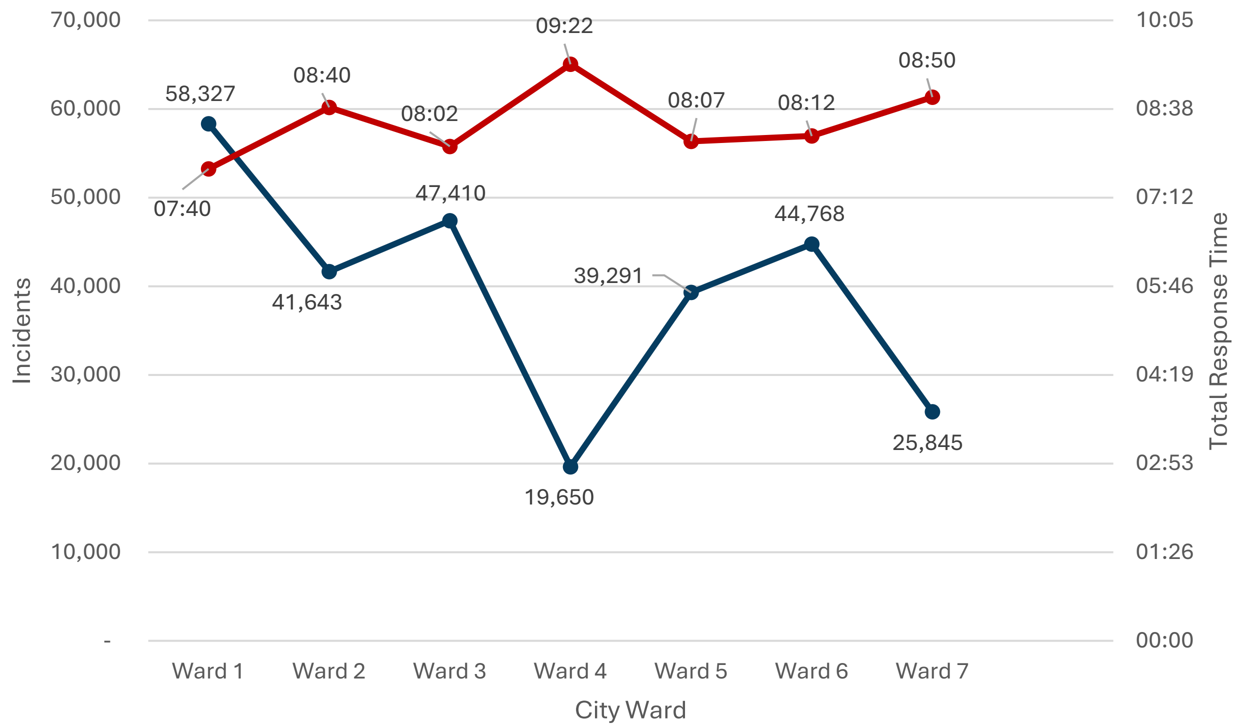
Since geography influences total response time, the faster times may result from a superior road network near busier stations or from more frequent responses to the same facility.

Riverside Ward System

The City of Riverside is governed through a seven-ward system, with each ward representing a distinct geographic area of the city. Residents of each ward elect one councilmember to represent their interests on the City Council, ensuring that all areas of Riverside have a voice in local decision-making. The wards encompass a diverse range of neighborhoods, from historic downtown districts and established residential areas to newer suburban developments and semi-rural communities. This structure allows for representation that reflects the city's geographic, cultural, and economic diversity while providing a framework for responsive local governance. The following figure shows the incident volume and response time performance for each Ward.

Figure 179: Performance by Ward

Ward	Incidents	Seconds	Total Response Time
Ward 1	58,327	460	07:40
Ward 2	41,643	520	08:40
Ward 3	47,410	482	08:02
Ward 4	19,650	562	09:22
Ward 5	39,291	487	08:07
Ward 6	44,768	492	08:12
Ward 7	25,845	530	08:50



Time on Task

Another measure of system stress and performance is the time spent serving the public. This time is measured from when the resource arrives at the service request location until the unit returns to service and can respond to another incident. This is the task interval and can represent the suppression activity, patient interaction, transport follow-up, etc.

Figure 180: Time On Task Analysis

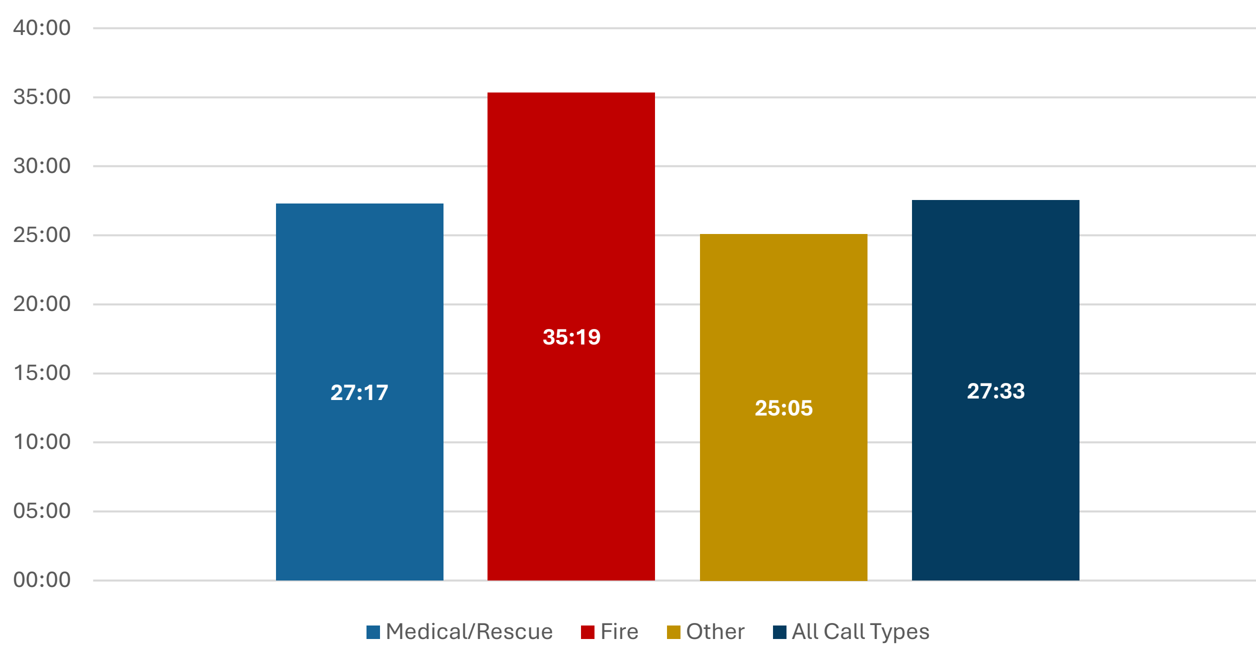
Call Type	Seconds	Time	*N* =	%
Medical/Rescue	1,637	27:17	187,737	96.1%
Fire	2,119	35:19	7,148	3.7%
Other	1,505	25:05	562	0.3%
All Call Types	1,653	27:33	195,447	100.0%
Valid Percent			**55.2%**	

Includes Unique Incidents & Less-than-95th-percentile max values (**48 minutes,10 seconds**).

RFD spends **27** minutes, **33** seconds for all incident types at the 90th percentile. Fire incidents take the longest to mitigate at **35** minutes, **19** seconds, but are closely followed by EMS incidents at **27** minutes, **17** seconds. Interestingly, Other call types are cleared 7 minutes faster than Fire and EMS.

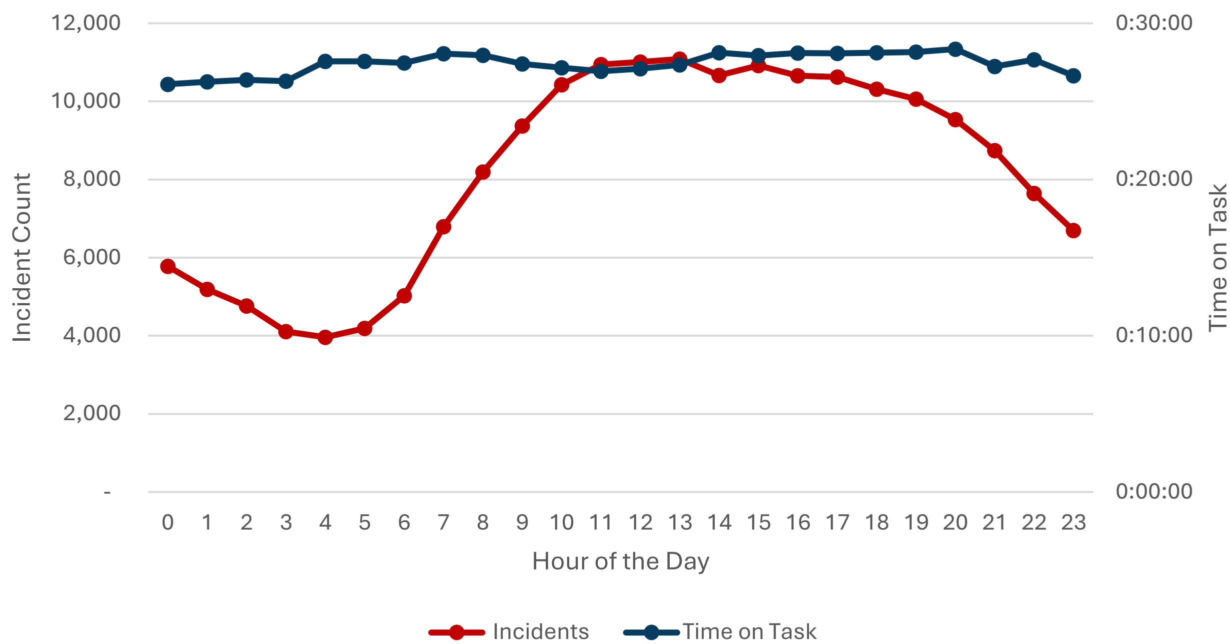
This information is displayed graphically in the following figure.

Figure 181: Time on Task Performance (2018–2024)



The following figure examines the relationship between the hour of the day and the time spent on tasks. The chart shows no correlation between the time spent on the task and the hour at which the incident occurred.

Figure 182: Time on Task by Hour of the Day (2018–2024)



Committed Time

A key measure is the evaluation of how long resources are consumed and remain unavailable for assignment to an incident. This is the time a unit is "committed" to an incident, measured from the time it is alerted (dispatched) until it becomes available for the next assignment. Longer system commitment times can result in longer wait times for service or resource queuing.

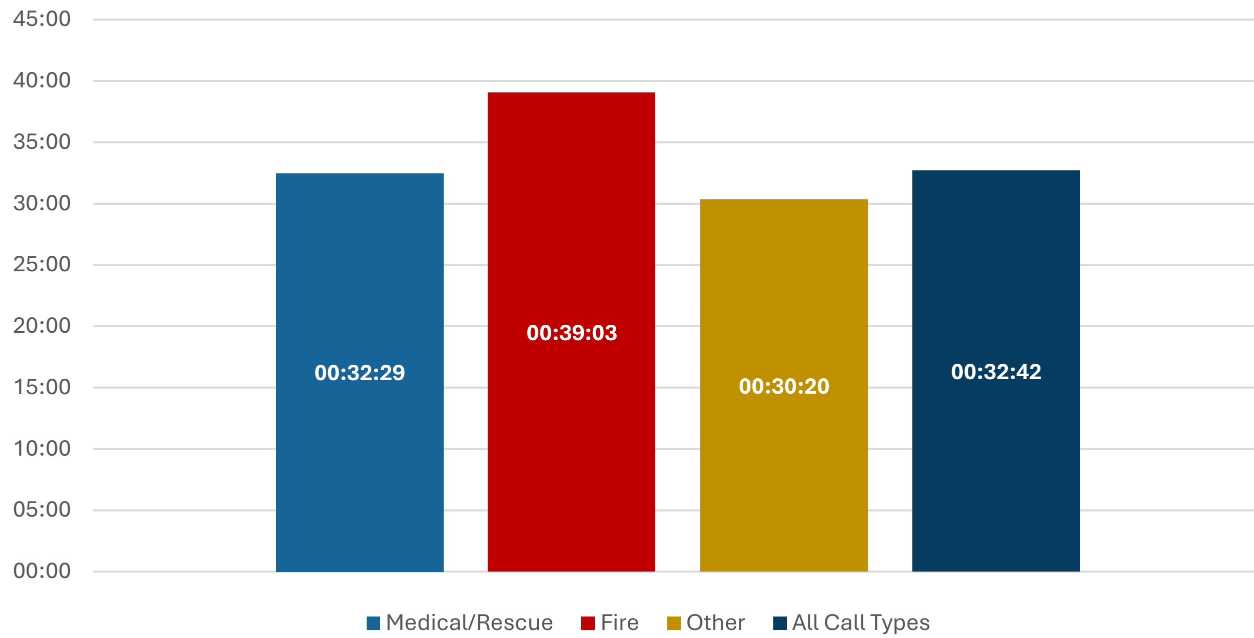
Figure 183: Committed Time Analysis

Call Type	Seconds	Time	*N* =	%
Medical/Rescue	1,949	32:29	187,711	96%
Fire	2,343	39:03	7,136	4%
Other	1,820	30:20	658	0%
All Call Types	1,962	32:42	195,505	100%
Valid Percent			**55.2%**	

Includes Unique Incidents & Less than 95th Percentile max values **(50 minutes, 42 seconds).**

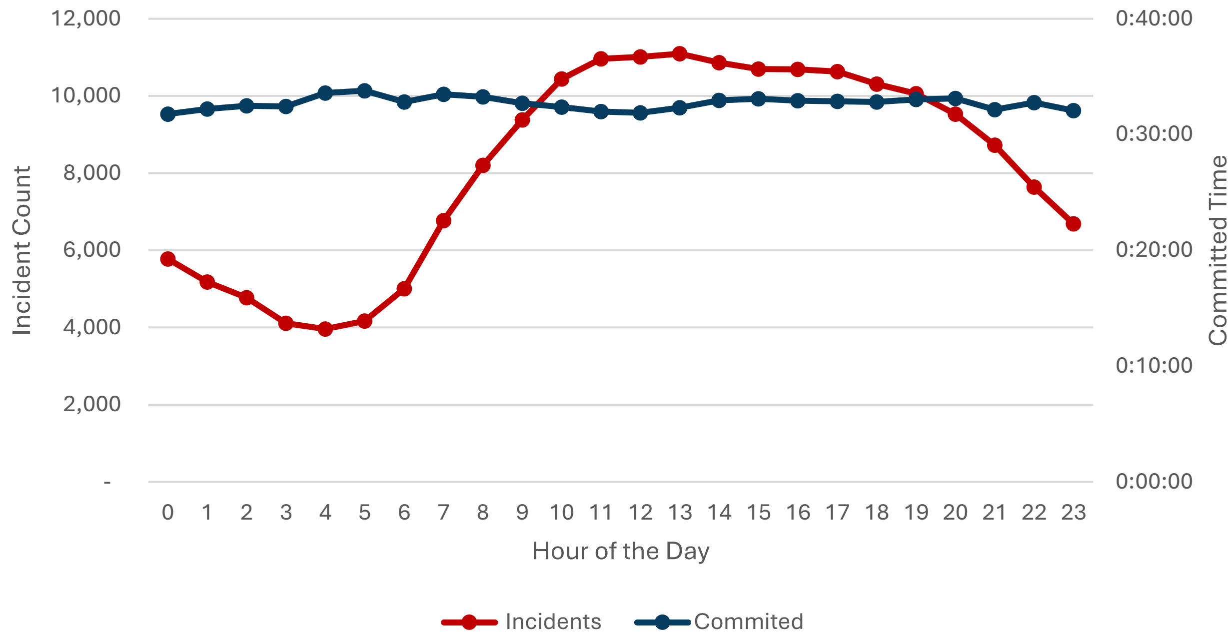
The following figure shows the time resources are committed to each call type. Committed times are slightly longer on EMS calls than on Fire and Other types.

Figure 184: Committed Time by Call Class (2018–2024)



The following figure compares the relationship between the hour of the day and the committed time. While incidents increase substantially during daylight hours, the amount of time resources are engaged does not change significantly.

Figure 185: Committed Time by Hour of the Day (2018–2024)



RESPONSE RELIABILITY STUDY

The Response Reliability Study assesses workload distribution (unit hour utilization), call concurrency, and resource exhaustion risks.

Concurrency

Concurrency, in the context of a Community Risk Assessment (CRA) and Standards of Cover (SOC) deployment analysis, refers to the simultaneous occurrence of multiple incidents that require an emergency response. This concept is crucial for understanding the demands placed on a fire department's resources and ensuring that there are sufficient units available to handle multiple emergencies simultaneously.

Concurrency is analyzed to assess workload distribution, call concurrency, and risks of resource exhaustion. This involves evaluating how often multiple incidents co-occur and the impact this has on the availability and reliability of emergency response units. The analysis helps identify periods of high demand and potential gaps in coverage, ensuring the fire department can maintain effective response times even during peak periods.

Call Concurrency

Call Concurrency involves examining the frequency and patterns of simultaneous incidents. By understanding when and where multiple calls are likely to occur, the fire department can better allocate resources to ensure that all incidents are adequately covered.

Figure 186: Incident Concurrency (2018–2024)

Concurrent Incidents	Count	Percent	Cum %
1	52,505	18.99%	18.99%
2	78,808	28.50%	47.48%
3	67,522	24.42%	71.90%
4	42,196	15.26%	87.16%
5	21,253	7.69%	94.85%
6	9,174	3.32%	98.16%
7	3,444	1.25%	99.41%
8	1,168	0.42%	99.83%
9	357	0.13%	99.96%
10	84	0.03%	99.99%
11	22	0.01%	100.00%
12	4	0.00%	100.00%
13	1	0.00%	100.00%
14	1	0.00%	100.00%
15	—	0.00%	100.00%

The following figure details the incident concurrency for EMS calls. By far the most populous data elements.

Figure 187: EMS Incident Concurrency (2018–2024)

Concurrent EMS Incident	Count	Percent	Cum %
1	53,283	27.53%	27.53%
2	62,986	32.54%	60.06%
3	42,529	21.97%	82.03%
4	21,383	11.05%	93.08%
5	8,833	4.56%	97.64%
6	3,199	1.65%	99.30%
7	980	0.51%	99.80%
8	295	0.15%	99.95%
9	67	0.03%	99.99%
10	13	0.01%	100.00%
11	7	0.00%	100.00%
12	1	0.00%	100.00%
13	—	0.00%	100.00%
14	—	0.00%	100.00%
15	—	0.00%	100.00%

Resource Exhaustion

Resource Exhaustion refers to the risk of having all available units committed to incidents, leaving no resources available for new emergencies. The analysis helps identify times when the department is most at risk of resource exhaustion and develop strategies to mitigate this risk. In the study period (2018–2024), RFD had 15 units busy in the same hour 1,100 times.

Figure 188: Unit Response Concurrency (2018–2024)

Concurrent Unit Response	Count	Percent	Cum %
1	48,311	13.78%	13.78%
2	73,498	20.97%	34.75%
3	70,003	19.97%	54.72%
4	53,706	15.32%	70.05%
5	36,613	10.45%	80.49%
6	24,130	6.88%	87.37%
7	15,422	4.40%	91.77%
8	10,174	2.90%	94.68%
9	6,574	1.88%	96.55%
10	4,345	1.24%	97.79%
11	2,822	0.81%	98.60%
12	1,804	0.51%	99.11%
13	1,200	0.34%	99.45%
14	812	0.23%	99.69%
15	1,100	**0.31%**	100.00%

The preceding figure indicates that RFD will exceed the 0.31% hourly concurrency rate at some point. Approximately 99.69% of the time, 14 units can be busy and still have available resources to respond.

Workload Distribution

Workload Distribution involves analyzing incident distribution across units and stations to ensure no single unit is overburdened. By balancing the workload, the fire department can maintain a high level of readiness and reduce the risk of burnout among personnel.

Unit Hour Utilization (UHU)

Unit Hour Utilization measures the percentage of time that a unit is actively engaged in responding to incidents. A high UHU indicates that a unit is frequently in use, potentially affecting its availability for new calls. The analysis helps in determining optimal staffing levels and resource allocation to maintain an effective response force.

Figure 189: Unit Hour Utilization (2018–2024)

Unit	2018	2019	2020	2021	2022	2023	2024
E1	23.4%	25.7%	22.8%	27.9%	29.8%	28.9%	25.7%
E2	18.0%	17.4%	16.9%	19.5%	20.4%	20.1%	16.4%
E3	33.1%	29.1%	29.8%	33.5%	36.3%	36.9%	30.9%
E4	36.4%	35.0%	36.5%	40.5%	40.5%	**43.6%**	35.1%
E5	18.7%	19.7%	19.8%	24.6%	25.2%	23.6%	20.5%
E6	18.0%	16.2%	16.1%	18.1%	19.7%	20.3%	16.4%
E7	26.8%	23.5%	24.8%	25.8%	26.6%	28.0%	23.2%
E8	34.2%	29.0%	30.7%	32.9%	35.6%	36.0%	29.8%
E9	10.3%	10.7%	10.8%	12.6%	13.4%	13.8%	11.1%
E10	17.9%	16.1%	15.8%	18.2%	18.6%	19.4%	16.7%
E11	14.5%	13.7%	14.1%	16.5%	17.6%	15.9%	14.4%
E12	24.7%	28.6%	28.9%	35.4%	38.6%	36.8%	34.6%
E13	9.1%	4.9%	0.1%	1.0%	0.2%	3.3%	2.8%
E14	13.2%	13.2%	12.4%	15.8%	16.3%	16.4%	13.8%
T1	2.3%	3.1%	1.4%	0.6%	0.0%	0.0%	0.0%
T2	33.5%	29.3%	30.6%	35.9%	40.8%	42.8%	36.7%
T3	24.6%	20.1%	23.0%	28.0%	31.9%	34.2%	29.4%
T13	30.1%	30.5%	31.4%	35.6%	38.3%	39.1%	33.1%
RSQ3	4.9%	6.4%	7.3%	8.4%	10.0%	11.5%	9.4%
S1	3.9%	5.8%	5.7%	7.3%	8.5%	7.2%	6.3%
S2	5.4%	6.4%	8.8%	12.0%	13.6%	12.3%	9.4%
S5	0.0%	3.0%	8.2%	8.5%	10.0%	6.3%	5.7%

RFD has many units that exceed the recommended UHU response level. The highest percentage was experienced by Engine 4 in 2023 at **43.6**%. Almost half of that unit's 24-hour shift is spent servicing requests, leaving little time for other activities.

By incorporating concurrency analysis into the CRA-SOC, the fire department can develop a more comprehensive understanding of its operational challenges and make informed decisions about resource deployment and staffing. This ensures that the department can effectively respond to the community's needs, even during periods of high demand.

POPULATION GROWTH & **SERVICE DEMAND PROJECTIONS**

Population Growth Prediction for Riverside, CA (2000–2050)

Available Data and Predictions

Historical Data (2000–2023)

According to Esri American Community Survey, Riverside's population grew from 258,738 in 2000 to 318,858 in 2023, an increase of 60,120 people, or 23.24%, with an average annual growth rate of 1.01%. The population peaked in 2019 at 329,785 but showed a decline of 4.46% from 2019 to 2020, likely due to the COVID-19 pandemic, followed by a slight recovery.

Short-Term Projection (2025)

World Population Review estimates Riverside's population at 321,385 in 2025, reflecting a 0.39% annual growth rate from 2020 (315,067). This suggests continued, albeit slower, growth in the near term.

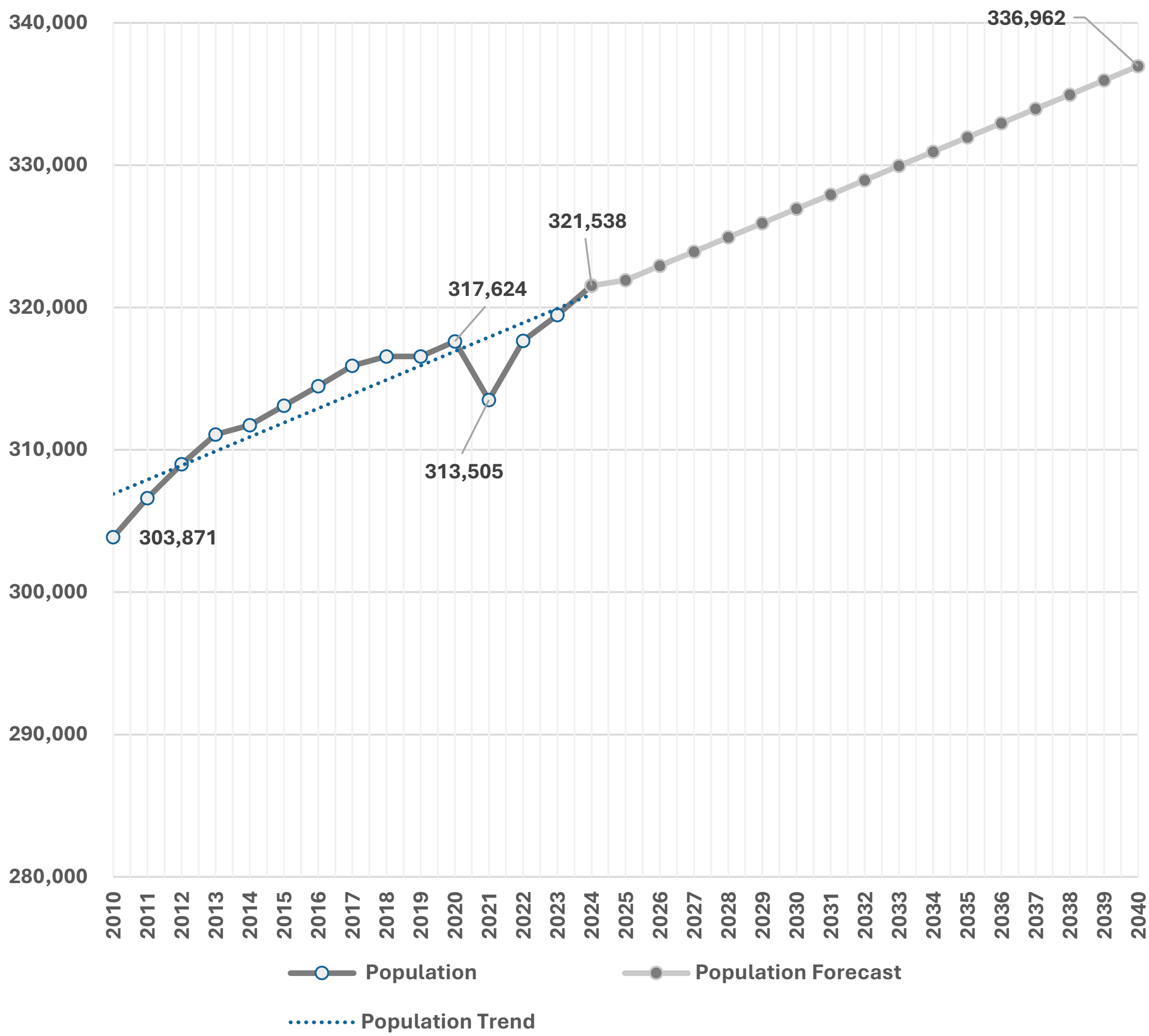
Long-Term Projection (2040)

The Southern California Association of Governments (SCAG) forecasts Riverside's population to reach 386,600 by 2040, a 17.8% increase (58,445 people) from 2020. This implies an average annual growth rate of approximately 0.89% from 2020 to 2040.

Beyond 2040

Specific projections for Riverside City extending to 2050 are not available in the provided data. However, Riverside County's population is projected to reach 2.55 million by 2026, with an average annual growth rate of 0.9% from 2021 to 2026. Continued growth is anticipated through 2050, though at a slower rate. Given that Riverside City is a significant part of the county, similar trends may apply, but city-specific data for 2050 is lacking.

Figure 190: Population Trend Predictions



Accuracy of Predictions

The accuracy of these population predictions depends on several factors:

Historical Trends

Historical data (2000–2023) show consistent growth with occasional dips (e.g., 2020–2021), suggesting that projections based on past trends are reasonably reliable for short-term forecasts (up to 2025 or 2040). However, long-term projections to 2050 are less confident due to unforeseen economic, social, or environmental changes.

Data Sources: Projections from SCAG and the California Department of Finance are based on robust methodologies, including birth and death rates and migration patterns; however, they rely on assumptions that may not hold over several decades.

External Shocks

The 2019–2020 population decline, attributed to the COVID-19 pandemic, highlights how unexpected events can disrupt established trends. Similar disruptions (e.g., economic crises, natural disasters, or policy changes) could affect long-term accuracy.

Margin of Error: Population estimates, especially from the U.S. Census Bureau, are subject to sampling variability and underestimation (e.g., 2010–2020 postcensal estimates underestimated the U.S. population by about 1% by 2020). This suggests caution when relying on projections for precise figures.

Given these factors, short-term projections (to 2025) are likely more accurate, with Riverside's population expected to grow modestly (around 0.39% annually). The 2040 projection of **336,962** seems plausible based on historical growth rates, but assumes steady economic and migration trends. Projections to 2050 are speculative without specific data; however, Riverside County's continued growth suggests the city's population may approach or exceed 400,000 if current trends persist.

Factors Impacting Population Growth in Riverside, CA

Several factors influence Riverside's population growth, based on available data and regional trends:

- **Economic Opportunities:**
  - **Job Market:** Riverside's economy, tied to the broader Riverside-San Bernardino-Ontario Metropolitan Statistical Area, has a 5.3% unemployment rate (as of 2024), which is slightly better than the county's (5.9%) and the state's (5.8%) rates. Growth in industries like logistics, healthcare, and education (e.g., University of California, Riverside) attracts residents.
  - **Housing Affordability:** Riverside's median home sales price was $675,000 in July 2024, relatively affordable compared to coastal California cities. This affordability attracts families and commuters from pricier areas, such as Los Angeles and Orange County.
  - **Economic Events:** Historical population "bursts" in Riverside County were often tied to economic booms, while slowdowns followed recessions or military base realignments (e.g., 1990s). Future economic fluctuations could similarly impact growth.

- **Migration Patterns:**
  - **Net Migration:** Riverside County saw 11,000 net migrants in 2020, with projections of 15,400 annually from 2021 to 2026. Riverside City likely benefits from this influx, particularly from domestic migration within California, given its affordability and proximity to major urban centers.
  - **Demographic Composition:** Riverside's diverse population (57.1% Hispanic, 34% White, 7.7% Asian, 6.3% Black in 2024) may attract specific groups seeking cultural communities. Immigration policies and regional migration trends will influence future inflows.
- **Housing Development:**
  - **Housing Supply:** The California Department of Finance uses changes in housing units to estimate population growth. Riverside's housing growth supports population increases, with 98,312 households in 2024 projected to rise to 101,884 by 2029.
  - **Regional Housing Needs:** SCAG's Regional Housing Needs Assessment (RHNA) drives housing development to accommodate growth, which could sustain population increases if infrastructure keeps pace.
- **Demographic Trends:**
  - **Birth and Death Rates:** The California Department of Finance projects births and fertility rates, which contribute to the natural growth of the population. Riverside's relatively young median age (34.4 in 2024) suggests higher birth rates compared to aging regions.
  - **Aging Population:** While Riverside's population is younger than the state average, an aging demographic could slow natural growth over time unless offset by migration.
- **External Factors:**
  - **Environmental Constraints:** Riverside County's growth is influenced by water availability and land use policies. The Western Riverside County Water Supply and Demand study anticipates continued growth but notes potential limitations due to the availability of water resources.
  - **Policy and Infrastructure:** Investments in transportation (e.g., Regional Transportation Plans) and urban planning can support growth by enhancing connectivity and improving livability. Conversely, inadequate infrastructure could deter new residents.
  - **Climate and Natural Disasters:** Riverside's inland location mitigates some coastal risks (e.g., sea-level rise), but it faces challenges like wildfires and heatwaves, which could impact its long-term desirability.

- **Post-Pandemic Recovery:**
  - The **2020–2021** population decline **(-4,119**) reflects pandemic-related disruptions, possibly due to out-migration or reduced births. Recovery since 2020 (e.g., **+4,164** from 2021 to 2022) suggests resilience, but future pandemics or similar crises could cause volatility.

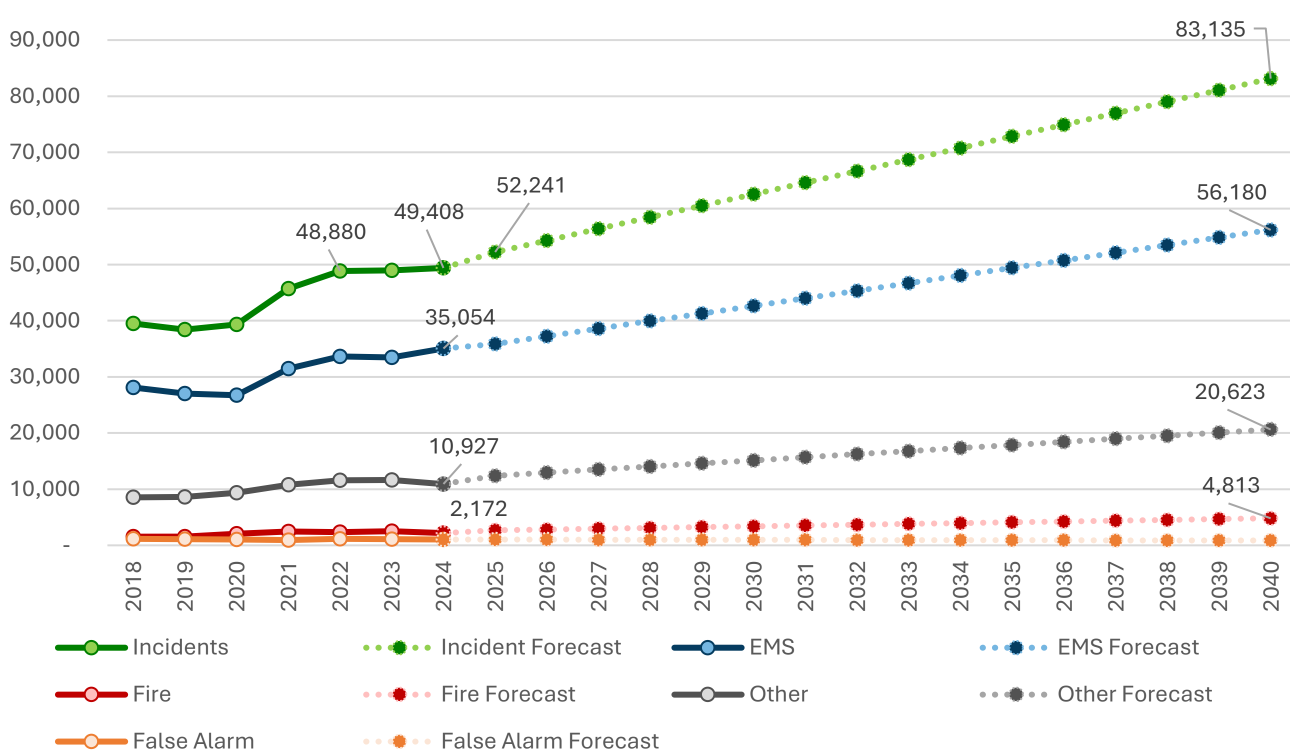
The population growth predictions for Riverside are reasonably reliable up to 2040, with SCAG's estimate of 386,600 by 2040 aligning with historical trends (0.89% annual growth). Beyond 2040, projections to 2050 are less specific but suggest continued growth, potentially reaching 400,000 or more, assuming Riverside County's trends (0.7–0.9% annual growth) apply. Key factors driving growth include economic opportunities, housing affordability, migration, and demographic trends. Constraints, such as environmental limitations and financial shocks, could moderate growth. For precise 2050 estimates, more data would be needed, and external events could significantly alter trajectories.

Service Demand Projections

Key Insights from the Riverside Fire Department's Service Request Forecast

The following figure visualizes historical and projected service request volumes for the Riverside Fire Department from 2018 to 2040, categorizing them into Incidents (actual calls), EMS (emergency medical services), Fire, Other, and False Alarms, along with their respective forecasts.

Figure 191: City of Riverside Incident Forecast



The data reveals strong upward trends in demand, underscoring the need for proactive resource planning. The following outlines the primary findings, structured by category for clarity.

- **Overall Demand Growth and Forecast Accuracy**
  - **Sustained Increase in Total Requests:** Actual incidents (green line) have risen steadily from ~**40,000** in 2018 to over 49,000 in **2024**, with forecasts projecting continued growth to **52,241** by 2025 and **83,135** by **2040**. This indicates an average annual growth rate of approximately 10–15%, likely driven by population growth, an aging population, or urban development in Riverside.
- **Category-Specific Trends**
  - **Dominance of EMS Calls:** EMS requests (blue line) form the largest share, surging from **28,142** in 2018 to **33,647** in 2022, with forecasts reaching **52,241** by 2025 and **56,180** by **2040**. This highlights a shift toward medical emergencies, which now comprise ~70% of total volume—prioritizing paramedic staffing and ambulance availability over traditional fire suppression.
  - **Stable but Low Fire Incidents:** Fire calls (red line) remain minimal and flat at ~**1,500–2,000** annually, with forecasts (red dashed) predicting only slight increases to ~**4,813** by 2040. This low volume (under 10% of the total) indicates successful prevention efforts, such as public education and building codes; however, vigilance is still needed to address seasonal wildfire risks in Riverside County.
  - **Moderate Growth in Other and False Alarms:** Other requests (gray line) increase from **8,452** in 2018 to **11,558** in 2022, with a forecasted peak of 12,399 by 2025. False alarms (orange line) are negligible (**900–1,000**), with forecasts (orange dashed) at ~**861** by 2040, pointing to effective system maintenance and fewer nuisance calls.
- **Implications for Operational Planning**
  - **Resource Allocation Shift:** With EMS projected to exceed **56,000** calls by **2040**, the department should invest in additional EMS units, cross-train firefighters as EMTs, and partnerships with hospitals to handle overflow. Fire and Other categories, while growing more slowly, still require balanced coverage to avoid under-resourcing niche needs.
  - **Efficiency Opportunities:** The low false alarm rate (< 5% of total) demonstrates strong alarm system reliability; however, monitoring the gradual rise could yield further reductions through tech upgrades or public awareness campaigns.

- **Long-Term Preparedness:** By **2040**, total forecasted requests are expected to double from 2022 levels, necessitating budget advocacy for hiring, facility expansions, and data-driven adjustments. Seasonal peaks (e.g., summer fires) are not detailed but could be inferred from the linear trends—integrating weather or demographic data into models would enhance precision.
- **Potential Risks:** If growth exceeds forecasts (e.g., due to climate-driven events), response times could suffer; early warnings from this figure emphasize the importance of scenario planning for surges.

In summary, the figure depicts that the Riverside Fire Department is under increasing pressure from medical emergencies, while fire risks remain stable, with accurate forecasts enabling strategic foresight. This data supports evidence-based decisions to sustain service quality as Riverside's needs evolve.

ESTABLISHMENT OF **PERFORMANCE OBJECTIVES**

In this report, AP Triton draws on a range of benchmarks from industry and national standards, which are generally regarded as best practices. However, it is important to recognize that each community is unique, and not all benchmarks may be suitable for every situation. Benchmarks serve as quality standards or targets against which performance can be measured. Striving towards these benchmarks helps in identifying and achieving excellence in products, services, or processes. RFD is encouraged to adhere to these benchmarks or targets to enhance outcomes for the community.

PERFORMANCE BENCHMARKS

RFD is in the process of establishing performance benchmarks for service delivery. AP Triton advises the formulation and implementation of formal performance standards. An area ripe for improvement is data and records management. It's crucial to regularly review and analyze performance indicators to identify service gaps and needs. RFD should explore the full potential of its records management system to ensure consistent and accurate reporting and data entry.

The subsequent sections draw from established best practices and serve as models for developing benchmarks in fire suppression, EMS, technical rescue, and hazardous materials (hazmat) response. NFPA 1710 is a nationally recognized, voluntary performance standard that focuses on achieving performance benchmarks at the 90th percentile. Specifically, NFPA 1710 provides standardized definitions for fire apparatus and assigned personnel, outlines procedural guidelines for their operation, and details staffing levels required for various tasks at an incident scene. According to NFPA 1710, fire departments should aim for a performance objective of at least 90% in each of the following time objectives:

- Alarm processing time.
- Turnout time for fire and special operations response and turnout time for EMS response.
- The arrival of the first arriving engine company at a fire suppression incident and travel time for deployment of an initial full alarm assignment at a fire suppression incident.
- Travel time for the arrival of a unit containing a first responder with an AED or higher-level capability at an emergency medical incident.

The City of Riverside intends to use NFPA 1710 benchmarks as goals for the City of Riverside.

Benchmark objectives are designed to ensure timely arrival at the scene, allowing for initial actions or interventions that lead to better outcomes. Regular evaluation of these benchmarks is crucial, with concerted efforts to achieve or sustain these established levels.

For RFD, data on turnout times and first-due response travel times is readily accessible. The Effective Response Force (ERF) is defined as the minimum required number of firefighters and equipment needed at a specific emergency incident within a maximum set travel time. Currently, RFD does not consistently track ERF times. It is advised that RFD starts monitoring total ERF times where feasible.

RFD has adopted the NFPA 1710 standard as its benchmark. As baseline performance data is gathered in the future, these benchmark goals can be adjusted to align with community expectations and available resources. NFPA standards are also being used as benchmarks for first-due response and turnout times. Going forward, RFD should evaluate and analyze baseline performance times to identify and address any gaps between NFPA standards and actual performance.

These performance benchmarks are specifically for response times within the Riverside city limits. However, Riverside is an expanding community, and RFD frequently responds to incidents beyond these limits. While a specific benchmark for calls outside the city limits is not established, it is recommended that RFD tracks performance data for these incidents as well. This will provide a more comprehensive understanding of their overall response capabilities.

ORGANIZATIONAL PERFORMANCE BENCHMARKS

A cooperative effort between RFD leadership and the City of Riverside administration needs to establish benchmarks that meet the expectations of the community while maintaining fiscal responsibility.

Fire Suppression Benchmarks

For 90% of all ***Low***, ***Moderate***, ***High***, and ***Extreme*** risk fire-related incidents, the response time (turnout plus travel time) for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be within 7 minutes (7:00) during the day and 7 minutes, 30 seconds (7:30) at night.

The first-due arriving unit shall carry a minimum of 500 gallons of water and be capable of producing 1,250 gallons per minute pumping capacity. The first-due unit shall establish command, declare scene priorities, establish an uninterrupted water supply, perform life-saving and property-saving interventions, and provide scene safety and accountability for the RFD members and citizenry.

For 90% of ***Moderate-Risk*** fires, the minimum effective response force staffing shall be 19 firefighters with the total response time of the sixth unit shall be 17 minutes (17:00) during the day and 17 minutes, 30 seconds (17:30) at night.

The ERF staffing shall be capable of safely controlling the incident following the adopted RFD standard operating guidelines. ERF members shall be authorized to request additional resources to enhance safety and manage an escalating incident.

For 90% of ***Moderate/High-Risk*** fires, The minimum effective response force staffing shall be 23 firefighters with the total response time of the seventh unit shall be 19 minutes (19:00) during the day and 19 minutes, 30 seconds (19:30) at night in all response zones in the city limits of Riverside. The ERF staffing shall be capable of safely controlling the incident following the adopted RFD standard operating guidelines. ERF members shall be authorized to request additional resources to enhance safety and manage an escalating incident.

For 90% of the **Extreme-Risk** Fires, the minimum effective response force (ERF) staffing shall be the minimum effective response force staffing shall be 49 firefighters with the total response time of the 18th unit shall be 41 minutes (41:00) during the day and 41 minutes, 30 seconds (41:30) at night.

Medical Response Benchmarks

RFD is a non-transport EMS first-response agency. AMR currently provides transport. AMR utilizes system status management to maintain response time performance. One paramedic typically staff an ambulance.

For 90% (percentile) of all **ALS EMS** related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of two firefighters, shall be 7 minutes (7:00) during the day and 7 minutes, 30 seconds (7:30) at night.

For 90% (percentile) of all **BLS EMS** related incidents, the total response time for the arrival of the first due unit, staffed with a minimum of two firefighters, shall be 16 minutes (16:00) during the day and 16 minutes, 30 seconds (16:30) at night.

Rescue Benchmarks

For 90% of all ***Low*, *Moderate***, and ***High*,** rescue related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be 7 minutes, (7:00) during the day and 7 minutes, 30 seconds (7:30) at night in all response zones in the city limits of Riverside.

For 90% of ***Moderate-Risk*** rescue incidents, the minimum effective response force staffing shall be eight firefighters with the total response time of the second unit shall be within 9 minutes (9:00) during the day and 9 minutes, 30 seconds (9:30) during the night. The ERF staffing shall be capable of safely controlling the incident in accordance with the adopted RFD standard operating and medical care guidelines.

For 90% of ***High-Risk*** rescue incidents, the minimum effective response force staffing shall be twelve firefighters with the total response time of the third unit shall be within 11 minutes (11:00) during the day and 11 minutes, 30 seconds (11:30) during the night in all response zones in the city limits of Riverside.

Hazardous Materials Benchmarks

For 90% of all ***Low*, *Moderate***, and ***High*,** risk hazardous materials-related incidents, the response time for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be within 7 minutes, (7:00) during the day and 7 minutes, 30 seconds (7:30) during the night in all response zones in the city limits of Riverside. The first-due arriving unit shall be staffed with personnel trained to the minimum level of hazardous materials operations and equipped with air monitoring and commodity identification software or references.

For 90% of ***Moderate*** hazardous materials incidents, the minimum effective response force staffing shall be eight firefighters with the total response time of the second unit shall be within 9 minutes (9:00) during the day and 9 minutes, 30 seconds (9:30) at night in all response zones in the city limits of Riverside. The ERF staffing shall be capable of safely controlling the incident in accordance with the adopted RFD standard operating guidelines.

For 90% of **High-Risk** Hazardous Materials incidents, the minimum effective response force staffing shall be 14 firefighters with the total response time of the third unit shall be 11 minutes (11:00) during the day and 11 minutes, 30 seconds (11:30) during the night.

A draft performance benchmark resolution for the City of Riverside is found in the appendix. The resolution provides guidelines for future staffing, capital, and facility growth.

Section IV:
MASTER PLAN

MASTER PLAN **INTRODUCTION**

PLANNING FOR FIRE PROTECTION & EMS

This analysis provides a comprehensive evaluation of the administrative, operational, and service delivery functions of the Riverside Fire Department (RFD). It is intended to serve as a strategic tool that supports informed decision-making, long-term planning, and continuous improvement across all divisions of the department.

For planning and implementation purposes, the most effective use of this document is twofold. First, department leadership should review the consolidated list of recommendations and associated timelines to understand the priority actions identified through this assessment. Once reviewed, the department should re-examine its existing Strategic Plan—adopted in 2023—to ensure alignment between current initiatives and the recommendations presented in this Standard of Cover (SOC), Community Risk Assessment (CRA), and Master Plan. Aligning these guiding documents will help create a unified organizational roadmap that supports coordinated progress and avoids duplication of effort.

Second, the document should be used to extract and examine individual sections related to priority initiatives currently underway or scheduled for near-term action. Each section includes detailed findings, analysis, and best practices that can inform the development of initiative-specific goals, objectives, and implementation strategies. This approach will enable the department to break complex initiatives into manageable components supported by data-driven evaluation and industry standards.

As Riverside continues to grow, the demand for fire suppression, emergency medical services, technical rescue, and specialized response capabilities will increase. These evolving service requirements necessitate forward-thinking and adaptable planning. This analysis provides the foundational information, performance indicators, and systemwide recommendations required for RFD to respond effectively to changing community needs, guide resource allocation, and maintain high-quality service delivery well into the future.

FINDINGS & **RECOMMENDATIONS**

FISCAL FINDINGS & RECOMMENDATIONS

Riverside's overall fiscal position is stable and structurally balanced. General Fund revenues increased from roughly $298.0 million to $361.2 million, about 21% growth, consistently outpacing expenditures and supporting reserves maintained near 20% against a 15% policy minimum. This growth is driven primarily by taxes, property, sales, and utility user taxes, which comprise about two-thirds of General Fund resources. Recognizing sales tax cyclicality, the City has adopted a conservative outlook for FY 2025.

Expenditures are rising, led by personnel costs. Total General Fund spending climbed about 16.7% over the period, with recurring costs, salaries, benefits, contracts, and internal charges, remaining the majority. Non-recurring outlays fluctuated year to year for special projects and capital. Measure Z, the voter-approved one-cent sales tax, remains essential to this stability, transferring at least $18.3 million annually to the General Fund and supporting 8–10% of RFD's budget (about $7.3 million in FY 2025). However, its 2036 sunset poses a significant long-term risk, underscoring the need to begin renewal or replacement planning.

Within this context, the Riverside Fire Department's budget expanded from approximately $75.2 million to $83.5 million during the study period, with recurring costs up nearly 16% to about $82.1 million. Personnel continues to dominate the department's spending, around 80% of total, reflecting negotiated wage adjustments, rising CalPERS contributions, and increased benefit costs. Non-personnel expenditures also grew (notably fleet, supplies/PPE, professional services, and training). At the same time, the department's debt service burden eased markedly, from about $5.9 million to $1.6 million, due to retired obligations and continuing Measure Z support; Citywide strategies such as the 2021 pension obligation bond and the Section 115 trust help stabilize pension-related pressures.

Grant funding, particularly UASI and other restricted sources, remains an important but targeted supplement, financing specialized equipment and preparedness rather than core operations. Operationally, AP Triton identified efficiency opportunities in logistics: the lack of a centralized inventory and supply management program (including PPE) creates inefficiencies and a single-point-of-failure risk. Establishing a dedicated logistics function with modern inventory controls would strengthen cost management and readiness.

Finally, the department faces significant unfunded capital needs totaling roughly $78.5 million, including multiple station replacements, facility upgrades, and a new fire warehouse. Aligning these priorities with the City's multi-year capital planning and developing a financing strategy, potentially blending CIP allocations, debt, grants, and a Measure Z successor, will be critical to sustaining service levels as operating costs rise and the community grows.

Recommendation F-1: Develop a Comprehensive Overview and Recommendations for Measure Z. (Short-Term)

Description: Measure Z provides a critical layer of funding stability for the City of Riverside and the Fire Department, generating roughly $80 to $85 million annually. For RFD, these revenues sustain several essential programs that would otherwise fall solely on the General Fund. Current Measure Z allocations include maintaining firefighter staffing levels, vehicle and apparatus replacement, and support for facility maintenance and technology upgrades. Specific examples include funding for engine and ladder company replacements, the four-person staffing initiative on apparatus, and the firefighter and captain positions created to support training and arson operations.

As the measure approaches its statutory sunset in 2036, the department must evaluate which ongoing costs can be absorbed by the General Fund. This evaluation should be performed collaboratively with the City and presented as a stand-alone report to the City Council.

The review should summarize:

- Projected Measure Z revenues through FY 2028;
- A detailed list of RFD programs, positions, and capital assets funded by Measure Z;
- An assessment of operational risk if revenues decline or the measure expires; and
- Strategic options for long-term sustainability, including a phased transition plan, potential use of grants, and alignment with the City's five-year financial plan.

Outcomes: This effort will provide transparent documentation of all RFD staffing, fleet, and capital assets currently supported by Measure Z, allowing City leaders to clearly see where the department relies on this funding stream. It will also help identify the areas of service most vulnerable to future funding reductions and create a roadmap for integrating those items into the General Fund. Ultimately, this process will strengthen RFD's financial resilience, ensure early preparedness for 2036,, and improve communication with both City Council and residents regarding the tangible benefits Measure Z delivers to the community.

***Estimated Financial Cost*:** Minimal direct cost. The work can be completed internally by RFD and City staff using existing budget data and expenditure tracking systems. Some consultant or audit support may be beneficial to verify long-term projections but is not essential.

Recommendation F-2: Maintain and Periodically Re-Evaluate the Fee-for-Service Schedule for Fire Prevention and Community Risk Reduction. (Short-Term, then ongoing with Periodic Reassessments)

Description: The City of Riverside recently adopted a revised fee schedule that modernized cost-recovery for plan review, inspection, hazardous materials, and other fire-prevention services. As community growth and service demand evolve, it is important for RFD to remain actively engaged in monitoring these fees and coordinating with the Finance Department to ensure they continue to reflect the true cost of service delivery.

RFD should implement an internal process to review fee performance metrics annually and work with Finance to conduct a more formal cost-recovery study every two to three years, or as needed based on operational changes. Benchmarking against comparable California jurisdictions will help confirm that fees remain equitable, competitive, and compliant with the City's cost recovery policy.

Outcomes: By sustaining an ongoing evaluation process, the City will ensure its prevention and inspection fees remain accurate, equitable, and aligned with actual service costs.

Estimated Financial Cost: Minimal direct cost. Routine monitoring can be accomplished internally with existing staff resources, while periodic external cost-recovery validation may be budgeted on a multi-year cycle.

Recommendation F-3: Explore Establishing an Enterprise Fund for Emergency Medical Services. (Short- to Mid-Term)

Description: If the City of Riverside explores options for providing emergency medical transport under its 201 rights, RFD should explore establishing an Enterprise Fund dedicated to Emergency Medical Services (EMS). An enterprise fund operates as a self-supporting financial structure in which program revenues, such as transport fees, reimbursements, and cost recovery, are used exclusively to fund EMS operations, staffing, equipment, and capital needs.

Creating an enterprise fund would allow EMS to function similarly to a municipal utility, ensuring that all costs and revenues associated with ambulance service are tracked transparently and independently from the General Fund. This structure enhances fiscal accountability and provides a clear picture of the program's true cost of service. It would also allow the City to reinvest any net revenues into improving EMS delivery, technology, and clinical quality while reducing pressure on the General Fund.

Outcomes: Establishing an enterprise fund for EMS would improve transparency, long-term fiscal stability, and accountability for ambulance transport operations. It would ensure that program revenues are used exclusively for EMS-related expenditures and that the community receives a clear, accurate accounting of service costs. The fund structure would also position RFD to better manage fluctuations in reimbursement rates, support capital replacement, and plan for future growth as service demand increases.

Estimated Financial Cost: Minimal direct cost for initial evaluation; feasibility and legal review could be performed internally or through limited consultant assistance. Once established, the enterprise fund would be self-sustaining through EMS revenue streams.

Recommendation F-4: Establish a Dedicated Budget and Process for Station Replacement Items. (Short-Term)

Description: RFD currently lacks a consistent funding mechanism or process to replace essential station-level items such as mattresses, furniture, appliances, exercise equipment, and small fixtures. These replacement needs occur regularly across the department's 14 fire stations and are essential to maintaining safe, healthy, and functional living environments for personnel.

Without a dedicated budget, stations must request funding on an ad hoc basis or rely on outdated or worn items well past their usable lifespan. Establishing a small, recurring station replacement fund, with clear guidelines and spending thresholds, would allow RFD to manage these routine purchases more efficiently.

Outcomes: Creating a defined process and annual funding stream for station replacement items will improve consistency, efficiency, and accountability. RFD will be able to replace items proactively rather than waiting for failure or budget year-end approvals. This will enhance daily living conditions for personnel, reduce safety risks, and extend the service life of station furnishings and equipment.

Estimated Financial Cost: An annual allocation amount deemed sufficient for routine replacement of station furnishings and appliances across the department. This funding could be incorporated into RFD's operating budget and managed internally under established purchasing policies.

Recommendation F-5: Budget Process to Strengthen Line-Item Detail and Inventory Control. (Short-Term)

Description: The current budget process provides the necessary framework for annual financial planning, but would benefit from additional detail and stronger integration with inventory and asset-management systems. A more granular, line-item approach, paired with consistent inventory tracking, would allow the department to better identify true operational costs, monitor spending trends, and anticipate future capital or equipment needs.

Outcomes: Integrating budget planning with existing asset-tracking tools will improve accountability and make it easier to monitor consumables, personal protective equipment (PPE), and apparatus-related costs in real time. Enhancing budget detail and linking financial data to inventory records will give RFD staff greater visibility into real-time spending, asset usage, and remaining budget capacity. This improved transparency will help make more informed operational decisions, monitor expenditures as they occur, and better anticipate future needs.

Estimated Financial Cost: Minimal direct cost. The enhancements can be achieved primarily through internal coordination and process redesign.

Recommendation F-6: Establish a centralized logistics management system and dedicated logistics position. (Short-Term)

Description: RFD should implement a centralized logistics management system to oversee the acquisition, storage, distribution, and tracking of materials, supplies, and PPE. Currently, supplies and PPE are dispersed across multiple facilities and managed informally by operational personnel, including a single Operations Captain. This decentralized approach results in operational inefficiencies, increased costs, and a lack of accountability.

Additional dedicated logistics positions should be created to manage these functions full-time. The position would be responsible for developing standardized procurement procedures, implementing inventory management technology, and maintaining accurate data to support forecasting and long-term planning. This approach will align logistics operations with the department's overall strategic and operational goals, improving both efficiency and readiness.

Outcomes: Creating a dedicated logistics role and management system will significantly enhance operational efficiency and accountability across the organization. Centralized procurement and tracking will reduce costs through bulk purchasing, improve data accuracy, and ensure that mission-critical supplies, such as PPE and medical equipment, are consistently available. The system will also allow data-driven forecasting to anticipate needs during major incidents or periods of supply chain disruption, strengthening overall readiness and resilience.

***Estimated Financial Cost*:** Initial investment will include additional full-time logistics positions, procurement of inventory management software, and warehouse. Estimated costs to be developed during implementation planning.

STAFFING & MANAGEMENT FINDINGS & RECOMMENDATIONS

RFD demonstrates a well-developed management framework that reflects strong leadership, an established organizational culture, and an emphasis on performance accountability. The department's mission, vision, core values, strategic plan, and management systems collectively convey a professional and forward-looking organization committed to excellence in public safety service delivery.

At the foundation of RFD's management system is a clear mission statement: *"To protect life, property, and the environment by providing exceptional and progressive, all-hazard emergency services and community risk reduction programs."* The statement effectively conveys what the department does and how it fulfills its purpose; however, it could be strengthened by explicitly defining *for whom* these services are provided, such as residents, visitors, and businesses, to enhance its community connection. Similarly, the vision statement expresses the department's commitment to providing professional and equitable service to a diverse community, though it lacks a clearly defined aspirational goal or desired end state that leadership can use as a long-term benchmark of success.

RFD's seven core values, Accountability, Honesty, Trustworthiness, Integrity, Professionalism, Teamwork, and Respect, form a strong ethical framework that guides decision-making and conduct. These values are well articulated and integrated into the department's culture, reinforced by internal messaging and public communication, including a dedicated values video on the department's website. Together, these foundational components illustrate an organization that not only understands its purpose but also prioritizes consistent behavior and integrity across all ranks.

The department's *2023–2028 Strategic Plan* (updated June 2025) further underscores its commitment to thoughtful, data-driven management. Developed through extensive employee and community engagement, the plan integrates the Community Risk Assessment (CRA), Standards of Cover (SOC), and the Commission on Fire Accreditation International (CFAI) model, ensuring alignment with both local strategic objectives (*Envision Riverside 2025*) and national best practices. This integration of strategic, operational, and accreditation-based planning highlights RFD's commitment to continuous improvement and outcome-based management.

From an internal perspective, the Fire Chief identified several critical issues consistent with those of similarly sized agencies: future staffing and resource needs, increasing incident volume, fire station expansion, and evolving community risk due to new development and higher-density construction. These priorities indicate that RFD's leadership is actively planning for growth and positioning the department to adapt to increasing service demands through strategic forecasting and data analysis.

Communication, both internal and external, represents another organizational strength. Internally, RFD utilizes multiple platforms, including staff meetings, memorandums, an intranet system, and an open-door policy. Plans to establish an internal newsletter demonstrate awareness of the need to enhance information sharing and employee engagement. Externally, RFD maintains an active presence through its public website and social media channels (Facebook, Instagram, and X), in addition to a formal complaint process and community surveys. This combination of tools reflects a balanced approach to transparency and stakeholder engagement, ensuring consistent messaging and responsiveness to community feedback.

Administrative processes within RFD are well-structured, ensuring compliance, transparency, and accountability. Policies and procedures guide document control, records retention, and public communication, with the department publishing an annual report that summarizes key performance data. These practices demonstrate RFD's professionalism and attention to both regulatory and ethical obligations while balancing transparency with confidentiality requirements.

Technological infrastructure supports many of RFD's operational and administrative functions. The department relies on City IT staff for general system support, while an outside vendor and an internal Captain manage the radio network. Systems such as **ImageTrend™** and **FirstWatch™** are used for incident documentation, patient care reporting, and performance analytics, tools that provide valuable operational insight. However, the absence of dedicated fire IT personnel limits RFD's capacity for rapid response to system issues, cybersecurity oversight, and specialized data integration. Dedicated technology staffing and infrastructure investment would strengthen efficiency, reliability, and situational awareness.

Staffing and personnel management remain areas of operational concern. Administratively, AP Triton identified an overall shortage of support staff and an over-reliance on shift personnel to perform non-operational program duties. This inefficiency affects critical divisions including, Fire Operations, Fire Prevention, the Office of Emergency Management, the Training Division, and the dispatch center. As call volumes, development activity, and regulatory demands grow, the department will require additional administrative and technical staffing to sustain service levels and workload balance.

Operationally, RFD maintains a minimum daily staffing level of 72 personnel across 14 fire stations, staffed by 231 suppression employees organized into three platoons working a 4/6 Kelly schedule. Four of the 14 engines (29%) are staffed with three-person crews rather than four, resulting in variability in response capability and operational effectiveness. Geographic coverage and call distribution also suggest the need to evaluate the addition of a third daily Battalion Chief to improve span of control and incident command capacity. AP Triton's analysis of the Staffing Relief Factor (SRF) indicates a shortage of personnel necessary to consistently meet minimum staffing requirements without extensive overtime or force hiring.

Personnel management systems within RFD are well established. Employees operate under city-wide human resources policies, departmental Standard Operating Procedures (SOPs), and collective bargaining agreements. The department maintains compliance with state and federal EMS, training, and certification standards. Compensation and benefits are consistent with comparable agencies, and recruitment processes are structured around professional standards, including minimum education, fire academy certification, and EMT/paramedic licensure.

RFD also demonstrates a strong commitment to employee health and wellness. New hires receive pre-employment physicals, while annual medical exams are provided to operational staff. The Join Apprenticeship supplements departmental programs with advanced cardiac and cancer screenings and fitness equipment support. The department offers an Employee Assistance Program (EAP), Peer Support Program, and Critical Incident Stress Debriefing resources, reflecting a holistic approach to physical and mental health.

Recommendation S-1: Add the following administrative positions: (Implementation timelines varied)

Description: The administrative staff of the organization has not experienced a significant change in headcount as the community has engaged the fire department for service requests over the past several years. As with many fire departments, operational staff are often assigned "program responsibilities" that are to be balanced with emergency response needs. The Riverside Fire Department is no different than these other agencies, but with a growing number of calls for service, dedicated administrative support should be considered for several categories.

Administration – Accounting/Payroll Clerk (Mid-Term)

AP Triton recommends the addition of an Accounting/Payroll clerk position to assist the Administrative Services Manager and existing staff in managing accounts payable, payroll, and budgetary needs (one FTE).

Administration – Management Analyst (Short-Term)

Description: The fire department does not have a dedicated analyst position. Today's fire service requires timely, accurate, and actionable data to support strategic planning, operational readiness, and evidence-based decision making.

The Administrative – Management Analyst position will provide critical support to the Deputy Chief of Administration by enhancing the department's ability to efficiently collect, validate, and interpret operational and administrative data. This position will enable in-depth analysis of response performance, predictive and risk-based planning, staffing and resource allocation, accreditation requirements, and other compliance-related reporting needs.

Outcomes: Establishing a dedicated analyst will strengthen operational decision-making, increase organizational transparency through performance dashboards, and support budgetary and strategic planning efforts. This position will ensure that the department meets modern expectations for data-driven performance management and continuous improvement, ultimately enhancing service delivery and community outcomes.

Fire/EMS Dispatcher – External (Police Department) (Short-Term)

During the course of on-site interviews and evaluation, an immediate need for a second dedicated dispatcher position was identified. Dispatch employees are funded by the Police Department. RFD would fund this position through an interdepartmental transfer. Should the agency expand the EMS program to include ground ambulance dispatch and transport, additional dispatch positions would be required. This recommendation is for one FTE.

Logistics (Short-Term)

AP Triton recommends the need for a dedicated warehouse facility for equipment, supplies, and apparatus. In the meantime, the logistical needs of a 14-station fire department are being spread among multiple fire stations, shipping containers, and trailers. Shift personnel are tasked with managing all logistic support programs. This example illustrates the need for dedicated staffing. It is recommended that logistics staff be expanded to include a Logistics Manager, and one additional logistics staff member (2 FTEs).

Mobile Communications/IT/Radio Network Support – External (Innovation & Technology Department) (Short-Term)

RFD receives traditional desktop and mobile device support through the City IT department. There does not exist a “dedicated” staff member focused only on fire department hardware and software solutions. AP Triton staff learned that the fire department’s radio network lacks on-call support, and the repeater recently failed. It is imperative for a public safety agency to have a reliable communications backbone, along with redundancy, should a failure occur. A Fire Captain is still tasked with managing the radio programming and repair for the agency, while still responsible for emergency response. This support must be available 24 hours per day. It is strongly recommended that the fire department retain a qualified and dedicated IT support position from the city or explore radio network contract support. This recommendation is based on funding one additional IT position.

Outcomes: RFD continues to experience increasing service demand, incident complexity, and reliance on technical integration. The administrative staff must have the capability to backstop operational resources to directly impact the ability to deliver timely, reliable, and professional service to the community.

***Estimated Financial Cost*:** Total compensation by position for six FTEs is reflected in the next figure:

Figure 192: Recommendation S-1 – Administrative Staffing Detail

Position	Number of Staff	Total Compensation	Priority
Senior Account Clerk	1	$96,038	Mid-Term
Management Analyst	1	$156,710	Short-Term
Fire/EMS Dispatcher	1	$97,264	Short-Term
Logistics Manager	1	$109,940	Short-Term
Inventory Control Specialist	1	$102,214	Short-Term
IT Staff	1	$148,375	Short-Term
TOTAL ESTIMATED COST	**6**	**$710,541**	

Recommendation S-2: Add an Operations-Battalion Chief 3. (Short-Term)

Description: RFD operates from 14 fire stations that collectively provide service across an 81-square-mile jurisdiction. Each engine captain is responsible for the daily operation and management of their assigned company and fire station, while Battalion Chiefs (BCs) provide administrative oversight and operational coordination for multiple stations and associated response resources.

At present, two Battalion Chiefs are assigned to duty each day. However, continued community growth, increasing population density, escalating traffic congestion, and a steady rise in call volume and incident complexity have placed significant demands on these positions. The ability of the BCs to provide timely and effective incident command and oversight has consequently been constrained.

During emergency operations, the Battalion Chief responds in a specially equipped command vehicle that functions as a mobile command post and serves as the on-scene Incident Commander for multi-company or complex incidents. The BC assumes overall command responsibility, ensuring tactical coordination, operational safety, and communication with partner agencies, other City departments, and Fire Department executive leadership.

Given the size of the jurisdiction, the current staffing configuration does not provide an optimal level of coverage or response efficiency when distance and travel time are considered. A third Battalion Chief position is recommended, requiring an additional three full-time equivalent (FTE) positions.

Outcomes: Provision of consistent Battalion supervision and support throughout the City of Riverside.

***Estimated Financial Cost*:** Total compensation by position for three FTEs is reflected in the next figure:

Figure 193: Recommendation S-2 – Operations Battalion Chief

Position	Number of Staff	Total Compensation	Priority
Operations Battalion Chief	3	$293,834	Short-Term
TOTAL ESTIMATED COST	**3**	**$881,502**	

Recommendation S-3: Implement consistent four-person engine company staffing. (Short-Term)

Description: The fire department staffs 13 engine companies 24/7/365. Of these companies, four are staffed with three personnel, while the remaining nine engine companies have four-person staffing. This inconsistent staffing level impacts the capabilities of the individual engine company, but this also presents a challenge to the Battalion Chief at larger incidents in which responding engine companies have differing staffing levels. Adding an additional Firefighter position to each of the four companies will require 12 FTEs.

Outcomes: Provision of consistent engine company staffing levels and capabilities throughout the City of Riverside.

***Estimated Financial Cost*:** Total Compensation for the Firefighter Paramedic is $169,319, with Firefighter EMT approximately $14,000 less annually. Total Compensation by position for 12 FTEs is reflected in the next figure:

Figure 194: Recommendation S-3 – Consistent Engine Staffing

Position	Number of Staff	Total Compensation	Priority
Firefighter Paramedic	12	$169,319	Short-Term
TOTAL ESTIMATED COST	**12**	**$2,031,828**	

Recommendation S-4: Implement an additional Engine Company at Station 1. (Short to Mid-Term)

Description Station 1, located in the downtown core, houses Engine 1, Truck 1, Squad 1, and Battalion 1, functioning as Battalion 1's headquarters. The facility is modern (built in 2013, 30,412 sq ft, four drive-through bays) and in excellent condition. It routinely anchors downtown's multi-company response and supports nearby high-density and civic occupancies. Given its size and capability, it is well-positioned to absorb additional staffing but experiences heavy simultaneous unit commitments because of the downtown and high-volume service profile.

Outcomes: Add a second engine company at Station 1 to enhance first-alarm depth within the downtown core and reduce simultaneous out-of-service periods for Truck 1 and Squad 1. This action leverages an existing 'excellent' facility, avoids capital outlay for new construction, and ensures service continuity during overlapping incidents. An alternative would be to add an additional squad to absorb the high EMS volume, keeping the current single engine available for fire calls. This would not completely solve the problem of concurrency of calls, but would lessen the out-of-service time of Engine 1 now. With Station 1's central location and high call volume, a second engine is justifiable.

***Estimated Financial Cost*:** $1.5 million+ for an outfitted engine plus staffing costs.

Recommendation S-5: Add RA/Squads in Stations 4, 12, and 8. (Short to Mid-Term)

Description: Several single-engine districts demonstrate persistent EMS demand and facility limitations. Station 4 (Eastside/University) was built in 1962 and is in fair condition with two bays and lacks decontamination facilities. Station 12 (La Sierra South) was built in 1996 and is in good condition with two bays and 12,000 sq ft. Station 8 (La Sierra) was built in 1977 and is in fair condition with two bays and lacks decontamination and training rooms.

Outcomes: Deploy RA/Squad units sequentially—Station 4, then Station 12, and then Station 8. Station 4 should be prioritized due to age and need for EMS workload relief, Station 12 has adequate space for expansion, and Station 8 should receive a RA/Squad introduction concurrent with modernization. Temporary solutions to keep apparatus out of the weather and secured can be utilized for a short period of time until capital upgrades can be performed on the stations to lessen the call volume burden, but this should be for a limited time only.

***Estimated Financial Cost*:** $350,000+ for each outfitted vehicle plus staffing costs.

CAPITAL FACILITIES & APPARATUS FINDINGS & RECOMMENDATIONS

RFD's capital platform—its stations and rolling stock—largely supports current operations, but age, seismic gaps, and uneven fleet condition create rising risk and cost pressure without a formalized replacement program. A 2025 walk-through using NFPA 1500 criteria found one station in **Poor** condition (Station 10, 1975), six in **Fair** (Stations 2, 3, 4, 7, 8, 9; built 1962–1977), three **Good**, and three (11, 12, 13) **Excellent.** Facilities built since 2005 (Stations 1, 5, 6, 14) generally meet modern needs with segregated sleeping, decon capability, exhaust capture, and adequate bay geometry. Older houses frequently lack seismic protection (e.g., 2, 3, 4, 7, 8, 9, 10), have space/programming constraints (several lack training rooms), and show system obsolescence typical of continuous-occupancy buildings (HVAC, roofing, aprons, generators, security). Station 10 is the only one-bay house and is the clearest near-term facility liability. Overall housekeeping is strong and indicates high crew ownership, but the portfolio's age spread (12–63 years) argues for a structured capital plan that prioritizes life-safety upgrades (seismic, decon, exhaust), right-sizing, and systematic renewal.

Frontline apparatus depth is generally solid: **13 engines** and **four trucks**, with **two engines Excellent, eight Good, three Fair,** and all trucks **Good**. Average engine age is ~6.5 years (range 3–14), suggesting the frontline fleet is mid-life but manageable. By contrast, the **reserve fleet is predominantly Poor** (6 of 7 reserve engines and the reserve truck), which undermines surge capacity and resilience during major incidents or prolonged shop time; NFPA 1900/1910 guidance indicates Fair/Poor reserves should be slated for replacement or retirement. Command/support vehicles are mixed (several Fair/Poor high-mileage SUVs and one Poor Suburban), meriting phased replacement to avoid reliability and safety issues.

RFD currently lacks a dedicated apparatus/vehicle replacement fund and relies on case-by-case budgeting. Adopting a life-cycle program consistent with **NFPA 1910**, e.g., frontline to reserve near 15 years, retirement near 25 years, with condition/miles/hours scoring (Figure 17 rubric), would stabilize costs, reduce downtime, and keep safety systems current. The same disciplined approach should extend to facilities via a multi-year Capital Improvement Plan sequencing seismic retrofits, critical building systems (HVAC, roofs, generators, aprons, security), and functional modernization of the oldest stations, with Station 10 and the 1960s cohort (2, 3, 4, 7, 8) at the top of the queue.

On medical capital, RFD operates **26 LifePak 15 monitors/AEDs (2018 vintage)**. These are not on a formal replacement schedule; incorporating them into a 8–10-year biomedical cycle (with battery/firmware management and staggered replacements) will protect clinical readiness and avoid clustered end-of-life costs.

Current frontline capacity is serviceable, but facility age/seismic deficits, a degraded reserve fleet, and the absence of a funded, standards-based replacement plan are the primary risks. A synchronized facilities-and-fleet CIP, anchored to NFPA 1910 life-cycle triggers, will improve reliability, control long-run costs, and sustain mission readiness.

Recommendation C-1: Evaluate the current facility maintenance process and explore options for increased departmental oversight. (Short-Term)

Description: RFD currently depends on the City's General Services Department for facility maintenance and minor repairs at all fire stations and administrative sites. While this centralized approach ensures consistency in procurement and contract management, it often results in extended turnaround times for basic repairs and limits RFD's ability to address small-scale facility issues that impact daily operations that could likely be handled more efficiently if the department had greater flexibility or a small internal maintenance budget.

To improve responsiveness and efficiency, the City should evaluate the existing facility maintenance workflow and identify opportunities for RFD to assume limited oversight of certain maintenance activities. This may include establishing an internal service budget or maintenance account for lower-cost repairs, developing a priority response system for time-sensitive issues, or assigning designated liaisons within both departments to streamline communication. The intent is not to duplicate General Services' function but to ensure fire facilities receive timely attention for health, safety, and operational concerns.

Outcomes: Conducting this evaluation and granting RFD greater flexibility in handling minor maintenance will shorten repair timelines, reduce operational disruptions, and enhance the overall condition of fire stations. Ultimately, this approach will support better facility upkeep, improve working conditions for firefighters, and extend the lifespan of City-owned infrastructure.

Estimated Financial Cost: Minimal direct cost to conduct the evaluation. If implemented, establishing a small internal maintenance budget would provide RFD the ability to manage minor repairs independently while still coordinating larger projects through General Services.

Recommendation C-2: Plan for added facilities to support logistics, fleet maintenance, and special Teams. (Mid-Term)

Description: RFD's existing maintenance and logistics facilities are operating near full capacity and lack the space needed to support the department's growing apparatus fleet, specialized equipment, and program expansion. The current Fire Maintenance facility, approximately 15,000 to 20,000 square feet, functions as both a repair shop and parts storage area but is undersized relative to the department's operational needs. As service demand continues to increase and the department adds new apparatus, equipment, and personnel, the limitations of this space will increasingly hinder efficiency, readiness, and safety.

To address these challenges, the City should evaluate options for expanding, reconfiguring, or constructing a new centralized Fire Logistics and Fleet Facility designed to accommodate current and future demands. The facility should include adequate apparatus bays for repairs, covered storage for reserve units, dedicated space for parts and equipment inventory, administrative offices, and training areas for fleet and logistics personnel. Modular or phased construction should be considered if immediate capital funding is limited. The project should also incorporate environmentally sustainable design features, such as energy-efficient lighting and electric vehicle infrastructure, to align with City sustainability goals.

Outcomes: Developing a larger and more modern logistics and fleet facility will enhance operational efficiency, improve apparatus readiness, and extend the lifespan of the department's fleet. Centralized storage and maintenance will reduce response downtime, streamline inventory management, and improve coordination between maintenance staff and field operations.

Estimated Financial Cost: Preliminary cost estimates for a new logistics and fleet facility range from $6 million to $10 million, depending on location, design, and land acquisition needs. Expansion or renovation of existing space may be less costly but should be supported by a detailed engineering and space utilization study. Funding options include Measure Z allocations, capital improvement funding, and potential grant opportunities through FEMA or state resilience programs.

Recommendation C-3: Evaluate the continued necessity of 5 OES Engines (Type 1/3/6). (Short to Mid-Term)

Description: Multiple stations house Cal-OES Type I engines that occupy limited bay space within small, two-bay single-company stations. This reduces flexibility for Squads or Rescues and may constrain local response capacity.

Outcomes: Conduct a fleet-use and cost-benefit assessment of OES Units placements to determine deployment frequency, maintenance cost, and bay-space value. Where these units limit local coverage or modernization, relocate or release them to free space for higher-demand EMS or Squad resources. Work with CalOES on life expectancy and contractual obligations of current vehicles to determine the need for all OES apparatus. Determine if Riverside would benefit from a reduction in these vehicles.

***Estimated Financial Cost*:** Staff time for reviewing and revising agreements with CalOES.

Recommendation C-4: Consider a new fire station in the District 11 area. (Mid to Long-Term)

Description: Growth and development pressures in southeastern Riverside—especially logistics, industrial, and residential expansion near E Alessandro Blvd and I-215—have stretched current coverage. Station 11's single company already covers Orange Crest, Alessandro Heights, and portions of the Meridian JPA.

Outcomes: Plan and construct a new station in the District 11/Orange Crest–southeast corridor. Select a site that provides freeway and arterial access, covers planned industrial and warehouse development, and ensures appropriate ladder coverage for emerging multi-story occupancies.

***Estimated Financial Cost*:** Cost to be determined during formal capital facility development process.

Recommendation C-5: Evaluate current fleet staffing and bay requirements throughout the department. (Mid to Long-Term)

Description: Many single-engine stations have only two bays yet cross-staff specialty or OES units. Several facilities lack dedicated training rooms or modern decontamination areas, creating inefficiencies in housing reserve and specialty apparatus.

Outcomes: Adopt a minimum three or four-bay standard for all new or remodeled single-company stations, allowing front-line, reserve, and specialty/EMS units to be housed simultaneously. Implement a one-reserve-per-type fleet staffing policy (engine, truck, rescue) and include exhaust-capture and decontamination systems in every remodel per NFPA 1500.

***Estimated Financial Cost*:** Significant capital outlay will be needed.

Recommendation C-6: Centralize a support campus for Logistics, Fleet, EOC, and Reserves. (Long-Term)

Description: The CRA identifies an increasing need for centralized logistics, fleet maintenance, reserve storage, and EOC space. Existing front-line stations lack the space to store reserve apparatus or large equipment caches.

Outcomes: Develop a 30,000-square-foot minimum logistics and support facility to consolidate fleet maintenance, reserve apparatus storage, PPE/EMS caches, EOC functions, and special-operations bays. This will alleviate congestion in front-line stations and improve operational readiness during surge events.

EMS FINDINGS & RECOMMENDATIONS

RFD delivers ALS/BLS medical first response from 14 fixed stations and operates within a dual-oversight framework: statewide regulation by EMSA (standards, licensure, Title 22 compliance) and local system design and clinical policy by Riverside County REMSA. This structure provides clear regulatory guardrails, but day-to-day performance hinges on local implementation and data discipline.

Medical direction is protocol-driven with limited real-time physician involvement. RFD now has its own Medical Director which will help the system be proactive, prospective oversight model (standing orders, targeted audits, field observation) to improve safety, quality, and fiscal compliance.

Utilization data show a high EMS demand profile, traumatic injury, abdominal pain, respiratory distress, ALOC, and chest pain dominate impressions, supporting the need for robust ALS capability and rapid transport. Medication and procedure use is concentrated (e.g., IV access, 12-lead ECG, ondansetron, oxygen, fentanyl), indicating clear opportunities to right-size inventories and training to actual practice.

Current QA/QI processes are limited (≈21% case review). Scaling EMS responsibilities will require dedicated QA/QI staff, standardized case selection (high-risk/low-frequency, sentinel events, protocol variance), and a three-lens analytics program (Time, Efficacy, Utilization) fed by consistently completed ImageTrend ePCRs and CAD data.

Logistics need modernization. RFD's reliance on AMR for supply exchange is misaligned with expansion. Implementing PS Tracks® and a partially automated inventory system, plus securing adequate warehouse capacity, would reduce waste, improve readiness, and support QA/QI traceability.

Deployment is static (station-based) rather than dynamic. While all stations field ALS capability, increasing concurrency and unit-hour utilization in busier areas argues for targeted peak-load strategies (e.g., squads, move-ups) and demand-based posting on high-frequency time blocks.

Ambulance transport is provided by AMR under a City contract (expires 2027). Incomplete and inconsistent AMR time-stamp data impede reliable adjudication of the 12:14 @ 90% metro response standard. Establishing a City-managed, authoritative time-stamp repository (CAD integration, shared APIs, exception auditing) is essential for contract compliance, performance transparency, and patient safety risk management.

Hospitals: the system is anchored by a small set of destination facilities (Riverside Community ~52%, Parkview ~25%, Kaiser ~15%), which concentrates turnaround pressures (wall times) and argues for joint ED throughput initiatives and alternate destination protocols where permissible.

Financially, the updated 2025 valuation projects 18,128 transports growing 3% annually to 20,403 by 2029. Charges rise 5%/yr; net collections remain ~26–29% of gross due to payer limits. PP-GEMT (and QAF in private models) materially improves Medi-Cal yield (from ~10% to > 30%), making participation and rigorous cost reporting non-negotiable for sustainability.

To support any transition to City transport, RFD should (1) formalize funding for medical control (City Medical Director, hospital partnerships), (2) stand up QA/QI staffing and dashboards, (3) harden logistics and data systems, and (4) implement performance standards (NFPA 1225/1710-aligned) with public reporting. These moves will tighten clinical quality, ensure contractual accountability, and position RFD for scalable, fiscally sound EMS growth.

Recommendation M-1: Establish an EMS Division. (Short-Term)

Description: RFD provides emergency medical response at the Advanced Life Support (ALS/Paramedic) level. The provision of ALS service requires advanced training, regular case review, and a robust Continuous Quality Improvement (CQI) program to maintain a highly skilled and effective paramedic workforce.

EMS-related calls comprised the majority of RFD's workload, with approximately 20,000 in 2018, and are projected to exceed 32,900 incidents in 2025, representing roughly 70% of the department's total call volume. Given this demand, a well-staffed and efficiently managed EMS Division is essential to sustaining service quality and patient outcomes.

Currently, the Training Division oversees EMS functions through an EMS Captain and EMS Coordinator. It is recommended that the RFD establish a standalone EMS Division under the leadership of a Division Chief. The existing two positions would transition under this new section, and the addition of two Continuous Quality Improvement (CQI) positions should be considered to meet the operational and performance monitoring needs associated with current call volumes.

In total, a minimum of three FTEs positions would be required to adequately support this structure. Should the organization consider a more robust EMS program including patient transport in the future, additional staffing would likely be required.

Outcomes: This enhancement will address and enhance clinical oversight, training, quality assurance, regulatory compliance and coordination with the County EMS Agency, and existing private ambulance provider.

***Estimated Financial Cost*:** Total Compensation by position for three FTEs is reflected in the next figure:

Figure 195: Recommendation M-1 – EMS Division

Position	Number of Staff	Total Compensation	Priority
Division Chief	1	$253,854	Short-Term
EMS Coordinator	2	$156,370	Short-Term
TOTAL ESTIMATED COST	**3**	**$566,594**	

Recommendation M-2: Evaluate and implement an "Alliance Model" or "Unit Hour Model" for EMS Transport Delivery. (Short-Term)

Description: RFD should consider developing and implementing an **Alliance Model** or **Unit Hour Model** for EMS transport services. Under this framework, the City of Riverside would serve as the **Provider of Record**, retaining oversight and administrative control of the EMS transport system while contracting with a private partner to provide deployment hours. This structure allows the department to manage key system components—such as billing, compliance, quality improvement, and financial stewardship—without requiring City personnel to staff transport units directly.

By maintaining regulatory and operational oversight, RFD can ensure that clinical performance, system reliability, and response deployment align with community expectations and industry best practices. Contracted partners operate ambulances under predetermined unit-hour commitments, while the City sets system standards, monitors compliance, and manages program finances.

Outcomes: Adopting an Alliance or Unit Hour Model has demonstrated several advantages in comparable jurisdictions, including:

- **Long-term financial sustainability** through predictable cost structures and improved revenue capture;
- **Enhanced quality oversight**, allowing the City to implement consistent clinical standards and enforce performance metrics;
- **Improved system reliability** by eliminating the volatility often seen in fully private ambulance models;
- **Strengthened integration** between fire-based ALS first response and transport operations;
- **Greater transparency** in billing, compliance, and system performance.

This model also enables RFD to scale deployment based on service demand, modify unit-hour commitments annually, and adjust operational strategies without being constrained by private provider business fluctuations.

Estimated Financial Cost: Initial start-up expenses would include capital equipment, administrative staffing, legal and contracting services, and system infrastructure. Based on comparable system valuations, the department would be expected to recover these initial costs and achieve **net positive revenue within five years**, assuming efficient implementation and appropriate rate-setting.

Recommendation M-3: Engage a Consulting Firm to Facilitate the Request for Proposal (RFP) Process for an Alliance Model. (Short-Term)

Description: If the Riverside Fire Department elects to pursue an Alliance Model for EMS transport, it is recommended that the department retain a qualified consulting firm to lead and manage the Request for Proposal (RFP) process. Developing an RFP for a system of this scale requires specialized industry knowledge, familiarity with regulatory requirements, and a structured approach to evaluating ambulance service providers. A consulting firm experienced in EMS system design, contracting, and procurement can ensure that the RFP is comprehensive, transparent, and aligned with the City's operational, financial, and clinical objectives.

The consulting firm would support RFD in drafting technical specifications, establishing performance metrics, developing scoring criteria, facilitating bidder communications, ensuring compliance with municipal procurement rules, and guiding the evaluation and selection process. This support would allow RFD leadership to focus on strategic decision-making while ensuring the process adheres to best practices and withstands public and legal scrutiny.

Outcomes: Engaging an external consultant will:

- Ensure a structured, defensible, and competitive procurement process;
- Leverage industry expertise to identify contractors that best align with Riverside's service delivery goals;
- Improve the quality and specificity of contract terms, performance standards, response requirements, and financial structures;
- Reduce risk of procurement challenges by ensuring compliance with all legal and procedural requirements;
- Support the City in selecting a contractor capable of delivering high-quality, reliable prehospital service.

Overall, a professionally managed RFP process increases the likelihood of securing a partner who can meet the City's expectations for clinical excellence, operational reliability, and fiscal responsibility.

Estimated Financial Cost: Approximately **$65,000,** depending on the scope of services, complexity of the procurement process, and level of technical assistance required.

Recommendation M-4: Implement a partially automated inventory control system. (Short-Term)

Description: RFD currently utilizes a manual logistical support process in which crews inspect and document supplies on fire apparatus, entering the information into PSTRAX. Transitioning to a partially automated system—such as RFID, QR-code, or barcode-based tracking—would enhance operational efficiency, improve accuracy, and reduce medical supply waste.

Outcomes: Automated inventory systems have consistently demonstrated long-term cost-effectiveness by streamlining tracking processes and significantly reducing waste, particularly from lost or expired medical supplies.

Estimated Financial Cost: The overall cost will vary depending on the specific system and technology selected. A portion of the implementation cost is expected to be offset by savings realized through reduced waste and minimized loss of supplies.

Recommendation M-5: Perform a cost-benefit analysis for medications/procedures performed/administered by RFD. (Mid-Term)

Description: RFD maintains an extensive capacity to provide medical care and progressive medical protocols. To ensure fiscal responsibility and efficiency, all staffing, equipment, and supplies not mandated by government or industry standards should undergo a cost-benefit analysis.

Outcomes: A statistical study is required to determine the overall efficacy and justification for each resource evaluated.

Estimated Financial Cost: Staff time for revising and conducting the evaluation process.

Recommendation M-6: Consider a capital replacement program to replace a minimum of 25 cardiac monitor/defibrillators. (Short-Term)

Description: Approximately 25 of the department's LifePak 15 cardiac monitors require replacement. These units can no longer be adequately maintained or receive manufacturer support. RFD should develop a phased replacement plan.

Outcomes: Replacement with newer, more reliable cardiac monitors will ensure continued high-quality patient care.

Estimated Financial Cost: $1,500,000.

Recommendation M-7: Increase interaction with the Medical Program Director and actively participate in developing system protocols. (Short-Term)

Description: RFD paramedics operate under a protocol-based system with limited direct involvement from the Medical Program Director. Based on available information, RFD currently has limited opportunities to participate in the development or revision of EMS protocols.

Outcomes: A regionalized approach can enhance patient outcomes but should include active participation from all agencies.

Estimated Financial Cost: Staff time for revising and participating in the evaluation process.

Recommendation M-8: Future deployment models focus on reducing apparatus and staffing to behavioral emergencies. (Mid-Term)

Description: Future dispatch and deployment models should place greater emphasis on limiting the number of responding apparatus and enhancing the ability to release duplicate units back into service more efficiently.

Outcomes: Improved system efficiency and reduced response times overall.

Estimated Financial Cost: Dependent on the staffing model selected.

Recommendation M-9: Enhance EMS response capabilities to support an increasingly aging population. (Mid-Term)

Description: RFD should evaluate and plan for EMS response models tailored specifically to the needs of Riverside's growing population aged 65 and older. As of 2024, approximately 11.7% of Riverside residents fall within this age group, and this percentage is projected to rise significantly over the next decade. Older adults typically require more frequent EMS interventions due to chronic medical conditions, fall-related injuries, cardiac concerns, respiratory illnesses, and challenges associated with mobility and medication management.

To meet these evolving needs, RFD should consider developing or expanding programs such as **community paramedicine, mobile integrated healthcare (MIH),** and **targeted chronic-condition management initiatives**. These models can improve early identification of health risks, reduce unnecessary 9-1-1 utilization, support in-home care, and improve patient outcomes through proactive engagement.

Outcomes: Strengthening EMS capabilities for geriatric care will result in:

- Improved response capacity and clinical effectiveness for age-related emergencies;

- Reduced strain on emergency departments and 9-1-1 resources through alternative care pathways;
- Enhanced patient outcomes via early intervention, home-based assessments, and chronic-condition support;
- Increased community health resilience and quality of life for older adults.

A structured, specialized approach also positions RFD to better manage anticipated increases in call volume and resource demand associated with an aging community.

Estimated Financial Cost: Dependent on the level and scope of the program implemented. Costs may include dedicated personnel, advanced training in geriatric care and community paramedicine, program management, technology platforms, and partnerships with healthcare providers.

LIFE SAFETY SERVICES & PUBLIC EDUCATION FINDINGS & RECOMMENDATIONS

RFD maintains a comprehensive and well-structured Life Safety Services and Public Education Program that reflects the department's commitment to proactive fire prevention, community risk reduction, and public engagement. These functions are managed through the Fire Prevention Division under the leadership of the Deputy Chief of Administration and are supported by specialized personnel dedicated to fire inspections, fire investigations, and education.

Fire Prevention

RFD enforces the 2022 California Fire Code along with local ordinances and amendments, including a longstanding sprinkler ordinance enacted in 1993. The division conducts detailed plan reviews for new construction, occupancy changes, and tenant improvements to ensure compliance with current life safety standards. Inspection activities include fire and life safety assessments for both new and existing occupancies, hazardous materials facilities, high-piled storage operations, and storage tanks. The department also coordinates key box (Knox) installations for emergency access.

Inspection services are managed through the ImageTrend platform, which allows for efficient scheduling, documentation, and tracking. Twelve dedicated personnel conduct inspections under a fee-based system, which includes charges for after-hours and specialized permits. The department maintains a four-year inspection cycle for most occupancies, with annual inspections required where mandated by state law. Administrative citations are issued for non-compliance to ensure adherence to safety standards.

Public Education and Outreach

RFD's public education and outreach efforts are led by Public Education Coordinator which includes a wide range of programs targeting all age groups and community sectors. The department provides education on emergency preparedness, calling 9-1-1, home evacuation planning (EDITH), cooking and electrical safety, and injury prevention. Programs also address senior safety, helmet use, and fire extinguisher instruction. CPR courses are regularly offered at community events, and school programs incorporate materials from NFPA, FEMA's Ready Campaign, and the U.S. Fire Administration.

While a juvenile fire-setter intervention program exists, it is not currently active. However, development is underway for a new Wildland-Urban Interface (WUI) education component to strengthen community resilience against wildland fires. The department provides bilingual educational materials as needed, distributes annual fire prevention reports, and makes safety publications available to the public.

Fire Investigation

Assigned to the Deputy Fire Chief of Administration, Fire origin and cause determinations are performed by a team of four certified full-time investigators who work closely with the Riverside Police Department. There are six shift investigators to support the four full-time investigators. Investigators utilize specialized tools, including digital cameras and forensic photography support, and manage evidence and records through secure systems such as Laserfiche and the Police RMS. Established protocols guide scene control, evidence handling, and juvenile or arson investigations. This structured process ensures investigative accuracy and supports successful prosecution when arson is suspected.

Data Collection and Risk Analysis

The department employs technology-based data collection systems to analyze trends in fire incidents, causes, and response patterns. Although no staff are exclusively assigned to data analysis, consistent use of computer-based systems provides reliable recordkeeping and helps inform strategic planning and resource allocation decisions.

Administration and Staffing

The Fire Prevention Division is led by the Fire Prevention Division Chief/Fire Marshal and supported by a multidisciplinary team that includes 12 Fire Inspectors, , three Plan Reviewers, one Deputy Fire Marshal, one CUPA administrative analyst, one Public Educator, and three Administrative Assistants. Code Enforcement Officers, though not housed within the department, coordinate closely with RFD staff.

Overall, the Riverside Fire Department's Life Safety and Public Education Program demonstrates a balanced approach between prevention, enforcement, and community outreach. While current staffing and systems effectively support core functions, future enhancements in data analysis, WUI education, and juvenile intervention could further strengthen the department's capacity to reduce risk and promote safety across the community.

Recommendation L-1: Add one senior fire inspector and one Senior Administrative Analyst position. (Short-Term)

Description: The RFD Fire Prevention Division is authorized to charge fees for many of the services it provides. Unlike other divisions within the organization, these fee revenues partially offset the program's operating costs. However, with the current pace of development and the increasing number of mandated inspections, additional staffing is necessary to maintain service levels and compliance. It is recommended that one Senior Fire Inspector and one Senior Administrative Analyst position be added (totaling 2.0 FTEs) to meet current and projected workload demands.

Outcomes: The addition of these positions will enhance the Prevention Division's ability to coordinate and manage increasing inspection workloads, ensure timely plan review, and maintain compliance with fire and life safety codes, and state-mandated inspections. An additional Senior Fire Inspector will provide the needed overhead needed over the two existing divisions, while the second analyst will allow more detailed administrative coordination, data tracking, and fee recovery.

***Estimated Financial Cost*:** Total Compensation by position for two FTEs is reflected in the next figure:

Figure 196: Recommendation L-1 – Fire Prevention Staffing

Position	Number of Staff	Total Compensation	Priority
Senior Fire Inspector	1	$140,865	Mid-Term
Administrative Analyst	1	$103,447	Short-Term
TOTAL ESTIMATED COST	**2**	**$244,312**	

Recommendation L-2: Evaluate the Office of Emergency Management (OEM) positions for permanent funding consideration. (Implementation timelines varied)

Description: The City of Riverside Office of Emergency Management (OEM) is managed by the fire department. As outlined in this report, the majority of the seven existing positions are either partially or fully funded through federal grants and are therefore largely governed by the parameters of those funding sources.

Given the uncertainty surrounding the continuation of federal grant programs, combined with the ongoing need for comprehensive emergency planning, preparedness, and response capabilities, it is recommended that the following positions be evaluated for permanent funding consideration. These positions would be "city dedicated," meaning they would be staffed without a reliance on outside federal funding sources.

Future funding decisions for these positions will ultimately be a policy determination by City leadership, particularly if changes to federal programs occur as a result of the current Executive Order issued by the President of the United States.

Outcomes: The sustainability of the Office of Emergency Management's programs is critical to maintaining readiness and ensuring effective coordination, communication, and support during significant incidents and disasters. Transitioning key positions to a more stable funding source would enhance continuity of operations and reduce dependence on federal grants.

***Estimated Financial Cost*:** Total Compensation by position for seven FTEs is reflected in the next figure:

Figure 197: Recommendation L-2 – OEM Staffing

Position	Number of Staff	Total Compensation	Priority
Deputy Administrator	1	$199,518	Short-Term
Training & Exercise ESC*	1	$156,370	Short-Term
Operations & Logistics ESC	1	$156,370	Mid-Term
Planning Coordinator ESC	1	$156,370	Short-Term
Mitigation & Recovery Coordinator ESC	1	$156,370	Mid-Term
Public Alert & Warning Coordinator (ESC)	1	$156,370	Short-Term
Senior Office Specialist	1	$92,662	Short-Term
TOTAL ESTIMATED COST	**7**	**$1,074,030**	

* Emergency Services Coordinator

Recommendation L-3: Include the increased utilization of public education and prevention outreach in future planning efforts. (Short-Term)

Description: Public outreach remains one of RFD's strengths, but program reach is limited relative to community growth. Efforts are primarily event-based rather than continuous engagement models. There is potential to expand digital education, school-based programming, and collaboration with community partners to improve participation rates.

Outcomes: Develop a scalable public education strategy that combines in-person outreach with digital content delivery. Utilize social media, online CRR modules, and partnerships with local schools, businesses, and faith-based organizations to increase community engagement. An emphasis toward Home Safety Assessments both in person and on line should be prioritized. With the high proportion of Spanish speakers in the city, all information should be available in Spanish.

***Estimated Financial Cost*:** Staff time for creating strategy, materials, and guidelines. $5,000–$20,000 for on-line programs.

Recommendation L-4: Consider increased staffing for inspections consistent with recent growth. (Short- to Mid-Term)

Description: Inspection workloads have increased significantly, particularly in new mixed-use and industrial developments. Staffing limitations and manual scheduling processes delay inspections and re-inspections. Modern fire prevention requires both adequate staffing and technology tools to manage compliance efficiently.

Outcomes: Expand fire prevention staffing and implement digital inspection management systems to improve turnaround times. Ensure inspection frequency aligns with risk classifications and integrate automated reminders for high-risk occupancies. If a risk level will not be inspected on an annual basis, other means to update business contact information and teach Fire Prevention materials should be implemented for the years in which an in-person inspection is not being conducted.

***Estimated Financial Cost*:** Cost for additional employees and/or $5,000–$50,000/yr. for online programs.

COMMUNICATIONS & DISPATCH FINDINGS & RECOMMENDATIONS

Emergency communications and dispatch operations for the Riverside Fire Department are managed by the City's Public Safety Communications Center, which serves as the primary Public Safety Answering Point (PSAP) for both fire and police services. The center processes a substantial workload, averaging more than **186,000 annual 9-1-1 calls** and **over 382,000 total incoming calls** between 2022 and 2024. The facility maintains strong performance metrics, answering more than **90% of calls within 20 seconds**, consistent with national standards for emergency communications.

The Communications Center operates with **three radio operators, six call-takers, and one supervisor per shift**, staffing levels that meet baseline needs but leave little margin for surge demand or specialized dispatching. Interviews with supervisory staff and operational personnel identified several critical challenges. The most immediate is the **need for additional fire-dedicated dispatchers**, as only one such position currently exists. Recruitment and retention difficulties have also been noted, particularly given the combined police/fire model, where turnover rates are reportedly higher than in single-function centers.

Looking ahead, the potential **integration of EMS ambulance dispatching** would require approximately **three additional full-time equivalents (FTEs)** to provide adequate coverage. The existing communications center has the physical capacity to support these positions, and cross-training dispatchers in both fire and EMS functions would enhance flexibility and system resilience. Overall, while the center performs effectively under current conditions, strategic staffing expansion and role specialization will be essential to maintain service quality and meet future operational demands.

Recommendation D-1: Explore Implementation of Comms Coach Dispatch Training Software in Partnership with the Police Department. (Short-Term)

Description: The City of Riverside's Public Safety Communications Center manages a high call volume across both police and fire/EMS dispatch operations. To support dispatcher proficiency, reduce errors, and enhance interagency coordination, the City should explore implementing Comms Coach or a similar dispatch training and simulation software platform in partnership with the Riverside Police Department.

Comms Coach provides realistic, scenario-based simulations that help train new dispatchers and refine the skills of existing personnel without impacting live operations. The software mirrors real-world call-taking and radio traffic, allowing supervisors to evaluate response times, communication accuracy, and decision-making. By implementing a shared system across RFD and RPD, both agencies can standardize training, strengthen interoperability, and improve the overall quality of emergency communications.

Outcomes: By implementing a shared system across RFD and RPD, both agencies can standardize training, strengthen interoperability, and improve the overall quality of emergency communications. A joint deployment would also enable cost sharing between departments, reducing individual budget impacts while ensuring both agencies benefit from the same training platform, data reporting tools, and performance benchmarks. Enhanced proficiency in call triage and resource assignment would ultimately translate to faster, more effective response times for the community.

Estimated Financial Cost: Initial software licensing and implementation costs are estimated at $25,000–$40,000, depending on configuration and the number of users. Ongoing annual maintenance and support fees typically range from $5,000–$10,000. Shared cost participation between RFD and RPD could further reduce individual departmental expenses.

HAZARDOUS MATERIALS FINDINGS & RECOMMENDATIONS

RFD maintains a highly capable and well-trained **Cal OES Type 1 Hazardous Materials Response Team (HMRT)** that serves both the City of Riverside and the surrounding region. The team is equipped and certified to manage a full range of **chemical, biological, radiological, nuclear, and explosive (CBRNE)** incidents, aligning with national standards and functioning as a regional mutual-aid resource for large-scale or complex events.

Riverside's **hazardous materials risk profile** is significant, driven by dense industrial development and extensive transportation corridors, particularly major freeways (SR-60, SR-91, I-215) and two high-volume freight rail lines (Union Pacific and BNSF). More than **1,600 businesses maintain Hazardous Materials Business Plans**, representing diverse industrial and municipal operations. Emerging hazards, such as **lithium-ion energy systems and renewable energy infrastructure**, further expand the city's exposure to modern HazMat risks.

The department's team structure includes dedicated response units with advanced detection, monitoring, and decontamination equipment. Personnel are **cross-trained as HazMat Technicians and Specialists**, with certifications meeting **NFPA 1072, OSHA HAZWOPER**, and **Title 19 CCR** requirements. The team operates under the **NIMS command framework**, ensuring integrated coordination with Cal OES, Cal Fire, and regulatory partners during complex or multi-agency events. Ongoing **multi-agency drills, annual recertifications, and equipment calibration** support operational readiness.

Between **2021 and 2024**, RFD averaged roughly **400–450 HazMat-related responses annually**, including gas leaks, flammable liquid spills, toxic releases, and electrical equipment failures. **Natural gas incidents** and **downed power lines** represent the highest recurring call types. Temporal analysis indicates that most incidents occur **midday to early evening**, peaking between **noon and 6:00 PM**, with slightly higher activity early in the week. Seasonal fluctuations are minimal, suggesting consistent year-round service demand.

RFD's HazMat program has a strong record of **regional mutual-aid deployment** and notable success in complex responses such as industrial chemical spills, rail incidents, and high-visibility events including the **March Air Force Base F-16 crash**. The unit's integration into the city's overall emergency management structure, coupled with public education and risk-prevention outreach—enhances community safety and environmental protection.

Recommendation H-1: Improve cost recovery processes for hazardous materials response. (Short-Term)

Description: Hazardous material response requires significant personnel training, capital, and supply expense, including personal protective equipment and monitoring devices. The program relies on grant funding for most of its needs. Legislation exists for an organization to recover all or part of specific hazardous material incidents. The department should implement a robust recovery program through the Prevention Division.

Outcomes: Increased funding will support future capital and supply requirements for hazardous materials response. Over-reliance on grant funding has created training gaps within the HazMat.

Estimated Financial Cost: This would generate funding for the program, depending on the level of the recovery program.

TECHNICAL RESCUE FINDINGS & RECOMMENDATIONS

RFD maintains a highly capable and well-structured Technical Rescue Program (TRT) that forms a critical component of the City's all-hazards emergency response framework. This specialized program enables the department to respond effectively to complex, high-risk incidents that extend beyond traditional firefighting or EMS operations. Through advanced training, specialized equipment, and regional collaboration, RFD's Technical Rescue Team ensures that life, property, and environmental safety are preserved during emergencies involving structural collapse, confined spaces, high-angle rescues, and swiftwater operations.

RFD's Technical Rescue Team provides broad operational coverage across the City of Riverside and surrounding jurisdictions, supported by mutual aid agreements. The city's diverse geography, including urban centers, wildland interfaces, canyons, rivers, and mountainous terrain, necessitates a broad range of technical capabilities. High-risk hazards such as earthquakes, flooding, industrial accidents, and vehicle entrapments further underscore the need for a proficient and well-equipped TRT. These specialized operations also align with regulatory and safety standards established by NFPA, OSHA, and Cal/OSHA, ensuring compliance and consistent performance across incident types.

The department's Technical Rescue Team operates from Station 3, with a core staff of 21 dedicated members and a total of 56 trained personnel citywide. Each member completes a rigorous training program consisting of 12 courses, nine mandatory and three elective, covering trench, rope, confined space, structural collapse, watercraft, and machinery rescue disciplines. On average, team members complete more than 225 hours of training annually. These efforts maintain compliance with NFPA 1670, 1006, and 2500 standards, FEMA's National Incident Management System (NIMS) typing, and FIRESCOPE operational guidelines. Continuous refresher training ensures that personnel remain proficient in rapidly evolving rescue techniques and technologies.

RFD's TRT maintains an extensive cache of specialized equipment, including rope and rigging systems, shoring and confined-space rescue tools, hydraulic and pneumatic extrication systems, and heavy rescue apparatus. Water rescue operations are supported through the use of boats, personal rescue watercraft, flotation devices, and swiftwater rescue gear. The department has invested significantly in PPE, averaging $2,200 per member for technical rescue PPE and $2,578 for water rescue PPE. These investments reinforce operational safety and readiness. However, the department has identified the need to replace Rescue 3, Utility 3, ATV 3, and associated boats and motors, and to add a dedicated swiftwater squad. Additionally, covered apparatus parking and facility upgrades at Station 3 are needed to house and maintain the growing inventory of specialized assets.

RFD actively participates in regional and national technical rescue initiatives, including California Task Force 6 (CA-TF6), FIRESCOPE working groups, and the State Fire Training Technical Rescue curriculum development program. These partnerships enhance interoperability, strengthen mutual aid response, and ensure that RFD remains aligned with state and federal operational standards.

From 2021 through 2024, the department responded to 313 technical rescue incidents. This incident volume reflects a consistent and diverse demand for technical rescue services throughout the city. Temporal analysis shows that incidents occur fairly evenly throughout the week but peak during late afternoon and evening hours, suggesting that morning hours are optimal for training and multi-company exercises.

Overall, the RFD Technical Rescue Program provides a significant public safety benefit through rapid, skilled, and coordinated response to high-risk emergencies. Continued investment in personnel, equipment, and infrastructure will be essential to maintaining readiness and ensuring long-term sustainability. The program's ongoing commitment to training, interagency cooperation, and proactive capability development reflects a culture of preparedness and positions the department as a regional leader in technical rescue operations.

Recommendation R-1: Replace Rescue 3, Utility 3, ATV 3, and associated boats and motors, and add a dedicated swiftwater squad. (Short- to Mid-Term)

Description: The city's diverse geography, including urban centers, wildland interfaces, canyons, rivers, and mountainous terrain, necessitates a broad range of technical capabilities. Current capital equipment/personal protective equipment needs to be updated or replaced.

Outcomes: RFD Technical Rescue Program provides a significant public safety benefit through rapid, skilled, and coordinated response to high-risk emergencies but is also over reliant on grant funding.

Estimated Financial Cost: Cost dependent on funding from federal programs, determining remaining funds required by the City of Riverside.

FIRE INVESTIGATIONS/ARSON TASK FORCE FINDINGS & RECOMMENDATIONS

RFD's Fire Investigations/Arson Task Force is a mature, multi-agency program supervised by a Fire Captain and staffed with cross-sworn investigators trained to NFPA 921/1033 and certified under the State Fire Marshal, with authority to enforce state and local codes. Converting to full-time investigator positions in **July 2024** established **24/7** coverage and strengthened evidence handling; the Investigations Supervisor also serves as DOJ Custodian of Records. The unit's scope extends beyond origin-and-cause to new-hire background checks, selective internal investigations, and a developing **WUI Defensible Space Inspection** process that advances community risk reduction. Program integration has improved: CQI was adopted in **January 2024**, arson cases are now documented in the **Riverside PD RMS**, and quarterly coordination with Prevention and Public Education aligns with the **2023–2028 Strategic Plan**. Demand is rising sharply (**Calls for Service: 134→241→446; INV cases: 96→164→205, 2023–2025 YTD**), while arrests dipped YTD as caseload surged. Key challenges include formalizing an **MOA with RPD**, establishing a **dedicated law-enforcement liaison**, expanding **external training** access, and relieving **space constraints at Station 12**. Targeted investments in these areas will sustain case quality, interagency coordination, and river-bottom operations.

Recommendation I-1: Assign a Dedicated Law Enforcement Officer to the Fire Investigations Division. (Mid-Term)

Description: The City should consider assigning a dedicated law enforcement officer from the Riverside Police Department to support the Fire Investigations Division. Between 2023 and 2024, arson-related arrests increased by approximately 50%, highlighting the growing need for enhanced investigative capacity. Strengthening the interagency partnership between the Riverside Fire Department and the Riverside Police Department (RPD) would improve case coordination, streamline evidence processing, and support more effective prosecution of arson-related crimes.

Outcomes: A dedicated law enforcement officer assigned to the task force would significantly enhance operational capacity by improving scene security, evidence handling, and suspect interviews. This added resource would also help expedite investigations, increase arrest and conviction efficiency, and reinforce interagency communication—ultimately improving public safety and reducing fire-related losses.

***Estimated Financial Cost*:** The estimated cost would include funding for one full-time equivalent (1 FTE) law enforcement position within the RPD budget, including salary, benefits, training, and associated equipment.

Recommendation I-2: Expand external training opportunities for the RFD Investigations Unit. (Short-Term)

Description: The RFD Investigations Unit currently faces significant constraints in accessing external training due to staffing shortages and limited budget allocation. As the complexity and volume of investigations continue to increase—including arson, hazardous materials involvement, and multi-agency response coordination—the need for advanced, specialized training has become essential. Expanding access to regional, state, and national training programs will ensure investigators remain current with evolving investigative techniques, legal standards, forensic technology, and best practices in fire origin and cause determination.

Outcomes: Increasing outside training opportunities will strengthen the unit's operational readiness and align skill development with rising service demands. Enhanced training will improve investigative accuracy, support more effective prosecution outcomes, and increase interagency collaboration through shared instruction and exercises. Ultimately, this investment will help the City maintain a high-quality investigative program capable of addressing emerging risks and complex incidents.

Estimated Financial Cost: To be determined.

Recommendation I-3: Expand office, meeting, and storage space for the Fire Investigations Task Force. (Mid-Term)

Description: The Fire Investigations Task Force is currently operating out of a limited workspace at Station 12, creating constraints on daily operations, collaboration, and equipment storage. As service demands continue to grow—including increases in arson investigations, complex incident responses, and multi-agency coordination—the current space no longer supports the unit's operational needs. Expanding or redesigning dedicated office, meeting, and storage areas will ensure the task force has the appropriate environment to conduct investigations, maintain equipment, hold briefings, and manage sensitive case files.

Outcomes: Enhancing and expanding the physical workspace will directly improve operational efficiency, support better case management, and strengthen interagency coordination. Additional space will also allow for secure storage of evidence, investigative tools, and protective equipment. A more functional and properly scaled workspace will enable the task force to maintain high-quality investigative services and continue providing effective and timely response to the community.

***Estimated Financial Cost*:** To be determined. Costs may include renovation of existing facilities, construction of new workspace, acquisition of storage infrastructure, furnishings, and technology improvements.

CALIFORNIA TASK FORCE 6 FINDINGS

California Task Force 6 (CA-TF6) represents one of the nation's premier Urban Search and Rescue (US&R) teams, combining local expertise with national disaster-response capability. Sponsored by the Riverside Fire Department, the task force is a multi-agency partnership comprising firefighters, structural engineers, physicians, paramedics, canine teams, and logistics specialists drawn from Riverside and neighboring jurisdictions. Its dual role, as both a California state mutual-aid asset and a FEMA-certified national response team, positions CA-TF6 as a vital component of large-scale emergency operations across the country.

Over the past five years, CA-TF6 has demonstrated exceptional operational readiness and sustained national impact. The team has been mobilized to numerous major disasters, including pre-positioning for Tropical Cyclone Douglas in 2020, multiple wildfire deployments in Oregon and Hawaii, and responses to several major hurricanes such as Delta, Zeta, Henri, Ida, Fiona, Ian, Helene, Milton, and Beryl. Most recently, in 2025, CA-TF6 was deployed to Kerr County, Texas, for flood-related search operations.

These missions have encompassed a full range of technical rescue and support activities—heavy search and rescue, structural collapse assessment, water and swiftwater rescue, and operational planning and logistics. The task force's participation in both domestic and Pacific-region incidents highlights its flexibility, technical proficiency, and interagency coordination capabilities.

Overall, CA-TF6 serves as a model of national readiness and regional collaboration. Its sustained activity underscores the Riverside Fire Department's leadership in federal emergency response and its continued commitment to maintaining a world-class Urban Search and Rescue capability that enhances disaster preparedness, response, and resilience across California and the nation.

TRAINING & CONTINUING MEDICAL EDUCATION FINDINGS & RECOMMENDATIONS

Training and continuing education form the foundation of the Riverside Fire Department's ability to deliver effective, high-quality emergency services. The department demonstrates a strong commitment to maintaining core competencies across fire, rescue, hazardous materials, and emergency medical services (EMS); however, several key areas within the training and continuing medical education (CME) program would benefit from modernization and structural enhancement to better align with operational realities.

The Training Division is overseen by a Training Chief, supported by a two Training Captain, one EMS Captain and an EMS Coordinator. Despite the limited staffing, this team carries the full responsibility for the development, coordination, and delivery of training across all divisions of the department. Foundational systems are well established, including formal Standard Operating Procedures (SOPs), probationary manuals, and certification programs, each outlining required instructional hours and performance expectations. However, the scope of responsibility compared to available resources has created challenges in maintaining consistency, ensuring competency verification, and balancing the instructional workload across all operational disciplines.

Analysis of departmental data reveals a notable misalignment between training emphasis and service demand. EMS responses account for approximately 70 percent of all RFD incidents, yet only 3 percent of total training hours are dedicated to patient care and medical skills. In contrast, 60 percent of all training hours are focused on fire suppression activities, which represent only a small fraction of the department's actual call volume. This imbalance highlights a significant opportunity to recalibrate training priorities, ensuring that instructional content reflects the operational needs of the community and the department's service profile.

Currently, RFD fulfills the continuing medical education requirements mandated by both the State of California and the National Registry, and the local LEMSA through a combination of computer-based courses and hands-on sessions. While this approach satisfies minimum standards, it results in variability among personnel regarding total hours completed and demonstrated proficiency. Without a robust verification process, individual skill competency may decline over time, potentially impacting patient outcomes in the field. To address this, the implementation of a structured annual skill check-off program, paired with random proficiency assessments, would provide measurable assurance that paramedics maintain mastery in critical procedures and documentation.

RFD employs a range of instructional methods, including monthly manipulative drills, facility-based exercises, and multi-company and interagency training. Annual evaluations are conducted following NFPA 1410 standards, and the department maintains a culture of continuous learning. However, training delivery remains centralized, which creates challenges related to scheduling, and accessibility for line personnel. The current reliance on a single training facility limits flexibility and scalability, making it difficult to conduct frequent, scenario-based exercises across all shifts and districts.

The department’s training facility has reached the end of its useful life. The existing burn building is no longer in use due to structural damage and asbestos contamination, and the training tower requires replacement to accommodate realistic, high-rise training reflective of the city’s vertical growth. Classroom and simulation spaces are limited, and the facility lacks adequate audio-visual and digital training resources. Additionally, EMS training is constrained by limited simulation equipment, relying primarily on one high-fidelity manikin nearing replacement and expired medical supplies for training scenarios.

To modernize and strengthen its training and CME program, the Riverside Fire Department should adopt a multi-pronged strategy. First, the department should rebalance its training focus to more accurately reflect service demand, dedicating a larger proportion of hours to EMS-related education. Annual skill verification and random competency assessments should be instituted to ensure consistent performance across all personnel. Decentralizing training through mobile units—such as training ambulances or portable simulation systems—would significantly improve accessibility, , and allow for hands-on instruction within operational districts. Additionally, investing in mid-fidelity manikins and updated simulation technology would enable repetitive skills practice and better reinforce the sequencing of critical interventions.

Finally, RFD should prioritize the replacement or modernization of its central training facility to meet the needs of a contemporary, all-hazards department. Future facility design should include multi-level structures that replicate the city’s built environment, expanded classroom capacity, and advanced simulation capabilities for both fire and EMS operations.

Recommendation T-1: Add a Training Captain position. (Short-Term)

Description: The RFD Training Division currently manages all fire, EMS, special operations, driver/operator, and new-hire training programs, including program design. While AP Triton recommends splitting the EMS function into a separate division, the existing training and public information needs remain significant.

An additional Training Captain position would support these needs while alleviating training responsibilities currently assigned to shift-based personnel. For example, Driver/Operator training currently requires on-duty personnel to leave their response areas to participate in training evolutions and testing at the training facility. A dedicated Training Captain would provide coverage for these programs, ensuring continuity of service and minimizing operational disruption.

The fire department also lacks a dedicated Public Information Officer (PIO). This function is currently performed by training staff in addition to their existing responsibilities. Establishing a dedicated PIO position would ensure consistent public messaging, support emergency preparedness and community education efforts, and provide on-call coverage during significant incidents.

Outcomes: The addition of these positions would enhance the department's operational efficiency, training effectiveness, and community engagement. Collectively, these positions would improve workforce readiness, maintain service coverage, and enhance the department's ability to meet both operational and public information responsibilities.

***Estimated Financial Cost*:** Total Compensation by position for two FTEs is reflected in the next figure:

Figure 198: Recommendation T-1 – Training Division

Position	Number of Staff	Total Compensation	Priority
Training Captain	1	$253,854	Short-Term
Public Information Officer (PIO)	1	$200,752	Short-Term
TOTAL ESTIMATED COST	**2**	**$454,606**	

Recommendation T-2: Develop a balanced Fire/EMS Training Program incorporating focused, repetitive, required, and immersive training. (Short-Term)

Description: RFD should consider implementing a more balanced and comprehensive training program that reflects the true distribution of service demand within the community. Current training practices are heavily weighted toward fire-related skills despite EMS incidents representing the vast majority of actual operational workload. The following figure illustrates the disparity between training hours and incident activity:

Figure 199: RFD Comparison Incidents to Training

Incident Type	Training	Incident
EMS	3%	70%
Fire	60%	3%
HazMat	2%	1%
Other	33%	24%
Rescue	0%	0%
Wildland	1%	2%

Outcomes: A balanced training program will promote a consistent, standardized approach to service delivery across all disciplines. It will ensure that training resources are allocated in a manner that supports community risk profiles, enhances operational readiness, and maintains compliance with professional standards. This approach will help reduce performance variability across shifts and stations, improve both EMS and fire-related outcomes, and foster a culture of continuous improvement.

Estimated Financial Cost: Primarily staff time associated with revising the training evaluation process, restructuring curriculum, and implementing ongoing monitoring to ensure alignment between training and service demand.

Recommendation T-3: Consider a staffing increase (approx. 2 FTEs) to establish the CQI program, which evaluates 100% of the EMS incidents, and increase the use of a statistically based quality management program. (Short-Term)

Description: RFD currently has a limited EMS Continuous Quality Improvement (CQI) program. In 2024, only 21% of EMS incidents were evaluated due to staffing shortages. The department also lacks defined QA/QI policies and benchmarks. Establishing an internal process would promote autonomy, improve patient care, and support program expansion and future budgetary increases. This evaluation identified opportunities for improvement in data collection and analysis. RFD currently uses ImageTrend® for patient care reporting; this program can export data into Excel for efficient analysis when properly documented.

Outcomes: Evidence-based data would provide objective measures of care quality and overall system performance.

Estimated Financial Cost: Cost of two (2) unsworn FTEs.

Recommendation T-4: De-centralize EMS Training through distributed simulation resources. (Short-Term)

Description: RFD currently relies heavily on online Continuing Medical Education (CME) platforms for EMS training, which limits opportunities for hands-on practice and real-time skill development. To strengthen clinical preparedness and align training with operational demands, the department should consider decentralizing EMS training across the city. This can be achieved by deploying **mid-fidelity manikins** to strategically selected stations and creating a **mobile simulation lab** capable of rotating among all stations.

A decentralized model reduces travel time for crews, enables frequent repetition of critical skills, and supports scenario-based training during regular shift hours. Mid-fidelity manikins provide realistic feedback for airway management, CPR, trauma care, and cardiac interventions, while a mobile simulation lab offers immersive, team-based practice that can replicate high-risk, low-frequency events.

Outcomes: Implementing decentralized simulation resources will:

- Improve clinical proficiency through increased hands-on practice;
- Enhance critical skill sequencing and decision-making under pressure;
- Support consistent training across all stations and shifts;
- Strengthen patient outcomes by increasing provider confidence and technical capability;
- Reduce logistical barriers associated with centralized training locations.

Overall, this approach fosters a more agile, responsive, and proficient EMS workforce.

Estimated Financial Cost: Approximately $5,000 per mid-fidelity manikin, with additional costs for outfitting and maintaining a mobile simulation lab, depending on configuration and equipment needs.

Recommendation T-5: Implement an EMS Skills Continuing Education and Competency Tracking Program. (Short-Term)

Description: RFD should establish a formalized EMS skills continuing education and tracking program to ensure that all paramedic-certified personnel maintain proficiency in essential Advanced Life Support (ALS) skills. These include, but are not limited to, endotracheal intubation, 12-lead ECG acquisition and interpretation, intravenous (IV) and intraosseous (IO) access, medication administration, and advanced airway adjuncts. Such a program should be designed to meet or exceed California State and Riverside County EMS recertification requirements while also addressing department-specific training priorities.

With approximately **31,500 medical responses annually**, Riverside's EMS call volume underscores the need for a structured process to monitor individual competencies. Although personnel may encounter high call volumes, many critical ALS procedures—particularly high-risk, low-frequency skills—are performed infrequently in the field. A formal tracking system will help ensure consistent proficiency, reduce performance variability, and support continuous clinical improvement.

Outcomes: Implementing an ALS skills tracking program will:

- Identify individual and system-wide skill deficiencies through objective performance data;
- Provide the foundation for targeted, data-driven training interventions;
- Strengthen clinical decision-making and improve overall quality of care;
- Ensure compliance with all state and county recertification requirements;
- Standardize expectations and performance benchmarks across all shifts and stations;
- Enhance patient safety and outcomes by reinforcing high-risk, high-impact procedures.

Over time, this structured approach will create a more consistent and reliable clinical workforce capable of delivering high-quality ALS care.

Estimated Financial Cost: Primarily staff time associated with revising the evaluation process, developing a tracking system, and integrating ongoing competency assessments into the department's EMS training framework**.**

Recommendation T-6: Consider replacing the current fire training tower. (Mid to Long-Term)

Description: Riverside Fire Department's current training infrastructure does not fully meet modern standards for multi-company, multi-story, or technical rescue evolutions. Existing facilities lack sufficient height, integrated standpipe systems, and realistic interior layouts for scenario-based training. The absence of a compliant tower limits firefighter proficiency in vertical operations, aerial tactics, and hose advancement drills.

Outcomes: Construct a new multi-story training tower designed to meet NFPA 1402 standards. The facility should incorporate standpipes, confined-space elements, and roof ventilation props to replicate real-world environments. This will enhance operational readiness and ensure training consistency across all companies.

***Estimated Financial Cost*:** Significant capital outlay will be needed.

Recommendation T-7: Consider replacing the current burn training building. (Mid- to Long-Term)

Description: The department's existing burn structure has reached the end of its serviceable life and no longer meets current NFPA 1403 standards for live-fire training. Structural integrity concerns and outdated ventilation controls limit training throughput and realism. This affects the department's ability to maintain safe and standardized live-fire evolutions for new recruits and incumbent personnel

Outcomes: Replace the current burn building with a modern, compliant structure capable of repeated live-burn evolutions. The new facility should integrate temperature monitoring, smoke management, and observation platforms to meet NFPA and Cal/OSHA safety requirements.

***Estimated Financial Cost*:** To be determined.

COMMUNITY RISK FINDINGS & RECOMMENDATIONS

The City of Riverside represents one of the most dynamic and rapidly evolving metropolitan centers in Southern California. As the county seat and most populous city within Riverside County, it anchors the Inland Empire's social, economic, and governmental infrastructure. Spanning 81.5 square miles, Riverside's 2024 population of approximately **321,500 residents** makes it the 12th largest city in California and the 61st largest in the United States. Its proximity—roughly 50 miles southeast of Los Angeles—positions it as both a commuter hub and a regional economic engine, blending historical significance, higher education, and innovation with the challenges of modern urban growth and diversification.

Riverside's community profile reflects a balance between historic character and contemporary expansion. The city's economy is built on a diverse foundation that includes higher education, advanced manufacturing, green-tech research, and healthcare. Four major medical facilities, including Riverside Community Hospital and Kaiser Permanente, support both residents and the surrounding region. Institutions such as the University of California, Riverside (UCR), California Baptist University, and La Sierra University contribute to a highly educated and culturally diverse population while also driving transient demand through student housing and seasonal population fluctuations.

Riverside's neighborhoods reflect varying community risks and emergency service demands. **Downtown Riverside**, with its historic Mission Inn and civic buildings, poses unique fire prevention and special event challenges due to its aging infrastructure, dense population, and high public activity. **Arlington** and **Eastside** include older residential areas with aging electrical systems, smaller lots, and higher socioeconomic risk factors that elevate both fire and EMS demand. **La Sierra**, bordering the Santa Ana River, contains Wildland–Urban Interface (WUI) zones that are highly susceptible to wildfire events intensified by Santa Ana wind conditions. **Orange Crest** and **Canyon Crest**, by contrast, represent newer and more affluent suburban developments with high EMS and traffic-related call volumes. The city's urban-rural fringe, such as **Sycamore Canyon**, extends into areas with limited water supply and access challenges for firefighting operations. This neighborhood diversity underscores the need for flexible deployment models and adaptive fire prevention strategies.

Riverside's demographic and socioeconomic conditions further shape the demand for fire and emergency medical services. Between 2010 and 2024, the city's population grew steadily by nearly **6%**, even as the state of California experienced population decline. Approximately **46% of residents speak a language other than English**, emphasizing the need for bilingual public education and risk communication strategies. The city's **poverty rate of 12.5%** and **median household income of $88,575** fall below state averages, correlating with elevated risk factors for fire, medical emergencies, and health disparities. Approximately **10.3% of residents lack health insurance**, increasing the likelihood of delayed medical intervention and higher EMS transport utilization. Additionally, **7.2% of residents have a disability**, creating potential barriers to evacuation and emergency response.

From an age distribution perspective, Riverside's population includes **5.6% under age five** and **11.7% over age 65**, both considered high-risk groups for fire and EMS incidents. Gender-based data indicates that males comprise the majority of fire-related fatalities and injuries, consistent with national trends. Educational attainment presents another challenge, with **74.3% of residents lacking a bachelor's degree**, a factor that correlates with limited economic mobility and increased vulnerability during emergencies.

Riverside's housing stock presents both strengths and vulnerabilities. Over **56% of homes were built before 1980,** prior to the widespread adoption of modern fire and life safety codes, meaning many structures lack interconnected smoke alarms or sprinkler systems. The city's homeownership rate of **56.3%** aligns closely with the state average, but aging infrastructure and the presence of numerous vacant properties elevate structural fire risks. Multi-family housing, which comprises over 11% of residential structures, further increases occupant density and evacuation complexity during fire incidents.

Environmental and natural hazards play a significant role in shaping Riverside's risk landscape. The city's topography, marked by foothills, canyons, and the Santa Ana River corridor, creates susceptibility to **wildfires, flooding**, and **earthquakes**. Over the past decade, Riverside has experienced multiple wildland fires exceeding 20 acres, many originating in the river bottom and exacerbated by encampments and dense vegetation. The city's position within a **high seismic zone**, near the San Andreas, San Jacinto, and Elsinore Faults, underscores the importance of structural resilience and emergency preparedness. Flooding hazards also persist, particularly in areas adjacent to the Santa Ana River and low-lying drainage zones where heavy rainfall can overwhelm aging stormwater systems.

Critical infrastructure across Riverside supports a complex urban environment that requires continuous coordination among city departments. The city contains **316 identified critical facilities**, including **14 fire stations, 6 police stations, 3 hospitals**, and **over 120 schools and daycare centers.** Major transportation corridors such as Interstates 215, 10, and 91, and the Union Pacific and BNSF rail lines, facilitate commerce but also increase the city's exposure to hazardous materials incidents and transportation-related emergencies. The **Riverside Municipal Airport (KRAL)** serves as one of California's busiest general aviation hubs, requiring specialized emergency planning for aircraft and fuel-related incidents.

Riverside's reliance on local public utilities, particularly **Riverside Public Utilities (RPU)** for electricity and water, provides both autonomy and responsibility. RPU maintains extensive infrastructure, including 967 miles of water pipeline, 16 reservoirs, and multiple treatment facilities that supply an average of 68 million gallons of water daily. Maintaining redundancy and resilience within these systems is essential for firefighting capability and disaster recovery operations.

The broader **Riverside County** context further amplifies the city's role as a regional service provider. Encompassing more than **7,200 square miles**, the county is the **fourth largest in California** and home to **2.3 million residents**. Its geography spans fertile valleys, deserts, and mountainous terrain, producing both wildfire and flood hazards. Since 1980, Riverside County has recorded **49 federally declared disasters**, reflecting persistent exposure to extreme weather, drought, and seismic activity.

In summary, the City of Riverside represents a complex service environment characterized by **rapid population growth, diverse socioeconomic conditions**, and **significant natural and technological hazards**. The community's size, infrastructure, and risk profile demand a highly adaptive and well-resourced fire and emergency services system. Future planning must balance urban development with proactive risk mitigation, emphasizing wildfire prevention in WUI zones, earthquake resilience, equitable EMS access for at-risk populations, and infrastructure upgrades to sustain public safety amid continued growth.

Recommendation CR-1: Consider the development and staffing of a Community Risk Reduction Program. (Short-Term)

Description: The Community Risk Reduction Program would support inspections and public education demand as development expands. Staffing levels have not kept pace with population growth or the addition of high-risk occupancies. The department's CRR model relies heavily on a limited number of prevention staff to manage plan review, code enforcement, and outreach.

Outcomes: Add CRR staffing positions proportionate to risk growth, focusing on inspection and outreach personnel. Ensure each fire station supports company-level CRR participation, allowing operational staff to engage directly in local risk-reduction initiatives.

***Estimated Financial Cost*:** Cost for additional employees.

Recommendation CR-2: Fully integrate a technology and data analytics system. (Short-Term)

Description: The department uses several data sources for incident reporting and occupancy management, but these systems are not yet fully integrated for proactive risk identification. Improved data-sharing between operations, prevention, and city planning would support early intervention for high-risk properties and enhance performance measurement.

Outcomes: Adopt integrated CRR data analytics platforms that merge NFIRS, GIS, and city planning datasets. Implement dashboards for trend analysis, inspection prioritization, and performance tracking to guide data-driven prevention strategies.

***Estimated Financial Cost*:** Depends on the current engagement capabilities of the current City GIS. Many of these efforts can be done in-house if they are staffed adequately. Proprietary programs can run in excess of $100,000/yr.

SERVICE DELIVERY & PERFORMANCE FINDINGS

Because RFD has not adopted local standards, this assessment references NFPA 1710 for deployment/turnout/travel and NFPA 1225 for communications. After cleaning the 2018–2024 dataset with an interquartile-range method to remove extreme outliers, sufficient integrity remained to evaluate the key time segments, call processing, turnout, travel, response, total response—and to examine Effective Response Force (ERF), reliability, utilization, and demand trends.

Dispatch performance is constrained by incomplete PSAP data (no ring-time capture and probable under-reporting of true call processing where CAD stamps differ). Even so, the dataset was stable enough to benchmark performance and underscores the need for formally adopted definitions and targets for ring time and call processing in line with NFPA 1225. Turnout is the first controllable field segment: at the 90th percentile, RFD units turn out in 1:46, with only a modest (~30-second) increase during overnight hours, suggesting consistent station procedures.

Travel time patterns indicate generally effective station placement. First-due travel is steady across call types, but modeled four-minute coverage shows predictable gaps west of Station 9 and in the southern/eastern portions near Stations 11 and 13, where terrain and network limitations apply. ERF assembly for moderate-risk structure fires is where stress emerges: from 2018–2024, 90th-percentile assembly times averaged 21:41 for the apparatus complement and 22:04 to assemble 19 personnel, with better years reaching the high-teens and more challenging years running longer. These findings align with the geography of slower ERF build-outs in the south and east.

At the customer level, response time (turnout + travel) is 6:52 at the 90th percentile across all calls (EMS 6:48; Fire 6:55; Other 7:03). Total response time (call processing + turnout + travel) is 7:24 (EMS 7:20; Fire 7:31; Other 7:38). Station performance is tightly clustered—only a 47-second spread from the fastest to the slowest station (6:57–7:46), while ward-level results vary more, with Ward 4 at about 9:22 and Ward 1 near 7:40, reflecting roadway geometry, distance, and workload effects.

Reliability indicators show rising pressure. Time on task (arrival to clear) is 22:06 at the 90th percentile (Fire 22:53; EMS 22:47; Other 15:32), and committed time (dispatch to available) is 27:04, with EMS slightly longer than other categories. Concurrency is routine: two to four simultaneous incidents account for roughly two-thirds of occurrences, and the system reached 15 units busy in the same hour 1,100 times over the study period, episodic saturation that can erode service levels if not managed. Unit Hour Utilization is elevated on several companies; notably, Engine 4 reached 47.8% in 2023, leaving little capacity for training, prevention, or resilience.

Looking forward, population and incident-volume forecasts point to continued growth driven chiefly by EMS demand. Without targeted action, higher concurrency and workload will push turnout, ERF assembly, and reliability toward less resilient operating points. The practical path is to adopt NFPA-aligned local benchmarks (ring/call-processing, turnout, first-due travel, ERF), tighten PSAP/CAD data capture, and adjust deployment where geography and ERF assembly lag—particularly in the south/east and west of Station 9/11/13. Balancing Unit Hour Utilization (e.g., targeted redeployments, peak-load resources, alternative responses for low-acuity EMS) and tracking ERF quarterly against staffing and mutual-aid triggers will protect performance as the city grows.

FIRE STATION LOCATION ANALYSIS FINDINGS

The Riverside City Fire Department demonstrates a well-distributed network of 14 fire stations that provides an overall strong level of service coverage across the city. GIS-based modeling indicates that approximately **80% of all emergency incidents** can be reached within a **four-minute travel time**, aligning closely with NFPA 1710 benchmarks. However, as the community continues to grow, some gaps in geographic coverage and unit availability are emerging—particularly in high-demand areas.

The **station reliability assessment** shows significant variation across the system. Stations 1 and 2 exhibit the highest reliability (94%) due to multiple assigned apparatus and centralized coverage, while **Station 8** demonstrates the lowest reliability, attributed to single-unit staffing and geographic distance from the city core.

Overall, the findings indicate that while Riverside's current station configuration provides robust citywide coverage, **targeted resource enhancements, rather than wholesale new-station construction, would yield the greatest service improvement**. Strategic additions of units at select stations and continued monitoring of demand growth should guide future facility planning and investment.

PROJECTED GROWTH OF RIVERSIDE FINDINGS

Riverside is entering a sustained period of urban expansion that will significantly impact fire and emergency service demand. Population and housing growth, coupled with ongoing industrial and commercial development, will intensify the workload for all divisions of the Fire Department—particularly emergency medical services, prevention, and special operations.

Planned housing growth of over **22,000 new units by 2029** will generate substantial increases in EMS and fire incidents, as new neighborhoods and multi-family developments expand the city's service area. Simultaneously, the continued rise of **industrial and logistics facilities** across the Inland Empire will heighten risks associated with large fire loads, hazardous materials, and complex inspection requirements.

Major public projects such as the **Riverside Sports Complex and Entertainment District** and the **Riverside Alive downtown redevelopment** will add high-occupancy venues requiring specialized event coverage and enhanced life safety oversight. Intensification within the **Downtown Specific Plan area**, including multi-story mixed-use buildings, will also increase the need for high-rise operations readiness, pre-fire planning, and technical rescue capabilities.

The City is also seeing a considerable amount of growth regarding multi-family housing. Multi-family residential buildings add unique challenges due to higher occupant density, shared egress routes, and the potential for rapid fire spread between units. As these developments grow, the fire department must ensure proper apparatus access, effective fire protection systems, and adequate staffing for rescue, suppression needs and EMS response. Ongoing inspections, pre-incident planning, and coordination with developers remain essential to maintaining safety.

Collectively, these trends point to a widening gap between projected service demand and current departmental capacity. Without a **phased approach to adding personnel, prevention staff, and new stations,** Riverside Fire Department may face challenges in maintaining its current response performance and prevention standards as city growth accelerates.

PERFORMANCE OBJECTIVES & MEASURES FINDINGS & RECOMMENDATIONS

RFD is in the process of formalizing its performance objectives to align with nationally recognized standards and best practices. Establishing measurable performance benchmarks is essential for ensuring accountability, consistency, and continual improvement in service delivery. AP Triton's analysis emphasizes the importance of adopting formal standards based on the **NFPA 1710** model, which defines time-based performance goals at the **90th percentile** for alarm processing, turnout time, travel time, and effective response force (ERF) deployment.

While RFD has begun referencing NFPA 1710 benchmarks, the department does not yet consistently track all corresponding performance indicators—particularly those related to total ERF times and multi-unit response performance. Improved data management and more comprehensive use of the records management system are necessary to ensure accurate, consistent reporting. This will enable RFD to monitor its actual performance against benchmark goals and identify where service gaps exist.

The recommended benchmarks for RFD include defined response-time targets for **fire suppression, EMS, technical rescue, and hazardous materials incidents**, each measured at the 90th percentile. For most first-due responses, the goal is a **total response time of seven minutes (7:00)** during the day and **seven minutes, thirty seconds (7:30)** at night. Additional standards define staffing and response expectations for varying risk levels, ensuring an appropriate and timely effective response force.

Moving forward, RFD should institutionalize these performance measures through formal policy adoption and regular evaluation, adjusting targets to reflect evolving community needs, available resources, and future growth. By adopting these benchmarks, Riverside will strengthen operational transparency, enhance service reliability, and align departmental performance expectations with national standards of excellence.

Recommendation O-1: Adopt and implement localized response performance benchmarks. (Short-Term)

Description: AP Triton recommends that the City of Riverside adopt formal response performance standards or develop community-specific benchmarks tailored to the City's unique operating environment. Response performance is the most publicly visible component of an emergency services delivery system, and establishing clear standards is foundational for evaluating system effectiveness, determining staffing needs, allocating resources, and communicating expectations to the community.

Localized benchmarks should consider Riverside's geography, traffic conditions, population density, call volume, and risk profile. These benchmarks also ensure alignment with recognized national standards—such as NFPA 1710—while allowing the City to adopt performance expectations that are realistic, achievable, and reflective of local service goals.

Outcomes: Implementing formal response performance benchmarks will:

- Provide a transparent, measurable framework for evaluating system performance;
- Align service delivery expectations with the community's needs and priorities;
- Guide future staffing decisions, apparatus deployment, station placement, and resource allocation;
- Improve accountability, data-driven planning, and long-term system reliability;
- Enhance communication with city leadership and residents regarding service capacity and improvement strategies.

These benchmarks will also form the foundation for future recommendations regarding station distribution, EMS deployment, and operational efficiency.

Estimated Cost: The primary cost is staff time dedicated to:

- Reviewing national performance standards and best practices;
- Analyzing local response data and determining recommended benchmarks for Riverside;
- Preparing a formal presentation for City management outlining existing performance, gaps, and proposed benchmarks;
- Seeking authorization to adopt performance standards that support improved service delivery.

A **sample resolution** is provided in an appendix of this report to support City adoption of these benchmarks.

Section V: STATION LOCATION STUDY

STATION **LOCATION ANALYSIS**

This station location analysis provides a comprehensive evaluation of how the Riverside Fire Department's current and future fire station distribution supports effective and timely emergency response throughout the community. Grounded in nationally recognized best practices—including those established by the Center for Public Safety Excellence (CPSE), the Commission on Fire Accreditation International (CFAI), and NFPA 1710—this analysis examines the department's ability to deliver essential emergency services based on the geographic placement of its resources.

The primary objective of this assessment is to determine whether the existing fire station network optimally supports community needs by ensuring rapid, reliable, and equitable response coverage. By evaluating call-volume patterns, travel times, service gaps, and historical response performance, the analysis identifies where current station locations are performing effectively and where adjustments may be warranted. This includes assessing the ideal distribution of units and personnel to minimize response delays while avoiding unnecessary duplication of coverage or overstaffing.

A critical component of the study is understanding how station placement influences performance benchmarks tied to national standards. NFPA 1710 emphasizes timely turnout and total response times, while CFAI requires agencies to establish and validate performance goals based on risk. Station location is at the core of these objectives. Proper geographic distribution directly impacts the department's ability to achieve four-minute travel goals for first-arriving units and to assemble the Effective Response Force (ERF) within the required timeframes. Riverside Fire Department has identified an ERF of 19 personnel for a moderate-risk structure fire, and this analysis evaluates how effectively this force can be assembled based on current and projected station configurations.

This study also focuses on identifying risk patterns—such as high-demand areas, population growth corridors, transportation barriers, and regions where queuing or travel time delays are more likely to occur. These insights guide recommendations for station relocation, additional stations, unit redeployment, or operational adjustments aimed at improving system reliability and resiliency. Geospatial modeling and simulation are used to map coverage, highlight areas of insufficient concentration or distribution, and forecast the system's ability to meet performance objectives under a variety of conditions.

As part of its commitment to continuous improvement and alignment with CFAI accreditation expectations, the Riverside Fire Department can use this analysis to support informed decision-making regarding capital planning, staffing strategies, and long-term resource needs. By quantifying the relationship between station location, community risk, and response capabilities, the department can strategically plan for growth, optimize operations, and enhance the overall safety of the residents it serves.

Response Reliability

Reliability refers to the successful delivery of an assigned resource to the scene of an incident in that resource's designated administrative area. For example, engine 1 (E1) is dispatched to an emergency call and arrives first on the scene within Station 1's administrative response district. This would be considered a reliable response and would indicate that the unit was placed in the proper geographic location and staffed effectively to respond to that incident within its "first due" area.

The most useful methodology for evaluating response reliability is to assess performance year over year and compare these results with other stations.

Overall, Riverside Fire Department's station reliability is shown in the following figure for the entire city. Station 1 exhibits the highest overall reliability from 2018 to 2024 at **91%**, while Station 8 is the lowest at **58%.**

Several factors may have an impact on this value, including:

- **Proximity** to major roadways can reduce travel times.
- **Square Miles to Cover:** Larger geographic areas, not well served by the road network, are harder to serve.
- **Sufficient Staffing:** The ability to staff more than one unit assigned to the station directly impacts reliability.
- Multiple **assigned resources** in the station service area.
- **High call volume** leading to units being out of the station more often.
- **Shorter reaction times** since the units are deployed and ready to respond more frequently.

Figure 200: Riverside Fire Department Station Reliability

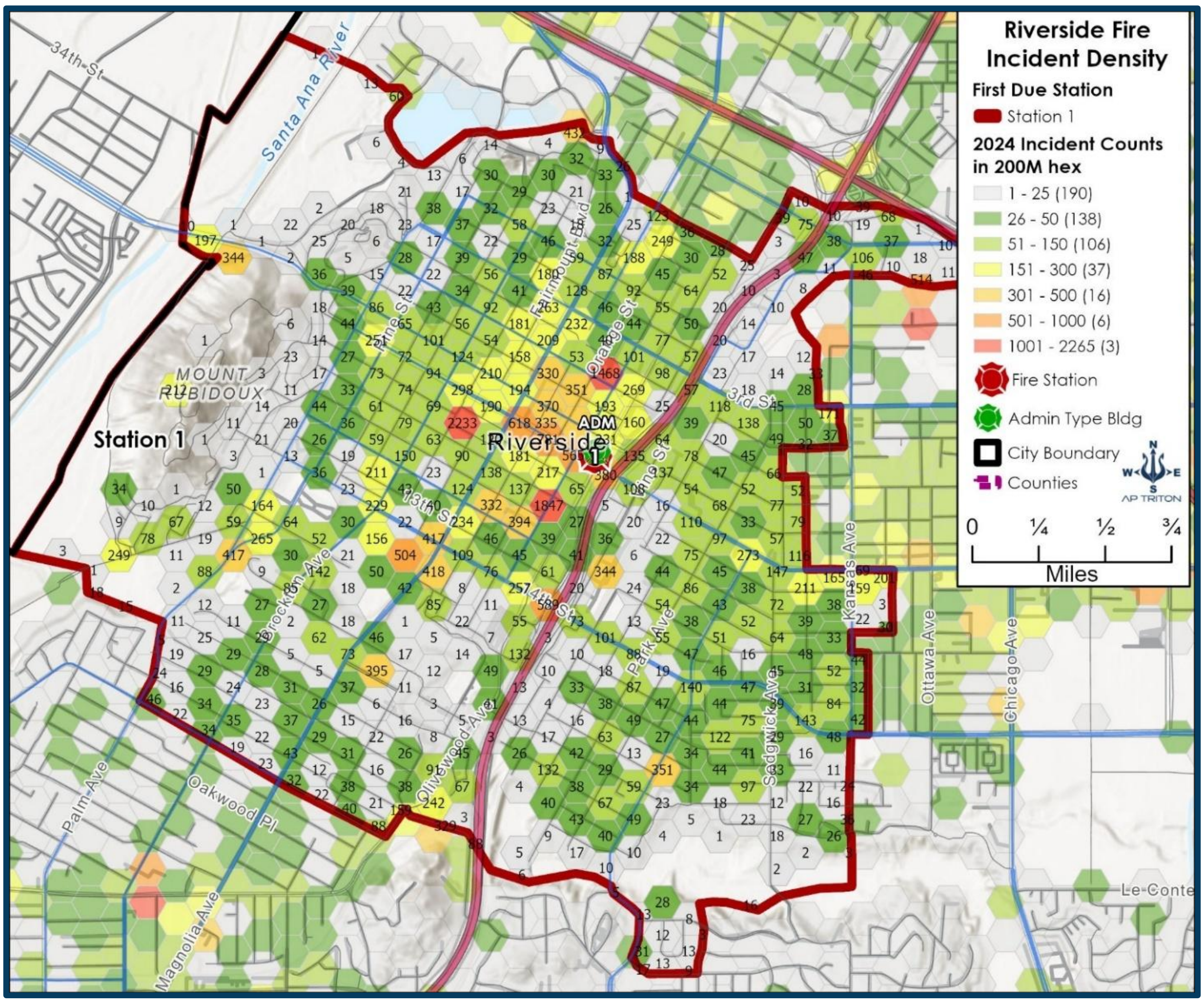
STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 1	94%	90%	90%	91%	91%	91%	92%	91%	7.1	10
Station 2	93%	82%	83%	85%	85%	87%	85%	86%	6	10
Station 3	90%	85%	87%	88%	87%	88%	89%	88%	4.7	7
Station 4	81%	74%	75%	74%	72%	72%	74%	75%	6.8	4
Station 5	92%	86%	85%	85%	86%	87%	87%	87%	12.4	5
Station 6	82%	72%	70%	71%	72%	76%	74%	74%	7	4
Station 7	81%	65%	67%	62%	62%	67%	67%	67%	10	4
Station 8	78%	62%	62%	58%	58%	65%	60%	63%	10.3	4
Station 9	89%	82%	82%	78%	78%	80%	81%	81%	10.6	4
Station 10	80%	65%	65%	62%	63%	67%	67%	67%	16.3	4
Station 11	88%	83%	85%	81%	80%	81%	85%	83%	8.3	4
Station 12	80%	75%	74%	72%	74%	74%	76%	75%	6.5	4
Station 13	82%	77%	78%	77%	77%	79%	79%	79%	5.9	4
Station 14	83%	78%	72%	75%	77%	77%	77%	77%	6.8	4

STATION 1

Incident Evaluation

Station 1 is situated in the most urban area of the city and, as such, has a higher population and incident density than other stations. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 1 area; other stations are included for context, showing how often Station 1 apparatus could be engaged as second-arriving units.

Figure 201: Station 1 Incident Counts

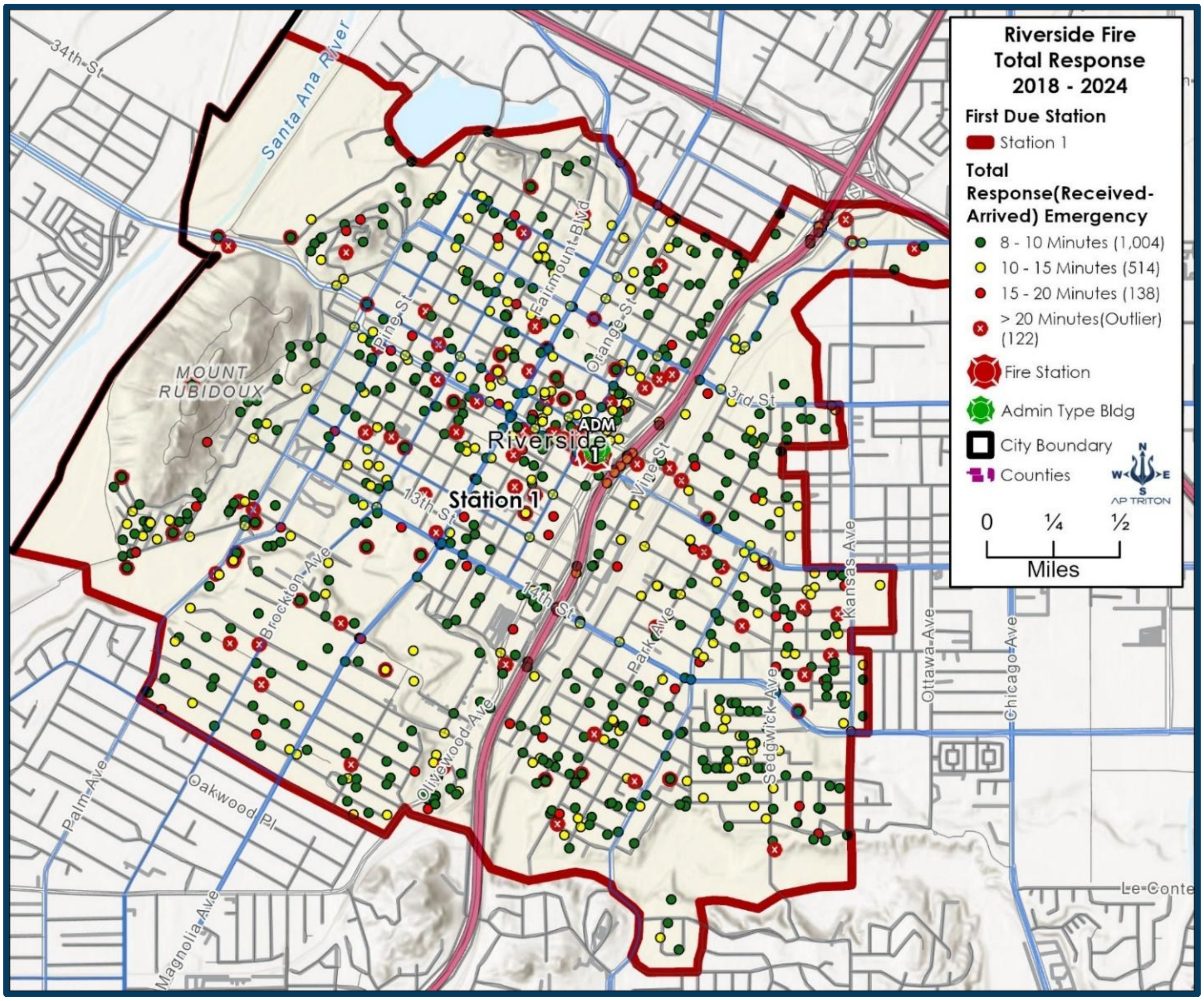


Between 2018 and 2024, Station 1 responded to **39,148** incidents. Of these incidents, from 2018 to 2024, a Station 1 assigned unit arrived first on the scene **35,714** times. This averages out to a reliability of **91%**. This indicates that, due to the large number of units and staff at the station, response reliability is very high.

Station 1 total response time for an incident is measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 1 crews can arrive at the location in **7** minutes, **15** seconds. This meets the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There were, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There were 1,778 8-minute-or-more total response time exceptions, representing 4.6% of all responses (emergency and non-emergency).

Figure 202: Station 1 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 1 is shown in the following figure. The probability that a Station 1 resource would be the first to arrive at the scene of an emergency request in Station 1's district is very high. Station 1 meets most of the reliability-improving parameters.

Figure 203: Station 1 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 1	94%	90%	90%	91%	91%	91%	92%	91%	7.1	10

Hazard Evaluation

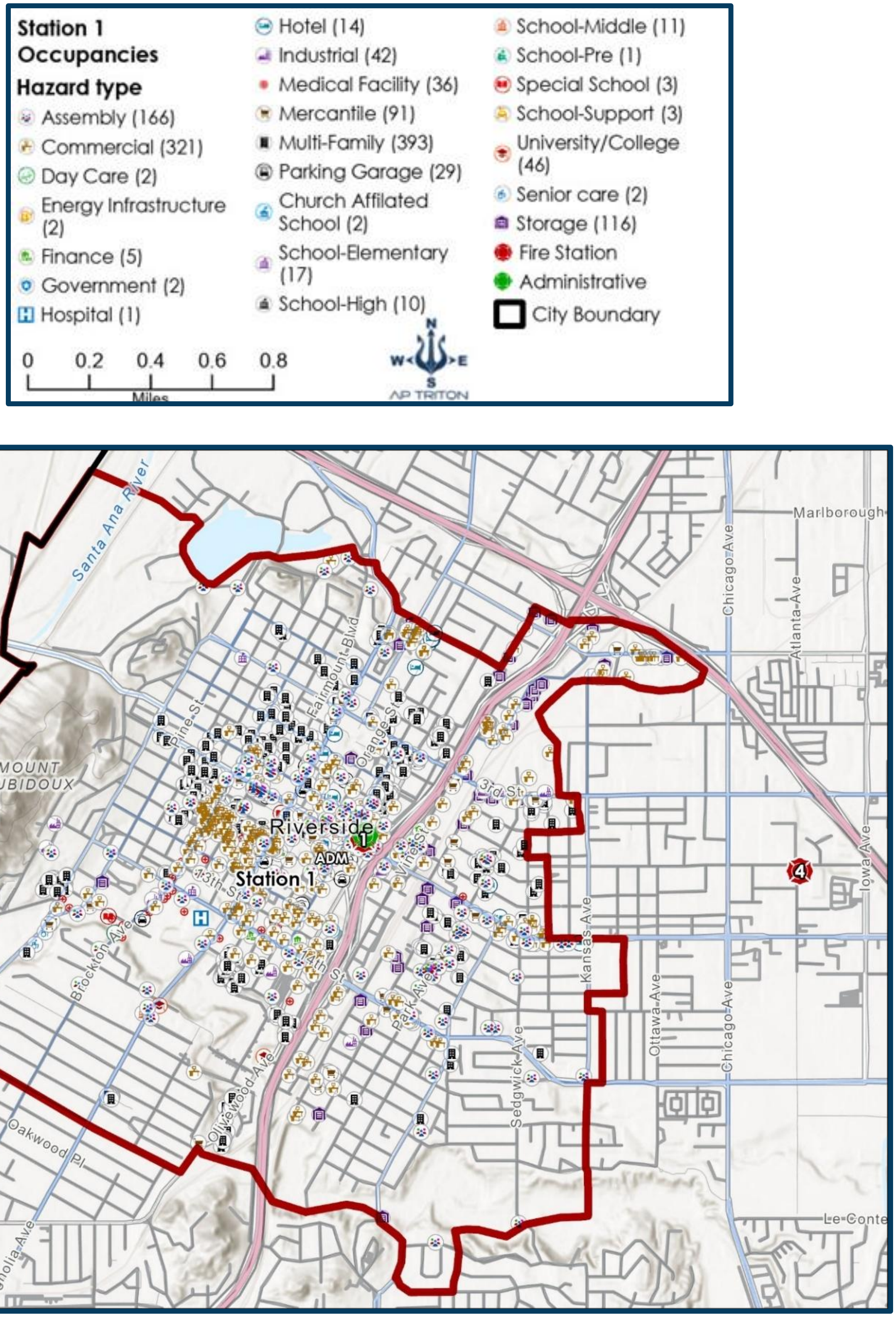
Station 1 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment. The RFD prevention division provided data for these elements gathered during inspections and may not include every possible business, residence, or building in the area.

Key Occupancy Types and Hazard Profiles

- **Dominant Hazards:** Multi-family residential (393) and commercial (321) sites are the most numerous, suggesting a densely populated urban area with everyday fire risks from cooking, electrical faults, or arson.
- **High-Risk Concentrations:** Educational facilities (~88 across various school types) and assembly areas (166) indicate areas requiring child- and pedestrian-focused response plans. Industrial and storage sites (158 combined) point to potential HazMat or large-scale incidents.
- **Geographic Notes:** The following figure shows clustered icons around Station 1, with the response area approximately 0.8 miles in diameter. No significant outliers, such as remote industrial zones, are visible, implying walkable/urban coverage.
- **Mount Rubidoux:** This promontory lies to the northwest of Station 1. This land feature implies a higher risk of wildfire exacerbation, technical rescues for recreational incidents, landslides, and other hazards.

This visualization supports strategic planning by quantifying response demands, helping prioritize training for assembly evacuations or industrial spills.

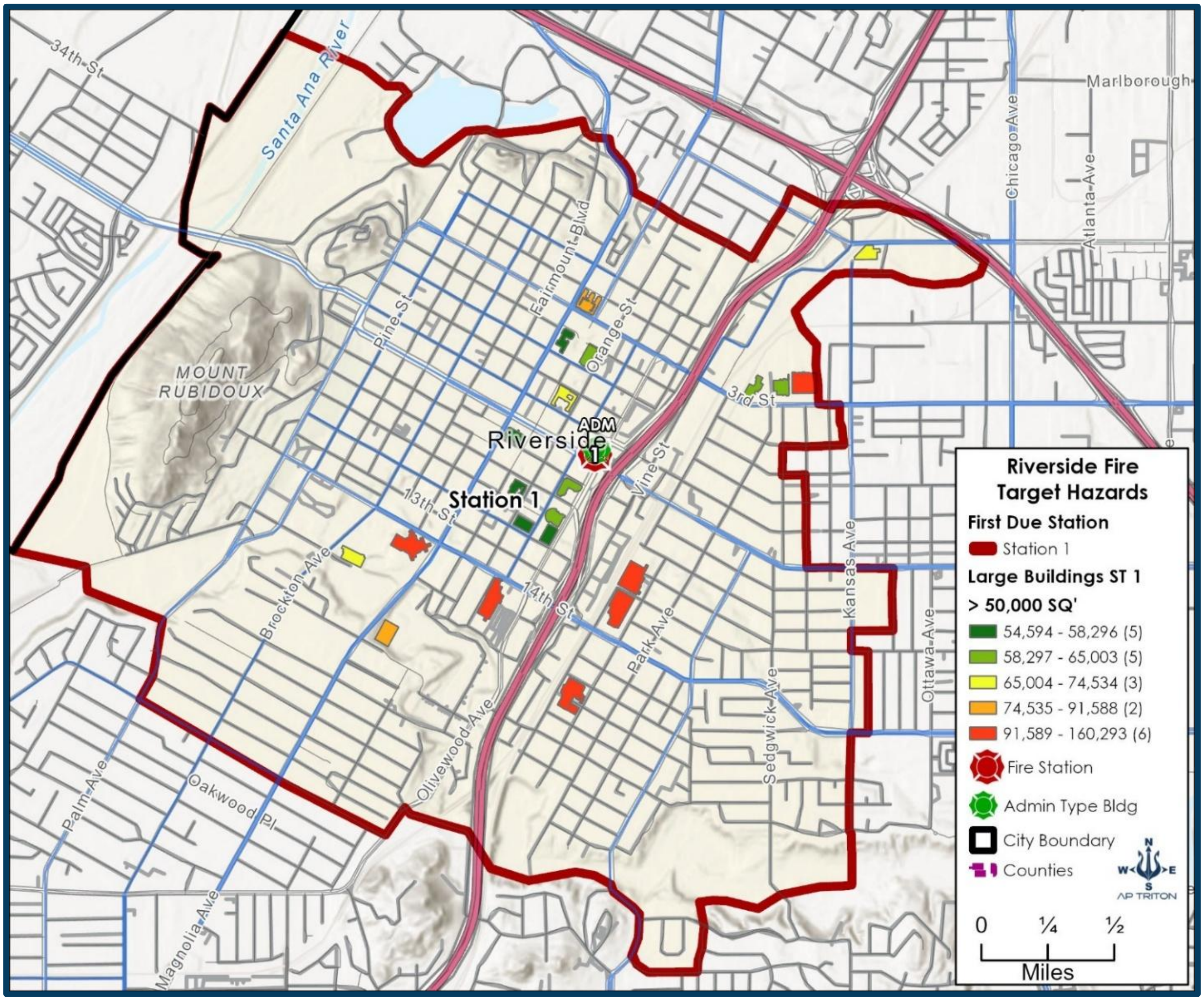
Figure 204: Station 1 Geographic Distribution of Hazards/Occupancies



Large Buildings

In the following figure, the map for large buildings (over 50,000 square feet) around Station 1 highlights significant structures within its response area, located at the center of the map. The map covers a region within the city boundary, with a scale of 0 to 0.5 miles.

Figure 205: Station 1 Large Buildings Greater than 50,000 Sq. Ft.



Key features include large buildings with square footage.

- **54,594–58,596 sq. ft. (5):** in green, a large building within the threshold.
- **58,297–65,003 sq. ft. (5):** Marked in light green, denoting moderately large sites, possibly schools or multi-family units.
- **65,004–74,534 sq. ft. (3):** Marked in yellow, including medium-large structures like retail or institutional buildings.

- **74,535–91,588 sq. ft. (2):** Marked in orange, representing sizable facilities such as warehouses or offices.
- **91,589–160,293 sq. ft. (6):** Marked in red, indicating the largest buildings, likely major commercial or industrial complexes.

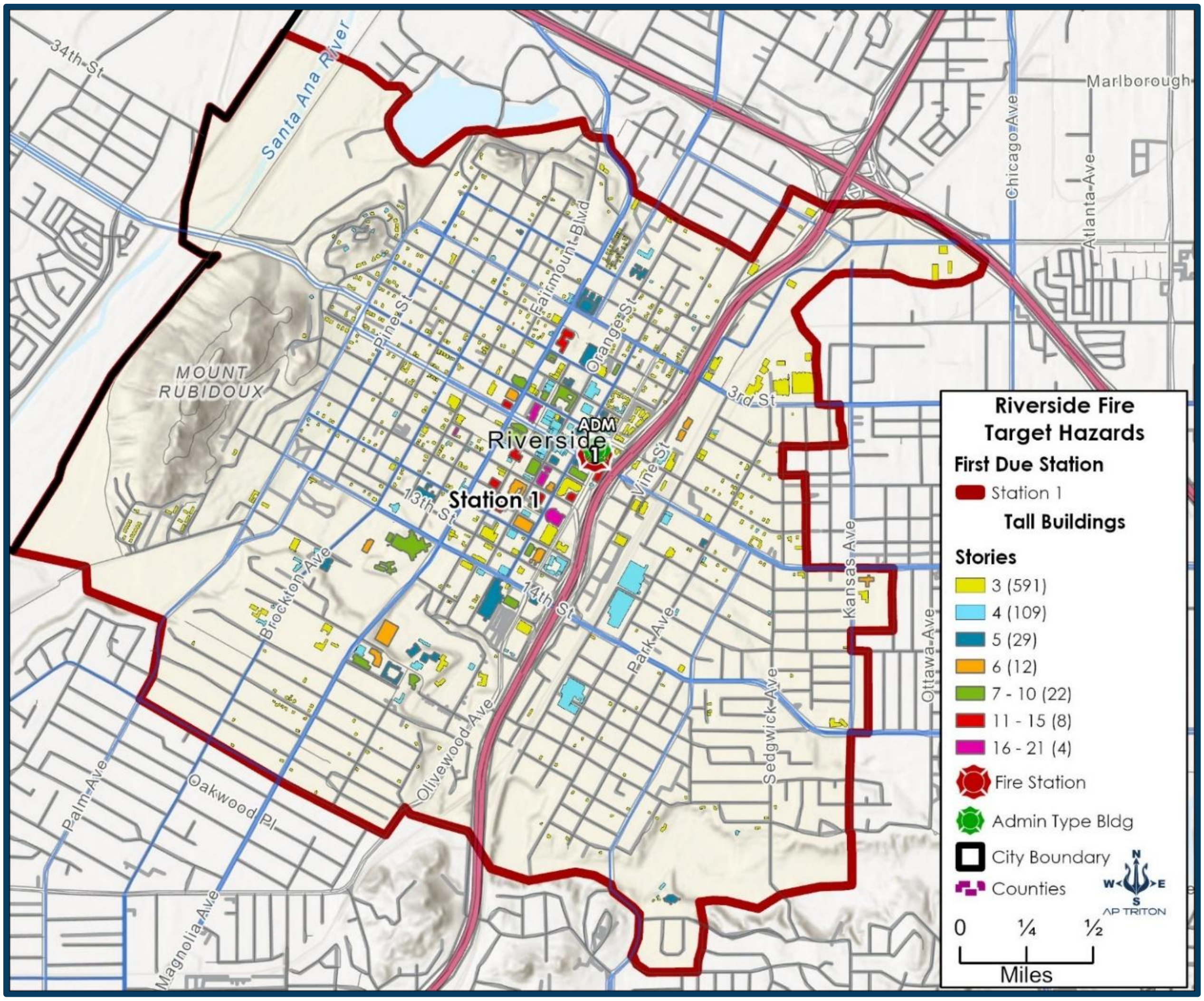
This figure aids in identifying high-risk large structures for fire response planning, focusing on Station 1's coverage of significant square footage within a compact urban area.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (more than three-story) buildings are considered to determine the effectiveness of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 1’s area.

The map for multi-story buildings around Station 1 highlights structures of varying heights within its response area, centered at the intersection of University Ave. and 14th St. The map covers a region within the city boundary, with a scale of 0 to 0.5 miles.

Figure 206: Station 1 Multi-Story Buildings



Station 1 has **775** Multi-story buildings defined by height:

- **3 Stories (591):** Marked in yellow, the most numerous, likely residential or small commercial buildings.
- **4 Stories (109):** Marked in blue, indicating mid-rise structures such as offices or apartments.
- **5 Stories (29):** Marked in dark blue, representing taller residential or mixed-use buildings.
- **6 Stories (12):** Marked in orange, a single mid-to-high-rise, possibly a commercial or institutional building.
- **7–10 Stories (22):** Marked in green, a single mid-to-high-rise, possibly a commercial or institutional building.

- **11–15 Stories (8):** Marked in red, the taller buildings are likely significant commercial towers or hotels.
- **16–21 Stories (4):** Marked in purple, denoting the highest structures, such as downtown high-rises.

ISO 2.5 Mile Aerial Coverage Assessment

In this case, the measure for the highest PPC score requires an aerial (Ladder/Truck) apparatus within 2.5 miles of a station. The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 1's area. Sources of the nearest ladder resources are also displayed. As shown in the following figure, the entire tall building load is covered by aerial apparatus within the required ISO parameter.

Figure 207: Station 1 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

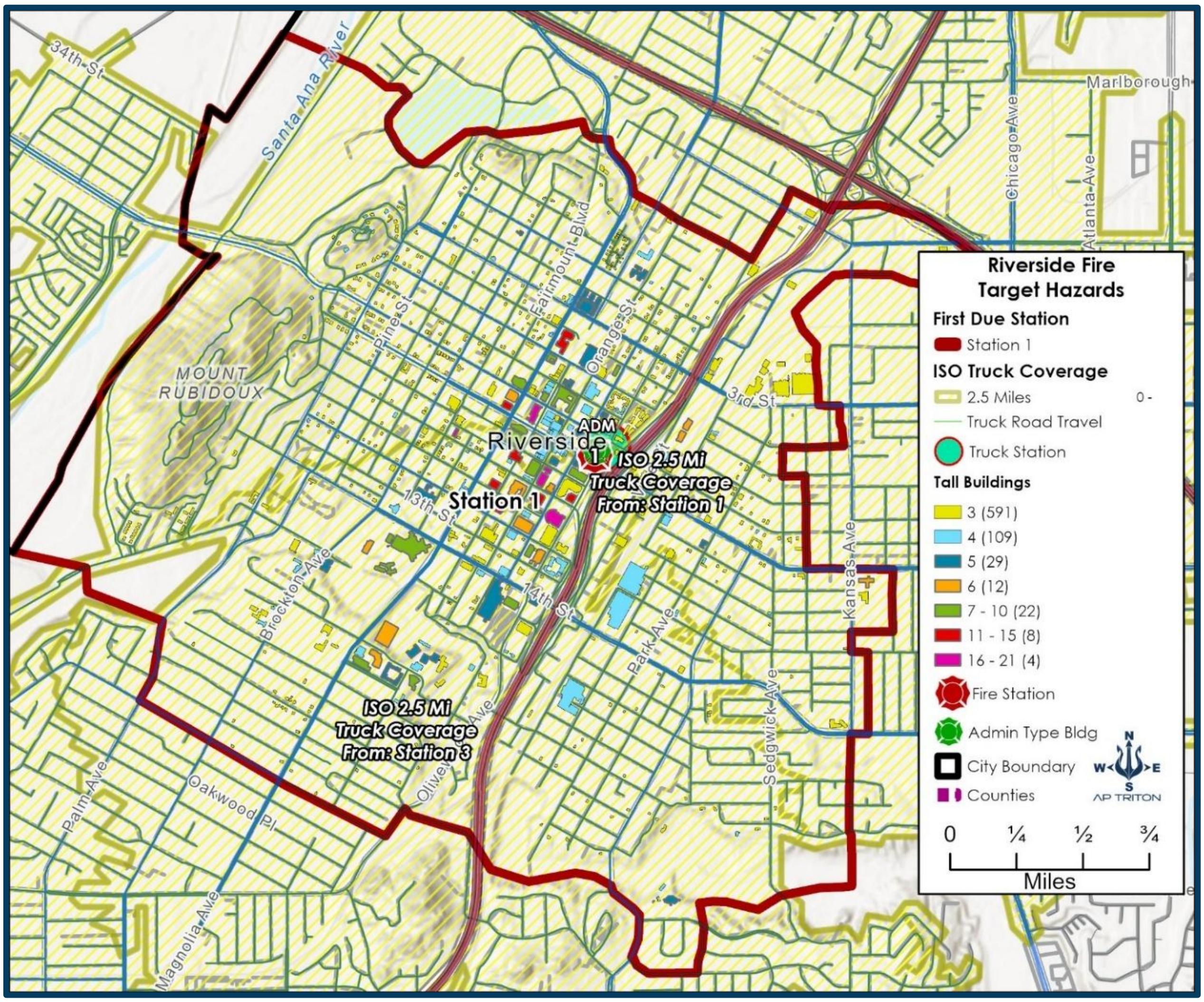
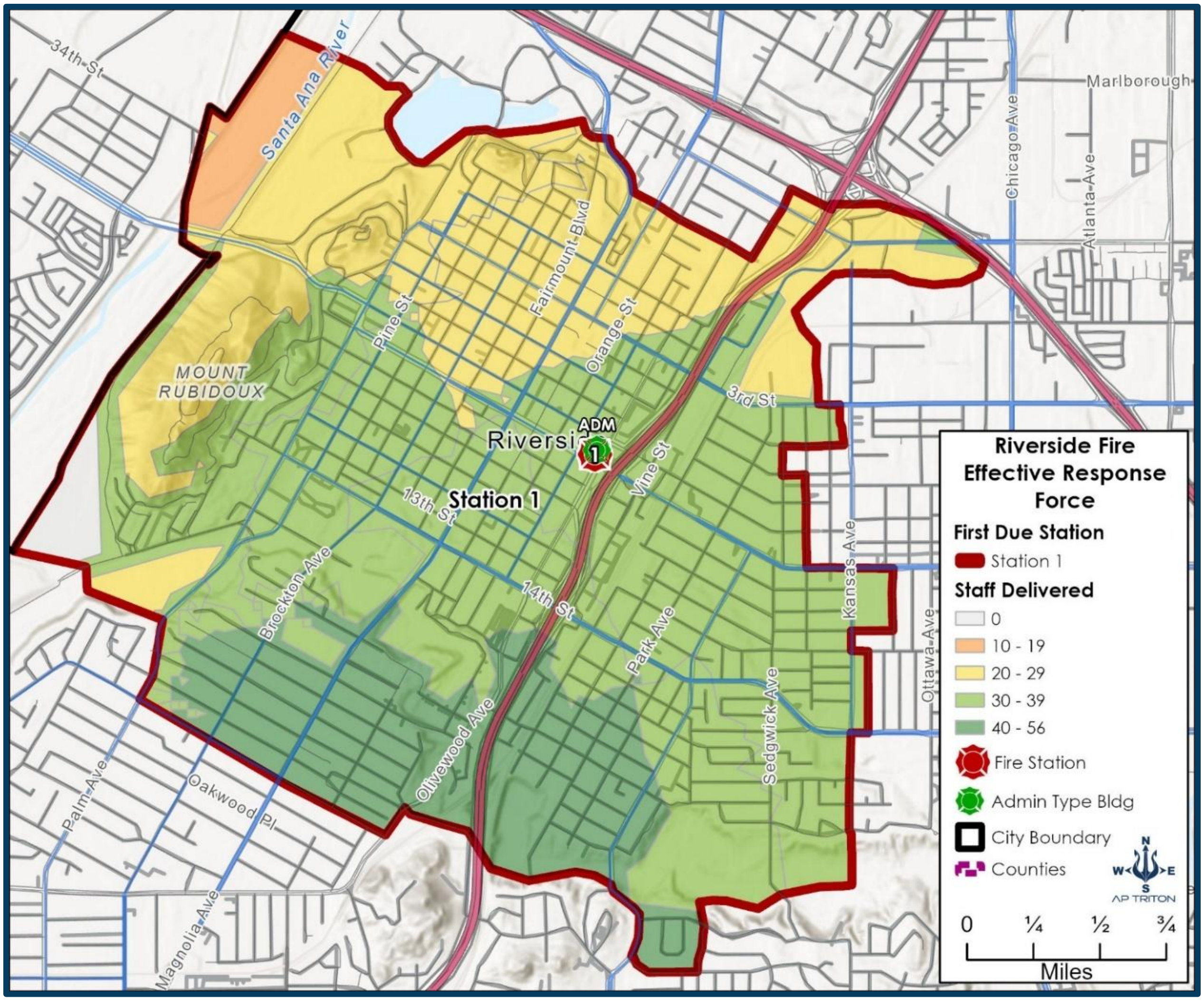


Figure 208: Station 1 ERF at 8 Minutes



Core Visualization

- **Effective Response Force Delivered:** This choropleth (color-coded polygon) layer shows estimated ERF personnel arriving per incident location, binned into ranges: 0 (white), 10–19 (light orange), 20–29 (yellow), 30–39 (light green), and 40–56 (dark green). Higher values indicate a stronger concentration of forces from Station 1 and mutual aid.
- **Coverage:** ~70–80% of the area achieves 20+ personnel (yellow to green), with strong performance (40+) in the central and eastern residential zones near the station. Lower coverage (0–19) is limited to peripheral pockets, such as the northwest hills (orange/white) and a small southern sliver (yellow).

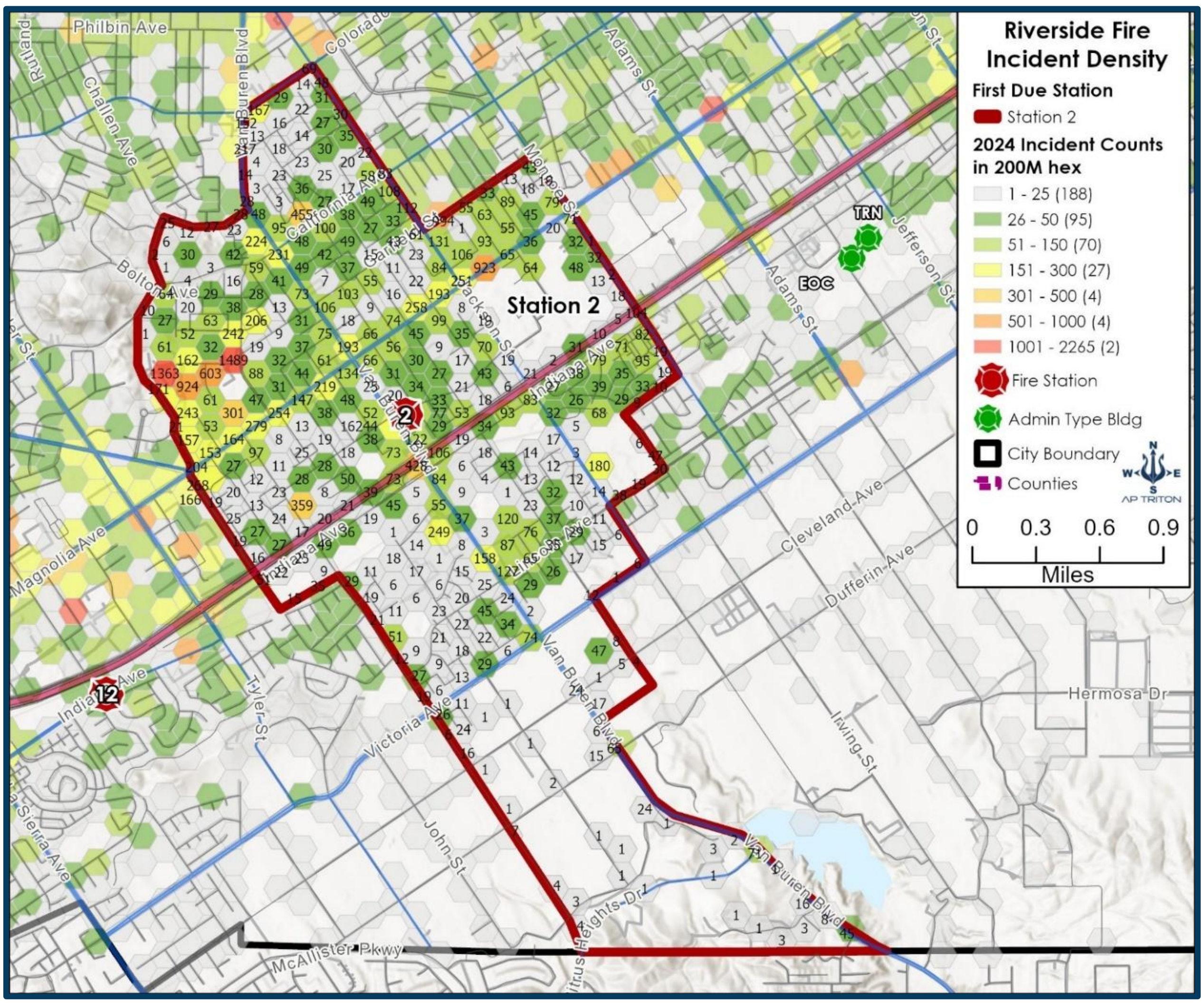
- **Data Implications:** The ERF values suggest modeling assumptions, such as four-person engine crews, 8–10-minute assembly times, and automatic/mutual aid from stations like Station 6. Dark green areas align with flat, accessible urban grids, while lighter shades correlate with topographic barriers (hills) that could delay response. Actual staffing numbers provided by Riverside Fire Department were used to generate the effective response time areas.
- **Strengths:** Alignment with CFAI Standards: a core SOC pillar, by quantifying personnel delivery rather than just travel times. This supports accreditation by highlighting equitable coverage—most high-risk urban areas (e.g., dense housing near railroads) receive 30 or more staff, enabling safe interior operations in accordance with NFPA/CFAI benchmarks.
- **Practical Insights:** Strong central coverage (40–56) validates Station 1's placement for core city risks, potentially meeting CFAI's 90% compliance threshold for urban fire response.
- **Coverage Gaps:** Approximately 15–20% of the area falls below 20 personnel (orange/white zones), particularly in the northwest hills and southern extensions, which are high-risk areas for wildfires or delayed access to medical calls. This could flag reliability issues under CFAI's "worst-case" risk assessment.
- **Overall Assessment and Recommendations**: RFD has a solid baseline performance, with 80% or more of the study area receiving adequate forces for standard incidents. It underscores the department's urban focus while pinpointing terrain-driven vulnerabilities, aligning with CFAI's emphasis on data-informed planning.
- **Strategic Actions:** Prioritize hill-area mitigation through brush patrols or micro-stations; pursue CFAI reaccreditation (RFD was previously accredited) to benchmark against peers.

STATION 2

Incident Evaluation

Station 2 is situated southwest of the city's main Riverside urban area and, as such, has a lower population density and incident rate than other stations within the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 2 area; other stations are included for context, showing how often Station 2 apparatus could be engaged as second-arriving units.

Figure 209: Station 2 Incident Counts

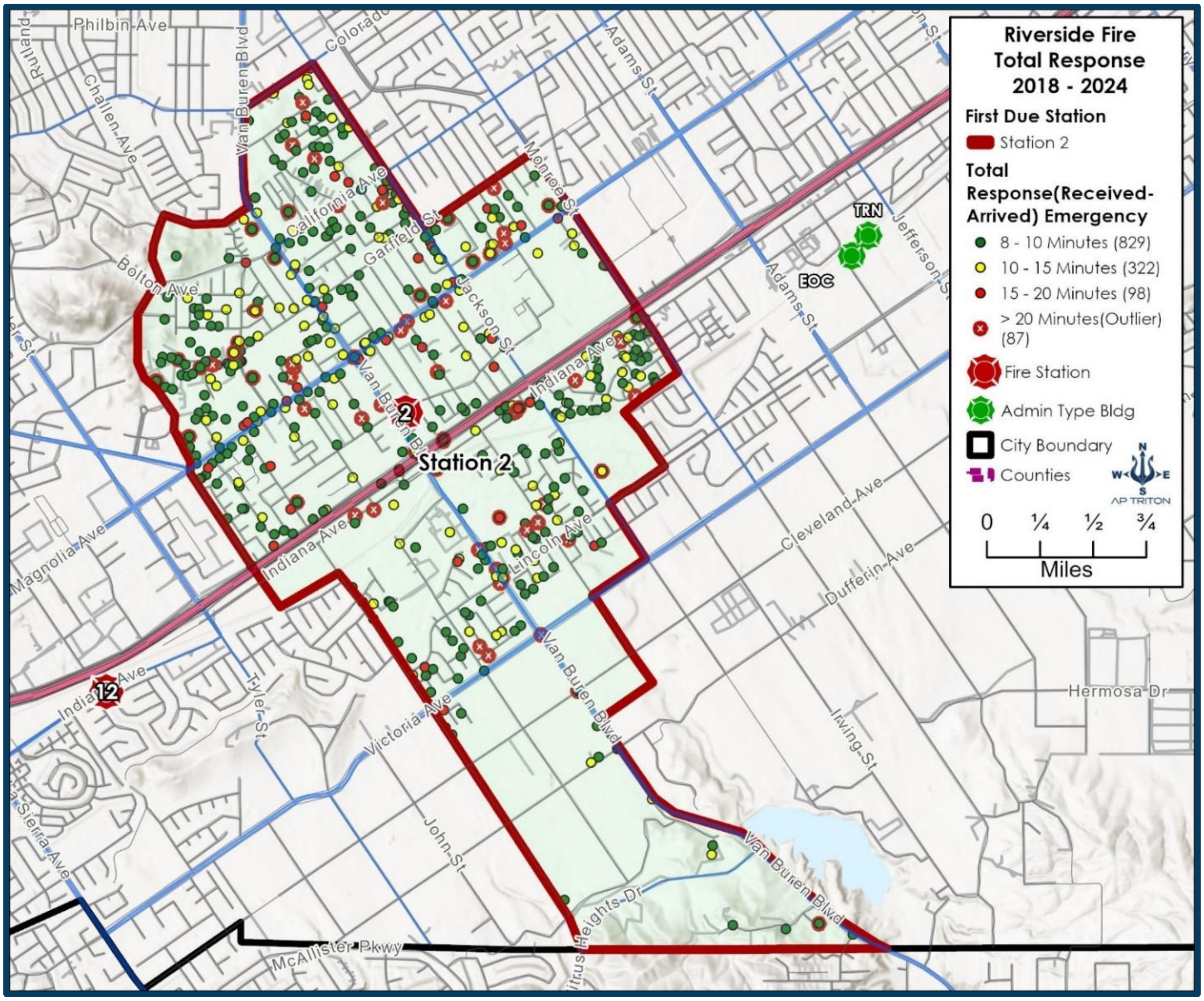


Between 2018 and 2024, Station 2 responded to **29,571** incidents. Of these incidents, from 2018 to 2024, a Station 2 assigned unit arrived first on the scene **25,534** times. This averages out to a reliability of 86%. This indicates that, due to the large number of units and staff at the station, response reliability is very high.

Station 2 can meet NFPA standards for total incident response time, measured from call initiation to on-scene arrival. Ninety percent of the time, Station 2 can arrive at the location in 7 minutes and **30** seconds. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **1,336** 8-minute or greater total response time exceptions representing 4.5% of all responses (emergency and non-emergency).

Figure 210: Station 2 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 2 is shown in the following figure. The probability that a Station 2 resource would be the first to arrive at the scene of an emergency request in Station 2's district is very high. Station 2 meets most of the reliability-improving parameters.

Figure 211: Station 2 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 2	93%	82%	83%	85%	85%	87%	85%	86%	6	10

From the previous figure, it is apparent that the likelihood that a Station 2 resource would be the first to arrive at the scene of an emergency request in Station 2's district is very high. Station 2 also possesses the reliability-improving characteristics present in the parameter list.

Hazard Evaluation

Station 2 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment. The RFD Prevention Division provided data for these elements gathered during inspections and may not include every possible business, residence, or building in the area.

Hazards are visible in clusters near industrial pockets along Tyler Street and Victoria Avenue. It could indicate chemical storage, manufacturing, or waste sites. White circles with red borders (scattered in the mid-area) indicate medical facilities. There is an inordinately high concentration of storage here. These align with Station 2's HazMat specialization, suggesting routine exposure to spills, leaks, or releases.

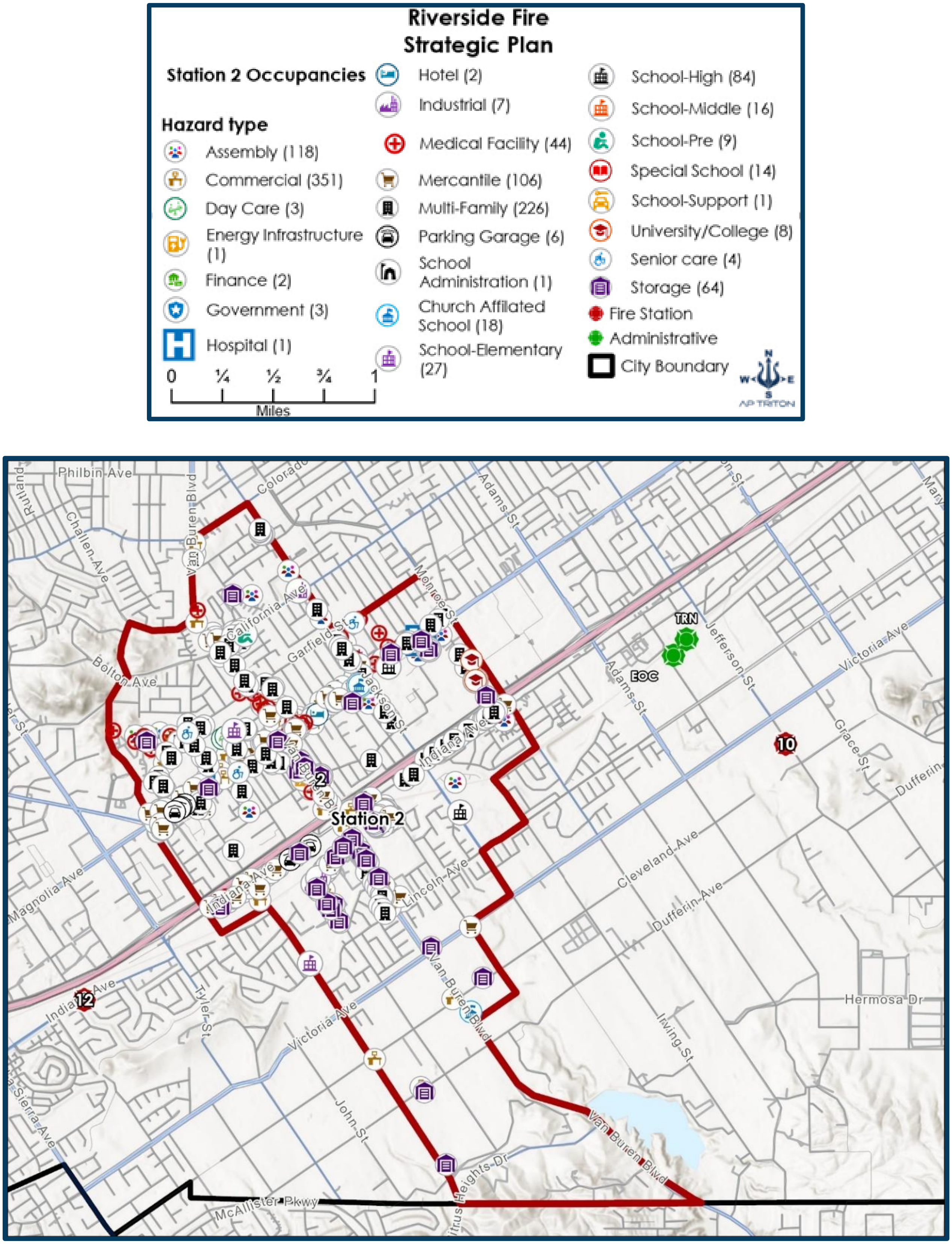
Key Occupancy Types and Hazard Profiles

- **Location Density:** The heaviest concentrations are found in commercial corridors (e.g., near Garfield Avenue and Lincoln Avenue), where warehouses and light industry coexist with traffic routes, thereby increasing spill risks during transportation. A release could contaminate waterways (e.g., a lake) or the air, requiring decontamination (as supported by Decon 12). Urban density amplifies evacuation challenges and poses the potential for cascading effects, such as explosions in confined spaces.
- **Transportation and Access Hazards (Moderate Risk) Highway and Rail Interfaces:** A major east-west highway (SR-91, marked with parallel lines) bisects the northern section, paralleled by rail tracks. Numbered red circles (12 at India Avenue, 10 at Grace Street) likely mark high-incident zones for vehicle accidents or rail crossings.
- **Internal Roadways:** Dense grid of streets with accessibility icons highlights potential bottlenecks in narrow residential alleys or during peak hours. Motor vehicle collisions or derailments could block primary access to the station, delaying response times. The area's proximity to regional commuting routes (via I-215) increases the likelihood of fuel spills or HazMat transport incidents.
- **Structural and Occupancy Hazards (Moderate Risk) High-Rise and Tall Buildings** clustered downtown-adjacent near Adams Street) represent apartments or offices prone to high-fuel-load fires. Shopping cart symbols (yellow, near Cleveland Avenue) indicate retail strips with occupancy loads exceeding 500, which raises panic or smoke spread risks.

- **Institutional sites,** such as school icons and medical markers, require specialized responses for vulnerable populations. Government buildings may house records or utilities susceptible to arson. Multi-story collapses or school lockdowns could strain resources, mainly when concurrent events occur. Dense multi-family housing increases residential fire calls due to cooking or electrical faults.

This visualization supports strategic planning by quantifying response demands, helping prioritize training for assembly evacuations or industrial spills.

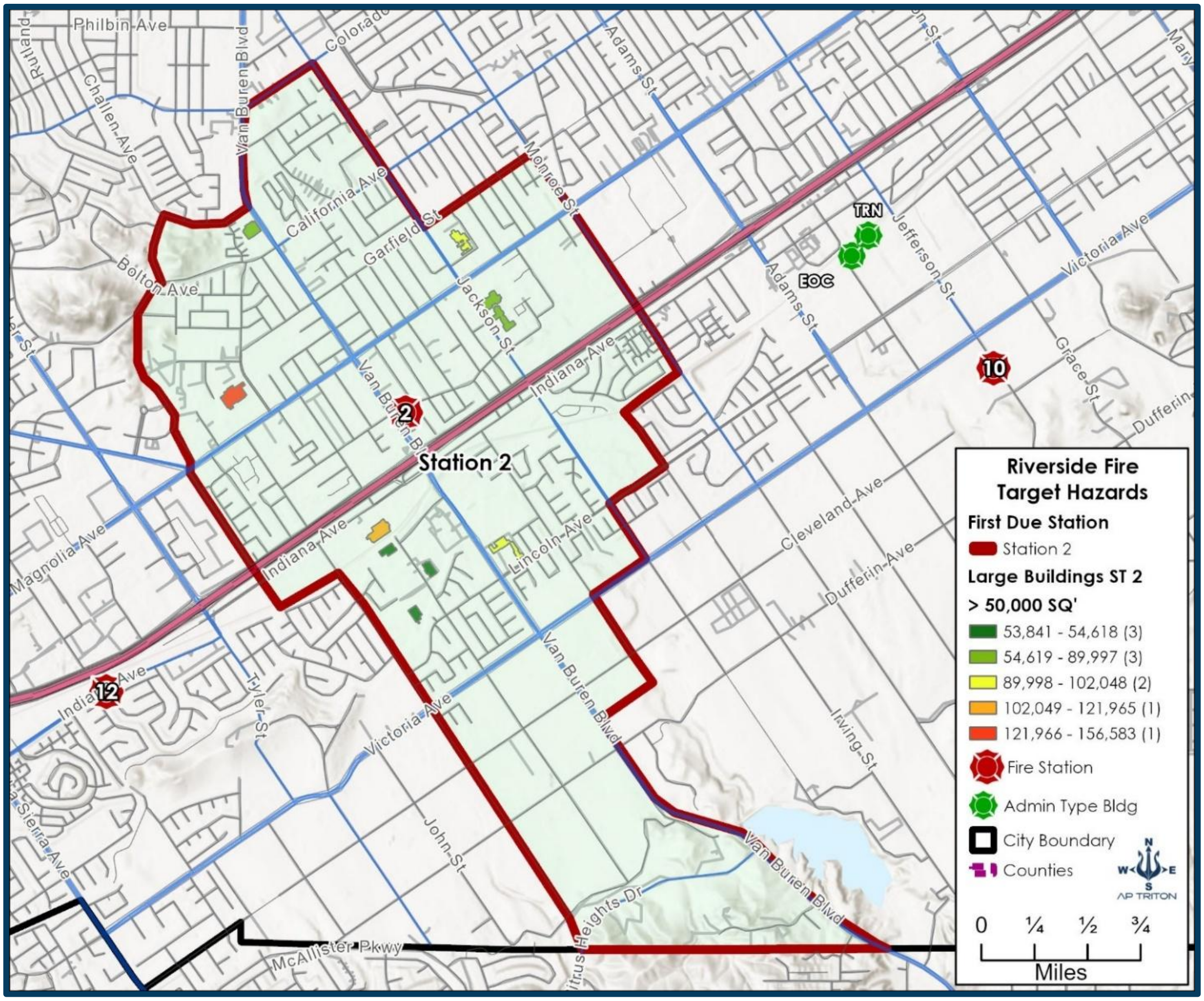
Figure 212: Station 2 Hazards/Occupancies



Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 2, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to 0.6 miles, and includes surrounding stations (10 and 12) for context.

Figure 213: Station 2 Large Buildings Greater than 50,000 Sq. Ft.



- **Smallest Range (53,841–54,618 sq. ft.)–Green Icons (3 Buildings):** Scattered across the central and southern parts of the response area, near Lincoln Avenue, Tyler Street, and Victoria Avenue. These are likely mid-sized commercial or institutional structures, such as small office complexes, schools, or community centers. With moderate occupancy (200–500 people), these buildings pose risks of fire spread from electrical faults or cooking incidents. Evacuation may be manageable, but access could be hindered by surrounding residential streets.

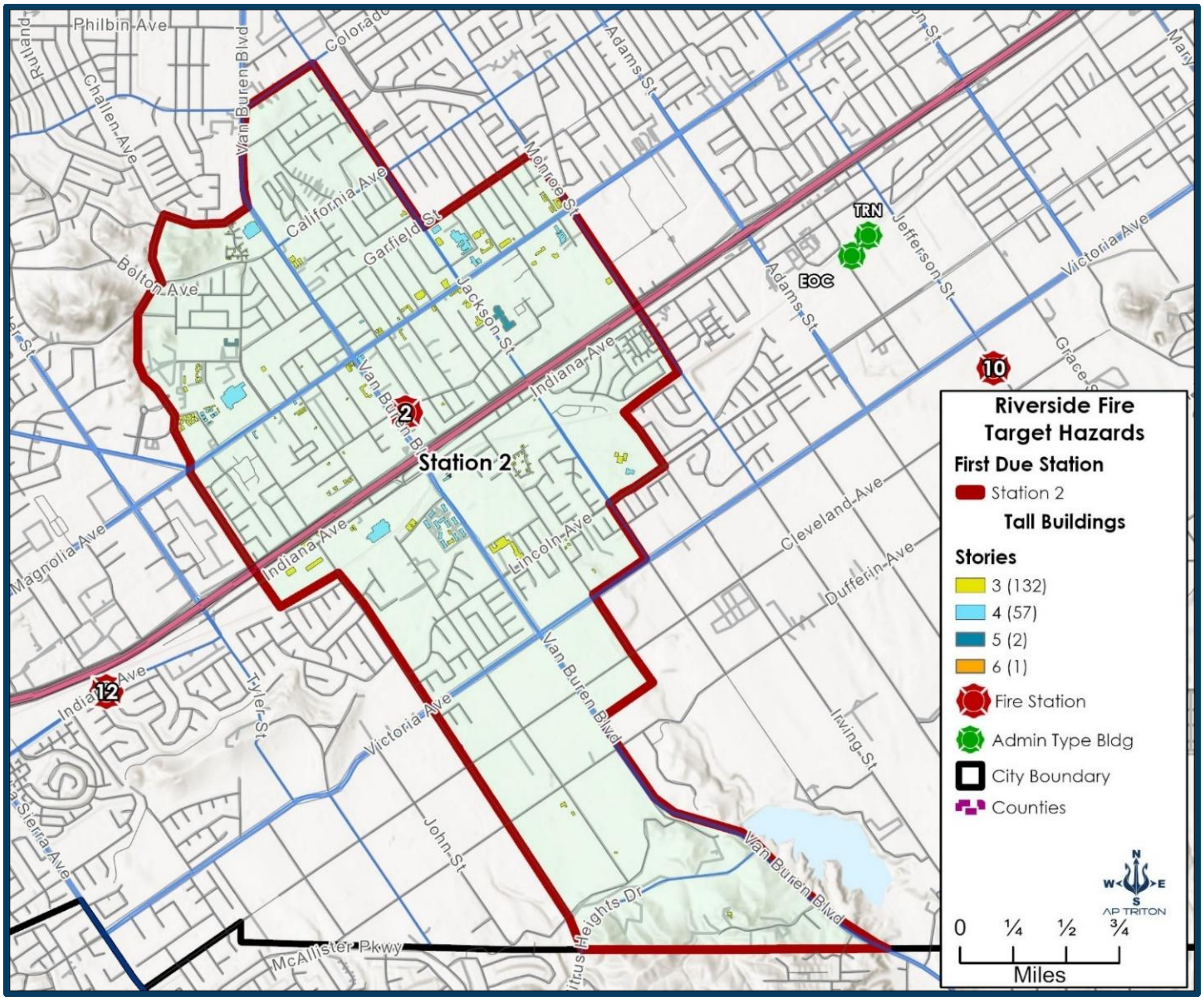
- **Mid-Range (54,619–89,997 sq. ft.)–Light Green Icons (3 Buildings):** Positioned centrally, near Jackson Street and Garfield Avenue, with one near Van Buren Boulevard. These could include larger retail stores, warehouses, or administrative offices. Higher fire loads from stored goods or equipment increase risk. The central location near Station 2 allows for quicker response, but dense traffic (e.g., near California Avenue) could delay access during peak hours.
- **Upper Mid-Range (89,998–102,048 sq. ft.)–Yellow Icons (2 Buildings):** One near Jackson Street (close to the green administrative icon), another southeast near Van Buren Boulevard. These could be larger commercial buildings, such as supermarkets, big-box stores, or multi-tenant office spaces. Occupancy may exceed 500, raising evacuation and panic risks. Firefighting challenges include extensive interior spaces and potential hazardous material (HazMat) storage (e.g., retail chemicals), aligning with Station 2's HazMat role.
- **Largest Range (102,049–121,965 sq. ft.)–Orange Icon (1 Building) Location:** Located centrally, near the intersection of California Avenue and Garfield Avenue. This could be a significant retail center, warehouse, or institutional facility (e.g., a large school or hospital annex). High occupancy and fire load indicate potential for a major incident, with risks of structural damage or prolonged suppression efforts. Proximity to Station 2 is an advantage, but mutual aid may be needed for large-scale events.
- **Largest Building (121,966–156,583 sq. ft.)–Red Icon (1 Building) Location**: Positioned northwest, near Bolton Avenue and the boundary with Station 8. It is likely a major warehouse, distribution center, or industrial complex, given its size and isolated location. Extreme fire loads and potential hazardous materials risks (e.g., flammable goods) are significant. The hilly terrain and distance from Station 2 could delay response, especially during wildfire conditions common in this area.

Station 2’s response area contains **10** large buildings, ranging from **53,611** to **156,583** sq. ft., with a mix of commercial, institutional, and industrial uses. The largest in the northwest poses the highest risk due to its size and terrain, while the central cluster (yellow and orange) presents additional challenges related to urban density. Station 2’s capabilities are well-suited to address these hazards; however, pre-planned access routes and mutual aid are critical for an effective response.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 2's area.

Figure 214: Station 2 Multi-Story Buildings



Identified Tall Buildings

Station 2's response district contains **192** tall buildings. The 6-story building near California Avenue and Garfield Street poses the highest challenge due to occupancy and height, while the numerous 3-story structures increase overall call volume. Station 2's capabilities are well-positioned to address these hazards; however, pre-planned access and mutual aid are critical for mitigating risks associated with taller structures.

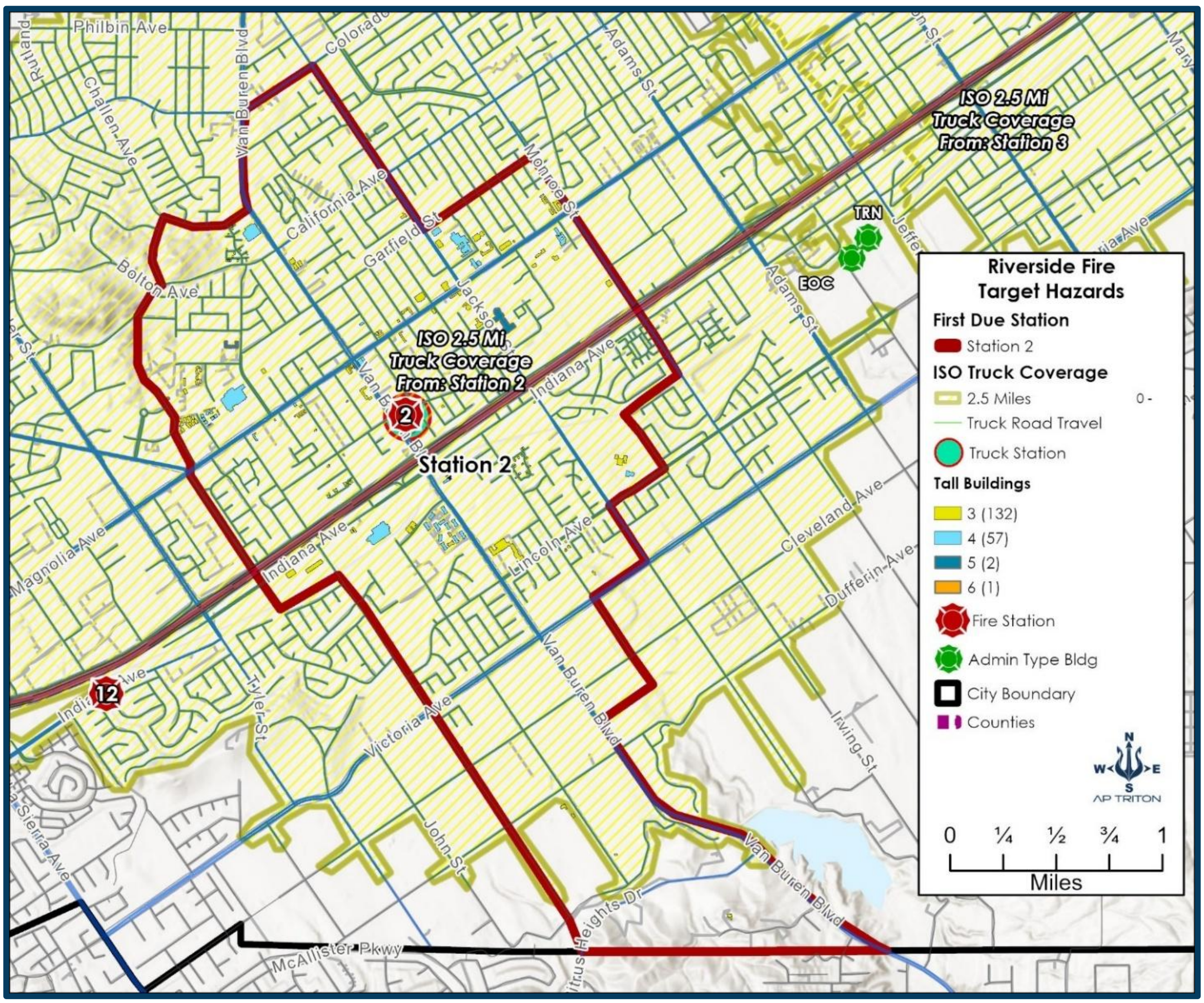
- **3 Stories–Yellow Icons (132 Buildings):** Widely distributed across the response area, with concentrations along California Avenue, Garfield Street, and Lincoln Avenue. These are potentially low-rise residential apartments, small office buildings, or commercial storefronts with upper residential floors. With moderate occupancy (50-200 people per building), fire risks include the potential for vertical spread via stairwells. Evacuation is generally manageable, but dense street layouts may slow apparatus access.
- **4 Stories–Light Blue Icons (57 Buildings):** Scattered centrally, near Jackson Street and Indiana Avenue. Possibly mid-rise apartments or office complexes with increased height and occupancy. Occupancy may range from 200 to 400, posing challenges for smoke management and evacuation. Proximity to Station 2 aids response, but older buildings may lack modern fire suppression systems.
- **5 Stories–Dark Blue Icons (2 Buildings):** Located near the central area, close to Station 2 and along Van Buren Boulevard. These could be higher-end apartments, small hotels, offices, or institutional buildings. With 400-600 occupants, these present moderate fire spread risks. A quick response from Station 2 is an advantage, although high winds from nearby hills could complicate firefighting efforts.
- **6 Stories–Orange Icon (1 Building) Location:** Positioned centrally, near the intersection of California Avenue and Garfield Street. Likely a significant residential or commercial high-rise, such as a condo or office tower. Occupancy could exceed 600, necessitating the development of complex evacuation plans. Fire risks include structural challenges that require ladder truck support.
- **Hazard and Response Considerations:** Fire Spread and Structural Integrity; Taller buildings (4–6 stories) are prone to vertical fire spread, primarily if constructed before modern fire codes (pre-1990s). Older structures may lack adequate firebreaks or exits.

Buildings with more than three stories require phased evacuations, and 6-story buildings require stairwell management for over 600 people. Dense residential streets and potential traffic near central hubs (e.g., California Avenue) could delay apparatus deployment. The proximity to hilly terrain (e.g., near Bolton Avenue) adds wildfire ember risks. Commercial buildings may store chemicals or fuels, aligning with Station 2's HazMat role (e.g., HazMat 2, Decon 12).

ISO 2.5 Mile Aerial Coverage Assessment

The figure shows the effect of ISO ladder coverage on the tall buildings in Station 2's area. Sources of the nearest ladder resources are displayed in the following figure.

Figure 215: Station 2 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

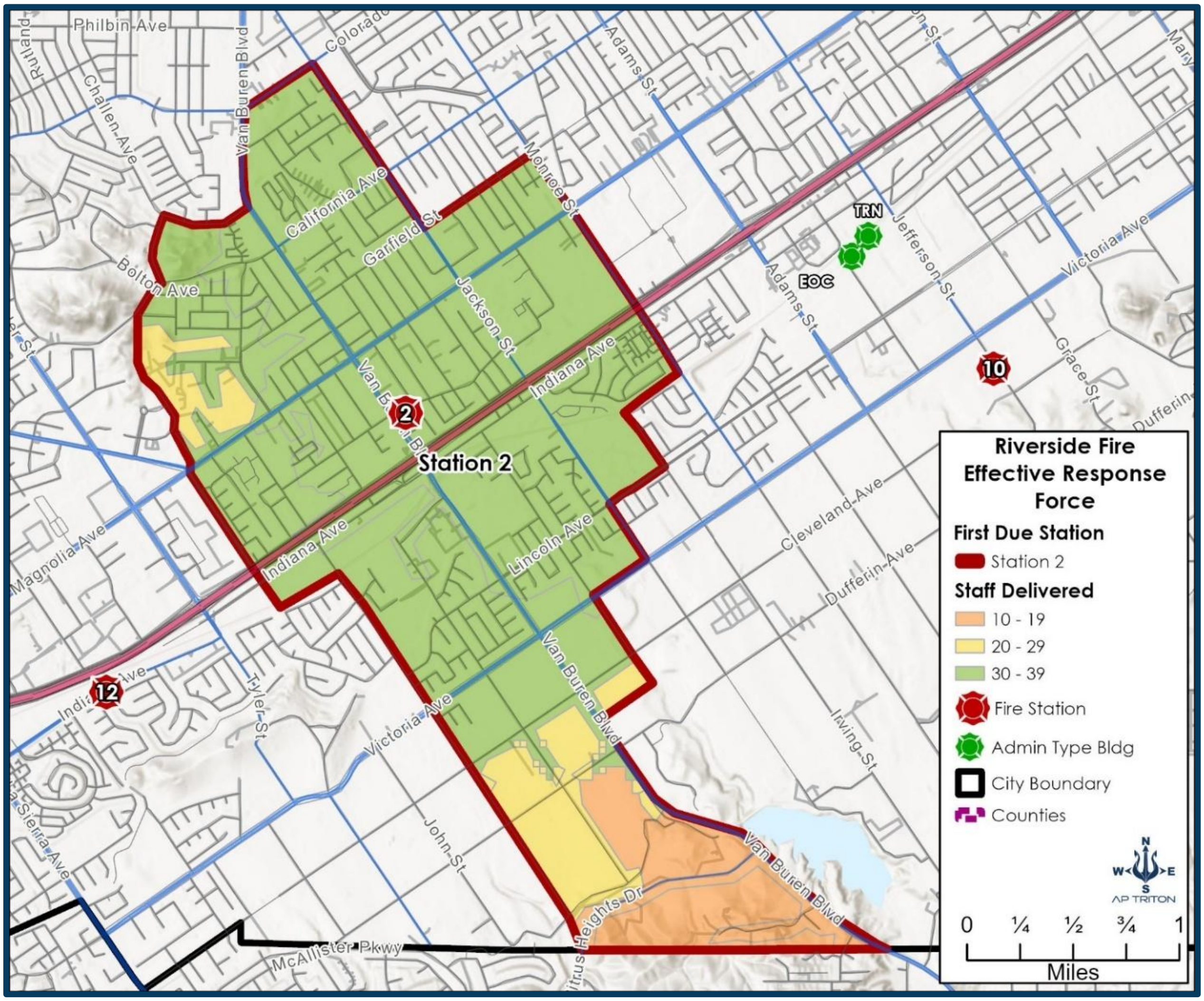


As shown in the previous figure, the entire tall building load is nearly entirely covered by aerial apparatus within the required ISO parameter. There is a small area to the southeast of the district that is not within the 2.5-mile road travel distance from the nearest ladder truck resource (Station 2).

Effective Response Force

The following figure highlights the number of staff that can be delivered within Station 2's district.

Figure 216: Station 2 ERF at 8 Minutes



The ERF represents the number of personnel dispatched to an incident scene within the department's adopted response time objectives, typically 4–8 minutes for the first unit and 8–12 minutes for a full alarm assignment, depending on the risk level (e.g., urban, suburban, or wildland-urban interface). The map uses color-coded zones to indicate staff delivery levels within Station 2's first due area, outlined in red, which encompasses a mix of residential, commercial, and natural terrain near Van Buren Boulevard and Victoria Avenue. Station 2's ERF appears to meet the critical tasking requirement for a moderate-level fire incident, providing at least 20 staff to cover 90% of the district.

Staff Delivery Zones

- **10–19 Staff Delivered–Orange Zone Location:** Southeastern portion of the response area, extending toward the boundary near a small lake and hilly terrain. This zone indicates a lower staffing level, likely covering less dense or peripheral areas with fewer critical risks. Represents a baseline response for low- to moderate-risk incidents (e.g., single-family residential fires or medical calls). This staffing may suffice for initial suppression or EMS but falls short of full alarm needs (19) for multi-unit or commercial fires, suggesting potential reliance on aid from Stations 12 or 3.
- **20–29 Staff Delivered–Yellow Zone Location:** Central area surrounding Station 2, including parts of California Avenue and Garfield Street. This zone reflects a moderate staffing level, covering the core urban-residential and commercial districts. Aligns with a standard response for moderate risk incidents (e.g., small commercial fires or multi-family dwellings). This staffing supports initial attack and basic life safety operations but may require reinforcement for high-hazard sites (e.g., HazMat or high-rises), consistent with Station 2's HazMat role.
- **30–39 Staff Delivered–Green Zone Location:** Largest portion of the response area, encompassing most of the northern and western sections, including areas near Bolton Avenue and Indiana Avenue. This zone indicates the highest staffing level within the first due area, covering the majority of the population and infrastructure.

Station 2's location, efficient roadway proximity, and staffing level meet or exceed the CFAI-recommended staffing for moderate risk incidents (e.g., Large commercial fires, Multi-casualty EMS events, or wildland-urban interface fires), typically requiring 20–30+ personnel for full alarm assignment. This level supports rapid intervention, rescue, and containment, aligning with Riverside's urban density and wildfire risks.

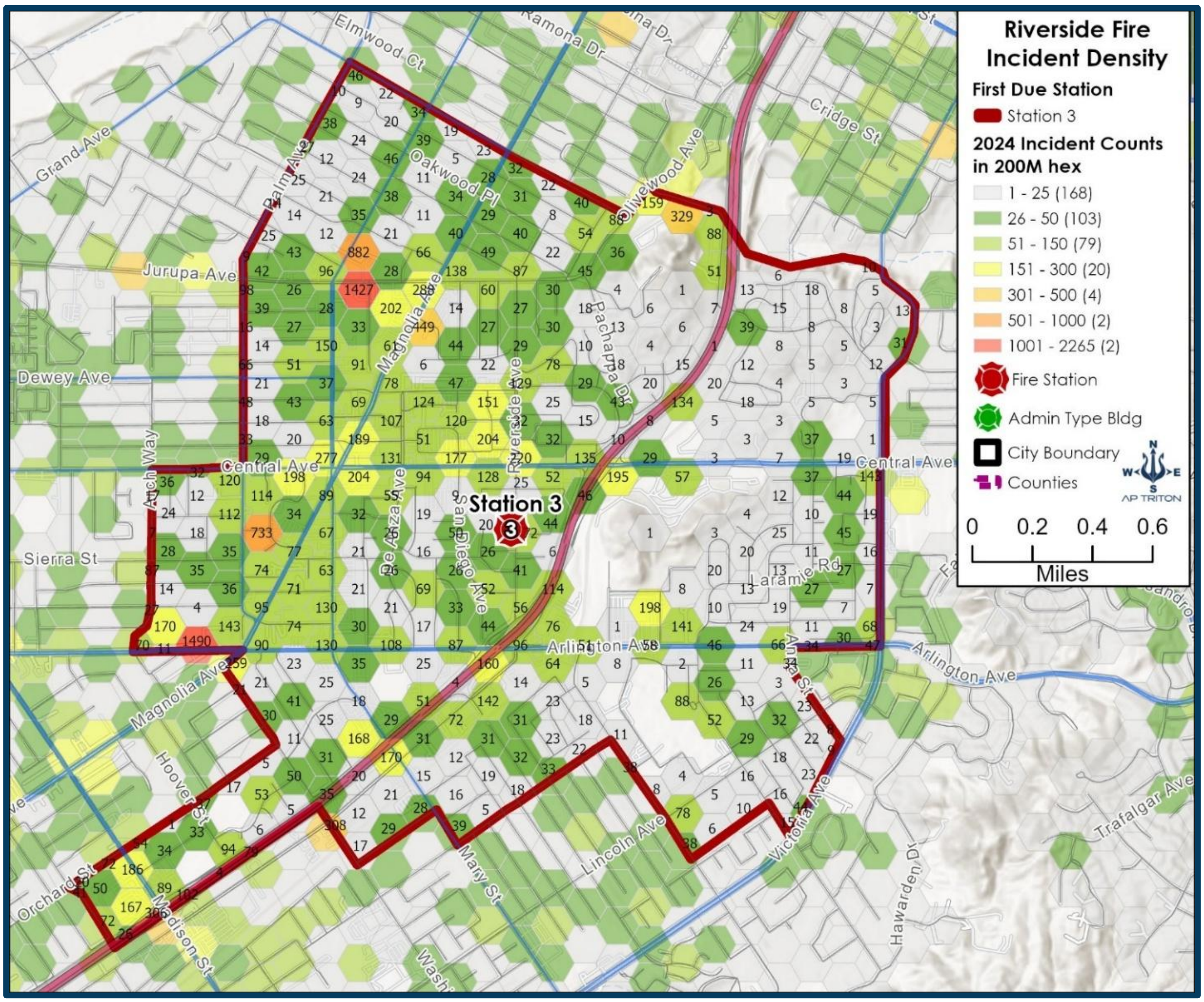
The green zone (30–39 staff) likely reflects areas where Station 2 can achieve CFAI's 90th percentile response time goal (e.g., 6–8 minutes for first unit, 10–12 minutes for full alarm) due to proximity. The orange zone (10–19 staff) may indicate travel time delays to peripheral areas, potentially exceeding 10 minutes, necessitating pre-plans or mutual aid.

STATION 3

Incident Evaluation

Station 3 is situated southwest of the city's main urban area and, as such, has a moderate population density and incident rate compared to other stations within the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 3 area; other stations are included for context, illustrating how often Station 3 apparatus could be engaged as second-arriving units. There are two areas of high density along Magnolia Ave.

Figure 217: Station 3 Incident Counts

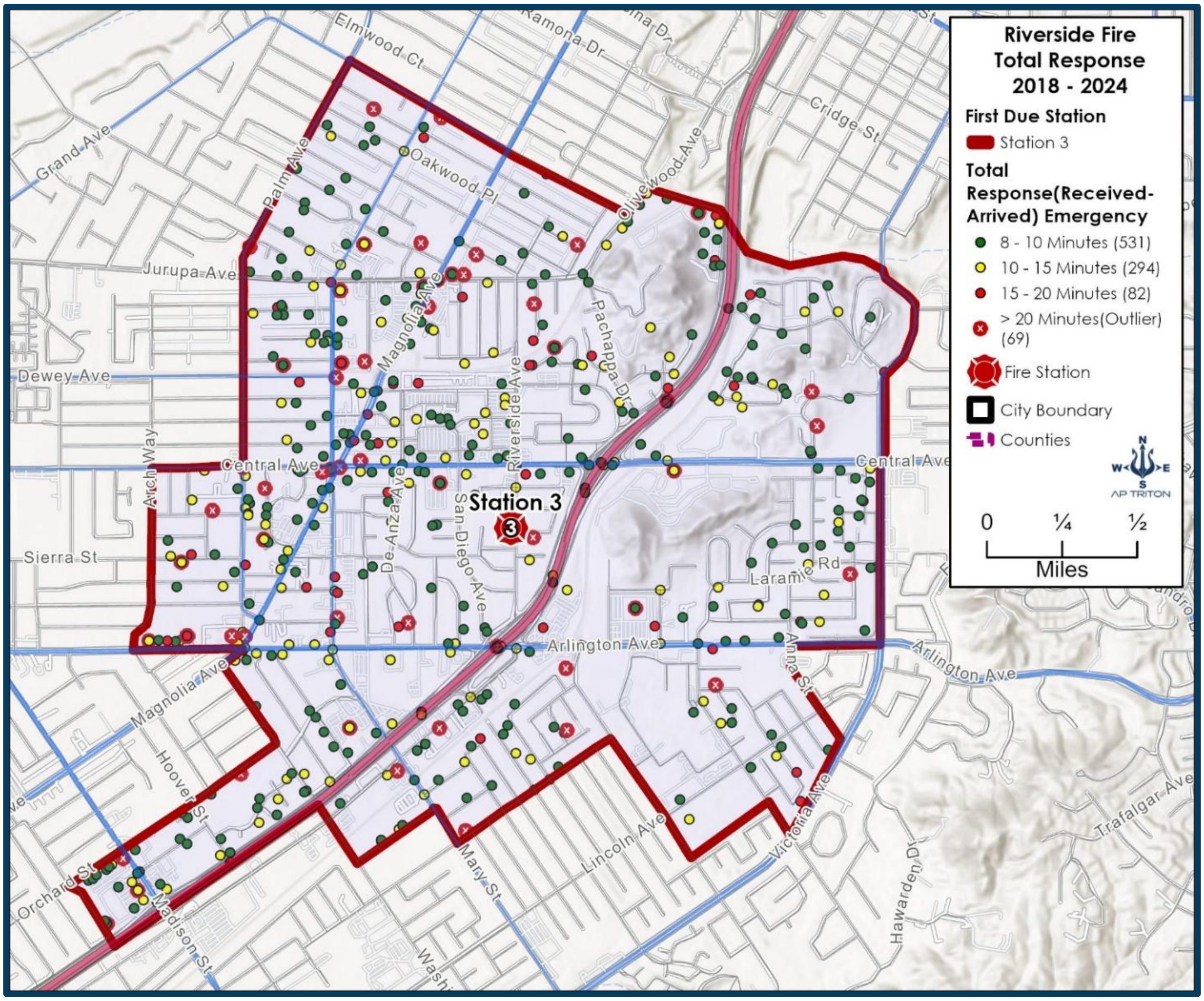


Between 2018 and 2024, Station 3 responded to **25,104** incidents. Of these incidents, from 2018 to 2024, a Station 3 assigned unit arrived first on the scene **22,022** times. This averages out to a reliability of **88%**. This indicates that, due to the station's placement near several high-efficiency roadways, such as Highway 91, which bisects the district, response reliability is very high.

Station 3 meets the NFPA standard for total response time for an incident, measured from the time a call is initiated until arrival on scene. Ninety percent of the time, Station 3 can arrive at the location in **7** minutes, **21** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **976** 8-minute or greater total response time exceptions representing 3.9% of all responses (emergency and non-emergency).

Figure 218: Station 3 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 3 is shown in the following figure. The probability that a Station 3 resource would be the first to arrive at the scene of an emergency request in Station 3's district is very high. Station 3 meets most of the reliability-improving parameters.

Figure 219: Station 3 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 3	90%	85%	87%	88%	87%	88%	89%	88%	4.7	7

Hazard Evaluation

Station 3 covers a dense urban-residential zone in Riverside, California, bounded by Grand Avenue to the west, Arlington Avenue to the east, Magnolia Avenue to the south, and Elinor Road to the north. This area, encompassing approximately 4.7 square miles, includes a mix of commercial corridors (e.g., Jurupa Avenue), residential neighborhoods, and adjacent hilly terrain. The red boundary outlines the primary first-due territory, serving a population of ~15,000–25,000 with diverse occupancies. Station 3's specialization in technical rescues (part of California Task Force 6 Urban Search and Rescue) and hazardous materials response highlights the area's significant all-hazards risk profile, as detailed using the provided legend.

Key Occupancy Types and Hazard Profiles

- **Assembly Hazards (150 Occupancies)**: Scattered throughout, with concentrations near Jurupa Avenue, Arizona Avenue, and Hoover Street. These include church schools (12), schools (elementary: 55, middle: 13, high: 17), a university/college (25), a special school (34), and school support (1), indicating high-occupancy public gathering sites. High occupant loads (500–1,000+ during events) pose evacuation and panic risks, especially in schools or churches. Structural collapse or fire spread (e.g., from electrical faults) could lead to mass casualty incidents, requiring Station 3’s US&R expertise.

- **Commercial Hazards (430 Occupancies)**: Dense clusters around Station 3, along Jurupa Avenue, and near Magnolia Avenue. Mercantile facilities (145) dominate, with additional parking garages (2), indicating the presence of retail stores, malls, and storage areas (91). High fire loads from goods and the storage of potentially hazardous materials (HazMat) (e.g., fuels, chemicals) increase the risks of ignition and explosion. Narrow streets may hinder apparatus access, with evacuation challenges for 200–500 occupants per site.

- **Medical and Senior Care Hazards** are concentrated centrally near Station 3 and along Central Avenue. Medical facilities (108) and senior care (2) suggest hospitals, clinics, and assisted living centers. Vulnerable populations (elderly, patients) face heightened risks from fires, power outages, or oxygen-related incidents. High EMS demand and specialized rescue needs align with Station 3’s capabilities.

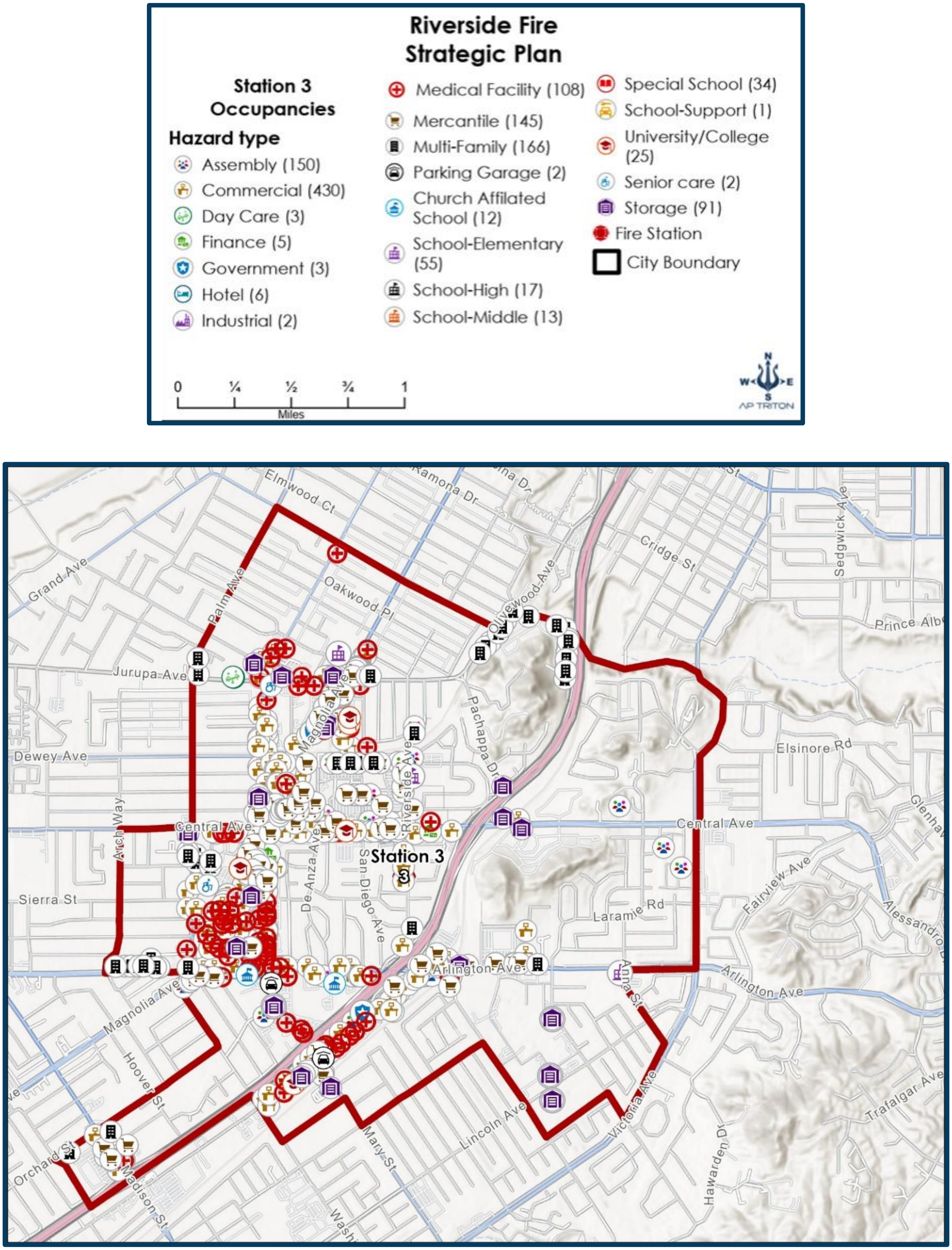
- **Day Care, Finance, Government, Hotel, and Industrial Hazards**
    - **Day Care (3)**: Scattered near residential zones (e.g., Sierra Street). Small-scale but critical, with evacuation challenges for young children.
    - **Finance (5)**: Green Dollar Sign Icon: Near Jurupa Avenue. Office fires from electrical or arson risks, with moderate occupancy (50–100).

- **Government (3)**: Near Arizona Avenue. Public records or utilities are vulnerable to fire, requiring rapid suppression.
- **Hotel (6):** Orange Bed Icon: Along Magnolia Avenue. Transient occupants (100–300) and vertical fire spread risks.
- **Industrial (2)**: Near Dewey Avenue. Hazmat risks (e.g., chemicals) and high fire loads, tying into Station 3's HazMat role.
- **Multi-Family Hazards (166 Occupancies)**: Widespread, with clusters near Oakwood Place and Pachappa Drive. These are likely apartments and multi-unit dwellings. Dense living conditions (200-400 occupants) increase fire spread and evacuation challenges, especially in older structures lacking sprinklers.
- **Church-Affiliated Hazards (2):** Near Hoover Street. Moderate occupancy (100–300) with potential for rapid fire growth during services.
- **Wildfire and Environmental Hazards** Terrain-Driven eastern and northern edges (near Elinor Road and Fairview Avenue) show gray-shaded hills, indicating wildland-urban interface with brush fuel. Seasonal wildfires could spread into urban zones, with hillside homes at risk during Santa Ana winds. FHSZ compliance (e.g., defensible space) mitigates but does not eliminate threats.

Station 3's response area is a "high-density urban core with interface risks," dominated by assembly (150), commercial (430), and multi-family (166) occupancies, totaling 911 identified hazards. The central concentration around Station 3 suggests a focus on urban structural and medical risks, with HazMat and US&R needs from industrial and high-occupancy sites. Challenges include access in dense grids, high EMS/rescue demand, and wildfire interface threats from the periphery. In a significant event (e.g., a commercial fire with collapse), prioritization would target assembly and medical clusters, leveraging Station 3's specialized capabilities and mutual aid to alleviate resource strain.

This visualization supports strategic planning by quantifying response demands, helping prioritize training for assembly evacuations or industrial spills.

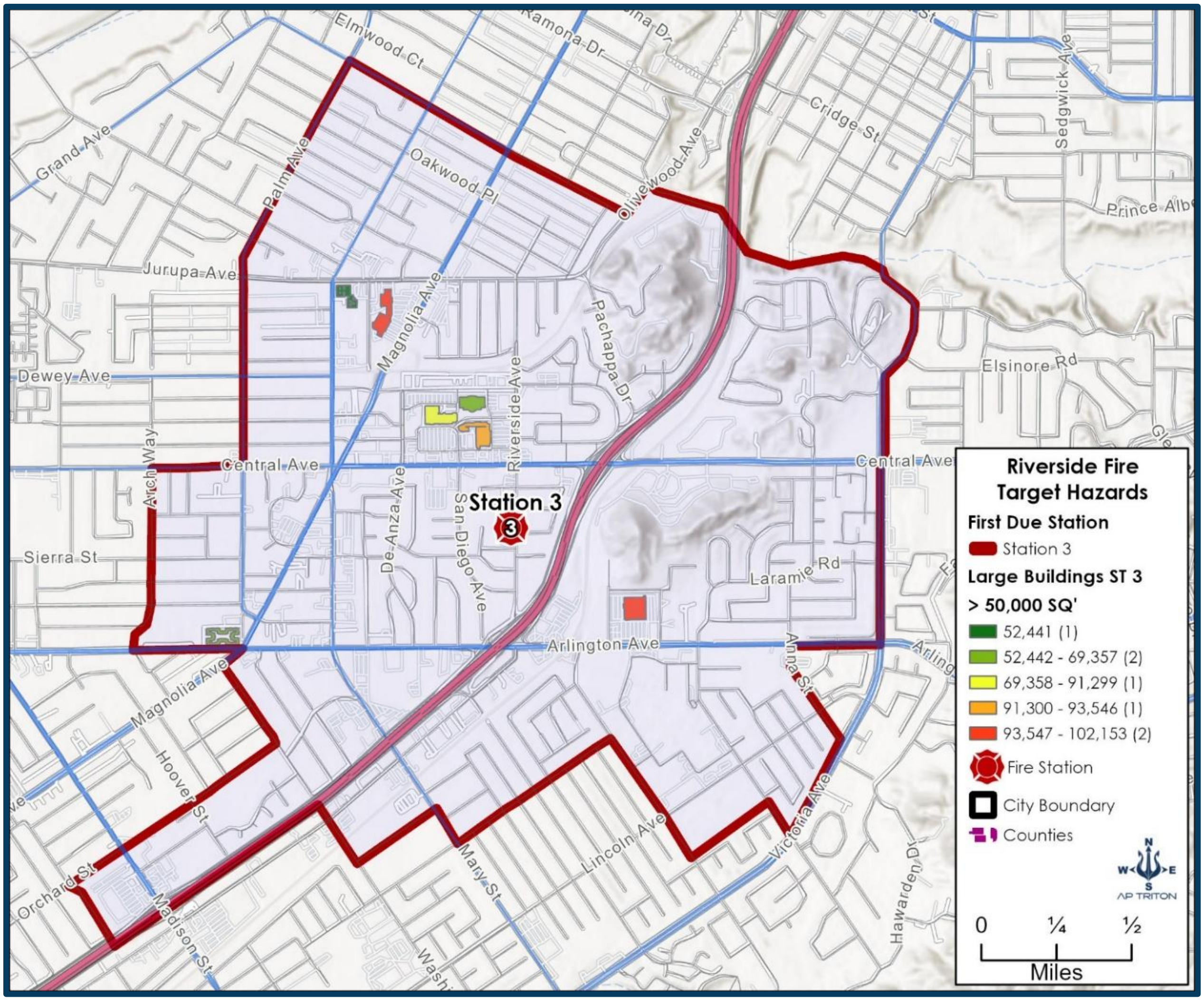
Figure 220: Station 3 Hazards/Occupancies



Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 3, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to 0.5 miles.

Figure 221: Station 3 Large Buildings Greater than 50,000 Sq. Ft.



Key features include large buildings by square footage.

- **52,441 sq. ft.: Green Icon (1 Building) Location:** Positioned centrally, near the intersection of Magnolia Avenue and Central Avenue. Likely a mid-sized commercial or institutional structure, such as a small office complex or community center. With moderate occupancy (100–200 people), this building poses a low to moderate fire risk. Its central location allows for quick response from Station 3, but access could be hindered by surrounding residential streets.

- **52,442–69,357 sq. ft.: Light Green Icons (2 Buildings):** One near Magnolia Avenue and Central Avenue, another slightly north towards Jurupa Avenue. These could include larger retail stores, warehouses, or administrative offices. Occupancy may range from 200–400, with potential fire hazards posed by stored goods or equipment. Proximity to Station 3 supports a rapid initial response, although dense traffic may delay access during peak hours.
- **69,358–91,299 sq. ft.**: Yellow Icon (1 Building) Location: Located centrally, near the intersection of Arizona Avenue and Central Avenue. Likely a significant retail center, warehouse, or institutional facility (e.g., a school or medical office). Occupancy could exceed 400–500, increasing evacuation and fire-spread risks. The central location is advantageous, but mutual aid may be needed for large-scale incidents.
- **91,300–93,546 sq. ft.: Orange Icon (1 Building) Location:** Positioned near the northern boundary, close to Laramie Road. Possibly a large commercial building, such as a big-box store or distribution center. High occupancy (500–700) and fire load suggest significant potential incidents. The northern location may delay response due to the distance from Station 3, especially in hilly terrain.
- **93,547–102,153 sq. ft.: Red Icons (2 Buildings):** One near Magnolia Avenue and Central Avenue, another slightly east toward Arlington Avenue. These are the largest structures, likely major warehouses, retail complexes, or industrial facilities. Occupancy may reach 700-1,000+, with extreme fire loads and potential hazardous material (HazMat) risks (e.g., flammable goods). The proximity of the southern building to Station 3 aids response, but the eastern one may require coordination with Station 1.

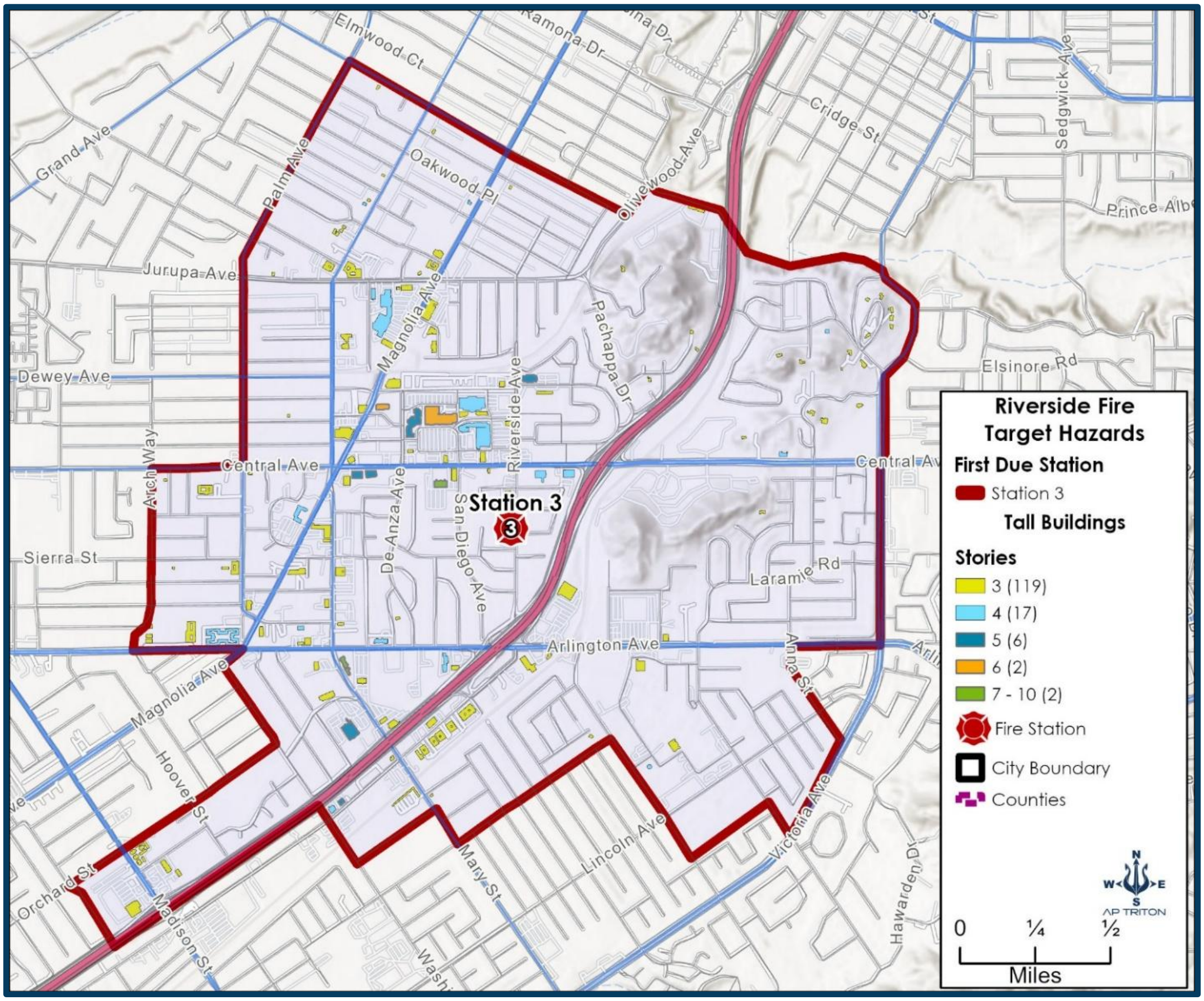
Larger buildings (91,300-102,153 sq. ft.) have high fuel loads (e.g., goods and machinery), which increase fire intensity and duration. Older structures may lack modern fire suppression systems. Buildings over 69,358 sq. ft. may host 400-1,000+ occupants, necessitating complex evacuation plans, particularly in retail or industrial settings. Dense street grids and potential traffic near central hubs (e.g., Magnolia Avenue) could impede apparatus movement. The northern and eastern buildings' locations near hills or boundaries may complicate access during peak times or wildfires. The largest buildings may store hazardous materials, aligning with Station 3's HazMat role.

Station 3's central position ensures a relatively quick initial response to most large buildings, but the spread across the area may require aid from Stations 1, 4, 5, 9, and 10 for significant events.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 3's area.

Figure 222: Station 3 Multi-Story Buildings



Identified Tall Buildings

- **3 Stories—Yellow Icons (119 Buildings):** Widely distributed across the response area, with concentrations along Jurupa Avenue, Central Avenue, and Magnolia Avenue. These are primarily low-rise residential apartments, small office buildings, or commercial storefronts with upper floors, typical of the urban core near Station 3. With moderate occupancy (50–200 people per building), fire risks include the potential for vertical spread through stairwells or shared walls. The high number (119) could strain resources during widespread incidents, though evacuation remains manageable with coordinated planning.

- **4 Stories—Light Blue Icons (17 Buildings):** Scattered centrally, particularly near Arizona Avenue and Central Avenue, close to Station 3. Likely mid-rise apartments or office complexes with increased density. Occupancy ranges from 200–400, posing challenges for smoke ventilation and phased evacuations. Proximity to the station enables a quick response (within 4–6 minutes), but older buildings may lack sprinklers, thereby heightening the risk of fire spread.
- **5 Stories—Dark Blue Icons (6 Buildings):** Concentrated in the central and eastern sections, near De Anza Drive and Arlington Avenue. These could include higher-density apartments, small hotels, or institutional structures such as medical offices.With 400–600 occupants, these structures present moderate risks for interior firefighting and rescue operations. The eastern placement near hilly terrain may complicate ladder access during emergencies.
- **6 Stories—Orange Icons (2 Buildings):** Positioned in the northeastern part, near Laramie Road and the boundary with Station 4. Likely significant residential or commercial high-rises, such as condos or mid-sized office towers. Occupancy could exceed 600, necessitating advanced evacuation tactics and potentially requiring aerial operations. The distance from Station 3 may slightly extend response times, necessitating aid.
- **7–10 Stories—Green Icons (2 Buildings):** One central near Station 3 (along Central Avenue), another in the western section near Dewey Avenue. These are taller mid-rise structures, potentially office buildings or residential buildings, with 800–1,200 occupants. They pose high risks for vertical fire propagation and structural stability. The central building benefits from rapid access, while the western one could face delays due to traffic on Jurupa Avenue.

Taller buildings (5–10 stories) are particularly vulnerable to rapid upward fire travel, especially in pre-1990s constructions without adequate compartmentalization. The 119 three-story buildings amplify cumulative urban fire load risks. Higher-story buildings require specialized plans, including stairwell pressurization and rooftop access for over 600 people. Nearby assembly and commercial occupancies (e.g., schools, retail establishments) increase the complexity of mass evacuation. Dense grid streets and proximity to hills (e.g., near Pachappa Drive) may impede apparatus during peak hours or wildfires. Rail lines and central avenues, such as Arlington, add transportation hazards.

Alignment with Station 3's Urban Search and Rescue (US&R) and HazMat roles suggests potential chemical storage in taller commercial sites, complicating responses.

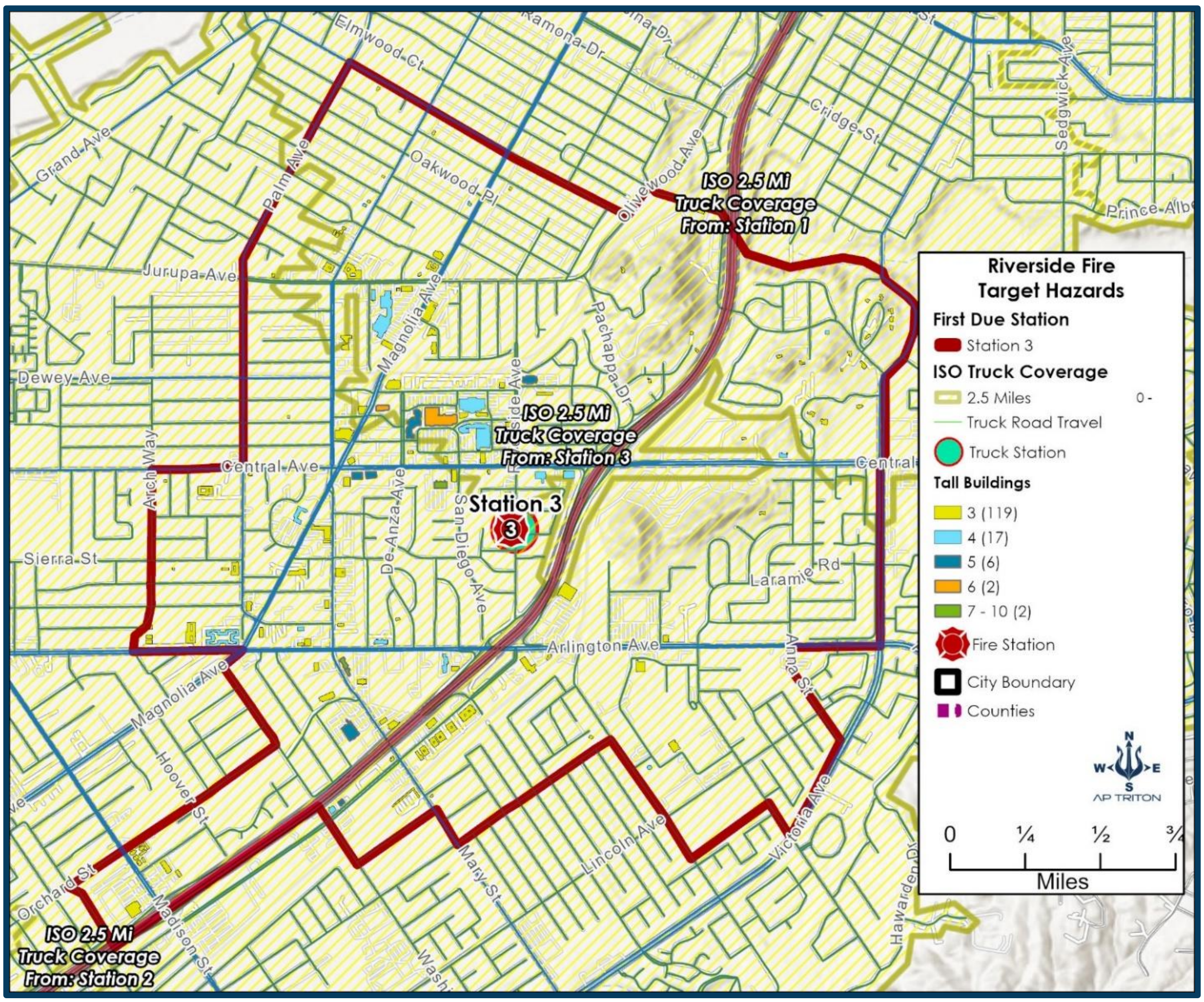
Station 3's central location enables a rapid initial response (within 4–6 minutes for most buildings, according to CFAI standards), with coordination from Stations 1, 4, 5, 9, and 10 for taller or peripheral structures.

Station 3's response area features **146** tall buildings, dominated by 3-story structures (119), with escalating risks in the 4–6 (25 total) and 7–10 story (2) categories. The northeastern 6-story and central 7–10 story buildings represent peak challenges due to height and occupancy, integrated with the area's high-density commercial and institutional hazards. Station 3's expertise in technical rescues and HazMat positions it well, but mutual aid and pre-incident planning are vital for multi-building scenarios.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 3's area. Sources of the nearest ladder resources are displayed in the following figure.

Figure 223: Station 3 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

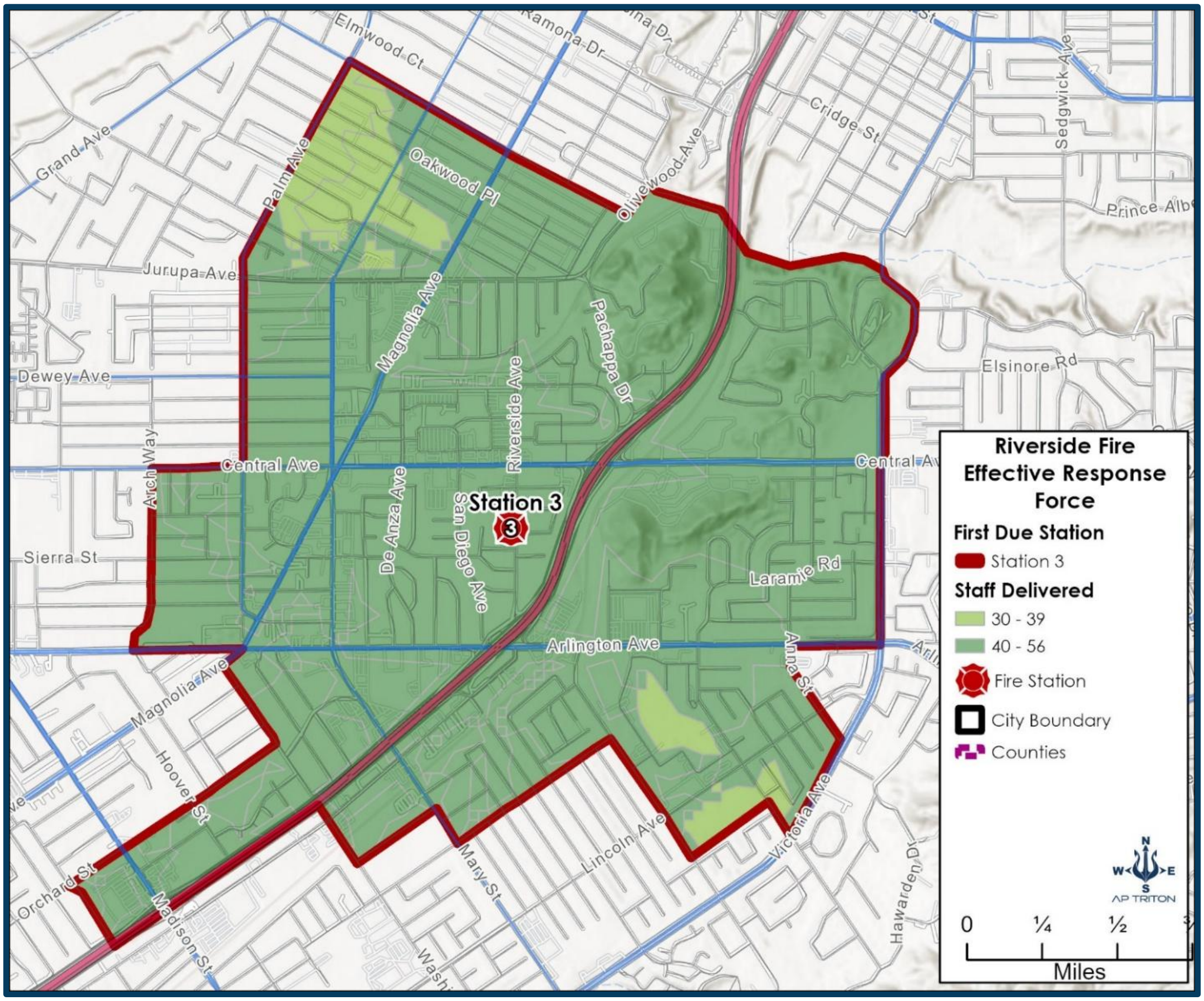


As shown in the previous figure, the entire tall building load is covered by aerial apparatus within the required ISO parameter.

Effective Response Force

The first due response area for Station 3, outlined in red in the following figure, covers a dense urban-residential zone in Riverside, California, bounded by Grand Avenue, Arlington Avenue, Magnolia Avenue, and Elsinore Road. This area serves a population of approximately 15,000 to 25,000. It includes a mix of commercial corridors (e.g., Jurupa Avenue), residential neighborhoods, and hilly terrain, reflecting a high-density urban core with interface risks. ERF is assessed within the CFAI CRA-SOC framework, which evaluates the department's ability to deliver adequate personnel within specified response time objectives (typically 4–6 minutes for the first unit and 8–12 minutes for complete alarm assignment) to mitigate identified hazards.

Figure 224: Station 3 ERF at 8 Minutes



- **CFAI CRA-SOC Context:** Represents a baseline response for low to moderate risk incidents (e.g., single-family residential fires or medical calls). With 10–19 personnel, this meets initial suppression or EMS needs but falls short of the CFAI-recommended 15–20 for full alarm assignments in multi-unit or commercial fires, suggesting reliance on mutual aid from Stations 1, 4, or 5.

  30–39 Staff Delivered–Green Zone Location: Largest portion, centered around Station 3 and extending along Central Avenue and Arizona Avenue. This zone indicates the highest staffing level, covering the densest population and infrastructure, including key assembly (e.g., schools) and commercial occupancies. Meets or exceeds CFAI recommendations for high-risk incidents (e.g., large commercial fires, multi-casualty events, or wildland-urban interface fires), requiring 20–30+ personnel. This level supports rapid intervention, rescue, and containment, aligning with Riverside's urban density and Station 3's specialized roles. The green zone (30–39 staff) likely achieves CFAI's 90th percentile goal (e.g., 6–8 minutes for first unit, 10–12 minutes for full alarm) due to proximity to Station 3.

- **Risk Assessment:** The CRA identifies risks such as residential fires, commercial hazards (e.g., warehouses along Jurupa Avenue), institutional vulnerabilities (e.g., schools, medical facilities), and wildfire threats from the northern hills. The graduated staffing reflects a tiered strategy, with higher levels in high-risk zones to address critical infrastructure.

The 30–39 staff in the green zone support CFAI's two-in, two-out rule (4 personnel for interior firefighting) and additional resources for command, rescue, and support. Staff in the 10–19 zone may limit initial action, requiring a staged deployment or backup from adjacent stations. The green zone's dominance indicates robust coverage near Station 3. Still, the orange zone's proximity to hilly terrain highlights access challenges during floods or wildfires, a key CRA factor in Riverside.

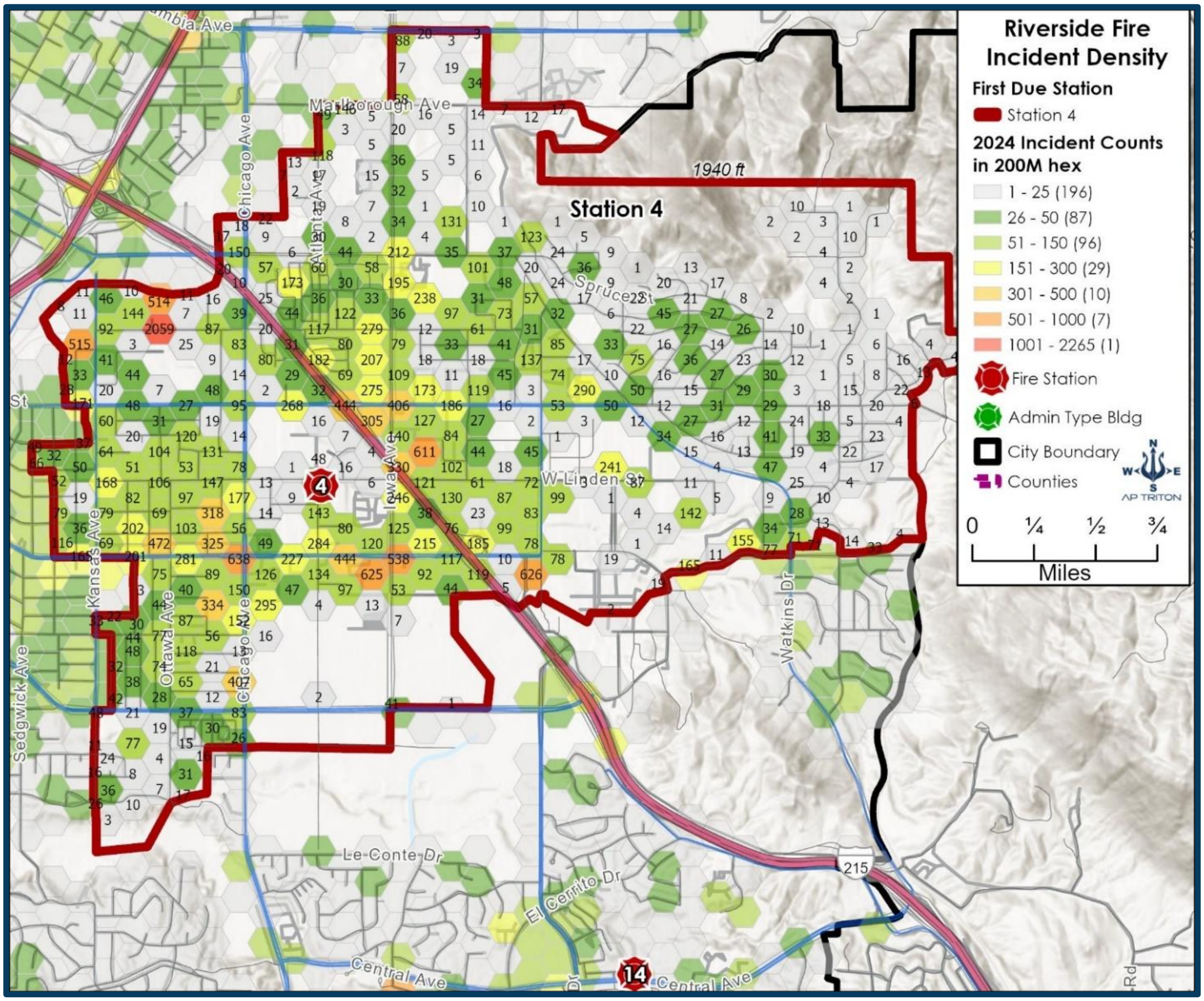
The ERF for Station 3's area ranges from 30–39 (light green) to 40–56 (green) personnel, with the majority (green zone) capable of delivering a robust response to high-risk incidents within CFAI SOC timeframes. This tiered staffing reflects a CRA-informed approach, prioritizing the central urban core while addressing peripheral challenges. However, mutual aid is critical for the lower-staffed orange zone during large-scale events.

STATION 4

Incident Evaluation

Station 4 is situated in the northeastern corner of Riverside and, as such, has a moderate population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map only shows the counts for the Station 4 area; however, other stations are included for context, showing how often Station 4 apparatus could potentially be engaged as second-arriving units.

Figure 225: Station 4 Incident Counts

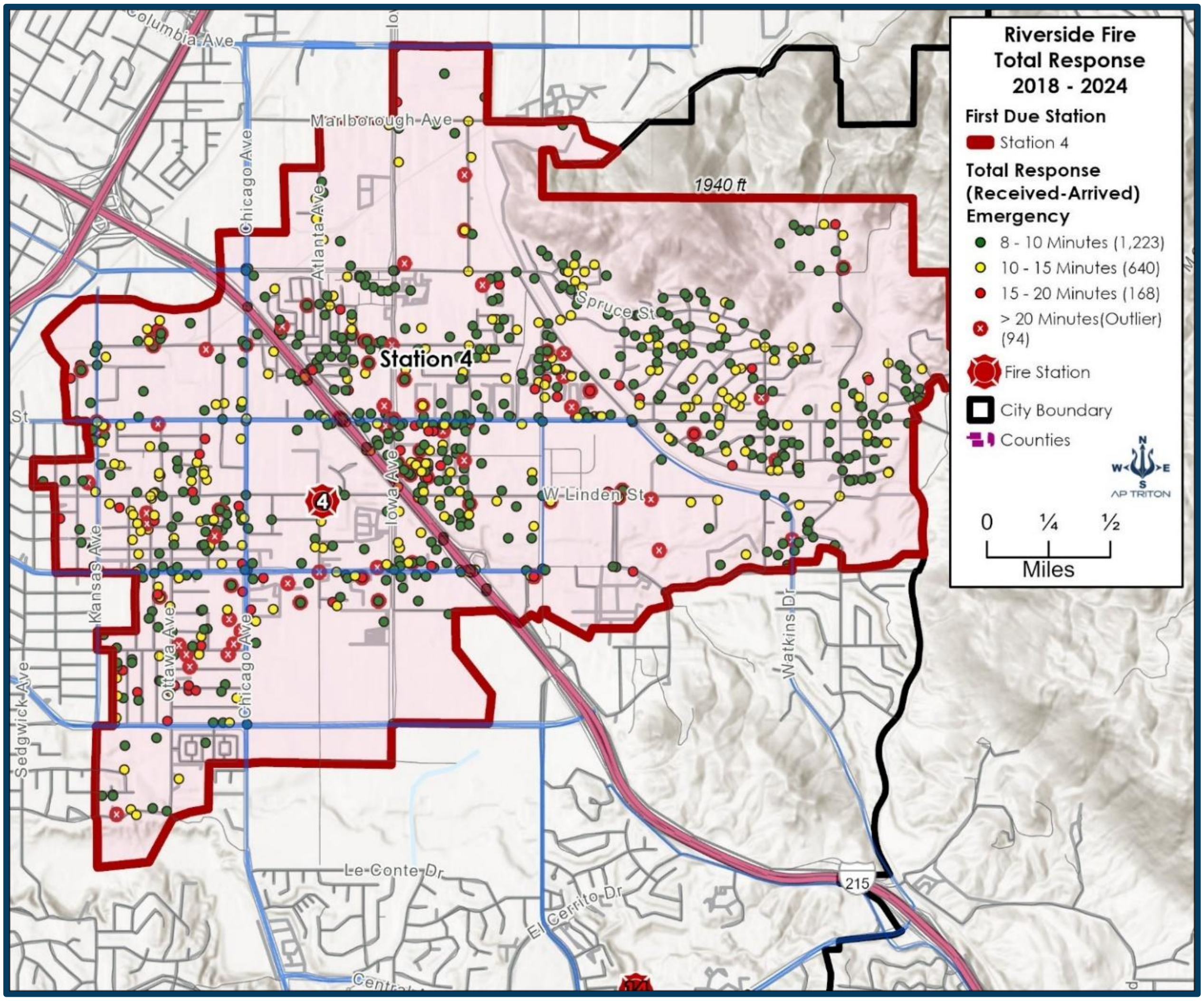


Between 2018 and 2024, Station 4 responded to **28,042** incidents. Of these incidents, from 2018 to 2024, a Station 4 assigned unit arrived first on the scene **20,886** times. This averages out to a reliability of **75%**. This indicates that, due to the station's placement near several high-efficiency roadways, such as Highway 60, which bisects the district, response reliability is relatively high.

Station 4 can meet NFPA standards for total response time for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 4 can arrive at the location in **7** minutes, **39** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance. In fact, Station 4 recorded the best total response times in the entire city.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There were **2,125** 8-minute or greater total response time exceptions representing 7.6% of all responses (emergency and non-emergency).

Figure 226: Station 4 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 4 is shown in the following figure. The probability that a Station 3 resource would be the first to arrive at the scene of an emergency request in Station 4's district is very high. Station 4 meets most of the reliability-improving parameters.

Figure 227: Station 4 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 4	81%	74%	75%	74%	72%	72%	74%	75%	6.8	4

Hazard Evaluation

Fire Station 4 covers a dense urban-commercial zone in downtown Riverside, California, bounded by Columbia Avenue to the north, Spruce Street to the east, 3rd Street to the south, and Le Conte Road to the west. This area, approximately 1–2 square miles in size, features a high concentration of mixed-use developments, educational institutions, and industrial pockets, serving a population of roughly 20,000–30,000. The gray-shaded hills on the eastern and southern edges indicate areas of high risk at the wildland-urban interface. Station 4's role in all-hazards response, including potential support for downtown high-rises and mutual aid, underscores the area's elevated structural, occupancy, and wildfire hazards.

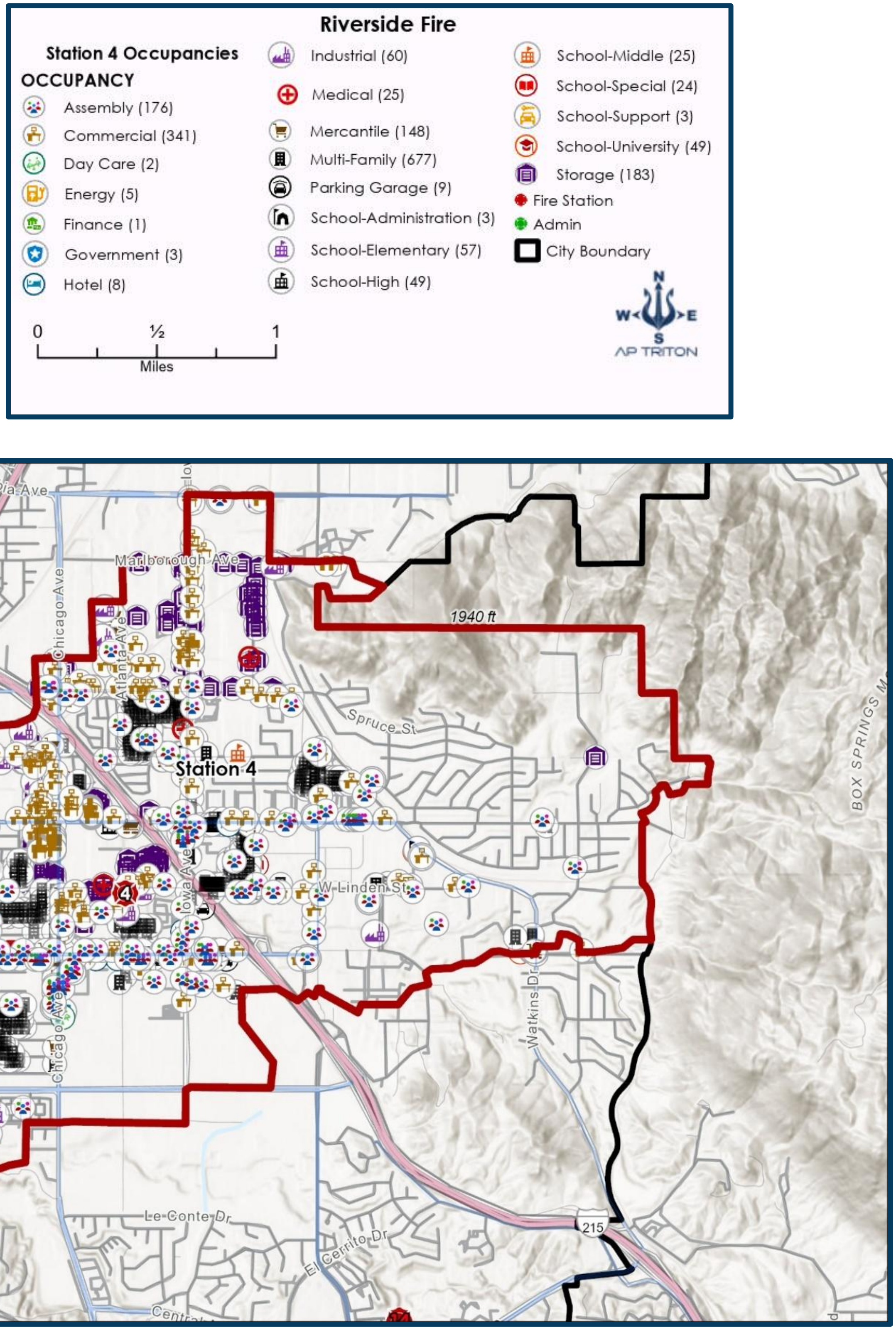
Key Occupancy Types and Hazard Profiles

- **Assembly Hazards (176 Occupancies)**: Dense clusters around Station 4, along Main Street and 3rd Street, with extensions toward university areas. Includes elementary schools (57), middle schools (25), high schools (49), special schools (24), school support services (3), universities/colleges (49), day care centers (2), and commercial assembly sites. High occupant loads (500–2,000+ during classes or events) pose significant evacuation and panic risks, particularly in schools or college facilities. Fire spread from electrical issues or overcrowding could result in mass casualties, demanding rapid triage and rescue operations.
- **Commercial Hazards (341 Occupancies)**: Concentrated in the central downtown core near Station 4, along Columbia Avenue and Spruce Street. Dominated by mercantile facilities (148) and storage (183), including retail strips, warehouses, and parking garages (9). Elevated fire loads from inventory (e.g., flammable goods) and high foot traffic (200–1,000 occupants) increase the potential for explosions or rapid spread. Access bottlenecks in pedestrian-heavy zones could delay apparatus, with HazMat risks from stored chemicals.
- **Multi-Family Hazards (677 Occupancies)**: Widespread residential pockets, clustered near Sedgwick Avenue and Watkins Drive. Apartments and multi-unit dwellings throughout the area. Dense housing (300–600 occupants per complex) heightens fire propagation via shared walls or balconies, especially in older structures. Evacuation challenges in vertical buildings align with the risks in downtown high-rises.
- **Industrial Hazards (60 Occupancies):** Scattered in the southwestern industrial zones near Kansas Avenue and Le Conte Road. Factories and manufacturing sites, including energy infrastructure (5). High HazMat exposure (e.g., chemicals, fuels) and risks of structural collapse from heavy machinery. A release or fire could spread to nearby residential areas, requiring specialized containment and decontamination measures.

- **Medical and Hotel Hazards**: Central clusters near Main Street and 3rd Street. Medical facilities (25), such as clinics and hotels (8) for transient lodging. Vulnerable groups (patients, tourists) face amplified risks from mobility issues or unfamiliarity during evacuations. Oxygen fires in medical sites or crowded hotel lobbies could escalate quickly.
- **Finance, Government, and Day Care Hazards**
  - Finance (1)–Isolated near downtown core. Low-volume but high-value targets for arson, with moderate occupancy (50–100).
  - Government (3)–Near administrative areas along Columbia Avenue. Critical infrastructure (e.g., offices) is vulnerable to utility failures or targeted incidents.
  - Day Care (2)–Near school clusters. High vulnerability in young children requires a specialized pediatric response.
- **Educational and Affiliated Hazards**
  - School-Elementary (57)–Widespread near residential zones. Daily high occupancy (300–800 students) with lockdown needs.
  - Admin-School (3)–Gray Building Icon: Central administrative hubs. Support facilities with records at risk from fire or intrusion.
- **Wildfire and Environmental Hazards Terrain-Driven Risks**: Eastern boundary near Spruce Street shows gray-shaded hills (e.g., 1,940 ft. elevation), indicating moderate to high Fire Hazard Severity Zones (FHSZ) per 2025 CAL FIRE updates using climate modeling. Urban-wildland interface allows ember spotting into downtown during Santa Ana winds, threatening multi-family and commercial structures. Riverside's FHSZ mandates (e.g., defensible space) apply, but density amplifies spread potential.

Station 4's response area embodies a "high-density downtown urban core with interface threats," totaling over 1,500 identified occupancies, led by multi-family (677), assembly (176), and commercial (341) hazards. The central focus around Station 4 emphasizes structural fires, high-occupancy evacuations, and hazardous materials (HazMat) incidents from industrial sites, as well as wildfire risks from surrounding hills. Challenges include traffic congestion on Main Street, resource strain from EMS calls (~70% of responses), and coordination for high-rises. In a major event (e.g., a commercial fire with collapse), prioritization would target assembly/educational clusters, utilizing Station 4's all-hazards capabilities, mutual aid, and updated emergency maps to enhance resilience.

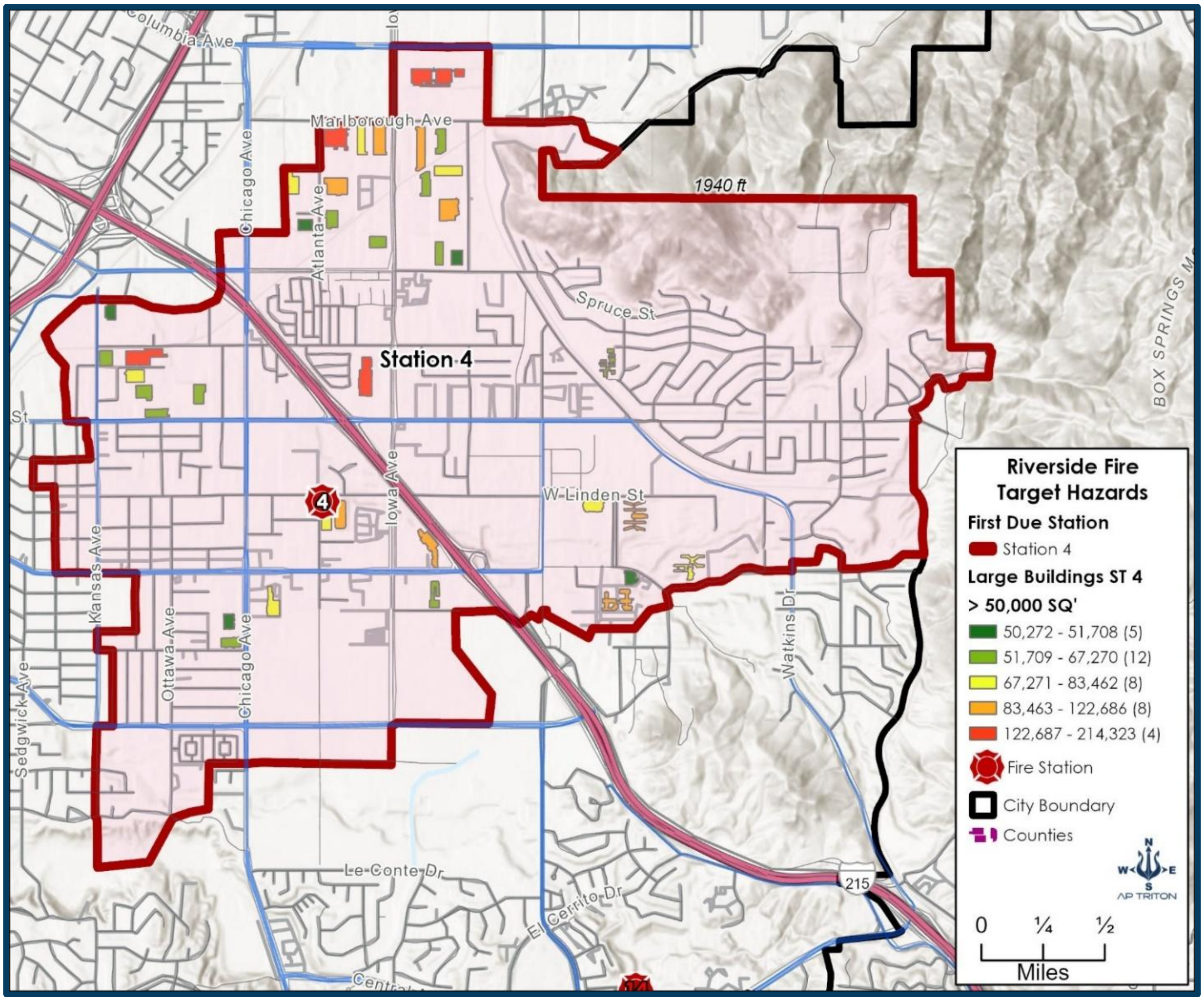
Figure 228: Station 4 Hazards/Occupancies



Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 4, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to 0.5 miles. Station 4's response area, which covers a dense urban-commercial zone in downtown Riverside, California, bounded by Columbia Avenue to the north, Spruce Street to the east, 3rd Street to the south, and Le Conte Avenue to the west. This area, approximately 6.8 square miles in size, serves a population of 20,000–30,000 and features a mix of high-rise buildings, educational institutions, and industrial areas. Large buildings (over 50,000 sq. ft.) are color-coded by size.

Figure 229: Station 4 Large Buildings Greater than 50,000 Sq. Ft.



Identified Large Buildings

- **50,272–51,708 sq. ft.–Green Icon (5 Buildings):** Distributed evenly throughout the district. Likely mid-sized commercial structures, such as small office buildings or retail centers. An occupancy of 100-200 suggests a low to moderate fire risk. Proximity to Station 4 ensures rapid response, but dense pedestrian traffic could hinder access.
- **51,709–67,720 sq. ft.–Light Green Icons (12 Buildings):** Scattered along Iowa Avenue and West of Chicago Ave. Possibly larger retail stores, warehouses, or institutional facilities. An occupancy of 200-400 indicates moderate fire load risks from goods or equipment. Station 4's central location facilitates a rapid initial response, although traffic congestion may delay its full deployment.
- **67,271–83,462 sq. ft.–Yellow Icon (8 Buildings):** Concentrated in the north near Marlboro and Atlanta Avenues, there are individual buildings along Linden Street and Kansas Avenue. Likely significant retail complexes or educational/administrative buildings. Occupancy of 400–500 poses evacuation and fire spread challenges. Dispersed placement hinders response, but mutual aid may be needed for large-scale incidents.
- **83,463–122,686 sq. ft.–Orange Icon (8 Buildings):** Positioned in the northern industrial zone near Marlboro Ave, with individual buildings dispersed along Hwy 60, and south of W Linden St. Possibly a large warehouse or industrial facility. High occupancy is possible (500–700), and the fire load suggests a significant incident potential. The distance from Station 4 and the dispersion of these facilities may extend response times, especially in traffic-heavy areas.
- **122,687–214,323 sq. ft.–Red Icons (4 Buildings):** One near Station 4, two in the North near Marlboro Ave, and another along Kansas Ave. These are the largest structures, likely major warehouses, retail complexes, or mixed-use developments. Occupancy may reach 700–1,000+, with extreme fire loads and potential hazardous material (HazMat) risks (e.g., flammable goods). Proximity to Station 4 for the central building aids response, but the eastern and northern ones may require coordination with Station 3 or Station 6.

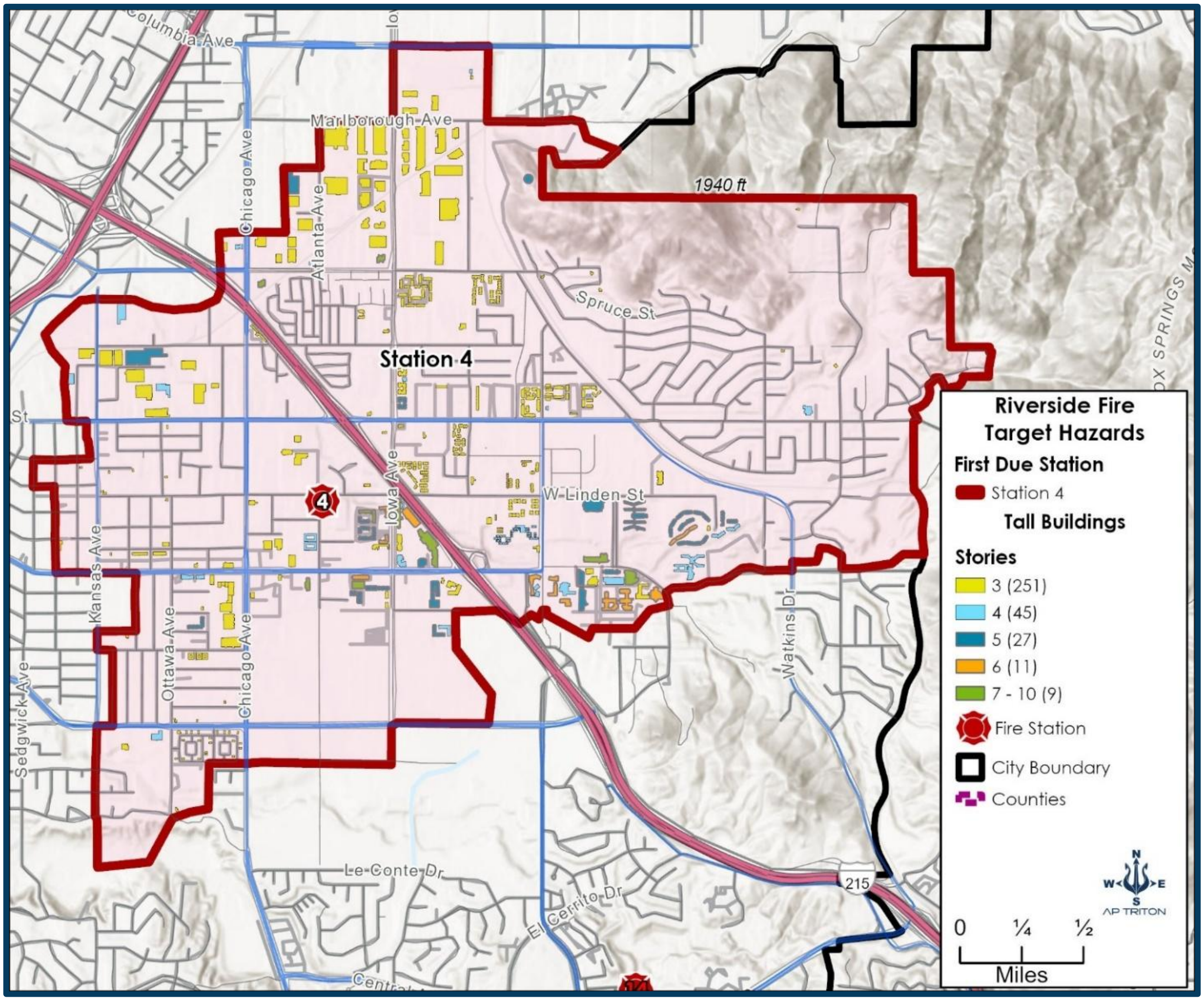
Larger buildings (**122,687–214,323** sq. ft.) carry high fuel loads (e.g., inventory, machinery), increasing fire intensity. Older downtown structures may lack modern suppression systems. Buildings exceeding **100,000** sq. ft. may accommodate 400–1,000+ occupants, necessitating complex evacuation plans, particularly in retail or mixed-use settings. The largest buildings (red icons) may store hazardous materials, aligning with Station 4's all-hazards role.

Station 4's central position ensures a relatively quick initial response (within 4–6 minutes for most buildings, per CFAI standards), with mutual aid from Stations 1, 6, and 14 for significant events.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are taken into consideration to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 4's area.

Figure 230: Station 4 Multi-Story Buildings



Identified Tall Buildings

- **3 Stories–Yellow Icons (251 Buildings):** Widely distributed, with concentrations along Marlboro Avenue, Chicago Avenue, and Kansas Avenue. Primarily, low-rise apartments, small office buildings, or commercial storefronts, and possibly, multi-story warehouses. Moderate occupancy (50–200 per building) with risks of vertical fire spread via stairwells. The high number (**251)** could strain resources during multiple incidents, though evacuation is generally manageable.

- **4 Stories–Light Blue Icons (45 Buildings):** Concentrated to the southeast, at the end of University street, east of I215, and abutting the edge of the south district boundary. Likely mid-rise apartments or office complexes with increased density. This concentration is consistent with the University of California, Riverside campus. Occupancy ranges from 200–400, posing challenges for smoke ventilation and phased evacuations. Proximity to I-215 enables a rapid response (within 4–6 minutes), but older buildings may lack sprinklers, thereby increasing the risk of fire spread.
- **5 Stories–Dark Blue Icons (27 Buildings):** Concentrated in the southeastern sections, near Linden Avenue and the edge of the district. There are standalone buildings in the west and north ends of the area. These could include higher-density apartments, small hotels, or institutional structures such as university buildings. The buildings may also be larger warehouse or manufacturing facilities. With 400–600 occupants, these facilities present moderate risks for interior firefighting and rescue operations. The eastern placement near hilly terrain may complicate ladder access.
- **6 Stories–Orange Icons (11 Buildings):** Positioned along I-215 and in the southeast, on the University of California, Riverside campus. Likely significant educational or commercial high-rises, such as condos (student housing) or office towers. The occupancy target hazard figure above shows these concentrations as "industrial," so storage or manufacturing is possible. Occupancy could exceed 600, necessitating advanced evacuation tactics and potentially requiring aerial operations. A central location facilitates response, but mutual aid may be necessary for extended incidents.
- **7–10 Stories–Green Icons (9 Buildings):** All of which are located along University Avenue. These are taller mid-rise structures, potentially classroom, dormitory, office buildings, or mixed-use developments. With 800-1,200 occupants, they pose significant risks of vertical fire propagation and structural instability. Proximity to Station 4 and Interstate 215 supports rapid initial action, though traffic congestion could delay full deployment.

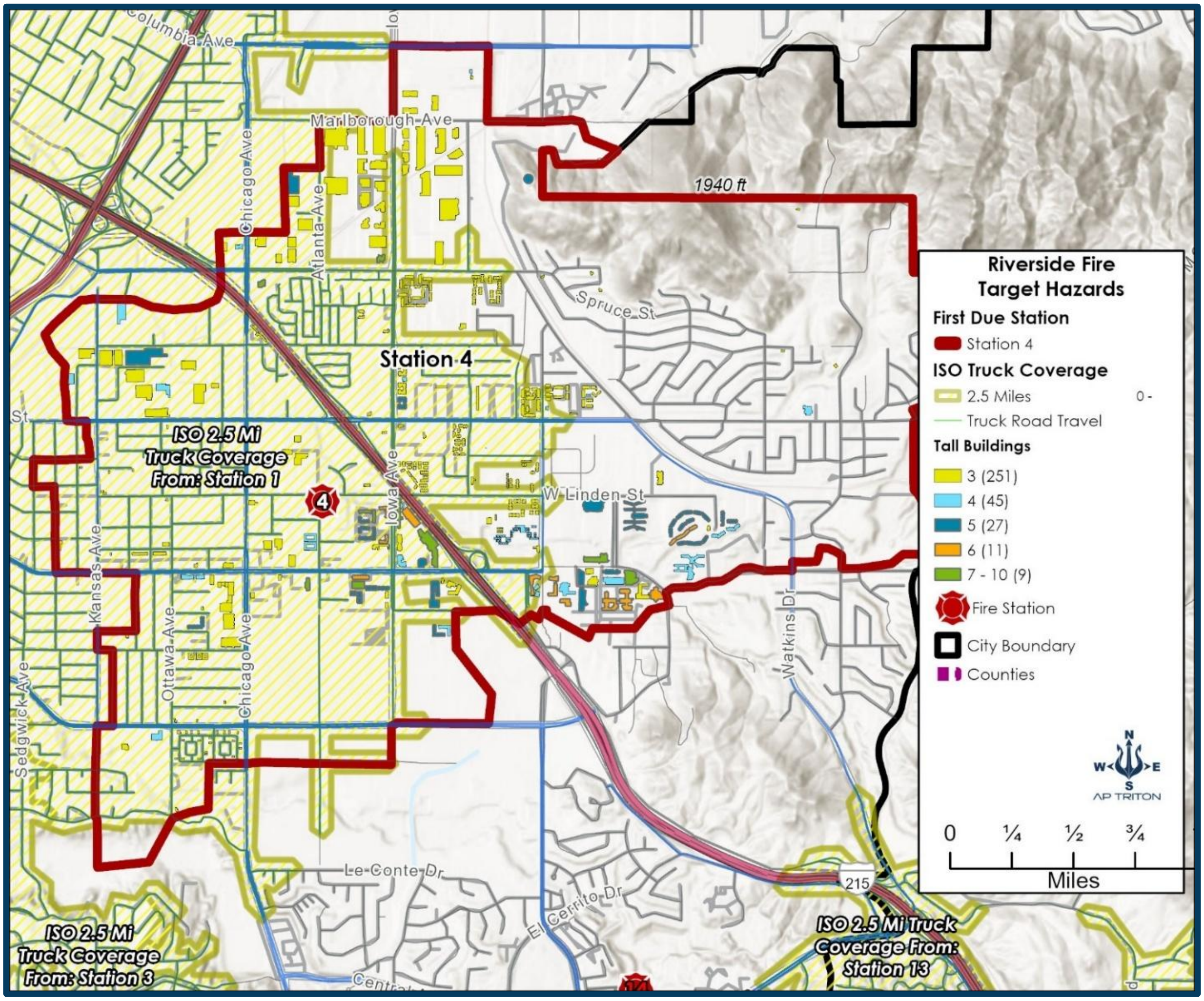
Tall buildings (5–10 stories) are prone to rapid upward fire spread, especially in pre-1990 downtown structures without compartmentation. The 142 three-story buildings add cumulative urban fire load risks. Buildings above five stories require specialized plans, including stairwell pressurization and rooftop access for 600+ people. The eastern hills near the Box Springs Wildlife Reserve add wildfire ember risks, complicating access during high-wind events.

Station 4's central position ensures a rapid initial response (within 4–6 minutes for most buildings, according to CFAI standards), with coordination from Stations 1, 6, and 14 for taller or peripheral structures. Station 4's all-hazards expertise positions it well, but mutual aid and pre-incident planning are vital for multi-building or high-rise scenarios.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 4's area. Sources of the nearest ladder resources are displayed in the following figure.

Figure 231: Station 4 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

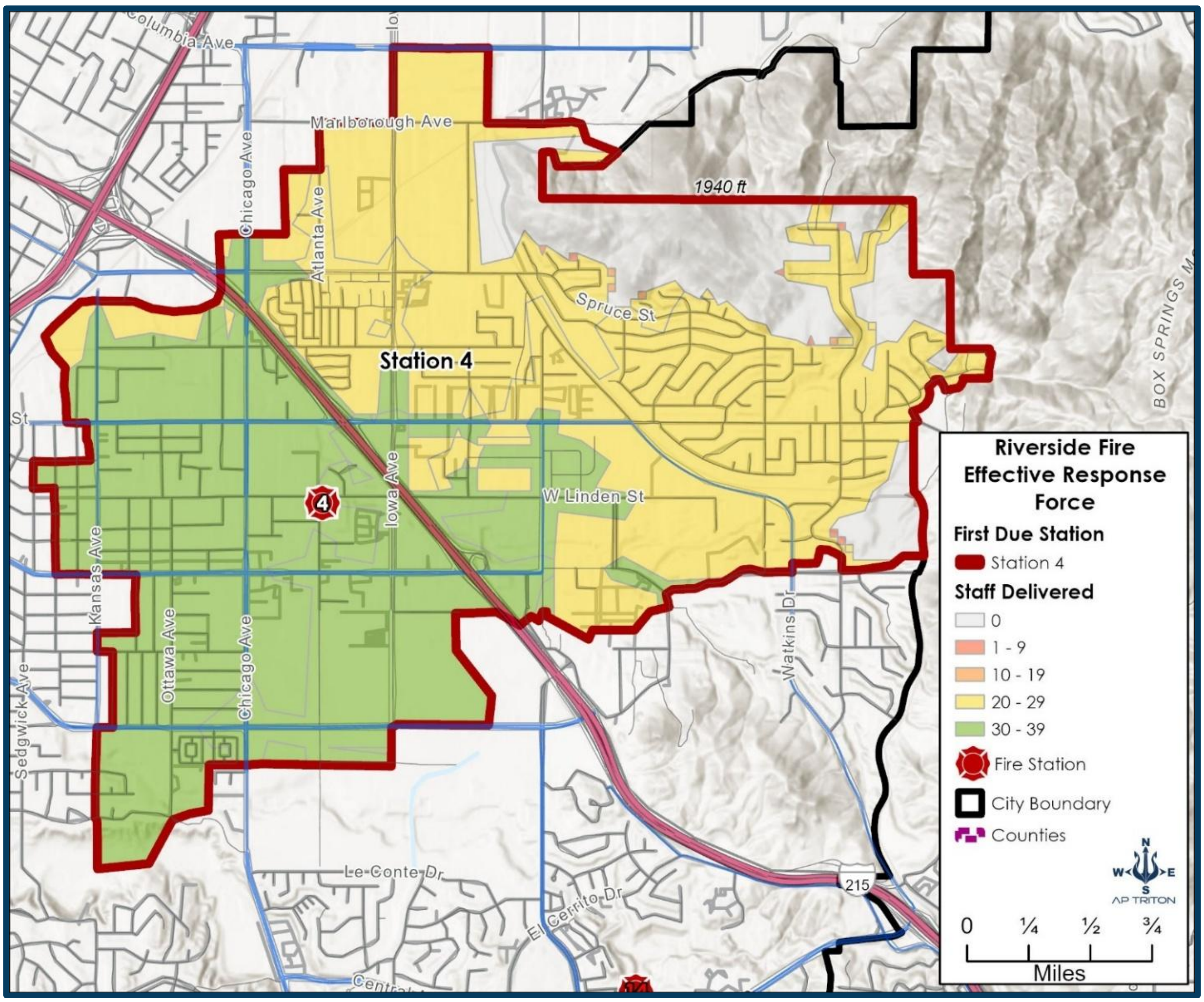


As shown in the previous figure, most of the tall buildings west of I-215 are covered by aerial apparatus within the required ISO parameter. The exception is that the southern portion of the district contains the taller towers, and most of the University campus is beyond the 2.5-mile travel distance from Stations 1 and 13. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 1.

Effective Response Force

The following figure depicts the first due response area for Station 4, outlined in red, which covers a dense urban-commercial zone in Southeast of downtown Riverside, California. Marlboro Avenue bounds the area to the north, Interstate 215 to the east, Martin Luther King Blvd to the south, and Kansas Avenue to the west. This area, approximately 6.8 square miles in size, serves a population of roughly 20,000 to 30,000 and features a mix of high-rise buildings, educational institutions, residential, and industrial areas. The eastern edges are marked by gray-shaded hills, indicating risks associated with the wildland-urban interface. The ERF is assessed within the CFAI CRA-SOC framework, which evaluates staffing delivery within specified response time objectives (typically 4–6 minutes for the first unit and 8–12 minutes for full alarm assignment) to address identified hazards.

Figure 232: Station 4 ERF at 8 Minutes



Staff Delivery Zones

- **10–19 Staff Delivered–Orange Zone Location:** Peripheral areas, particularly the eastern edge near Watkins Drive. This zone indicates a lower staffing level, likely covering boundary-adjacent or less-dense areas with moderate risk. These zones are likely insignificant, containing little to no fire load.
- **20–29 Staff Delivered–Yellow Zone Location:** Central and Eastern sections, including areas along I-215 and eastward. This zone includes portions of the building concentration on the University campus. This zone reflects a moderate staffing level, encompassing the core downtown commercial and residential districts. Aligns with a standard response for moderate risk incidents (e.g., small commercial fires or multi-family dwellings). The 20–29 staff support initial attack, life safety operations, and basic command, but may require reinforcement for high-hazard sites (e.g., high-rises or HazMat), leveraging Station 4's all-hazards capabilities.
- **30–39 Staff Delivered–Green Zone Location:** Largest portion, centered around Station 4 and extending along I-215 west. This zone indicates the highest staffing level, covering the densest population and infrastructure, including key assembly (e.g., some university buildings) and commercial occupancies. Meets or exceeds CFAI recommendations for high-risk incidents (e.g., large commercial fires, multi-casualty events, or wildland-urban interface fires), requiring 20–30+ personnel. This level supports rapid intervention, rescue, and containment, aligning with Riverside's downtown density and Station 4's strategic role. The green zone (30–39 staff) likely achieves CFAI's 90th percentile goal (e.g., 6–8 minutes for first unit, 10–12 minutes for full alarm) due to proximity to Station 4. The orange zone (10–19 staff) may exceed 10 minutes in peripheral areas near hills or industrial zones, necessitating pre-plans or mutual aid.

The CRA identifies risks such as high-rise fires, commercial hazards (e.g., warehouses along Marlboro Avenue), institutional vulnerabilities (e.g., schools, universities), and wildfire threats from the eastern hills. The graduated staffing reflects a tiered strategy, with higher levels in high-risk downtown zones to address critical infrastructure.

The 30–39 staff in the green zone support CFAI's two-in, two-out rule (4 personnel for interior firefighting) and additional resources for command, rescue, and support. Staff in the 10–19 zone may limit initial action, requiring staged deployment or backup from adjacent stations.

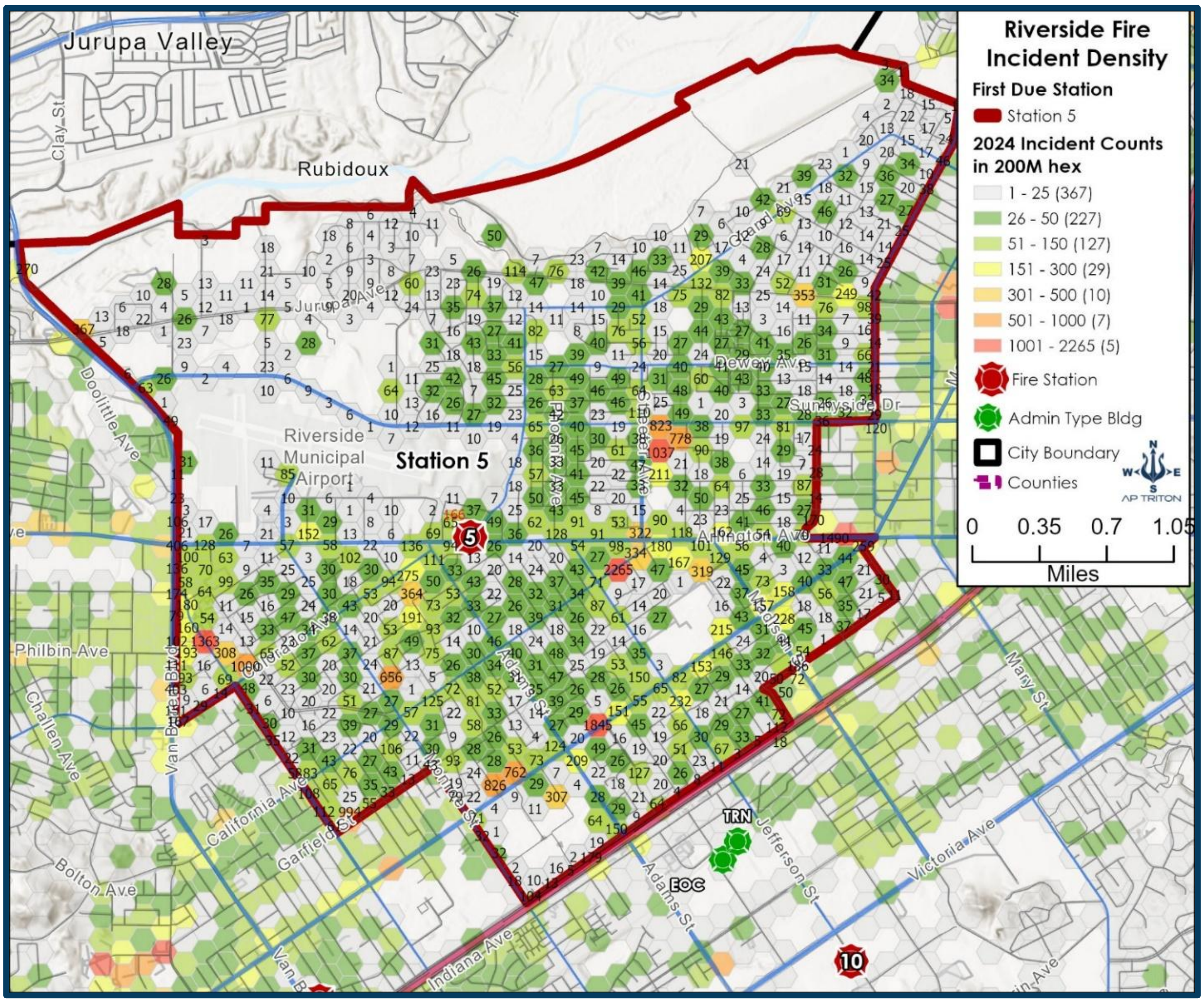
The green zone's dominance indicates robust coverage near Station 4. Still, the orange zone's proximity to hilly terrain and industrial areas highlights access challenges during wildfires or HazMat incidents, a key CRA factor in Riverside.

STATION 5

Incident Evaluation

Station 5 is situated in the northern section of Riverside and, as such, has a moderate population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map only shows the counts for the Station 5 area; however, other stations are included for context, showing how often Station 5 apparatus could potentially be engaged as second-arriving units.

Figure 233: Station 5 Incident Counts

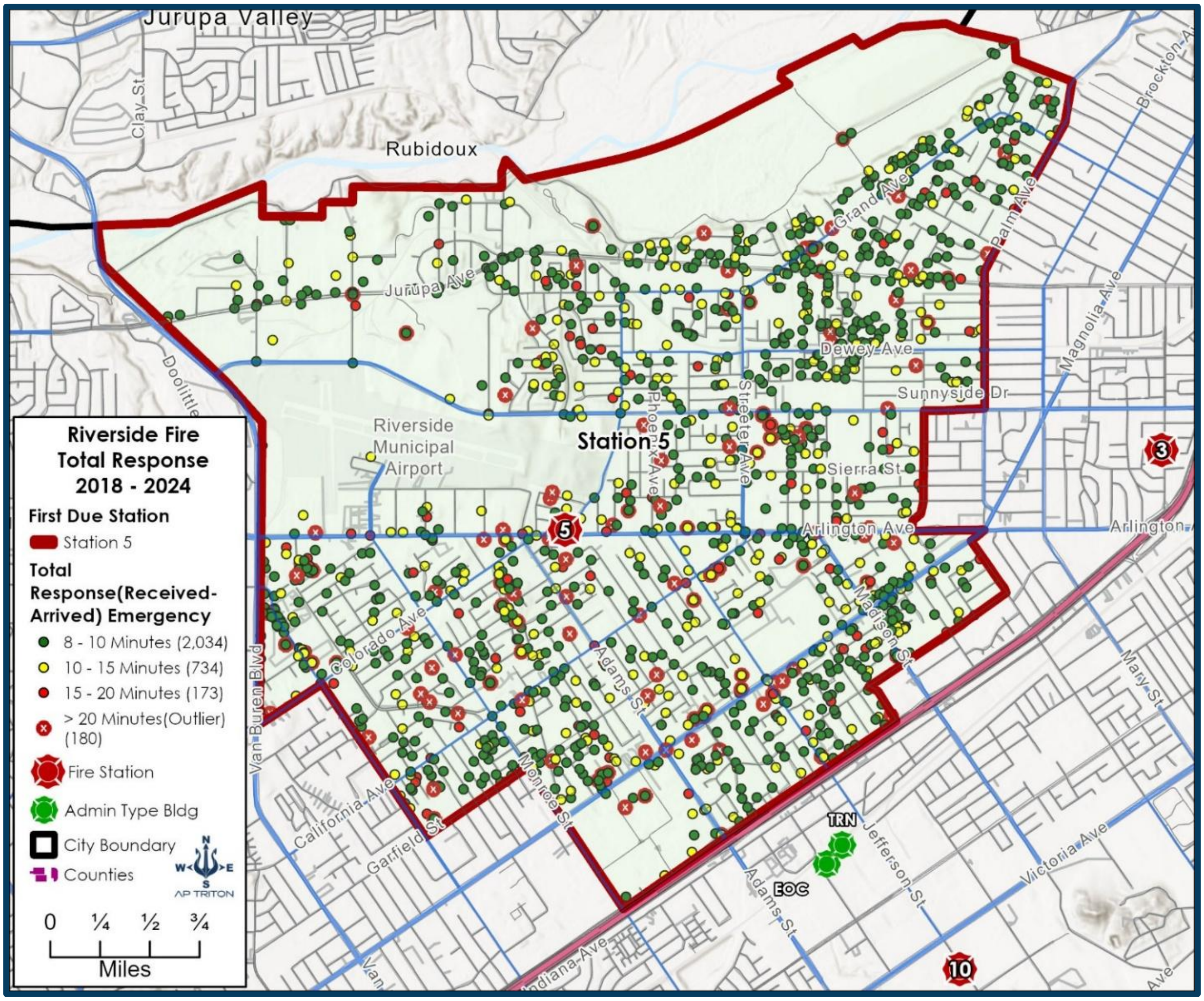


Between 2018 and 2024, Station 5 responded to **31,149** incidents. Of these incidents, from 2018 to 2024, a Station 5 assigned unit arrived first on the scene **27,047** times. This averages out to a reliability of **87**%. This indicates that, due to the station's placement near several high-efficiency roadways, such as Highway 91, which borders the district, response reliability is relatively high.

Station 5 can manage an excellent total response time for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 5 can arrive at the location in 7 minutes, **46** seconds. This exceeds the 8-minute target. Any incidents lasting more than 12 minutes, 10 seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **3,121** 8-minute or greater total response time exceptions representing 10.0% of all responses (emergency and non-emergency).

Figure 234: Station 5 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 5 is shown in the following figure. The probability that a Station 5 resource would be the first to arrive at the scene of an emergency request in Station 5's district is very high. Station 5 meets some of the reliability-improving parameters. The area's size, the number of units, and staffing are limiting factors. Riverside Airport is in the district and does not appear to be a source of total response exceptions.

Figure 235: Station 5 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 5	92%	86%	85%	85%	86%	87%	87%	87%	12.4	5

Hazard Evaluation

Station 5 covers a mixed urban-residential and commercial zone, bounded by Arlington Avenue to the east, Philbin Avenue to the north, Magnolia Avenue to the south, and extending westward toward the Santa Ana River and Mount Rubidoux. This area, approximately 12.5 square miles, is the second largest, and serves a population of ~15,000–25,000 and includes dense neighborhoods, commercial corridors (e.g., along Colorado Avenue), and adjacent hilly terrain (e.g., near Rubidoux). The red boundary outlines the primary first-due territory, with purple-shaded zones likely indicating Fire Hazard Severity Zones (FHSZ) as per CAL FIRE's 2025 updates, which emphasize wildfire risks in the wildland-urban interface. Station 5's all-hazards role, including support for technical rescues and hazardous materials, aligns with the area's diverse risks.

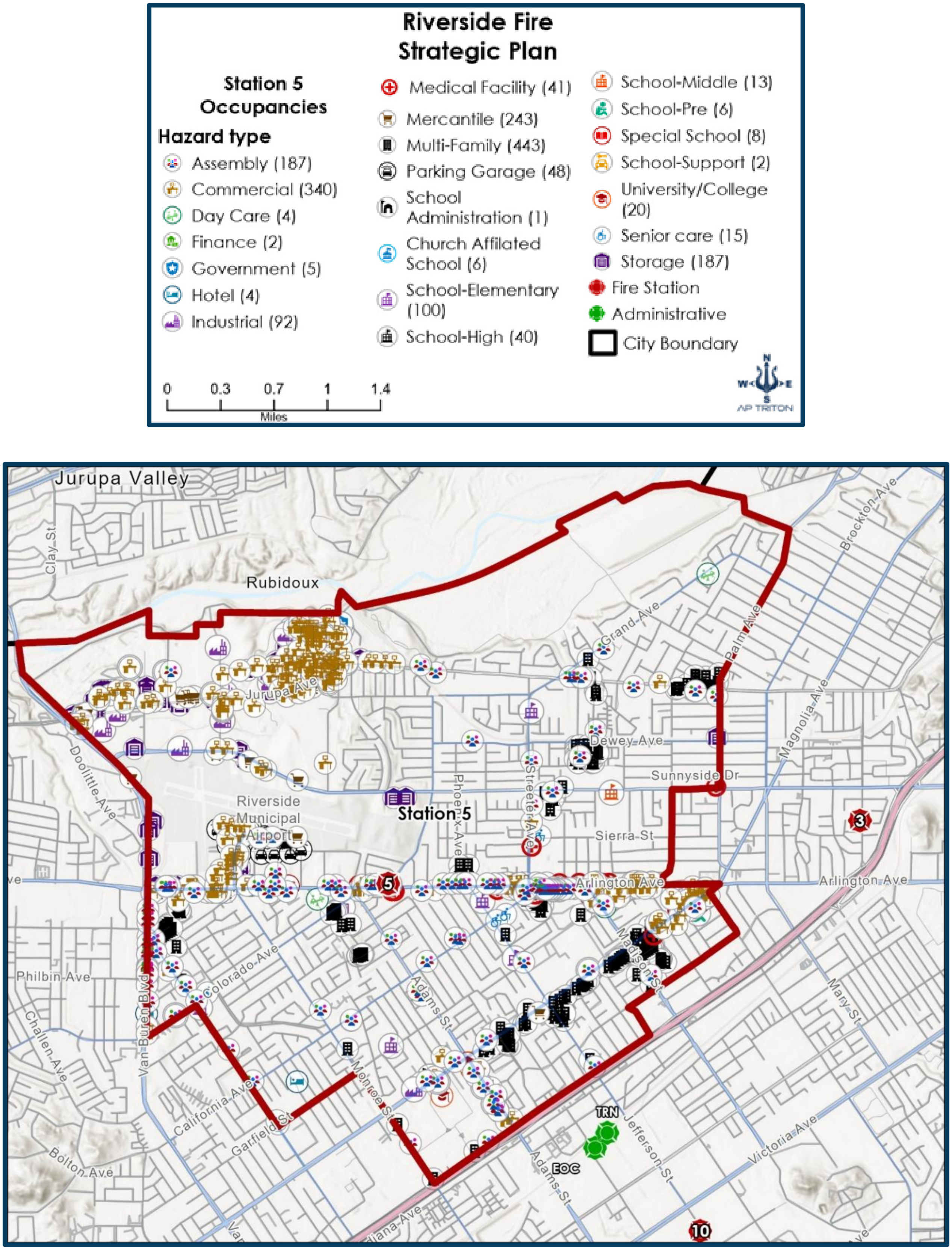
Key Occupancy Types and Hazard Profiles

- **Assembly Hazards (187 Occupancies):** Scattered throughout, with concentrations near Colorado Avenue, Sierra Street, and school clusters. Includes elementary schools (100), middle schools (13), high schools (40), pre-schools (6), special schools (8), school support (2), university/college (20), church-affiliated schools (6), and day care (4). High occupancy loads (300–800+ during school hours or events) pose evacuation and panic risks, especially in educational facilities. Fire spread from electrical faults or overcrowding could lead to mass casualties, requiring rapid triage and lockdown protocols.
- **Commercial Hazards (340 Occupancies)**: Dense clusters along Magnolia Avenue, Colorado Avenue, and near the station. Dominated by mercantile facilities (243) and storage (187), including retail stores, warehouses, and parking garages (48). Elevated fire loads from goods and high foot traffic (200–500 occupants) increase the potential for explosion or rapid spread. Access issues in commercial strips could delay apparatus, with HazMat risks posed by stored chemicals at storage sites.
- **Multi-Family Hazards (443 Occupancies):** Widespread residential pockets, clustered near Philbin Avenue and Sunnyside Drive. Apartments and multi-unit dwellings throughout the area. Dense housing (200–400 occupants per complex) heightens fire propagation via shared walls, especially in older structures. Evacuation challenges in multi-story units align with the area's tall building risks.
- **Industrial Hazards (92 Occupancies):** Scattered in the western industrial zones near the river and Tyler Street. These are likely factories and manufacturing sites, characterized by high HazMat exposure (e.g., chemicals and fuels) and the risk of structural collapse from heavy machinery. A release could impact nearby residential areas, tying into Station 5’s all-hazards mitigation.

- **Medical and Senior Care Hazards:** Central clusters near the station and along Magnolia Avenue. Medical facilities (41) and senior care (15), including clinics and assisted living facilities. Vulnerable populations (elderly, patients) face heightened risks due to mobility issues during fires or power outages. High EMS demand (~60–70% of calls) strains resources.
- **Finance, Government, and Hotel Hazards**
  - Finance (2)–Near commercial corridors. Moderate occupancy (50–100) with risks of arson in office settings.
  - Government (5) Near administrative areas. Critical infrastructure is vulnerable to utility failures.
  - Hotel (4)–Along major avenues. Transient occupants (100–300) and vertical fire spread risks.
- **School Administration and Affiliated Hazards**
  - School Administration (1)–Central hub, records, and support facilities at risk from fire.
  - Church Affiliated School (6)–Near residential zones. Moderate occupancy (100–200) with event-based surges.
- **Wildfire and Environmental Hazards Terrain-Driven Risks:** Western and northern edges near Mount Rubidoux show gray-shaded hills, indicating high FHSZ per 2025 CAL FIRE updates using climate modeling. The urban-wildland interface allows embers to enter neighborhoods during Santa Ana winds, threatening multi-family and commercial structures. Riverside's FHSZ mandates (e.g., defensible space) apply, but density amplifies threats.

Station 5’s response area is a "high-density urban interface zone," with over 1,200 identified occupancies, led by multi-family (443), commercial (340), many of which are located at Riverside Airport, and assembly (187) hazards. The station's central concentration highlights structural fires and medical/EMS risks, as well as HazMat from industrial sites and wildfire threats from the Rubidoux Hills. Challenges include access in dense grids, an airport with a terminal building, high call volumes, and resource strain during multi-hazard events (e.g., wind-driven fires). In a major incident (e.g., a commercial fire with wildfire spotting), prioritization would target assembly/school clusters, leverage Station 5’s capabilities and support from Stations 3 and 4, and update all-hazards maps to enhance resilience.

Figure 236: Station 5 Hazards/Occupancies

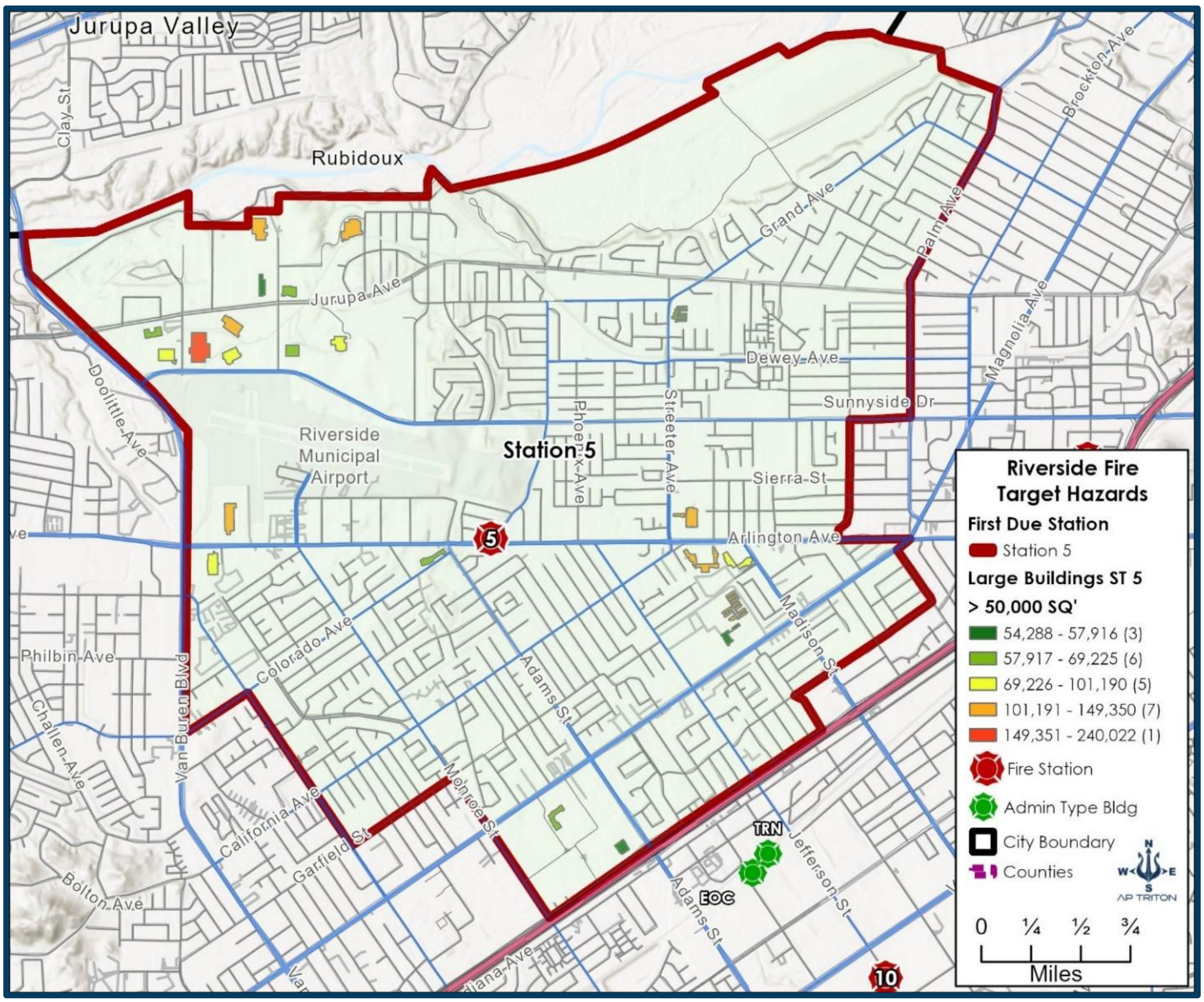


Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 5, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to ¾ miles and includes nearby station (10) for context.

The figure illustrates Station 5's response area, outlined in red, which covers a mixed urban-residential and commercial zone in Riverside, California. Arlington Avenue bounds the area to the east, Philbin Avenue to the north, Magnolia Avenue to the south, and extends westward toward the Santa Ana River and Mount Rubidoux. This area, approximately 12.4 square miles, serves a population of roughly 15,000 to 25,000 and includes dense neighborhoods, commercial corridors (e.g., Colorado Avenue), and adjacent hilly terrain. Large buildings (> 50,000 sq. ft.) are color-coded based on size ranges.

Figure 237: Station 5 Large Buildings Greater than 50,000 Sq. Ft.



Identified Large Buildings

- **52,288 -57,916 sq. ft.–Green Icon (3 Buildings):** Dispersed throughout Station 5's district. Likely mid-sized commercial structures, such as retail stores or small office buildings. An occupancy of 100-200 suggests a low to moderate fire risk. Proximity to Station 5 ensures rapid response, but traffic on Magnolia Avenue could delay access.
- **52,917–69,225 sq. ft.–Light Green Icons (6 Buildings):** Scattered along Colorado Avenue and near Philbin Avenue. Possibly larger retail centers, warehouses, or institutional facilities. An occupancy of 200-400 indicates moderate fire load risks from goods or equipment. Station 5's central location facilitates a quick initial response, although dense residential streets may complicate apparatus movement.
- **69,226–101,190 sq. ft.–Yellow Icon (5 Buildings):** Located near Monroe and Arlington Avenue, with three located north of Riverside Municipal Airport. Likely significant retail complexes or educational buildings. Occupancy of 400–500 poses evacuation and fire spread challenges. Central placement aids response, but mutual aid may be needed for large-scale incidents.
- **101,141–149,350 sq. ft.–Orange Icon (7 Buildings):** Positioned in the western industrial zone near the Santa Ana River. Possibly a large warehouse or industrial facility. High occupancy (500–700) and fire load suggest significant incident potential. Distance from Station 5 may extend response times, especially near the river's access constraints, and proximity to the Roubidoux hills raises the possibility of wildfire impingement.
- **149,351–240,022 sq. ft.–Red Icons (1 Building):** One near Jurupa Avenue. These are the largest structures, likely major warehouses or mixed-use developments. Occupancy may reach 700–1,000+, with extreme fire loads and potential hazardous material (HazMat) risks (e.g., flammable goods). Proximity to Station 5 for the northern building may require coordination with Station 3.

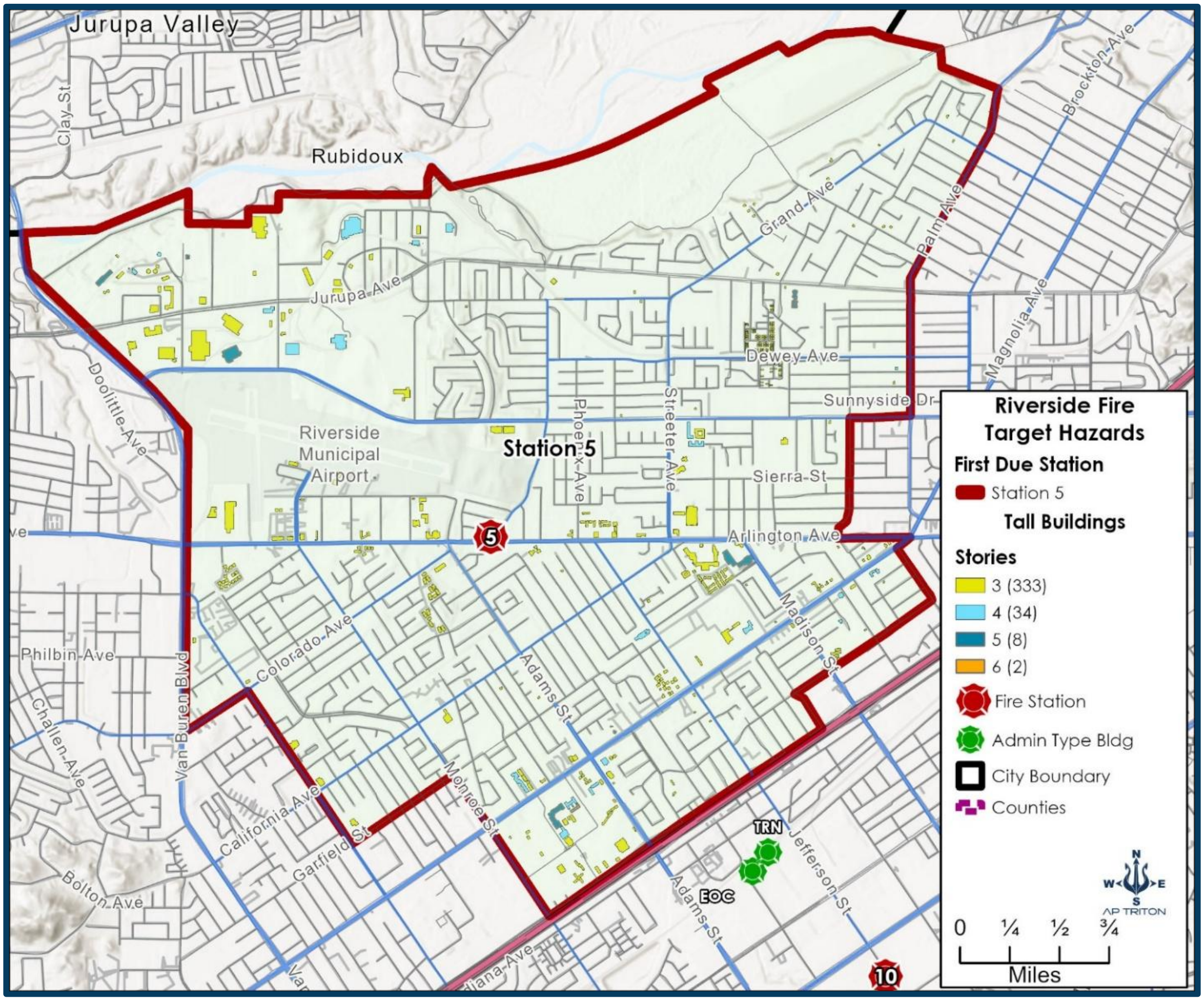
Larger buildings (91,300–102,153 sq. ft.) carry high fuel loads (e.g., inventory and machinery), which increase fire intensity. Older structures may lack modern suppression systems. Buildings exceeding 69,225sq. ft. may accommodate 400–1,000+ occupants, necessitating complex evacuation plans, particularly in retail or mixed-use settings. Dense residential streets and heavy traffic on Colorado Avenue and Magnolia Avenue could impede the movement of the apparatus. The western industrial building near the river adds access delays due to terrain. The largest buildings (red icons) may store hazardous materials, aligning with Station 5's all-hazards role.

Station 5's central position ensures a relatively quick initial response (within 4–6 minutes for most buildings, according to CFAI standards), with assistance from Stations 3 and 4 for significant events.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are taken into consideration to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 5's area.

Figure 238: Station 5 Multi-Story Buildings



Identified Tall Buildings

- **3 Stories–Yellow Icons (333 Buildings):** Widely distributed, with concentrations along Magnolia Avenue, Colorado Avenue, and Madison Street. Primarily, low-rise apartments, small office buildings, or commercial storefronts with upper floors are standard in the urban core. Moderate occupancy (50-200 per building) with risks of vertical fire spread via stairwells. The high number (153) could strain resources during multiple incidents, though evacuation is generally manageable.
- **4 Stories–Light Blue Icons (34 Buildings):** Scattered, mostly near Jurupa Avenue northwest of the airport. Likely mid-rise apartments or office complexes with increased density. Occupancy ranges from 200 to 400, posing challenges for smoke ventilation and phased evacuations. Proximity to Station 5 enables a rapid response (within 4–6 minutes), but older buildings may lack sprinklers, thereby increasing the risk of fire spread.
- **5 Stories–Dark Blue Icons (8 Buildings):** Concentrated in the central and eastern sections, near Colorado Avenue and Arlington Avenue. These could be higher-density apartments, small hotels, or institutional structures. With 400–600 occupants, these facilities present moderate risks for interior firefighting and rescue operations. The eastern placement near hilly terrain may complicate ladder access.
- **6 Stories–Orange Icons (2 Buildings):** Positioned near Magnolia Avenue and Tyler Street. Likely significant residential or commercial mid-rises, such as condos or retail complexes. Occupancy could exceed 600, necessitating advanced evacuation tactics and potentially requiring aerial operations. A central location facilitates response, but mutual aid may be necessary for extended incidents.

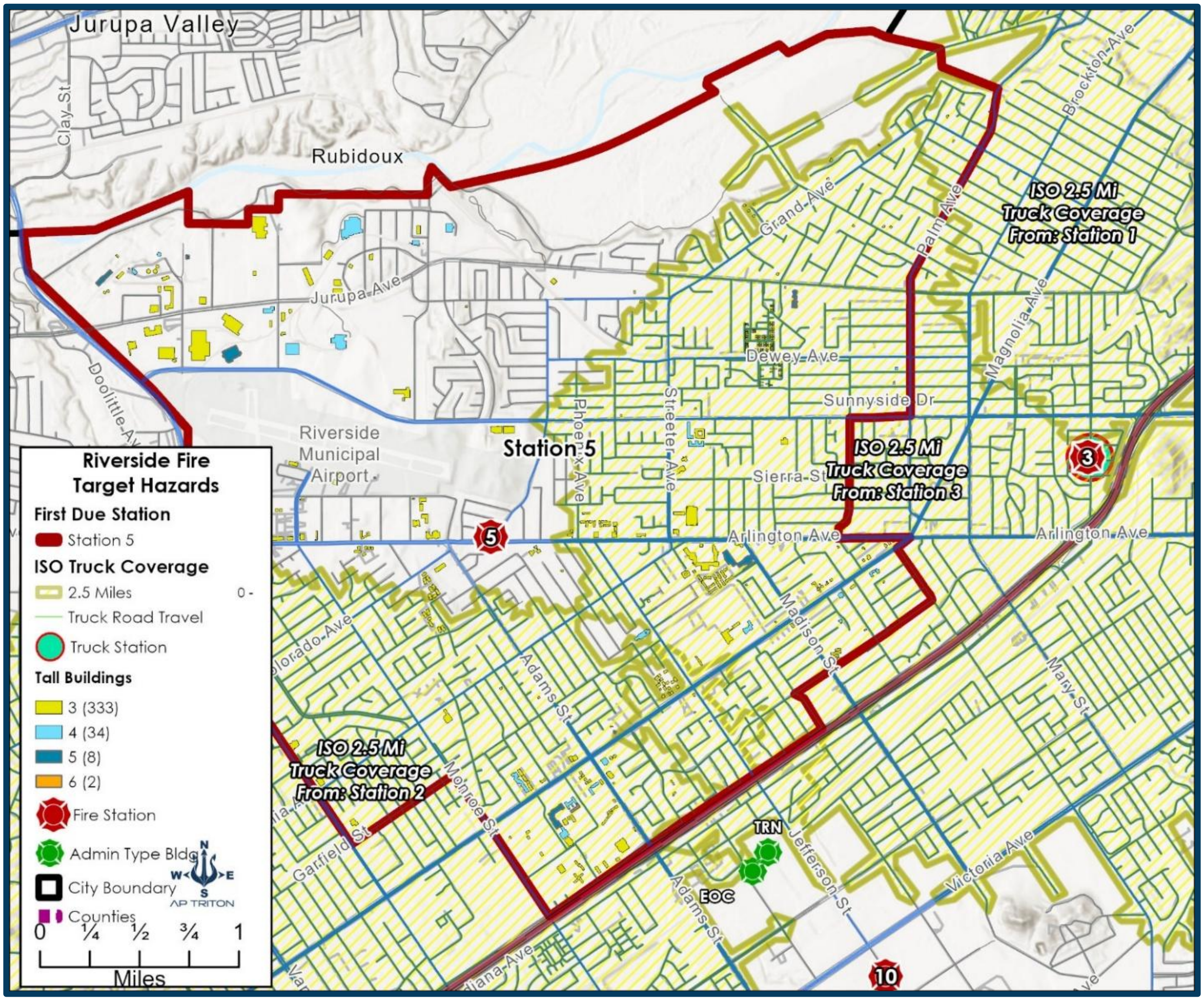
Taller buildings (5–10 stories) are prone to rapid upward fire travel, especially in pre-1990s structures without compartmentalization. The 333 three-story buildings add cumulative urban fire load risks. Buildings above five stories require specialized plans, including stairwell pressurization and rooftop access for 600+ people. Nearby assembly occupancies (e.g., schools) increase the complexity of mass evacuation. Dense residential streets and traffic on Colorado Avenue and Magnolia Avenue may impede access to the apparatus. The western hills near Rubidoux add wildfire ember risks, complicating access during high-wind events. The commercial and industrial mix (e.g., warehouses) aligns with Station 5's all-hazards role, suggesting potential chemical storage hazards.

Station 5's central position ensures a rapid initial response (within 4–6 minutes for most buildings, according to CFAI standards), with coordination from Stations 3 and 4 for taller or peripheral structures.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 5's area. Sources of the nearest ladder resources are also displayed.

Figure 239: Station 5 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

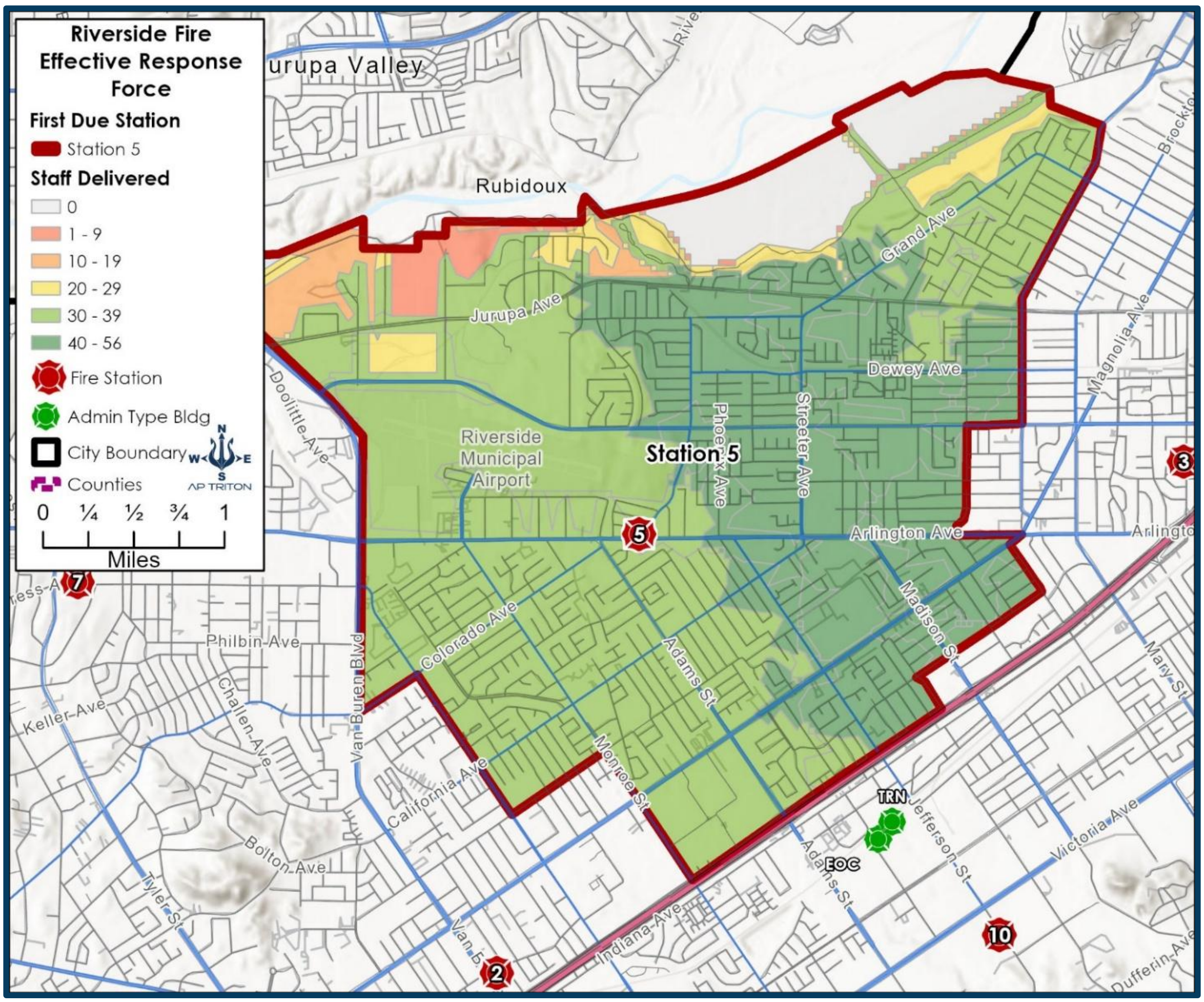


As shown in the previous figure, most of the tall building load is partially covered by aerial apparatus within the required ISO parameter. The exception is that the northern portion of the district, particularly along Jarupa Avenue, contains some of the taller buildings. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Stations 1, 2, or Station 3.

Effective Response Force

The following map depicts the First Due Area for Station 5's Effective Response Force. In the CFAI's CRA-SOC process, the ERF represents the minimum concentration of firefighting and emergency resources (e.g., personnel, apparatus, and equipment) required to achieve the desired tactical objectives for incident types such as structure fires or medical emergencies. It ensures reliable deployment based on risk levels, station distribution, and historical call data. The map visualizes ERF staffing specifically as the "Staff Delivered" metric, which quantifies the number of personnel that can be delivered to areas within the first due zone. This is a key performance indicator for evaluating coverage adequacy, reliability, and concentration in accordance with CFAI standards. The ERF staffing is color-coded by ranges of staff delivered, indicating resource density across the zone.

Figure 240: Station 5 ERF at 8 Minutes



Staff Delivered Range

- **White 0–9 Low** ERF concentration; areas with insufficient initial staffing, potentially requiring mutual aid or extended response times for higher-risk incidents. Low ERF Areas (White, 0–9 staff): Primarily in the far northern and western outskirts, including open or undeveloped land (e.g., near the red boundary). These gaps highlight potential vulnerabilities in low-density but expansive terrain, where CRA might recommend mitigation measures such as additional apparatus or risk-reduction programs.
- **Light Orange 10–19** Moderate ERF; adequate for low-acuity calls but may need reinforcement for complex fires or rescues. Primarily located on the northwestern fringe, but adjacent to the Roubidoux hills, which may present wildland risk challenges.
- **Medium Orange/Yellow 20–29** Good ERF buildup; supports core tactical objectives like fire suppression or victim extrication with minimal delays. Moderate ERF Areas (Orange/Yellow, 10–29 staff): Found in peripheral zones, including northwestern hills and southern edges near highways. These may represent transitional risk areas where turnout times or travel distances slightly dilute staffing.
- **Light Green 30–39** Strong ERF; high reliability for most urban incidents, aligning with CFAI benchmarks for effective suppression.
- **Dark Green 40–56** Optimal ERF; maximum staffing delivery, ideal for high-risk zones with dense populations or commercial structures. High ERF Areas (Dark/Light Green, 30–56 staff): Concentrated around Station 5's core (central urban grid) and extending eastward into residential neighborhoods. This suggests a robust initial response capability in high-call-volume districts, ensuring CFAI-compliant outcomes, such as life safety and property protection.

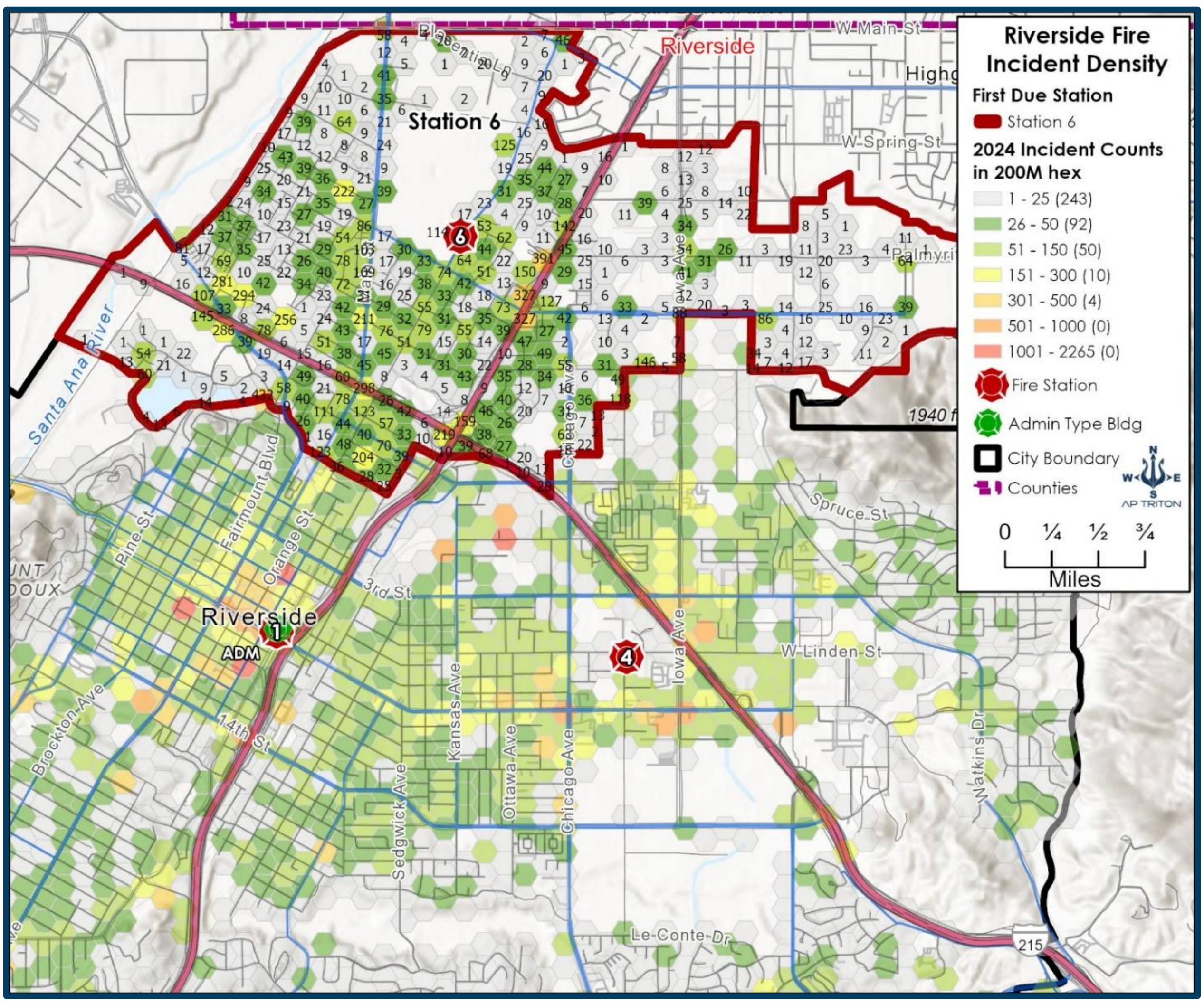
The zone spans approximately 12.4 square miles, with rail lines (brown) and freeways (red) influencing access. Approximately 90% of the mapped area achieves moderate to optimal ERF (10+ staff), supporting an effective response to urban fires in accordance with CFAI standards. However, low-ERF pockets could inform SOC updates, such as enhanced staffing during peak hours.

STATION 6

Incident Evaluation

Station 6 is situated in the north-eastern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. At just 7 square miles, Station 6's district contains many of the large square footage buildings. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map only shows the counts for the Station 6 area; however, other stations are included for context, showing how often Station 6 apparatus could potentially be engaged as second-arriving units.

Figure 241: Station 6 Incident Counts

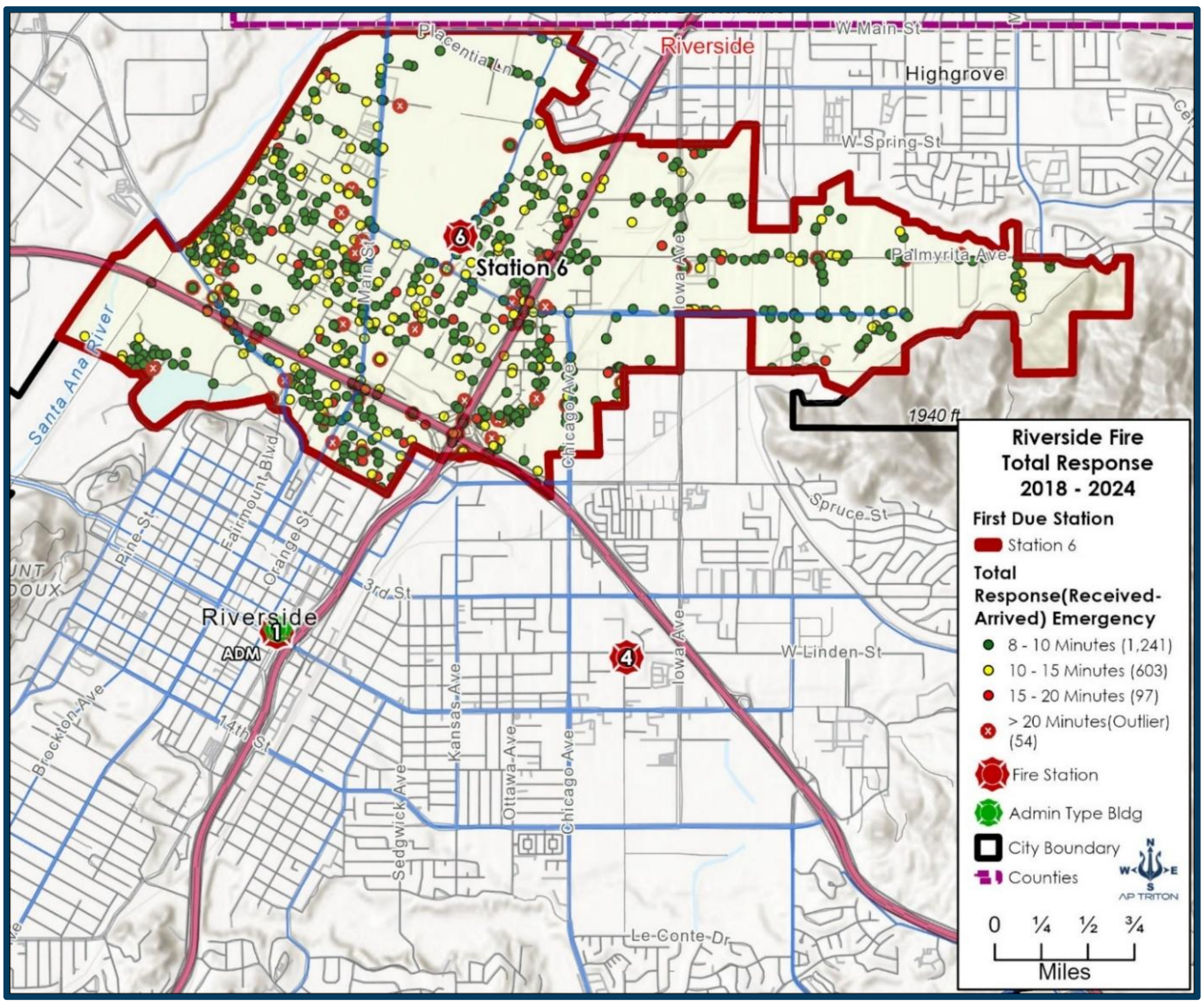


Between 2018 and 2024, Station 6 responded to **12,266** incidents. Of these incidents, from 2018 to 2024, a Station 6 assigned unit arrived first on the scene **9,026** times. This averages out to a reliability of **74**%. This indicates that, due to the station's placement near several high-efficiency roadways, such as Highway 60 and Interstate 215, which divides the district, response reliability is moderately high.

Station 6 slightly misses the NFPA total response time standard for an incident, measured from the time a call is initiated to arrival on scene. Ninety percent of the time, Station 6 can arrive at the location in **8** minutes, **7** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **1,995** 8-minute or greater total response time exceptions representing 16.0% of all responses (emergency and non-emergency).

Figure 242: Station 6 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 6 is shown in the following figure. The probability that a Station 6 resource would be the first to arrive at the scene of an emergency request in Station 6's district is high. Station 6 meets some of the reliability-improving parameters. The area's size, the number of units, and staffing are the limiting factors. The denser urban areas along Main Street appear to be a source of greater total response exceptions.

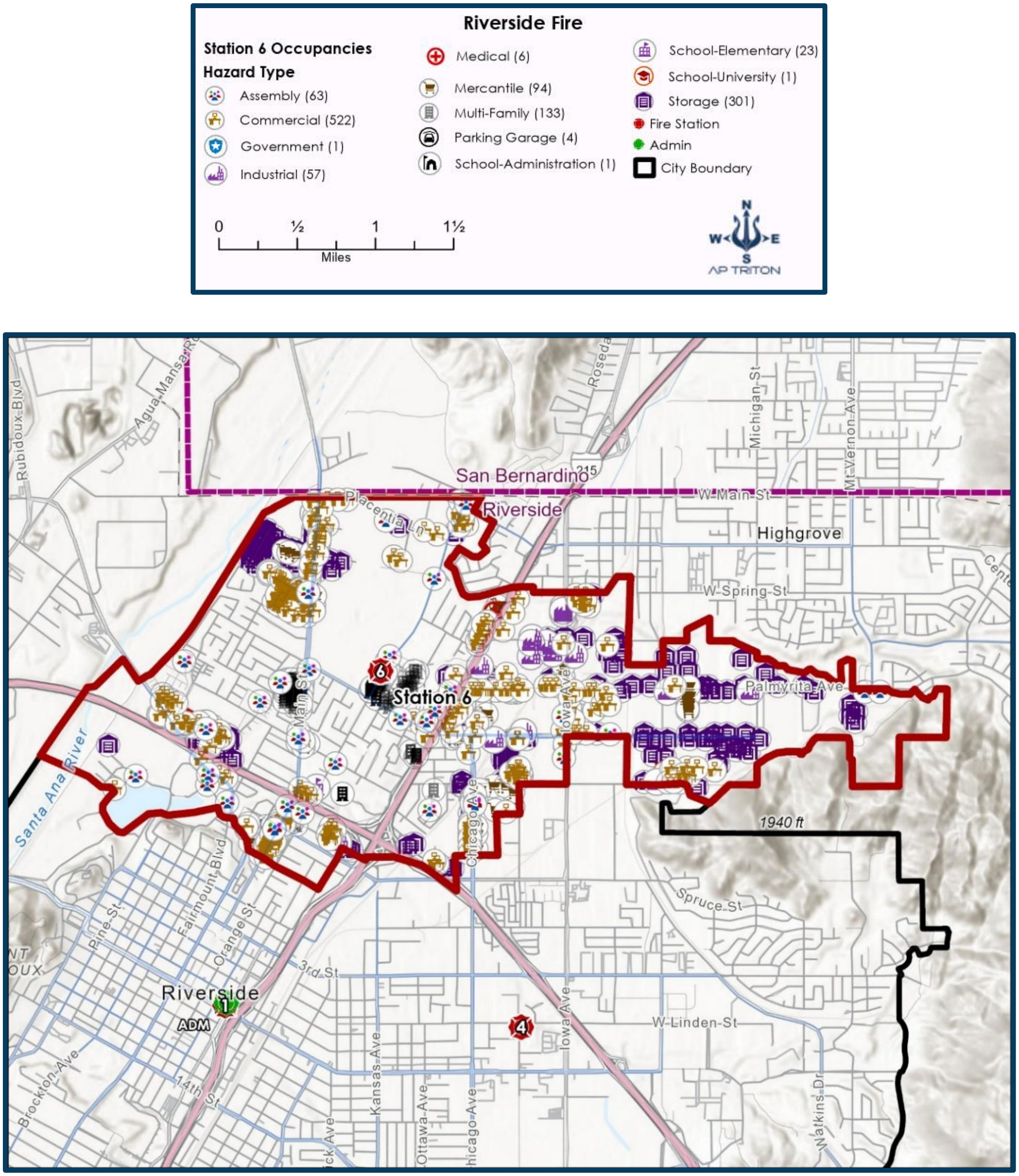
Figure 243: Station 6 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 6	82%	72%	70%	71%	72%	76%	74%	74%	7	4

Hazard Evaluation

This zone encompasses a compact urban-industrial corridor in central Riverside, California, bounded by the Santa Ana River to the south, Iowa Avenue to the east, and extending northward toward the San Bernardino Freeway (I-215) and SR-60. The area spans approximately 7 square miles and features a mix of residential, commercial, and heavy industrial development, with elevations up to 1,940 feet in the northern hills. Station 6 is centrally located near the intersection of Orange Street and Columbia Avenue, surrounded by dense occupancies that indicate a high-hazard urban environment requiring robust all-hazards response capabilities.

Figure 244: Station 6 Hazards/Occupancies



Icons represent specific occupancy types according to International Fire Code (IFC) classifications, with numbers indicating the total count within the response area. Distribution is uneven: industrial hazards cluster in the east (near Iowa Avenue), commercial/mercantile activities are concentrated in the central grid, and assembly/multi-family housing is located in the northwest, near the station.

Key Occupancy Types and Hazard Profiles

- **Assembly (63)** High life-safety risk; venues like theaters, churches, or event spaces with large occupant loads (> 50 people). Clustered in the northwest near schools/universities, posing mass evacuation challenges during fires or active threats.
- **Commercial (522)** Highest volume; office buildings, retail strips, and mixed-use structures. Widespread across the central zone, with moderate fire load but high economic impact; risks include business interruptions and exposure to fires at adjacent sites.
- **Government (1)** Low count but critical; likely a municipal office. Minimal fire risk but high consequence for service disruptions; located centrally, potentially requiring specialized response for secure facilities.
- **Industrial (57)** Elevated hazard; factories, warehouses, and manufacturing with flammable liquids/solids. Concentrated southeast near rail lines, raising concerns for HazMat spills, explosions, or toxic plumes affecting downwind residential areas.
- **Medical Facility (6)** High vulnerability; hospitals/clinics with non-ambulatory patients. Scattered in commercial zones, demanding rapid ALS transport and defensible space planning to protect vulnerable populations.
- **Mercantile (94)** Moderate risk; stores and markets with high public traffic. Dense in central streets (e.g., along University Avenue), susceptible to panic during incidents; fire loads from displays/inventory could accelerate spread.
- **Multi-Family (133)** Significant residential risk; apartments/condos with > 3 units. Prevalent in western/northern edges near the river, vulnerable to vertical fire spread and delayed egress in older structures.
- **School-Elementary (23)**: Widespread in residential pockets; daily high occupancy amplifies risks during school hours, requiring child-specific evacuation protocols.
- **University/College (1):** Adjacent to industrial zones; large transient population increases complexity for crowd management and medical surges. Specific High-Risk Features such as Educational Institutions (High Assembly Overlap): School (1): Likely a high school or admin building; poses extreme life-safety hazard due to children/teachers (hundreds of occupants).
- **Parking Garage (4)**: Multi-level structures with vehicle fuels; fire risks from confined spaces and ventilation issues.
- **Storage (301):** A vast count suggests warehousing near industries; high fuel loads and access challenges could lead to prolonged incidents.

The zone's proximity to freeways (I-215, SR-60) and the Santa Ana River introduces flood/brush fire risks, while northern hills (Grand Terrace) add access delays for elevated industrial sites. City boundaries limit aid options in some directions.

Hazards are evaluated based on occupancy types, their potential for fire, life safety, or environmental risks, as well as their spatial distribution and proximity to other hazards. Station 6's zone presents a high overall hazard profile due to the predominance of commercial and industrial occupancies, which account for the majority of sites and pose elevated risks for large-scale fires, hazardous materials releases, and structural collapses. The area encompasses 1,051 total mapped occupancies, with a focus on high-value, high-occupancy structures located near transportation corridors (e.g., freeways and rail lines), thereby increasing vulnerability to multi-casualty incidents or cascading emergencies. Key risks include rapid fire spread in multi-family dwellings, toxic exposures from industrial sites, and evacuation challenges in assembly venues. Approximately 60% of the zone is dominated by moderate-to-high-hazard occupancies (commercial, industrial, and mercantile), necessitating prioritized mitigation measures, including enhanced inspections, pre-incident planning, and mutual aid readiness. Low-hazard areas (e.g., open spaces near the river) are minimal, covering less than 10% of the zone.

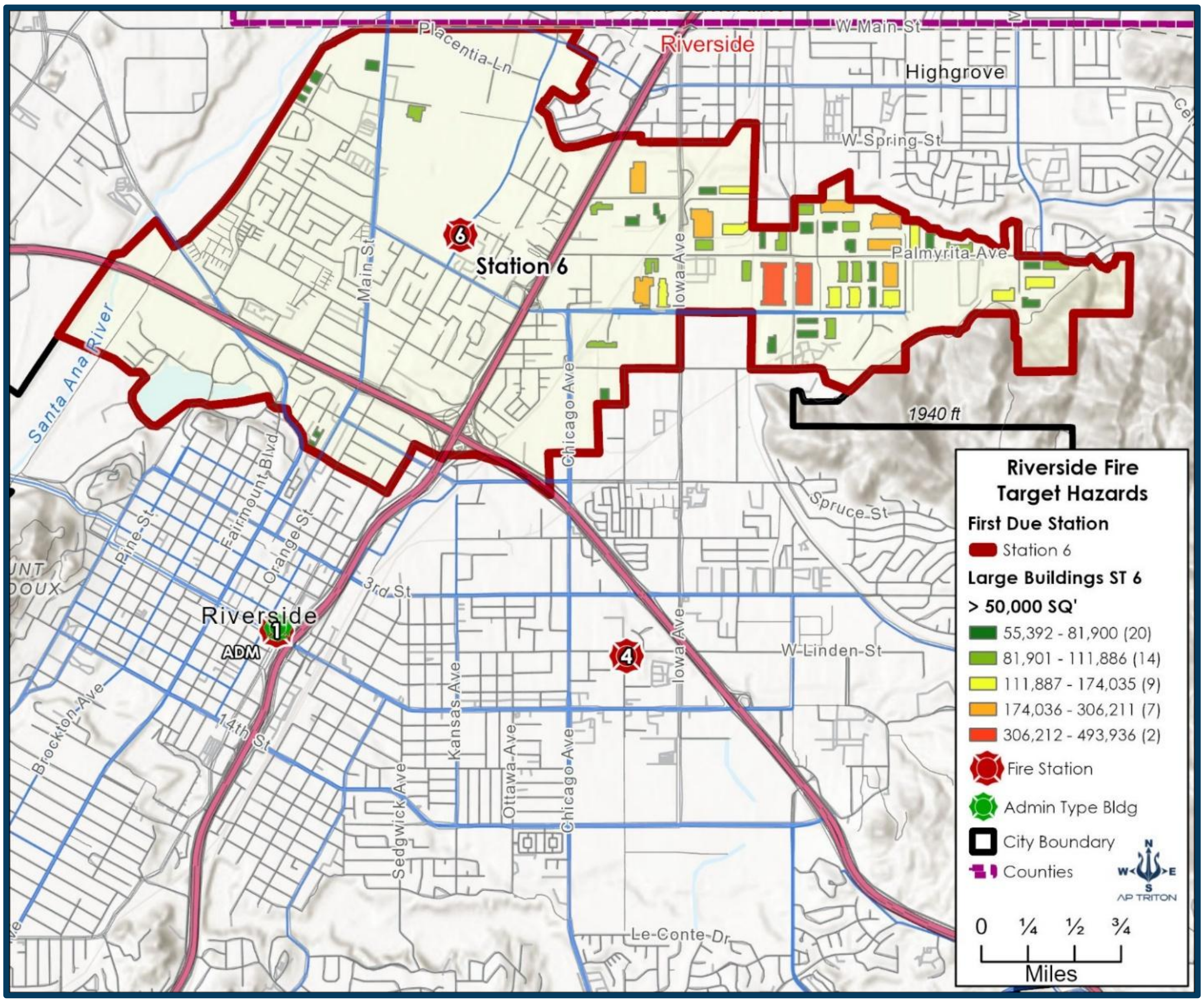
This hazard density underscores the need for Station 6 to maintain an ERF of 20–30 staff members for initial alarms, aligned with departmental SOC goals, with a focus on HazMat and technical rescue capabilities. The 2023 CRA-SOC document highlights similar urban-industrial risks citywide and recommends annual hazard abatement and public education to reduce vulnerabilities. Compared to Station 6's more residential focus (as determined by prior analysis), Station 6 faces greater industrial/commercial threats, potentially requiring specialized apparatus, such as those at nearby stations, for optimal coverage.

Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 6, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to 1 miles, and includes surrounding stations (1, 4, 9, and 14) for context.

The large buildings are categorized by square footage ranges, with colors indicating relative size and potential hazard levels. The total count (53) and distribution suggest a moderate to high concentration of significant structures, particularly in the eastern industrial corridor and central urban grid. These buildings pose elevated fire risks due to their size, occupancy potential, and complexity, necessitating robust initial response forces (ERF) and specialized tactics. Station 6's response area encompasses some of the city's most significant buildings.

Figure 245: Station 6 Large Buildings Greater than 50,000 Sq. Ft.



The square footage breakdown is as follows:

- **55,392–81,900 (20)–Green**: Smallest large buildings; likely warehouses, office complexes, or multi-family units. Moderate fire load; risks include delayed evacuation and exposure to adjacent structures, concentrated near Iowa Avenue and central streets.
- **81,901–111,886 (14)–Light Green**: Mid-range structures; potentially retail centers, schools, or industrial facilities. Increased occupancy and fuel load; hazards include rapid fire spread and structural collapse. Scattered across the zone, with clusters near Station 6.
- **111,887–174,035 (9)–Yellow**: Larger commercial or industrial sites; e.g., big-box stores or manufacturing plants. High fire load and economic impact; risks include hazardous materials and prolonged suppression needs, predominantly in the eastern industrial area.
- **174,036–306,211 (7)–Orange**: Significant structures; likely distribution centers or mixed-use complexes. Very high fire load and occupancy; challenges include access, water supply, and multi-company response. Located east of Iowa Avenue.
- **306,212–493,936 (2)–**Red: Largest buildings; possibly mega-warehouses (Walmart Distribution Center). Extreme fire load and complexity pose risks of catastrophic loss, requiring mutual aid and advanced pre-planning. Positioned in the northeast corner near Highgrove.

The highest density of large buildings (yellow, orange, red) is in the eastern portion of the zone, particularly near Iowa Avenue and extending toward Highgrove, indicating an industrial/commercial hub. This area, comprising 18 buildings (34% of the total) in the 111,887–493,936 sq. ft. range, represents the most significant hazard due to the potential for large-scale fires or hazardous material (HazMat) incidents. East of Station 6 and I-215, north, the green and light green buildings (34 total, 64%) suggest a mix of residential (multi-family) and commercial occupancies. These pose moderate risks but benefit from proximity to the station, which could potentially reduce response times.

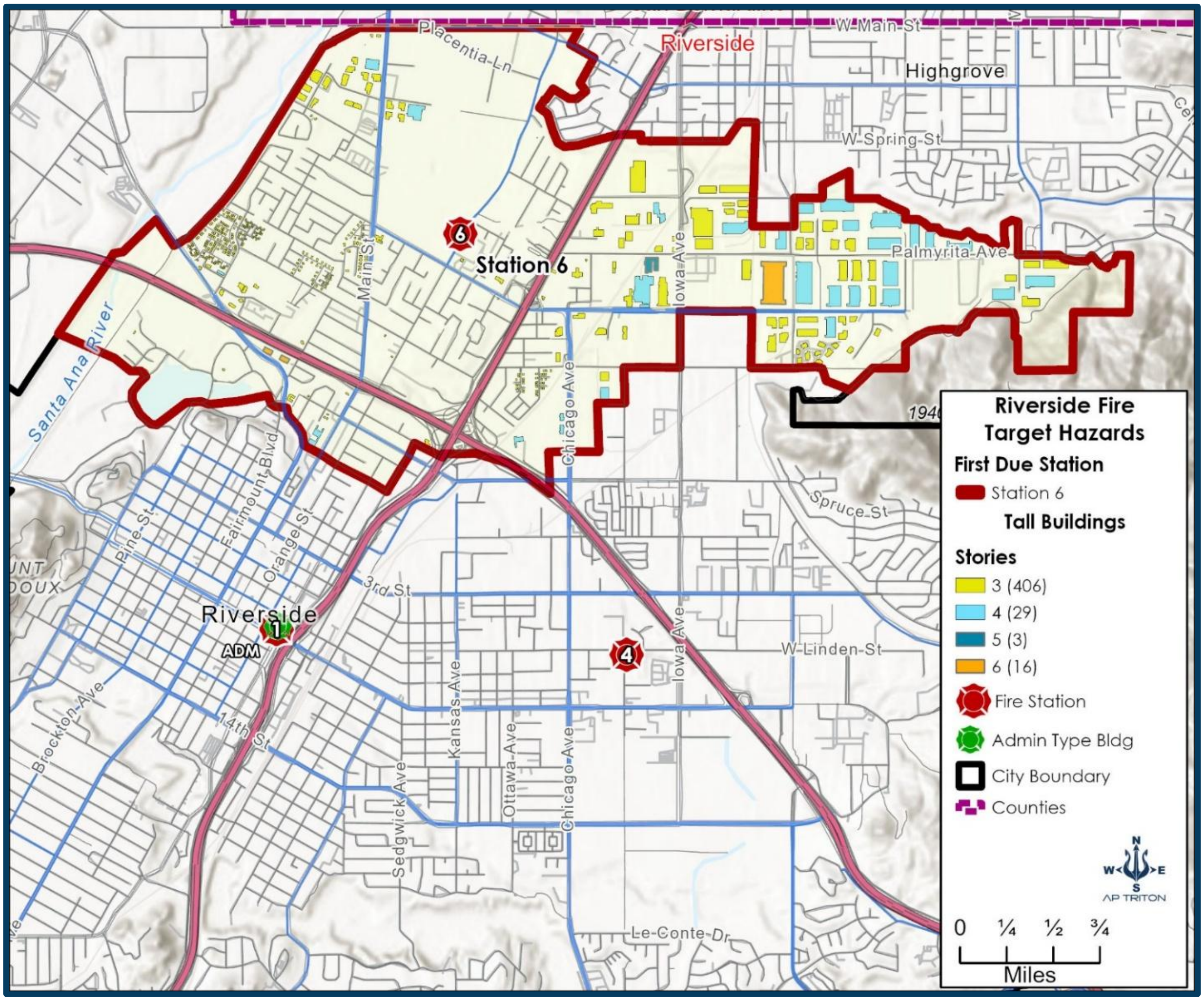
The two red buildings (306,212–493,936 sq. ft.) in the northeast, near the 1,940-ft elevation, indicate isolated megastructures, likely warehouses. Access challenges due to terrain and distance from Station 6 (over 0.75 miles) increase vulnerability, necessitating the allocation of additional resources to mitigate these risks.

The zone spans about 7 square miles, with large buildings distributed in one area. Approximately 66% (35 buildings) fall within the lower two ranges (55,392–111,886 sq. ft.), which are manageable with a standard ERF, while 34% (18 buildings) are in higher ranges and require enhanced planning and mutual aid.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 6's area.

Figure 246: Station 6 Multi-Story Buildings



The figure highlights multi-story buildings in the response area of Station 6, located near the intersection of Orange Street and Main Street, adjacent to the Santa Ana River. Tall buildings are defined as those with six or more stories, marked in orange. Below is an assessment of the buildings by story range.

Building Assessment by Story Range

- **3 Stories (Yellow, 406 total):** Widespread across the response area, particularly in residential neighborhoods and along secondary streets. Primarily residential (e.g., apartment complexes, townhouses) and small commercial buildings (e.g., shops, offices). Their high number suggests a dense urban residential zone, with potential risks from fire spread in closely packed structures or cooking-related incidents—moderate risk due to volume; evacuation and access challenges are also present in densely populated areas.
- **4 Stories (Light Blue, 29 total)**: Scattered, with concentrations along Main Street and near University Avenue. Likely mixed-use buildings with ground-floor retail and upper-floor apartments, or mid-rise office buildings. Some may serve as student housing near the university area, increasing the risk due to height, which requires ladder trucks for upper-floor access. Higher occupancy in mixed-use or student housing could complicate evacuations.
- **5 Stories (Dark Blue, 3 total)**: Rare, located near the eastern edge toward University Avenue. Possibly university-related facilities (e.g., dormitories, academic buildings) or upscale apartments. Their limited number suggests specialized development. Low frequency but high risk per building due to height and potential occupancy density; specialized response needed.
- **6 Stories (Orange, 16 total):** Concentrated along Main Street and extending toward Iowa Avenue and University Avenue, forming the downtown and university-adjacent core. Downtown (Main Street): Likely commercial office towers, historic hotels, or mixed-use developments with retail and residential units. These could house businesses, government offices, or luxury condos.
- **University Area (Near University Avenue):** Potentially student housing, university administrative buildings, or modern apartment complexes catering to faculty and students.

The highest risk category due to height and potential high occupancy. Requires advanced fire suppression (e.g., aerial platforms) and coordinated evacuation plans, especially in mixed-use or densely populated structures.

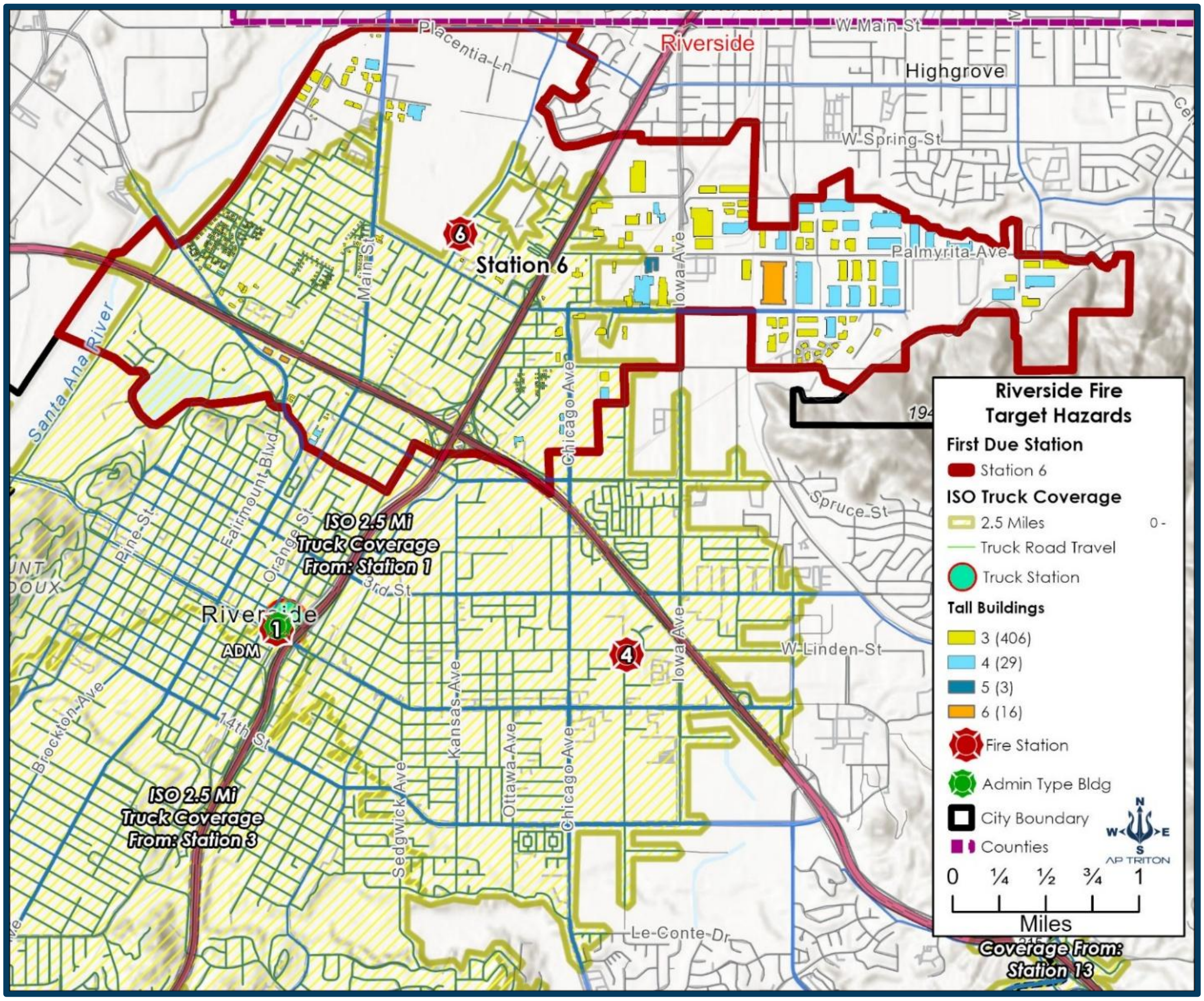
Downtown concentration suggests economic and population centers, increasing vulnerability to fire-related disruptions. University proximity increases risks associated with student behavior (e.g., electrical hazards, overcrowding).

Station 6's location is strategic for rapid response. Still, the mix of uses and building heights necessitates robust pre-planning for high-rise incidents, including water supply, access routes, and evacuation coordination.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 6's area. Sources of the nearest ladder resources are also displayed:

Figure 247: Station 6 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

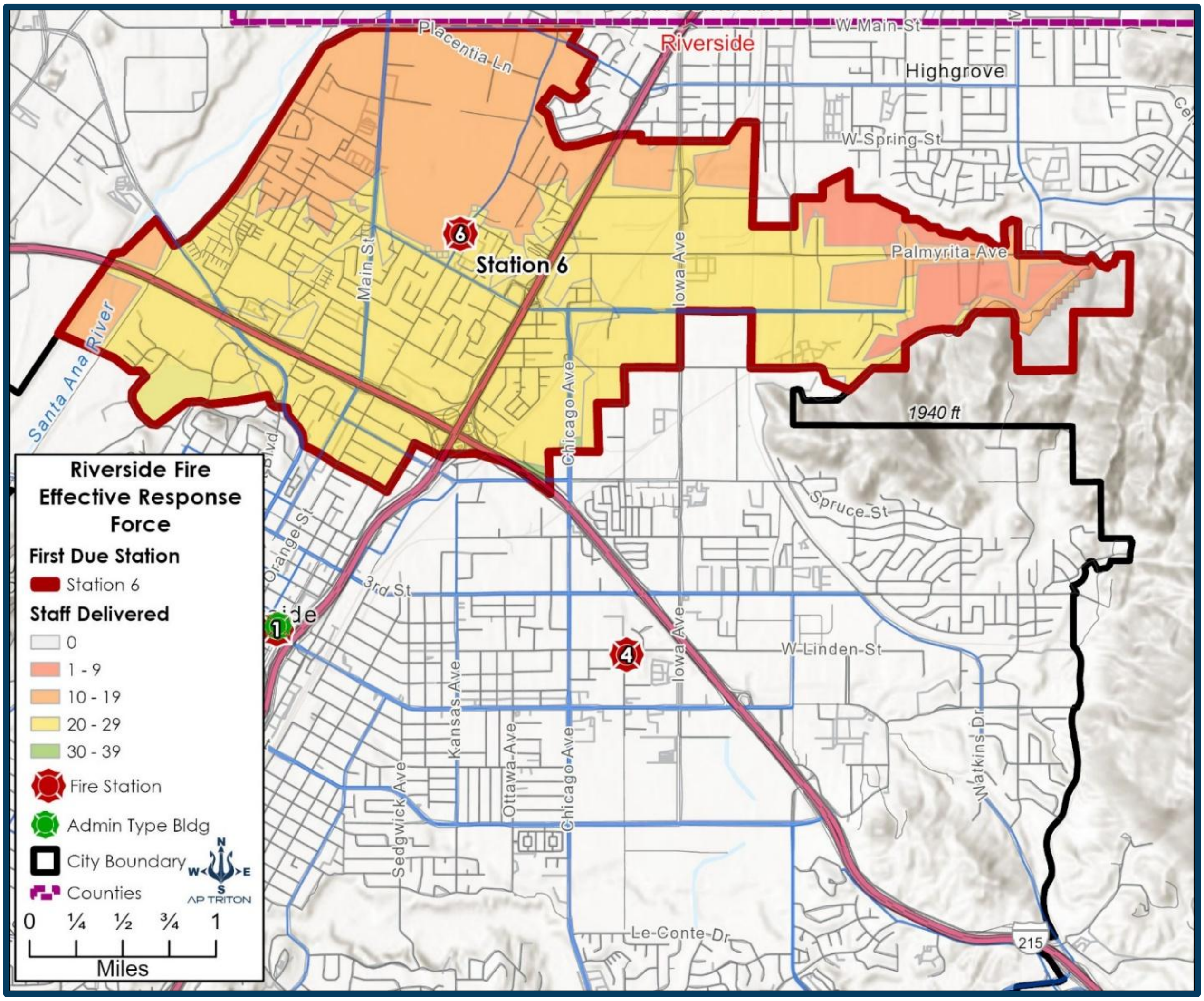


As shown in the previous figure, most of the tall building load is not covered by the aerial apparatus within the required ISO parameter. The northeastern and eastern portions of the district contain many taller buildings outside of the 2.5-mile coverage area. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 1 or 3.

Effective Response Force

The ERF refers to the personnel, apparatus, and resources deployed to address incidents within acceptable timeframes, tailored to the community's risk profile. The following figure provides a detailed view of the first due area and staff delivery, enabling an assessment of the ERF.

Figure 248: Station 6 ERF at 8 Minutes



Staff Delivered (Color-Coded Zones)

- **0 (White):** Areas with no staff delivered, likely outside the immediate response boundary or unserved regions, relying on mutual aid.
- **1–9 Staff Delivered (Orange):** Peripheral zones with low staff (e.g., near the river or eastern hills), indicating longer response times or secondary coverage.
- **10–19 Staff Delivered (Light Orange):** The majority of the response area, covering residential and mixed-use, and large building zones, suggests a moderate ERF for standard incidents.
- **20–29 Staff Delivered (Yellow):** Central areas around Station 6, indicating a stronger ERF for higher-risk zones like downtown with six-story buildings.
- **30–39 Staff Delivered (Green):** The immediate vicinity of Station 6, representing the highest staff density for rapid initial response to critical incidents. There is also a small concentration of staff near the intersection of Hwy 60 and I-215, the southeastern corner.

CFAI CRA-SOC standards typically require an ERF to arrive within 4–8 minutes for 90% of incidents. The 30–39 staff zone around Station 6 provides immediate coverage, while 20–29 staff in the core ensure coverage for high-rise risks. The 10–19 and 1–9 zones indicate potential exceedance of this target, necessitating assistance from Stations 1 and 4.

The CRA identifies risks associated with the 16 six-story buildings (commercial, mixed-use, and student housing) and the 406 three-story buildings (residential/commercial). The ERF's tiered staffing aligns with these risks, with higher deployment (20–39) in the urban core where high-occupancy or high-value properties dominate.

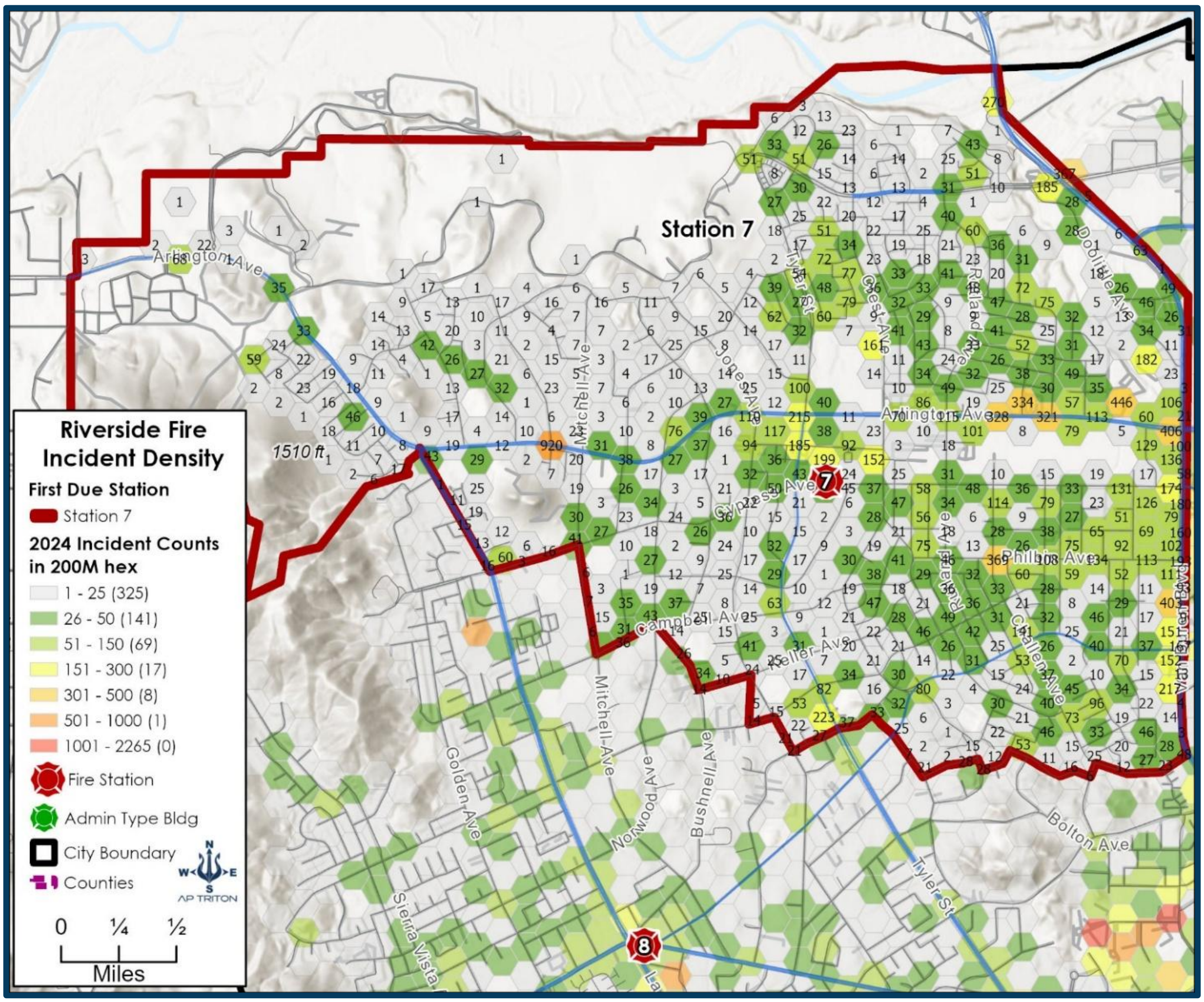
The ERF includes Station 6's primary units (e.g., engine, ladder truck) and support from adjacent stations (1, 4), as indicated by red symbols and blue response boundaries. The 30–39 staff level likely includes a four-person crew with advanced life support (ALS) capabilities, while 20–29 and 10–19 levels provide scalable reinforcement.

STATION 7

Incident Evaluation

Station 7 is situated in the north-western section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map only shows the counts for the Station 7 area; however, other stations are included for context, showing how often Station 7 apparatus could potentially be engaged as second-arriving units.

Figure 249: Station 7 Incident Counts

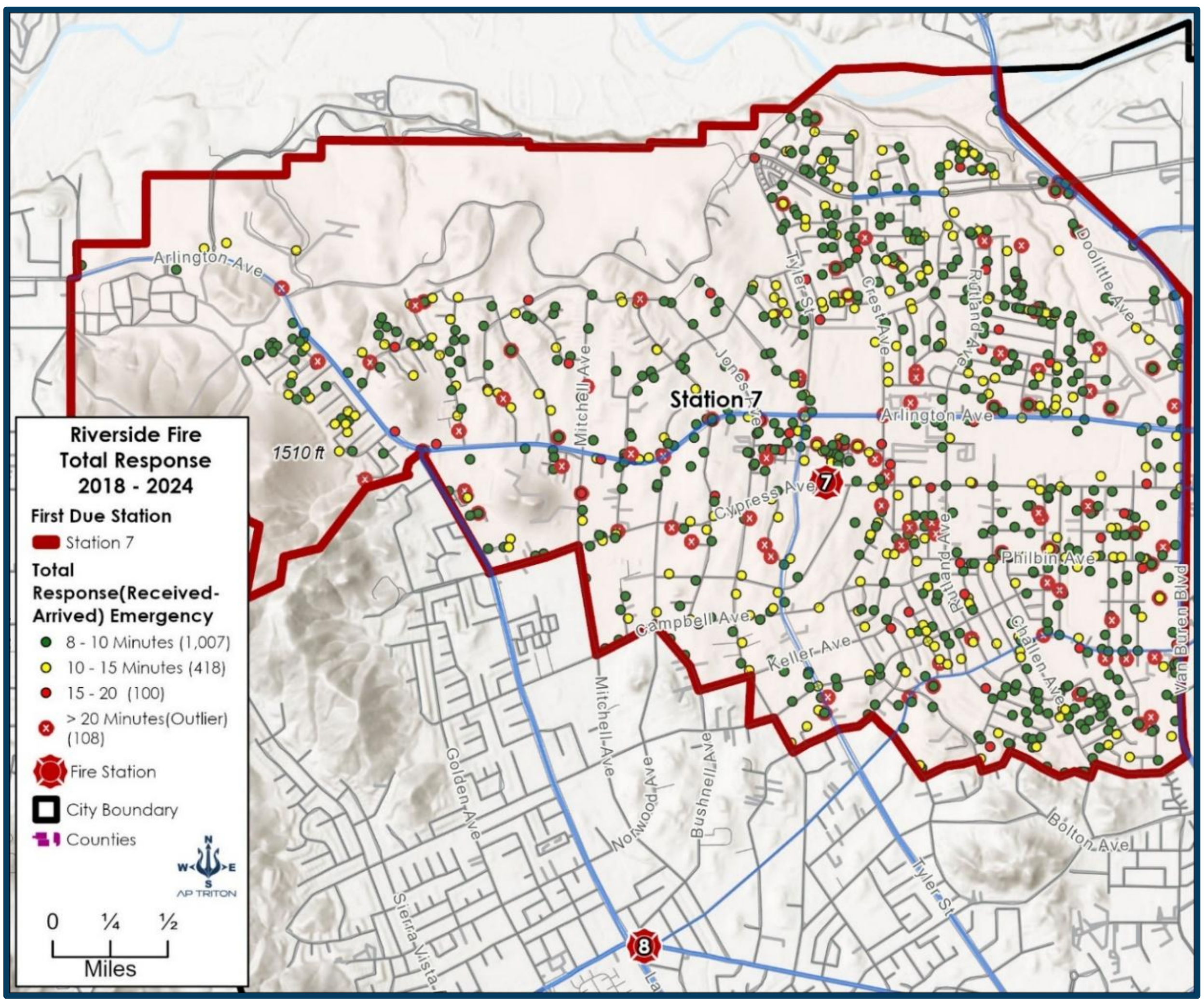


Between 2018 and 2024, Station 7 responded to **19,907** incidents. Of these incidents, from 2018 to 2024, a Station 7 assigned unit arrived first on the scene **13,331** times. This averages out to a reliability of **67%**. This indicates that, due to the station's remote location away from high-efficiency roadways, response reliability is the second-lowest in the department.

Station 7 can just meet an NFPA total response time standard for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 7 can arrive at the location in **7** minutes, **54** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the eight-minute total response NFPA standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **1,633** 8-minute or greater total response time exceptions representing 20.1% of all responses (emergency and non-emergency).

Figure 250: Station 7 Incident Exceptions (Long Response)



Station Response Reliability

The response reliability for Station 7 is shown in the following figure. The probability that a Station 7 resource would be the first to arrive at the scene of an emergency request in Station 7's district is high. Station 7 meets some of the reliability-improving parameters. The area's size, the number of units, and staffing are the limiting factors. Response reliability declined considerably during the COVID-19 pandemic.

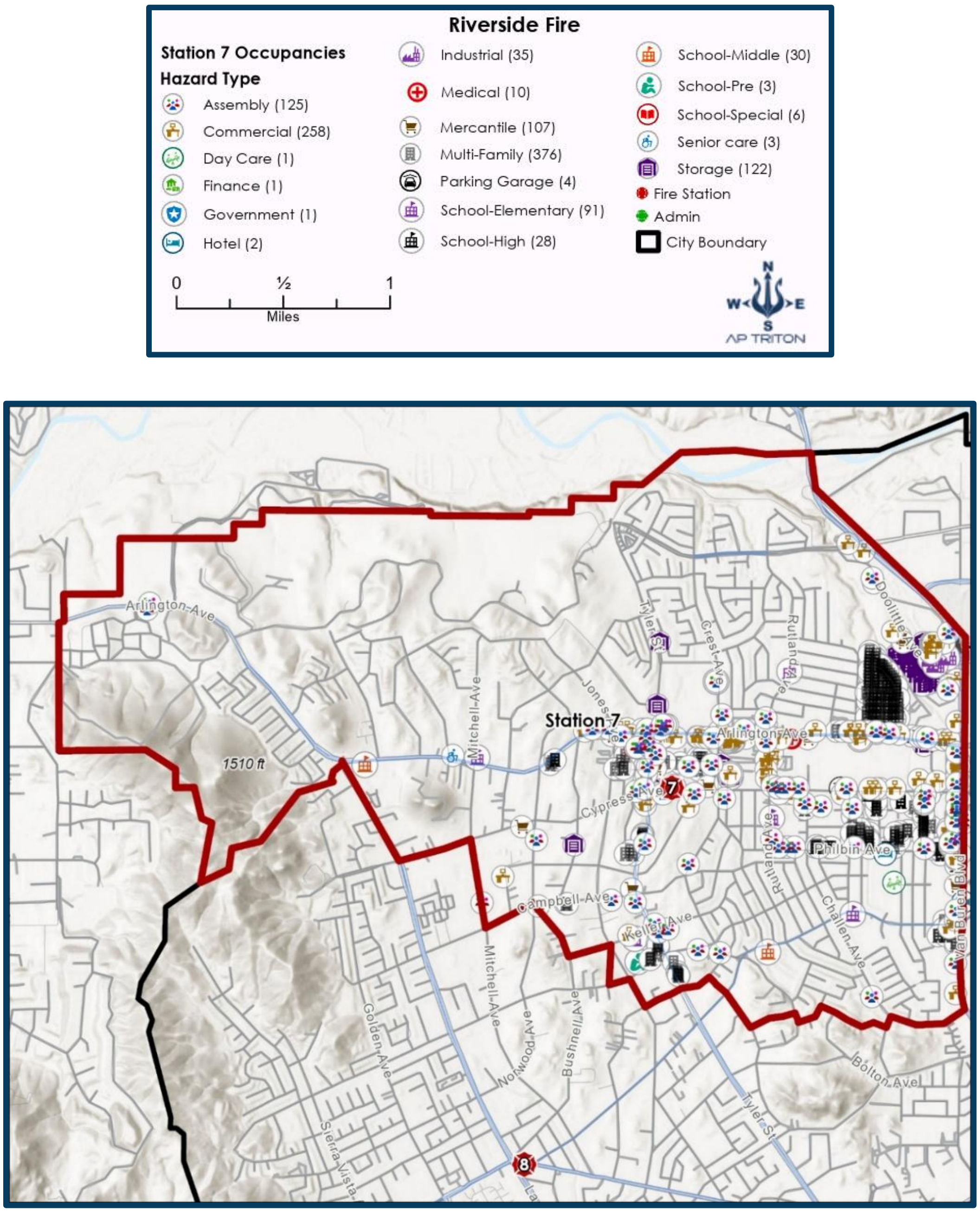
Figure 251: Station 7 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 7	81%	65%	67%	62%	62%	67%	67%	67%	10	4

Hazard Evaluation

The map for Station 7 in the following figure, located in the Arlanza neighborhood, details the distribution of various occupancies within its response area. Using the legend for icon identification, the map highlights a diverse range of hazard types and occupancies, reflecting a suburban environment with a mix of risks. The red boundary delineates the first due area, encompassing approximately 10 square miles in area, with a dense concentration of icons indicating potential hazards.

Figure 252: Station 7 Hazards/Occupancies



Key Occupancy Types and Hazard Profiles

- **Assembly (125):** With 125 assembly occupancies (e.g., churches, community centers), this is a significant hazard due to large gatherings. Risks include crowd-related incidents, panic during evacuations, or the spread of fire in older wooden structures, especially during events.
- **Commercial (258):** The 258 commercial sites (e.g., shops, offices) suggest a busy retail and service area along Cypress and Tyler Avenues. Hazards include fire risks from electrical faults, cooking equipment, or flammable goods, with potential for rapid fire spread in strip malls.
- **Day Care (1):** A single day care indicates a low-frequency but high-vulnerability hazard, requiring swift evacuation and pediatric medical response in emergencies like fires or lockdowns.
- **Finance (1):** One finance occupancy (e.g., bank) poses a moderate risk, with potential for armed incidents or fire hazards from electrical systems, though its isolated presence limits overall impact.
- **Government (1):** A single government building (e.g., office or post office) may involve critical infrastructure risks, such as hazardous material storage or high-occupancy evacuations during crises.
- **Hotel (2):** Two hotels indicate transient population risks, with hazards like cooking fires, blocked exits, or medical emergencies among guests, requiring rapid response and coordination.
- **Industrial (35):** The 35 industrial sites (e.g., warehouses, auto shops) along the periphery pose significant HazMat and fire risks, including chemical spills, explosions, or large-scale conflagrations due to stored materials.
- **Medical Facility (10):** Ten medical facilities (e.g., clinics) heighten EMS demands, with risks of patient evacuation during power outages, fires, or infectious outbreaks.
- **Mercantile (107):** The 107 mercantile occupancies (e.g., retail stores) add to commercial fire risks, with potential for rapid fire growth due to merchandise and customer presence.
- **Multi-Family (376):** The 376 multi-family units (e.g., apartments, condos) represent the highest occupancy density, posing risks of fire spread, complicated evacuations, and high casualty potential in wood-frame buildings. There is a very high concentration of these occupancies along Rutlidge Avenue near Arlington Ave.
- **Parking Garage (4):** Four parking garages increase vehicle fire and entrapment risks, particularly with gasoline or battery hazards, requiring specialized rescue operations.

- **Schools (158):**
  - **School-Elementary (91):** Ninety-one elementary schools indicate a large student population, with hazards like fire drills, bus accidents, or structural failures needing rapid, child-focused responses.
  - **School-High (28):** Twenty-eight high schools add teenage occupancy risks, including behavioral incidents, sports-related injuries, or larger-scale evacuations.
  - **School-Middle (30):** Thirty middle schools contribute to youth-related hazards, similar to high schools but with varying infrastructure age and occupancy.
  - **School-Pre (3):** Three pre-schools heighten vulnerability, requiring specialized evacuation and medical care for young children.
  - **Special School (6):** Six special schools suggest occupants with disabilities, increasing complexity for evacuations and medical responses during emergencies.
- **Senior Care (3):** Three senior care facilities pose high-risk scenarios, with elderly evacuation challenges, medical fragility, and potential for rapid health deterioration in crises.
- **Storage (122):** The 122 storage facilities (e.g., self-storage units) present fire hazards from stored combustibles, with risks of prolonged suppression due to inaccessible interiors.

Station 7's response area exhibits a high hazard density due to the extensive range and number of occupancies (1,155 total). The predominant risks stem from high occupancy and evacuation challenges. Multi-family (376), schools (152 across various levels), and assembly (125) occupancies create significant life safety concerns, especially in densely packed Arlanza, where rapid evacuation may be hindered by narrow streets or traffic congestion.

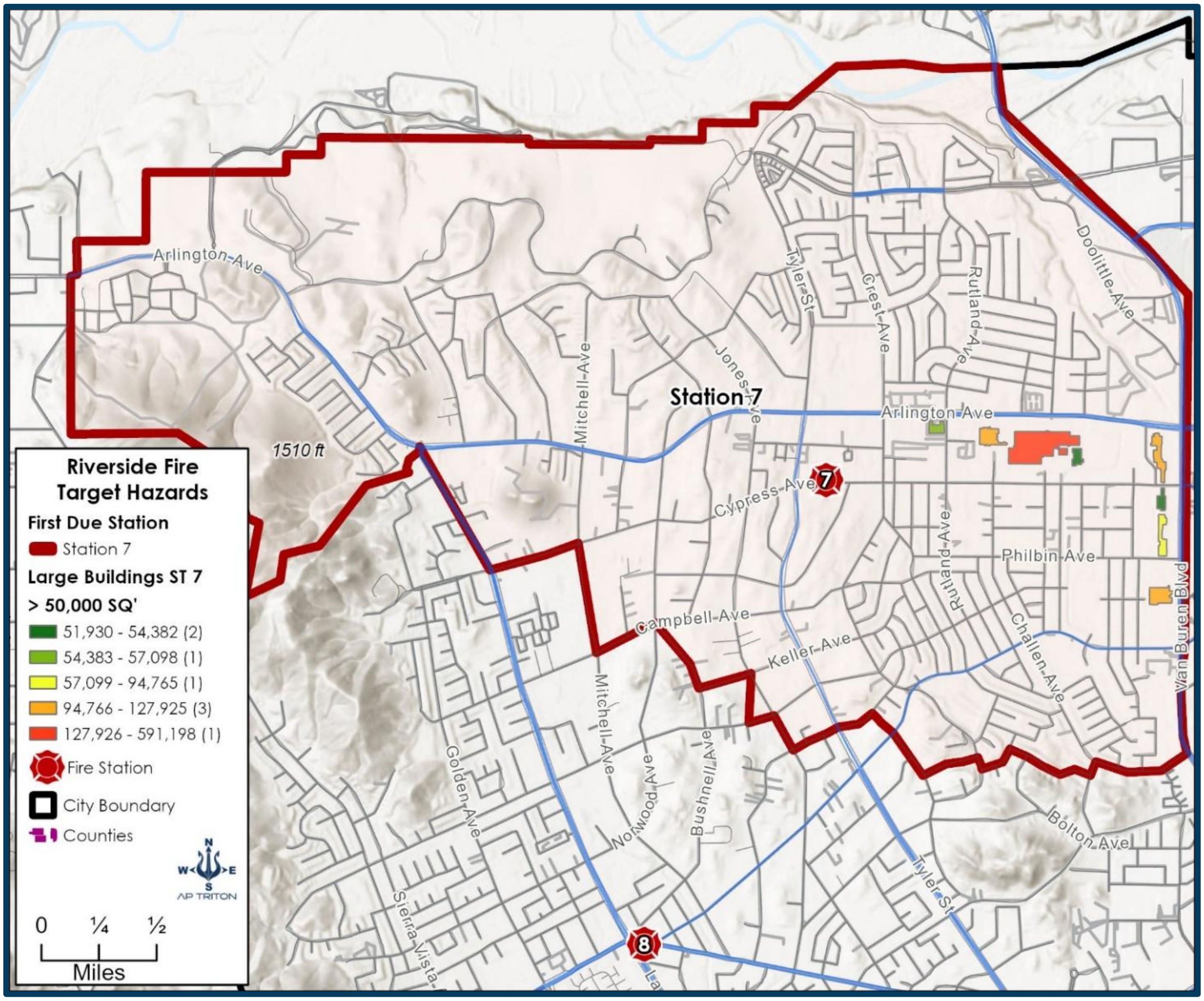
Commercial (258), industrial (35), mercantile (107), and storage (122) sites increase the fire load and the potential for hazardous-material incidents, particularly near industrial zones along the eastern boundary. Vulnerable populations, including daycare centers, preschools, special schools, and senior care facilities, require tailored emergency plans for children and older adults, which amplifies the complexity of the response. Proximity to hills (e.g., 1,510 ft. elevation) and the Santa Ana River (inferred from nearby maps) suggest moderate wildfire and flood risks, though mitigated by urban development.

The concentration of hazards, especially multi-family and school occupancies, necessitates a robust ERF, with Station 7 strategically placed to address these risks. The diversity and volume of occupancies indicate a need for pre-incident planning.

Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 7, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to 1 miles, and includes surrounding stations (2, 5, and 8) for context.

Figure 253: Station 7 Large Buildings Greater than 50,000 Sq. Ft.



The following is an assessment of the large buildings, broken out by square footage range.

Large Buildings by Square Footage Range

- **51,930–54,382 SQFT (Green, 2 buildings**): Two buildings are marked in green, located near the central area around Cypress Avenue and Philbin Avenue. Likely mid-sized commercial structures such as supermarkets, community centers, or medical clinics. These could serve residents with retail or healthcare services, given Arlanza's suburban character. Moderate fire load from merchandise or equipment, with evacuation challenges for 50,000+ occupants. Requires standard engine response but may require ladder support for upper floors if the building is multi-story.
- **54,383–57,098 SQFT (Light Green, 1 building)**: One building in light green, situated near the intersection of Cypress Avenue and Mitchell Avenue. Possibly a larger retail store (e.g., a big-box store like Walmart) or a warehouse distribution center. The size suggests a single-purpose facility designed to cater to regional needs, with a higher fire risk due to stored goods or inventory, and a potential for rapid spread. Evacuation complexity increases with large crowds, necessitating robust initial response and HazMat planning.
- **57,099–94,765 SQFT (Yellow, 1 building):** One yellow-marked building, located toward the eastern edge near Arlington Avenue. Could be an industrial facility, an office complex, or an educational institution (e.g., a school or a community college annex). The size supports a multi-use or specialized function. Moderate to high risk depending on use—industrial sites pose HazMat threats, while schools increase occupancy vulnerability. Requires coordinated response for evacuation or suppression.
- **94,766–127,925 SQFT (Orange, 3 buildings):** Three orange-marked buildings, clustered near Philbin Avenue and extending toward the northeastern boundary. Likely industrial warehouses, large retail centers (e.g., Home Depot), or multi-tenant office buildings. The concentration suggests a commercial/industrial hub, with a significant fire load and potential for large-scale evacuations. Industrial use increases HazMat risks (e.g., chemicals, fuels), while retail introduces crowd management challenges, necessitating the use of aerial ladders and mutual aid.
- **127,926–591,198 SQFT (Red, 1 building):** One red-marked building, prominently located near the center-east of the response area, close to Station 7. Likely a central distribution center or a large manufacturing plant. The substantial square footage suggests a critical infrastructure or high-traffic site—the highest risk category due to size and potential occupancy. Fire suppression requires specialized equipment (e.g., aerial platforms), prolonged response times, and significant mutual aid and support. Hazmat or structural collapse risks are elevated, especially in industrial contexts.

The response area features a gradient of risk, with the single 127,926–591,198 sq. ft. building posing the most significant challenge due to its size, potential high occupancy, and critical function. The three buildings, ranging from 94,766–127,925 sq. ft., form a moderate-to-high risk cluster, while the smaller ranges (51,930–94,765 sq. ft.) indicate widespread moderate risks across residential and commercial zones.

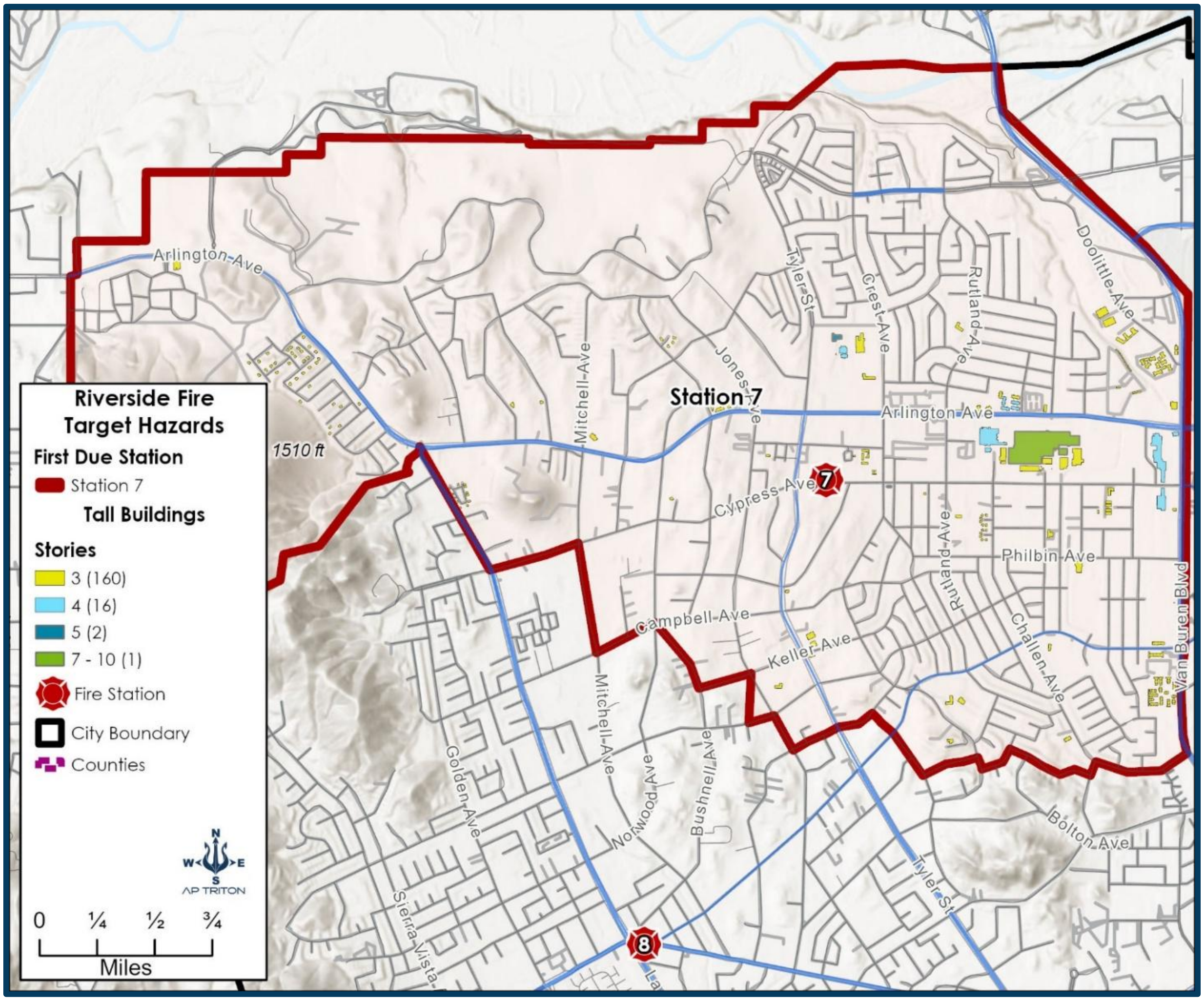
Based on prior occupancy data (e.g., 376 multi-family units, 35 industrial sites), large buildings are likely to include warehouses, retail, and institutional uses, which increase fire load, hazardous materials (HazMat) risks, and evacuation demands. Proximity to hills (elevation 1,510 ft) and the Santa Ana River suggests an increased risk of wildfires and flooding.

Station 7's central location is strategic for rapid response, but the distances, road network, diversity, and size of large buildings necessitate pre-planning for high-rise or large-area incidents. The ERF must include ladder trucks, HazMat units, and mutual aid from Stations 2, 5, 8, and 12 to address peak hazards.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 7's area.

Figure 254: Station 7 Multi-Story Buildings



Station 7's service areas is primarily low- to mid-rise in scale, with the tall buildings (3+ stories) concentrated along commercial corridors such as Cypress Avenue and Mitchell Avenue. The map highlights 180 multi-story buildings, indicating a moderate density of vertical development that could pose risks in fire scenarios due to the potential for rapid fire spread, evacuation challenges, and access limitations in a suburban layout with some hilly topography. From a community risk assessment (CRA) perspective, these buildings represent a targeted risk profile for the fire department. The Arlanza area has a diverse population, including families and low-income households. It is proximate to institutions such as California Baptist University (CBU) and Riverside City College, which increases vulnerability to high-occupancy residential and educational structures.

Key risks include:

- **Fire spread potential:** older multi-story residential buildings may have outdated fire suppression systems, while commercial strips may involve hazardous materials (e.g., retail storage).
- **Evacuation and access:** Hilly terrain and narrow streets (e.g., near Van Buren Avenue) could hinder apparatus response times, especially for upper floors.
- **Occupancy loads:** High daytime populations in commercial/educational sites amplify life-safety risks during business hours.
- **Mitigation needs:** RFD should prioritize pre-incident planning for these sites, such as hydrant mapping, aerial access points, and community education on vertical evacuation.

Building use is based on the area's zoning (predominantly residential and commercial mixed-use), visible clustering on the map (e.g., yellow icons along Cypress and Mitchell Avenues), and local development patterns. Arlanza features suburban apartment complexes, strip malls, and university-adjacent housing, with fewer high-rises than downtown Riverside. Below is a breakdown by story range from the legend, including estimated uses and CRA implications.

Story Range

- **3 Stories (160) Yellow Icons;** most abundant, clustered along Cypress Ave and side streets) Primarily low-rise apartment complexes and multi-family housing (e.g., similar to Cypress Springs Apartments at 7850 Cypress Ave, a 3-story affordable family complex with 101 units). Some may include small commercial ground floors, such as duplex/triplex conversions, or motels near Tyler Street. Highest volume risk due to sheer number; focuses on residential fire safety for families and low-income residents. Risks include cooking-related fires and child safety; CRA would emphasize smoke alarm programs and mutual aid for simultaneous incidents—moderate evacuation challenges on three floors.
- **4 Stories (16) Blue Icons**; scattered near Mitchell Ave and commercial nodes) Mid-rise student housing or extended-stay apartments, likely tied to nearby California Baptist University (e.g., analogous to University Village Towers near UCR, but adapted to Arlanza's profile). Possible office conversions or boutique hotels along retail strips. Elevated occupancy risk from transient populations (students/transients), increasing false alarms, and alcohol-related incidents. CRA highlights the need for dorm-style drills and integration with university emergency plans; better suppression systems, assumed in newer builds, reduce the risk of spread.

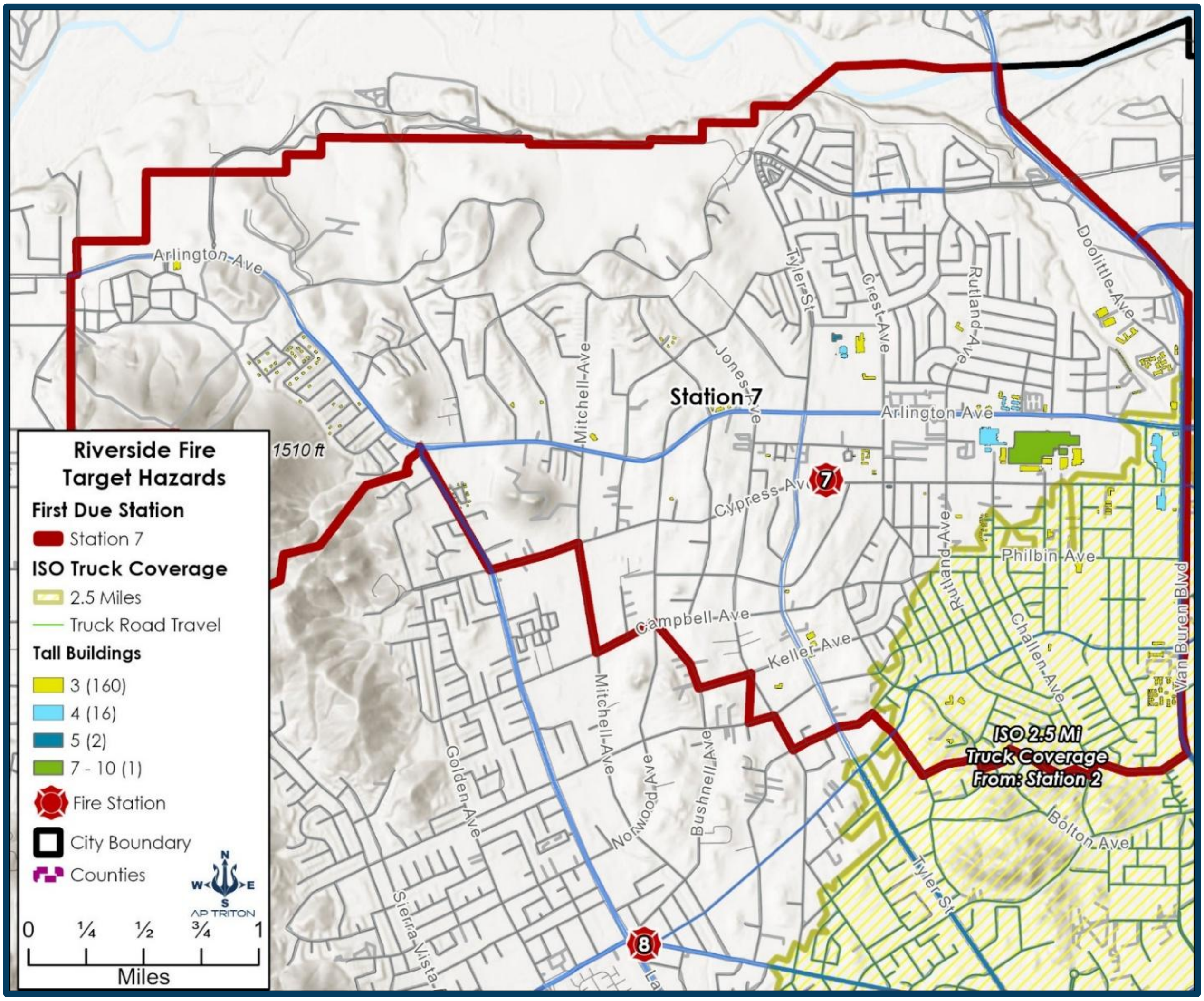
- **5 Stories (2) Dark Blue Icons;** limited, possibly near university edges or Van Buren Blvd) University-affiliated dormitories or senior living facilities, given proximity to CBU and Riverside's aging population. Could include a small hotel or medical office building for community services. Low count but high per-building risk due to vulnerable occupants (e.g., elderly or students with mobility issues). CRA prioritizes life-safety upgrades, such as sprinklers and stairwell pressurization; the potential for mass casualties in a single event necessitates specialized training.
- **7–10 Stories (1) Green Icon;** standout near central response area, possibly along Cypress or near hills) A landmark mid-rise, similar to a county office building, regional medical clinic, or the tallest local apartment tower (e.g., comparable to The Exchange at Riverside's 3-story scale but scaled up; in Arlanza, likely a public-service high-rise, such as a social services hub).

Critical high-risk asset; the tallest in area amplifies wind-driven fire spread and helicopter access needs. RFD should consider the area for annual inspections, seismic retrofits, and command post pre-planning.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 7's area. Sources of the nearest ladder resources are also displayed.

Figure 255: Station 7 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

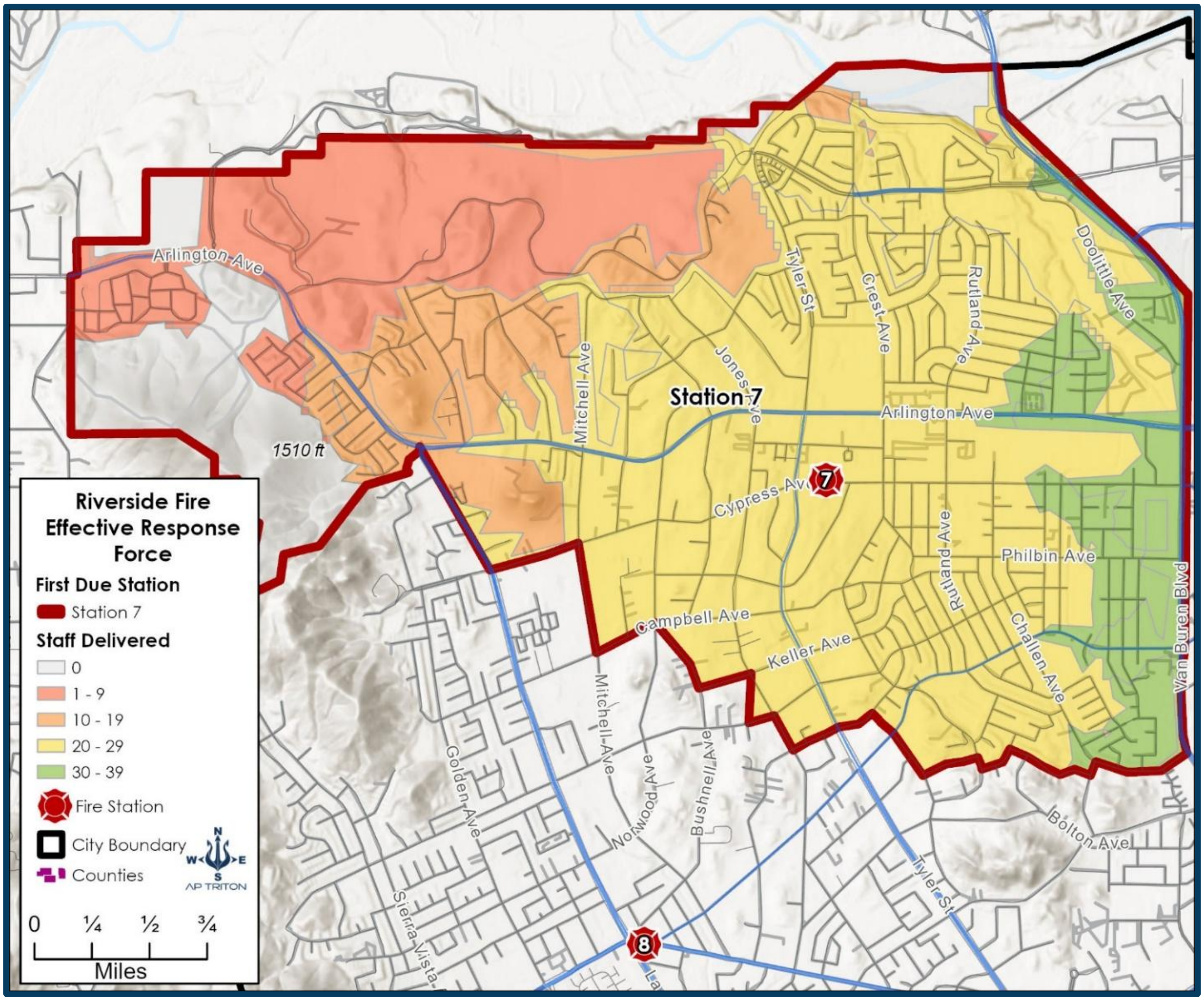


As shown in this figure, not all of the tall building load is covered by the aerial apparatus within the required ISO parameter. The exception is that the western portion of the district contains some taller buildings (mostly three-story). Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 2.

Effective Response Force

The effective response force depicted in the following Station 7 map reflects the staffing and resource distribution within its first-due area. The map uses a color-coded gradient to illustrate the ERF delivered, based on the number of personnel available to respond to incidents.

Figure 256: Station 7 ERF at 8 Minutes



- **White (0 staff delivered):** Areas with no effective response force, likely outside the primary service boundary or in unpopulated terrain (e.g., northern hills or riverbed zones).
- **Pink (1–9 staff):** Regions with minimal staffing, concentrated in the hilly northern and western fringes of Station 7's area. This suggests longer response times or reliance on mutual aid due to geographic challenges.

- **Orange (10–19 staff):** Moderate staffing zones, extending from the pink areas toward the central and southern parts, indicating improved coverage but still below optimal levels for complex incidents.
- **Yellow (20–29 staff):** The core residential and commercial areas around Station 7 (e.g., near Cypress Avenue and Mitchell Avenue) show this level, suggesting a baseline response force adequate for routine calls like residential fires or medical emergencies.
- **Light Green (30–39 staff):** The southeastern and eastern edges, including near institutional sites, indicate the highest staffing density, likely reflecting higher risk or demand (e.g., proximity to California Baptist University or multi-story buildings).

The gradient from white to light green suggests a tiered response model, with Station 7 prioritizing densely populated and high-risk zones (yellow to green) while peripheral areas (pink to white) may face delays. RFD’s critical task analysis calls for 19 staff for a moderate structure fire. This will not be easy to attain in the western sections of this district.

The CRA component aligns staffing with community risks in the yellow zones, where 20–29 staff can handle initial suppression and rescue. The 30–39 staff areas likely account for elevated risks, such as university-related incidents or mass casualty events.

CFAI standards target a 4- to 6-minute response time for the first-due unit and an 8- to 12-minute response time for full alarm assignment. Station 7 meets this requirement for central areas but may struggle in the pink zones, necessitating pre-plans or additional resources.

The presence of 10–19 staff in transitional zones indicates a buffer for mutual aid or second-alarm responses, while 30–39 staff in green zones suggests readiness for significant incidents, aligning with CFAI's focus on scalable response.

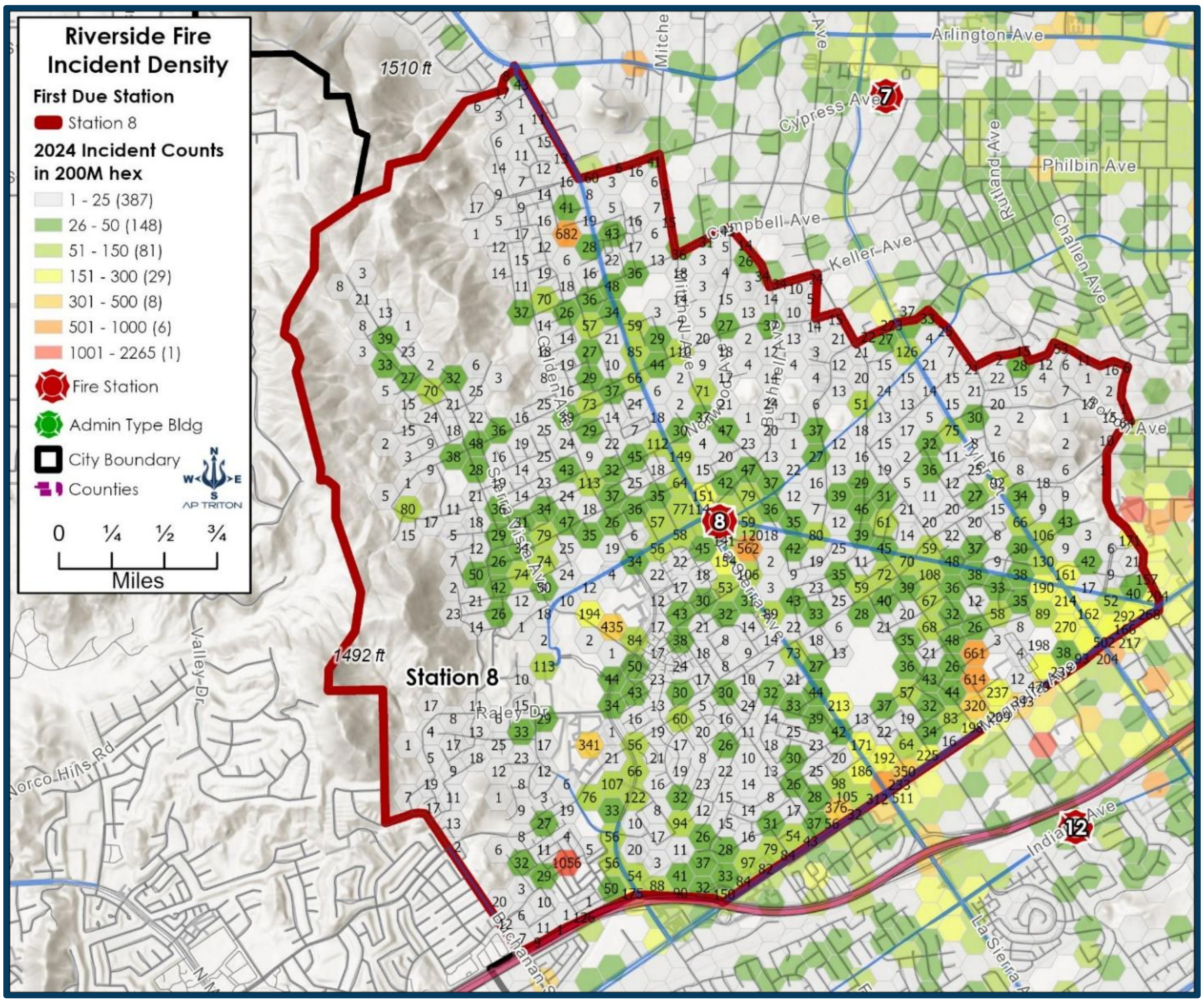
Station 7's effective response force is strongest in populated, risk-heavy areas, supporting CFAI's risk-based deployment. However, the low-staffed pink zones highlight potential vulnerabilities in rugged terrain or during peak demand, where CRA might recommend enhanced staffing or apparatus repositioning.

STATION 8

Incident Evaluation

Station 8 is situated in the western section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map only shows the counts for the Station 8 area; however, other stations are included for context, showing how often Station 8 apparatus could potentially be engaged as second-arriving units.

Figure 257: Station 8 Incident Counts

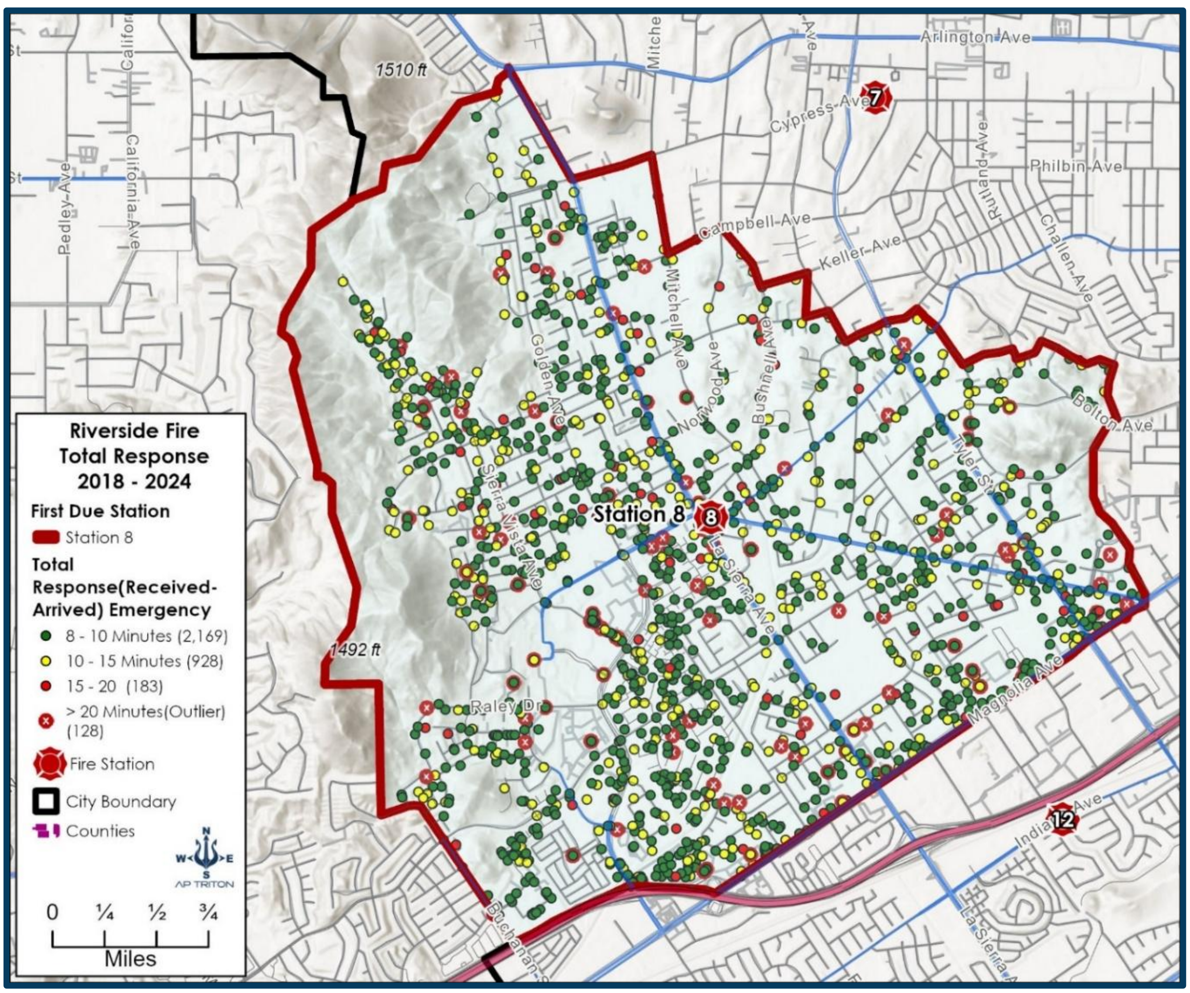


Between 2018 and 2024, Station 8 responded to **25,040** incidents. Of these incidents, from 2018 to 2024, a Station 8 assigned unit arrived first on the scene **15,761** times. This averages out to a reliability of **63**%. This indicates that, due to the station's remote placement away from high-efficiency roadways, response reliability is the **lowest** in the department. This has remained consistent over the years, with the lowest level ever (**58%**) occurring during the COVID-19 pandemic.

Station 8 fails to meet the NFPA total response time standard for an incident, measured from the time a call is initiated to arrival on scene. Ninety percent of the time, Station 8 can arrive at the location in **8** minutes, **14** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **3,408** 8-minute or greater total response time exceptions representing 13.6% of all responses (emergency and non-emergency).

Figure 258: Station 8 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 8 is shown in the following figure. The probability that a Station 8 resource would be the first to arrive at the scene of an emergency request in Station 8's district is high. Station 8 meets some of the reliability-improving parameters. The area's size, the number of units, and staffing are the limiting factors. Response reliability declined considerably during the COVID-19 pandemic.

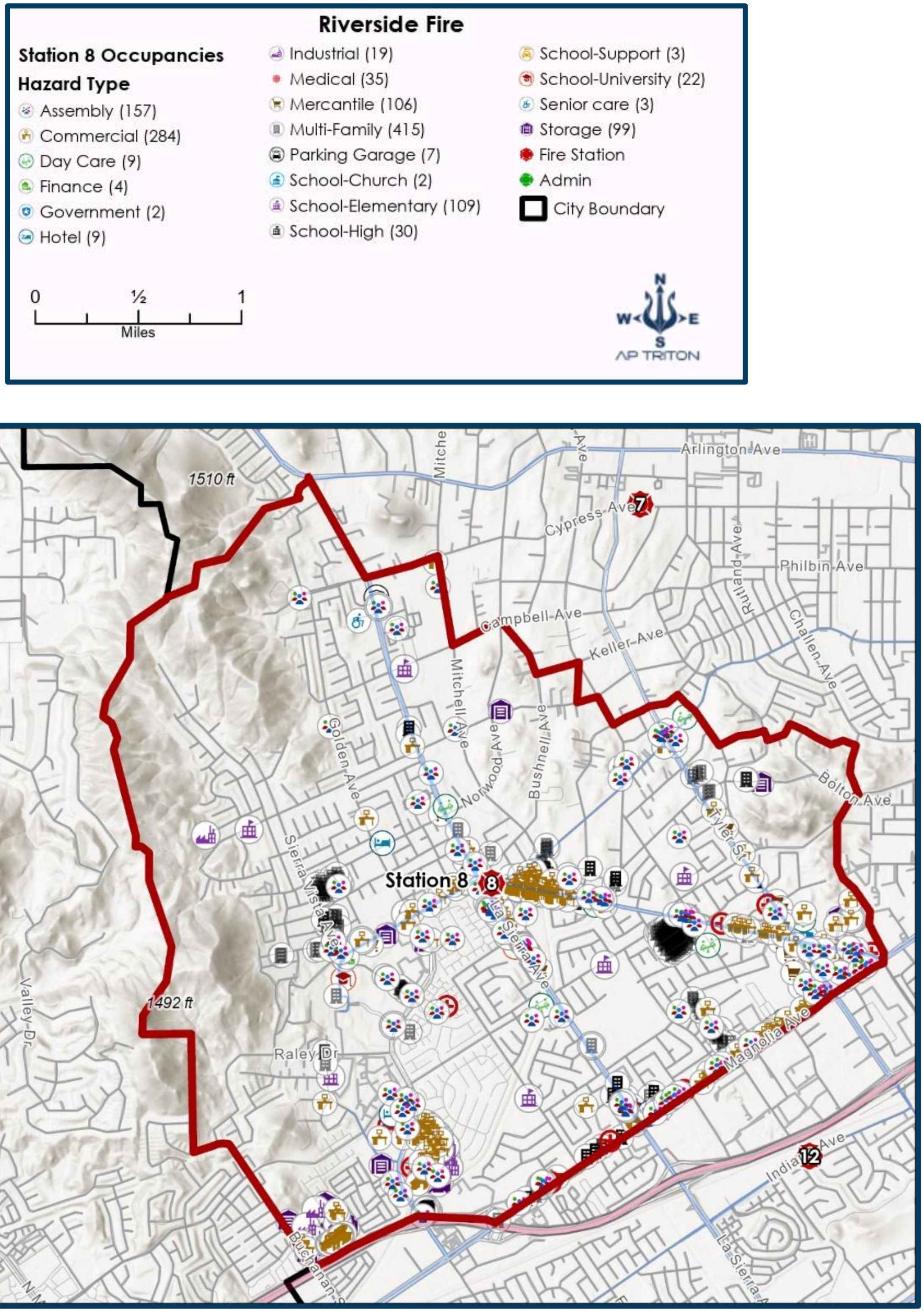
Figure 259: Station 8 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 8	78%	62%	62%	58%	58%	65%	60%	63%	10.3	4

Hazard Evaluation

The following figure depicts the response area for Station 8 covering a roughly 1.6-mile by 1.6-mile Suburban zone within the city boundaries. The area is bordered by the city boundary (black square outline) and features hilly terrain with elevation changes (e.g., 492 ft. and 1,510 ft. contours in gray). It primarily consists of residential streets, commercial corridors, and institutional sites. The distribution shows a high concentration of commercial and assembly occupancies, posing significant risks for fire spread, evacuation challenges, and resource demands during incidents.

Figure 260: Station 8 Hazards/Occupancies



Key Hazard Types and Distribution

The map identifies the following hazard types by icon and count, with their approximate spatial distribution relative to Station 8:

- **Assembly (157):** Heavily clustered in central and eastern commercial zones, often near major avenues like Indiana Ave and Tyler St; high-risk for large gatherings and rapid fire involvement.
- **Commercial (284):** Most prevalent type, densely packed along arterials (e.g., Arlington Ave, Market St, and Main St corridors); forms continuous strips that could accelerate fire propagation in retail/dining areas.
- **Day Care (9):** Scattered in residential pockets, particularly south and west of the station; vulnerable populations (children) increase urgency for rapid response.
- **Finance (4):** Limited to isolated spots in commercial hubs, e.g., near banking clusters on University Ave.
- **Government (2):** Minimal; one near the station core and another in the northwest institutional area.
- **Hotel (9):** Concentrated in the southeastern quadrant along travel routes like La Sierra Ave; transient occupancy heightens escape and smoke control needs.
- **Industrial (19):** Grouped in the southwestern industrial pocket (e.g., near Valley Dr), with potential for hazardous materials and large-scale fires.
- **Medical Facility (35:)** Distributed across the area, with clusters in the north (e.g., near hospitals on Cypress Ave) and central zones; critical for life-safety due to patient mobility issues.
- **Mercantile (106):** Abundant in shopping districts along east-west streets like Philbin Ave; overlaps with commercial, raising inventory fire load concerns.
- **Multi-Family (415):** Dominant residential hazard, widespread in apartment complexes throughout (e.g., dense blocks south of the station); high population density amplifies evacuation and exposure risks.
- **Parking Garage (7):** Few, mainly in commercial cores (e.g., near Station 8); vehicle fuels pose secondary fire hazards.

- **Schools (166):**
  - Church-Affiliated schools (2) are isolated in the western residential area.
  - School–Elementary (109) Numerous in family-oriented neighborhoods, especially central and southern sections (e.g., near Campbell Ave); daytime occupancy of children demands specialized response tactics.
  - School–High (30) Clustered in the northeastern educational corridor (e.g., near University/College icons).
  - School–Support (3) Sparse, supporting high schools in the east.
  - University/College (22) Concentrated in the northeast (e.g., along University Ave), with a large student population, increasing assembly-like risks.
- **Senior Care (3):** Limited to care facilities in quieter residential zones, e.g., the west side; mobility-impaired residents elevate vulnerability.
- **Storage (99):** Prevalent in peripheral zones (e.g., south and east edges near railroads); high fuel loads from contents could sustain prolonged incidents.

This response area presents a high-hazard suburban environment dominated by dense commercial (284), mercantile (106), and multi-family residential (415) occupancies, which together account for over 800 sites, more than half of all mapped hazards. These create interconnected risks, such as fire spreading from one building to another in strip malls or apartments, particularly along key roads like Indiana Avenue and Tyler Street. Vulnerable populations are prominent, with 157 assembly venues, 109 elementary schools, 35 medical facilities, and 22 universities/colleges, totaling over 300 life-safety-critical sites. Industrial (19) and storage (99) areas in the southwest and south pose potential threats from chemical or combustible materials. At the same time, the hilly topography could complicate access and water supply during multi-alarm fires. The station's central location provides good coverage within a 1.6-mile radius, but the sheer volume (~1,300 occupancies) suggests elevated response demands, especially for simultaneous or wind-driven events.

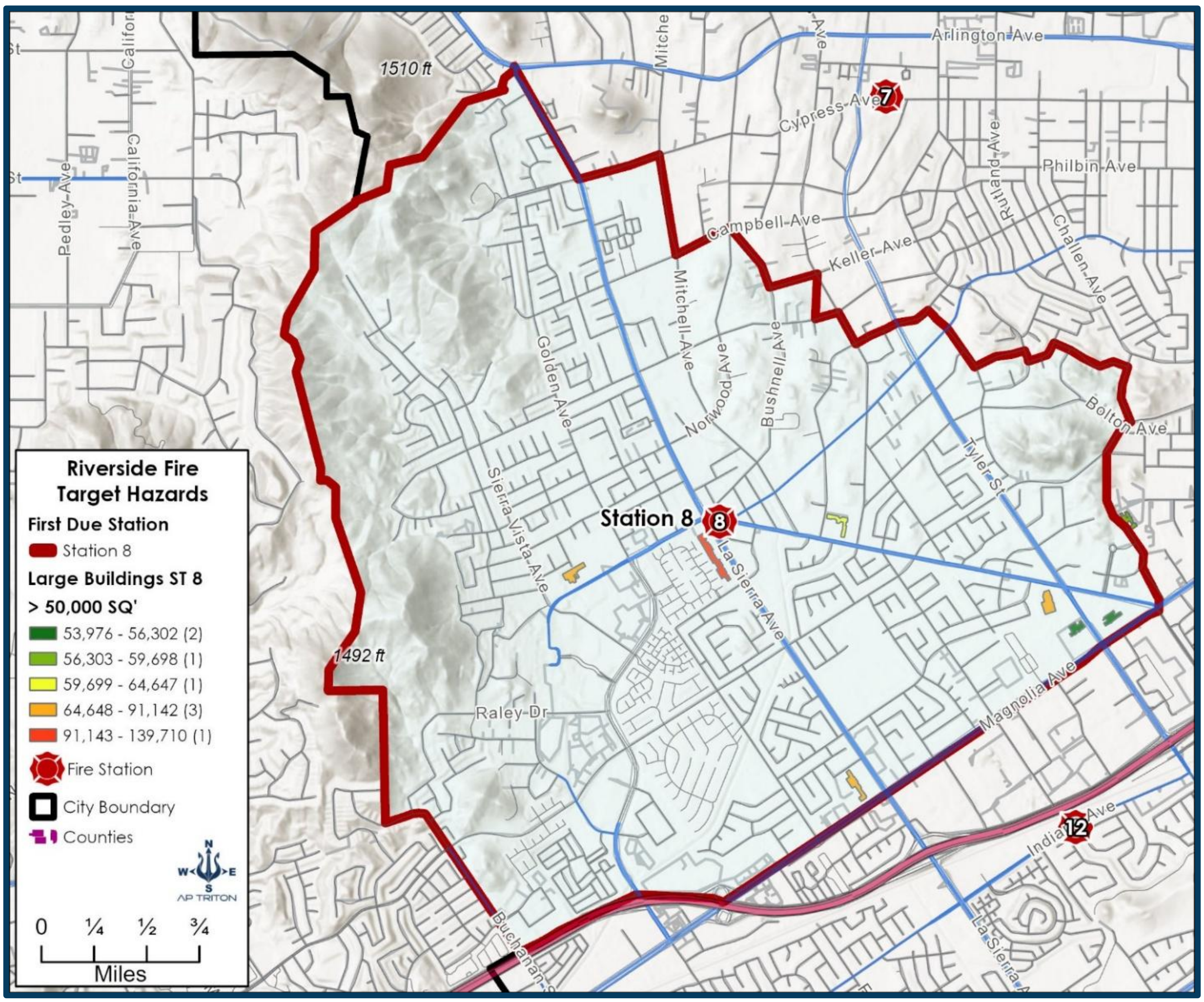
Strategic priorities likely include pre-planning for commercial strips, school routes, and medical corridors to mitigate cascading failures. No extreme wildfire interfaces are evident within the district boundary, but adjacent hills (shaded gray) may influence smoke patterns or secondary exposures.

Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 8, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to ¾ of a mile, and includes surrounding stations (7 and 12) for context.

The map highlights large buildings (> 50,000 square feet) within the response area of Station 8. These buildings are color-coded by size ranges according to the legend, with counts indicating their frequency. The region spans approximately 10.3 square miles, a suburban landscape with hilly terrain (e.g., 492 ft elevation contour. The presence of large buildings suggests significant community risks, including fire load, evacuation challenges, and resource demands. Based on their size, location, and the broader occupancy context from the prior map, speculative uses can be inferred.

Figure 261: Station 8 Large Buildings Greater than 50,000 Sq. Ft.



Large Buildings by Square Footage Range

- **53,976–56,302–Green (2)** Educational Facilities (e.g., High Schools) Consistent with 30 high schools and 109 elementary schools in the area; possibly located in the northeastern educational corridor. Risks involve large student populations (hundreds per building), daytime peak occupancy, and complex evacuation due to multiple floors or wings.
- **56,302–59,698–Light Green (1)** Medical Facility (e.g., Hospital Wing) Aligns with 35 medical facilities; could be a specialized unit or outpatient center near Cypress Ave. Risks include vulnerable patients, oxygen/fuel hazards, and critical infrastructure needs (e.g., power backup).
- **59,698–64,647–Yellow (1)** University/College Building. Matches 22 university/college sites in the northeast; likely an academic or administrative hall. Risks include high student density, research labs with chemicals, and extended operational hours.
- **64,648–91,142–Orange (3)** Multi-Family Residential (e.g., Apartment Complexes) Correlates with 415 multi-family units; large complexes near residential blocks (e.g., south of Station 8). Risks include high resident density (hundreds per building), vertical fire spread, and limited egress points.
- **91,143–139,710–Red (11)** Industrial/Warehouse (e.g., Distribution Centers) Matches 19 industrial and 99 storage sites, especially in the southwest (near Valley Dr). Likely used for manufacturing or logistics. Risks include hazardous materials, large combustible storage, and potential for prolonged, intense fires that require heavy resources.
- **Total Large Buildings: 9** structures exceed 50,000 sq. ft., with a significant concentration in the 91,143–139,710 sq. ft. range (1 building), indicating a heavy industrial presence. This suggests that the area has a robust economic base, but also faces elevated fire and safety risks.

Industrial/warehouse buildings (red) dominate the southwestern quadrant, near hilly terrain that could complicate access. Educational and medical facilities (green/light green/yellow) are likely centralized in the north and east, near population centers. Multi-family and commercial buildings are dispersed, overlapping residential and commercial zones.

Industrial warehouses (91,143–139,710 sq. ft.) pose the greatest fire load due to the storage of goods or materials, potentially requiring multi-alarm responses. Commercial retail (53,976–56,302 sq. ft.) adds secondary exposure risks along arterials. Educational (53,976–59,698 sq. ft.) and medical facilities (56,302–59,698 sq. ft.) house vulnerable populations, necessitating rapid evacuation plans and specialized rescue operations. Multi-family units (64,648–91,142 sq. ft.) increase residential exposure with potential for high casualty counts. Hilly terrain and dense street networks may delay response times, especially for large industrial sites. Proximity to Station 8 (a central location) helps mitigate this, but simultaneous incidents could still strain it.

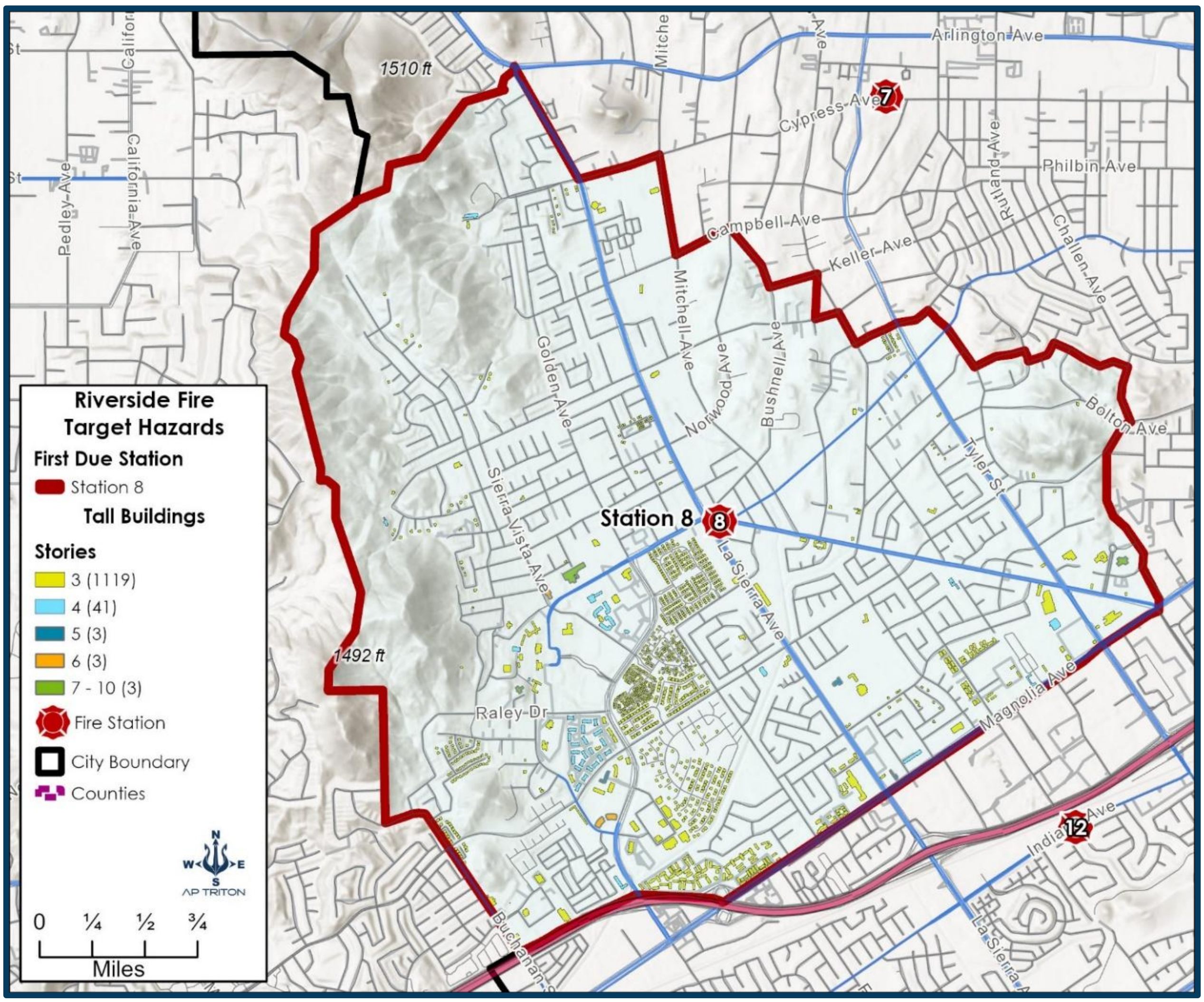
Pre-incident planning should focus on industrial fire suppression (e.g., water supply, HazMat protocols), school evacuation drills, and residential fire safety education. Coordination with adjacent stations (7, 12) is critical for mutual aid during large-scale events.

This assessment highlights a diverse hazard profile, with industrial buildings presenting the most significant fire challenge, while educational, medical, and residential structures amplify life-safety concerns.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 8's area.

Figure 262: Station 8 Multi-Story Buildings



The map depicts the response area of Station 8, covering a suburban zone with hilly terrain. The legend identifies multi-story buildings by story height, with color-coded markers indicating their distribution. Tall buildings are defined as those with three or more stories, posing increased risks due to vertical fire spread, evacuation challenges, and structural complexity. Based on their location and the prior context of occupancy types (e.g., multi-family, commercial), speculative uses can be inferred for community risk assessment.

Story Range

- **3 Stories–Yellow (1119)** Multi-Family Residential (e.g., Apartments): Most common, scattered across residential blocks (e.g., south and east of Station 8). Likely 3-story apartment complexes with 415 multi-family units. Risks include high resident density (dozens per building), limited egress, and potential for fire spread between floors.
- **4 Stories–Light Blue (41)** Multi-Family Residential or Hotels: Concentrated in denser residential zones; could include mid-rise apartments or the nine hotels. Risks include increased evacuation time, smoke management challenges, and the potential for stranded occupants on upper floors.
- **5 Stories–Blue (3)** Medical Facilities or Office Buildings: Rare, possibly near the 35 medical facilities or commercial hubs (e.g., along Indiana Ave). It could be clinics or administrative offices. Risks include vulnerable patients/staff, critical infrastructure (e.g., power, HVAC), and complex rescue operations.
- **6 Stories–Orange (3)** Commercial or University Buildings: Isolated in commercial corridors or near the 22 university/college sites (northeast). Likely retail centers or academic halls. Risks include high occupancy during business hours, large fire loads (e.g., merchandise, labs), and extended suppression needs.
- **7–10 Stories–Green (3)** High-Rise Apartments or Commercial Towers: Sparse, potentially in central or eastern zones near major roads (e.g., Tyler St). Could be luxury apartments or office towers from the 284 commercial sites. Risks include significant vertical fire spread, reliance on elevators, and demand for aerial apparatus that exceeds the immediate reach of Station 8.

A total of 1,169 structures with three or more stories, with the vast majority (1,119) being three-story buildings, indicating a predominantly mid-rise residential area. Higher stories (5–10) are rare but critical due to their height and complexity. Three-story buildings are widely dispersed, reflecting the dominance of the 415 multi-family units. Four-to-six-story buildings cluster in denser urban areas, while 7–10-story buildings are typically located near key infrastructure (e.g., commercial strips or educational zones). Hilly terrain (shaded gray) may hinder access to some sites.

The high count of 3-story buildings (1,119) suggests a widespread risk of floor-to-floor fire propagation, especially in multi-family units. Higher buildings (7–10 stories) pose challenges for aerial ladder reach, with truck coverage from Station 2 (yellow/green areas) critical for the eastern edge. Multi-family residences (3–6 stories) house hundreds of residents, increasing evacuation demands and exposure to smoke inhalation. Medical or office buildings (5–6 stories) often house vulnerable populations or experience dense daytime occupancy, requiring specialized response tactics.

The hilly terrain and dense street grid may result in delayed response times. Truck coverage from Station 2 extends to the east; however, gaps may exist in the southwest, necessitating mutual aid from Stations 7 or 12.

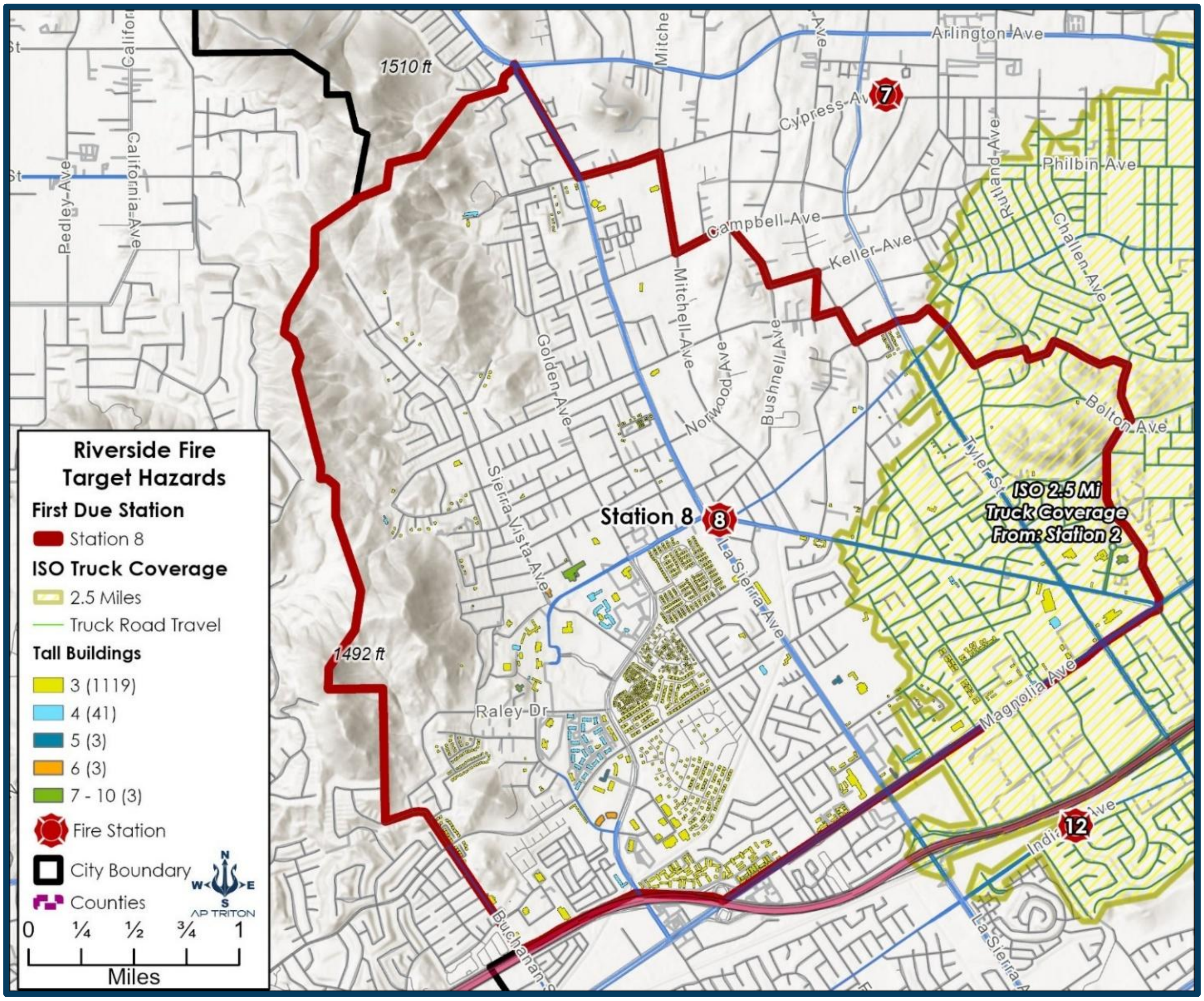
RFD should focus on residential fire safety education (e.g., sprinklers, egress planning) for buildings with 3-4 stories. Pre-plan high-rise sites (7–10 stories) for aerial operations and ensure coordination with adjacent stations for large incidents. Regular drills for medical and commercial evacuations are advisable.

This assessment highlights a high volume of mid-rise residential risks, with rare but significant high-rise hazards requiring enhanced response capabilities.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 8's area. Sources of the nearest ladder resources are also displayed.

Figure 263: Station 8 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

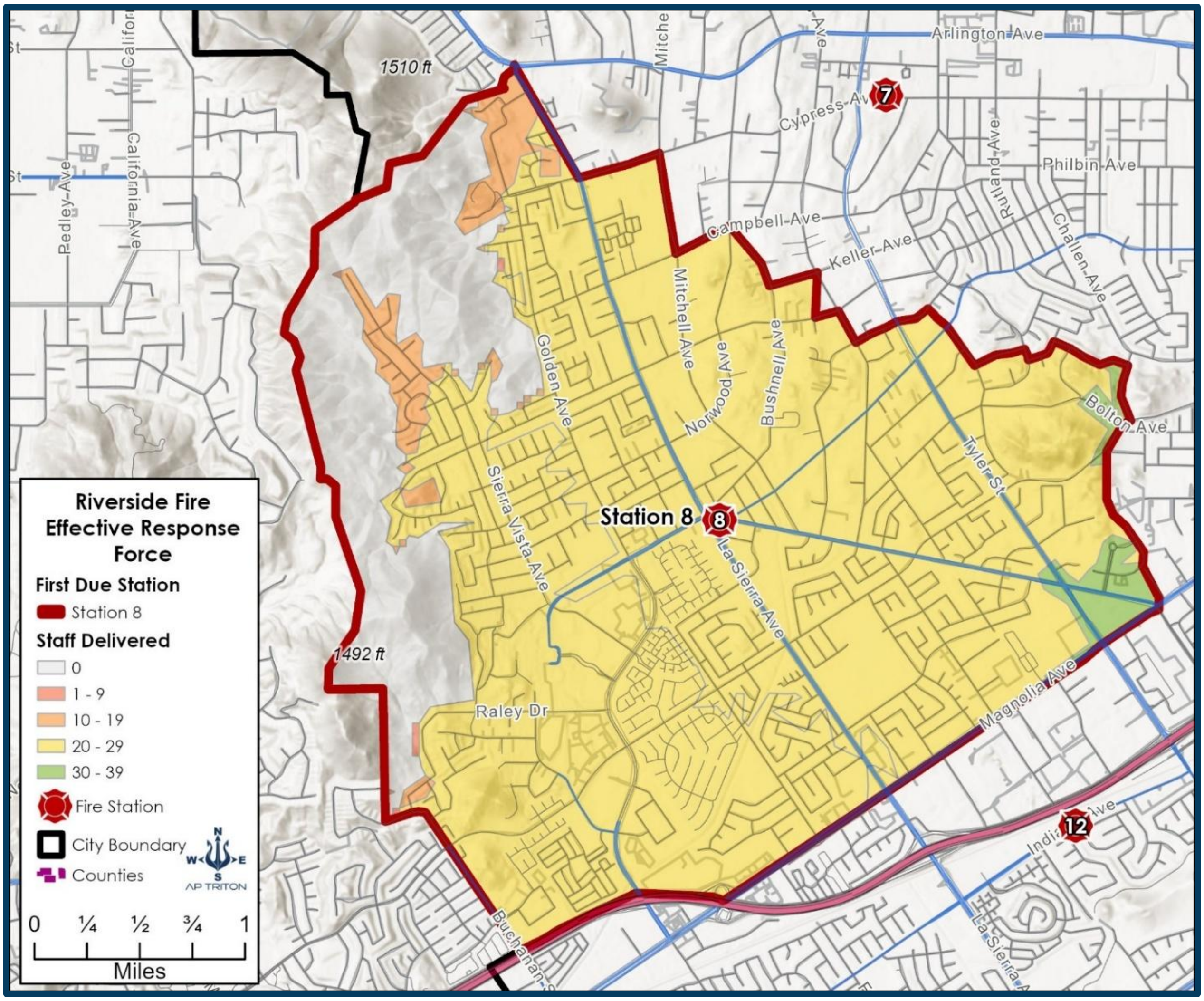


As shown in the previous figure, a few of the tall building loads are covered by the aerial apparatus within the required ISO parameter. The western portion of the district contains many taller buildings (the bulk of which are 3-, 4-, 5-, 6-, and 7-story) that fall outside the 2.5-mile coverage zone. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 2.

Effective Response Force

The map for Station 8 illustrates this through color-coded zones indicating the staff response force delivered, measured by personnel availability. Station 8, centrally located within its red-outlined first-due area, serves a varied urban landscape with hilly terrain and adjacent stations (7 and 12), suggesting a need for robust coverage to handle diverse hazards (e.g., multi-story buildings, commercial zones).

Figure 264: Station 8 ERF at 8 Minutes



- **White (0 Staff)**: Only roadless, wilderness areas are marked white, indicating a complete lack of coverage within the first-due area.
- **Pink (1–9 Staff):** Small pockets, particularly in the hilly northwestern section, suggest limited staffing capacity. This likely reflects challenging terrain or low-density residential zones where response may be stretched thin.

- **Orange (10–19 Staff):** Scattered patches, especially in the northwest and along the western boundary, indicate moderate staffing levels. These areas may include multi-story residential or industrial sites that require additional resources beyond the initial response.
- **Yellow (20–29 Staff):** The majority of the first-due area is shaded yellow, centered around Station 8. This suggests a baseline effective response force of 20–29 staff, which is adequate for typical incidents (e.g., single-family fires, small commercial calls), but potentially insufficient for larger or simultaneous events, given the presence of 1,169 multi-story buildings and 20 large structures (> 50,000 sq. ft.).
- **Light Green (30–39 Staff):** Limited to a small eastern section near the boundary with Station 12's coverage, this indicates enhanced staffing, possibly due to overlap or higher-risk zones (e.g., commercial corridors or truck coverage from Station 2).

The CRA identifies key risks from prior maps, including 284 commercial, 415 multi-family, and 157 assembly occupancies, as well as 20 large buildings and 1,169 multi-story structures. The yellow-dominated staffing (20–29) aligns with a moderate risk profile but may fall short for high-hazard scenarios (e.g., industrial fires, mass evacuations) that require 30 or more staff.

CFAI SOC requires sufficient personnel for initial attack, ventilation, rescue, and command within acceptable timeframes (typically 4–6 minutes for urban areas). The 20–29 staff range suggests capability for standard responses but may necessitate mutual aid (e.g., from Stations 7 or 12) for complex incidents, especially in pink/orange zones. Pink (1–9) and orange (10–19) areas indicate potential gaps, particularly in hilly northwest regions where access may be delayed. Light green (30–39) zones suggest strategic reinforcement, likely planned for high-density or critical infrastructure areas. The map implies a tiered response model, with Station 8 as the primary responder and adjacent stations providing backup. The effective force must account for daily staffing fluctuations may reduce the number of available personnel compared to daytime hours. A 20–29-staff force is likely sufficient for 80–90% of incidents (e.g., residential fires, medical calls), but the high volume of multi-story and large buildings suggests a need for 30–39 staff for worst-case scenarios (e.g., high-rise fires, mass casualty events).

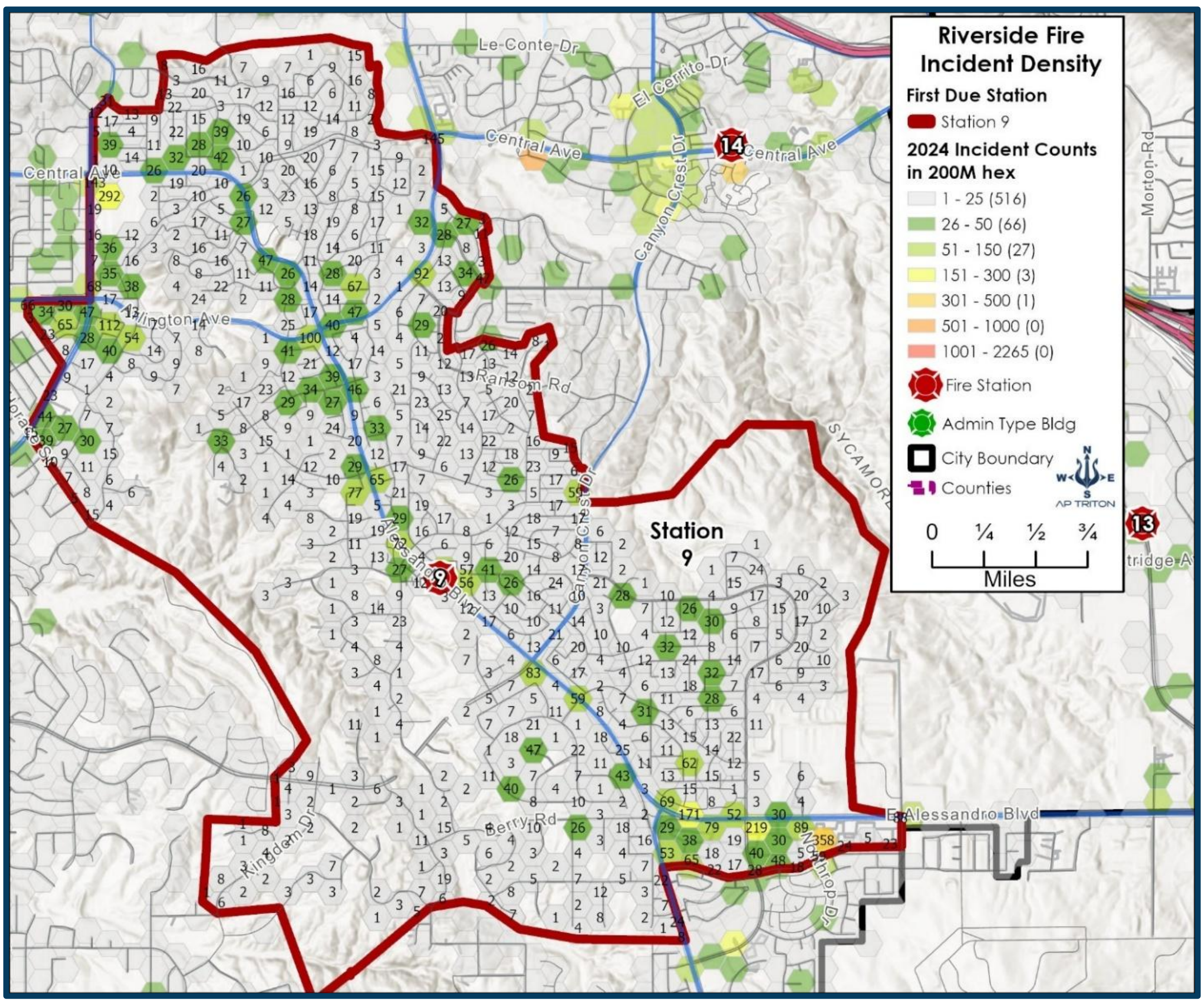
Identified mitigation strategies include enhancing staffing in pink/orange zones through repositioning or additional units. Pre-plan for mutual aid triggers (e.g., > 29 staff required) and ensure aerial apparatus availability for 7-to 10-story buildings.

STATION 9

Incident Evaluation

Station 9 is situated in the southeastern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. Station 9's first due area, along with Station 3's location, are the only two stations that do not intercept the city border. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 9 area; other stations are included for context, showing how often Station 9 apparatus could be engaged as second-arriving units.

Figure 265: Station 9 Incident Counts

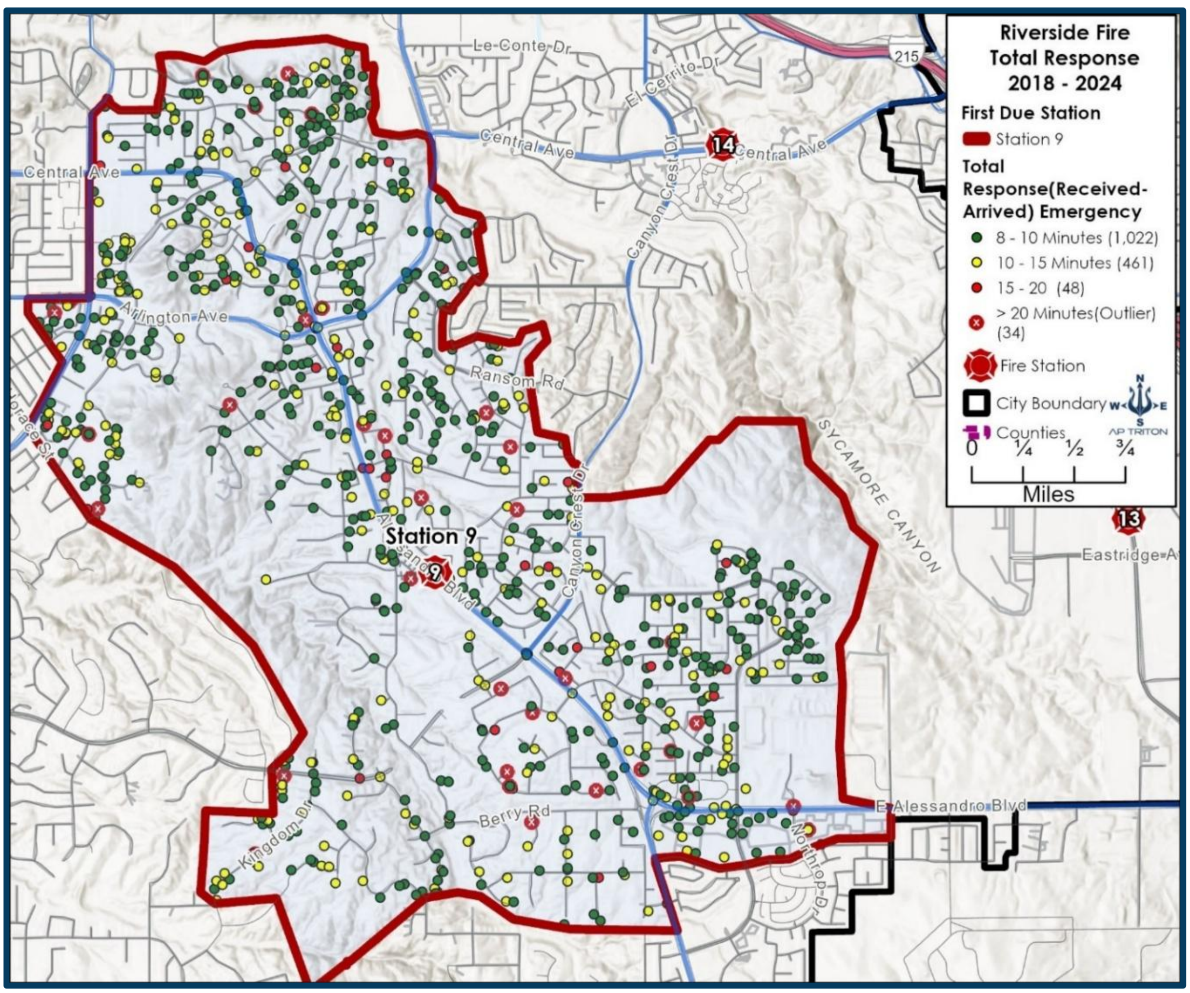


Between 2018 and 2024, Station 9 responded to **6,187** incidents. This is the lowest incident count of all station districts. Of these incidents, from 2018 to 2024, a Station 9 assigned unit arrived first on the scene **5,013** times.
This averages out to a reliability of **81%**. This indicates that, due to the station's remote placement away from high-efficiency roadways, response reliability is lower, but still acceptable.

Station 9 has not met the NFPA total response time standard for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 9 can arrive at the location in 8 minutes and **25** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **1,565** 8-minute or greater total response time exceptions representing 23.3% of all responses (emergency and non-emergency).

Figure 266: Station 9 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 9 is shown in the following figure. The probability that a Station 9 resource would be the first to arrive at the scene of an emergency request in Station 9's district is very high. Station 9 meets most of the reliability-improving parameters.

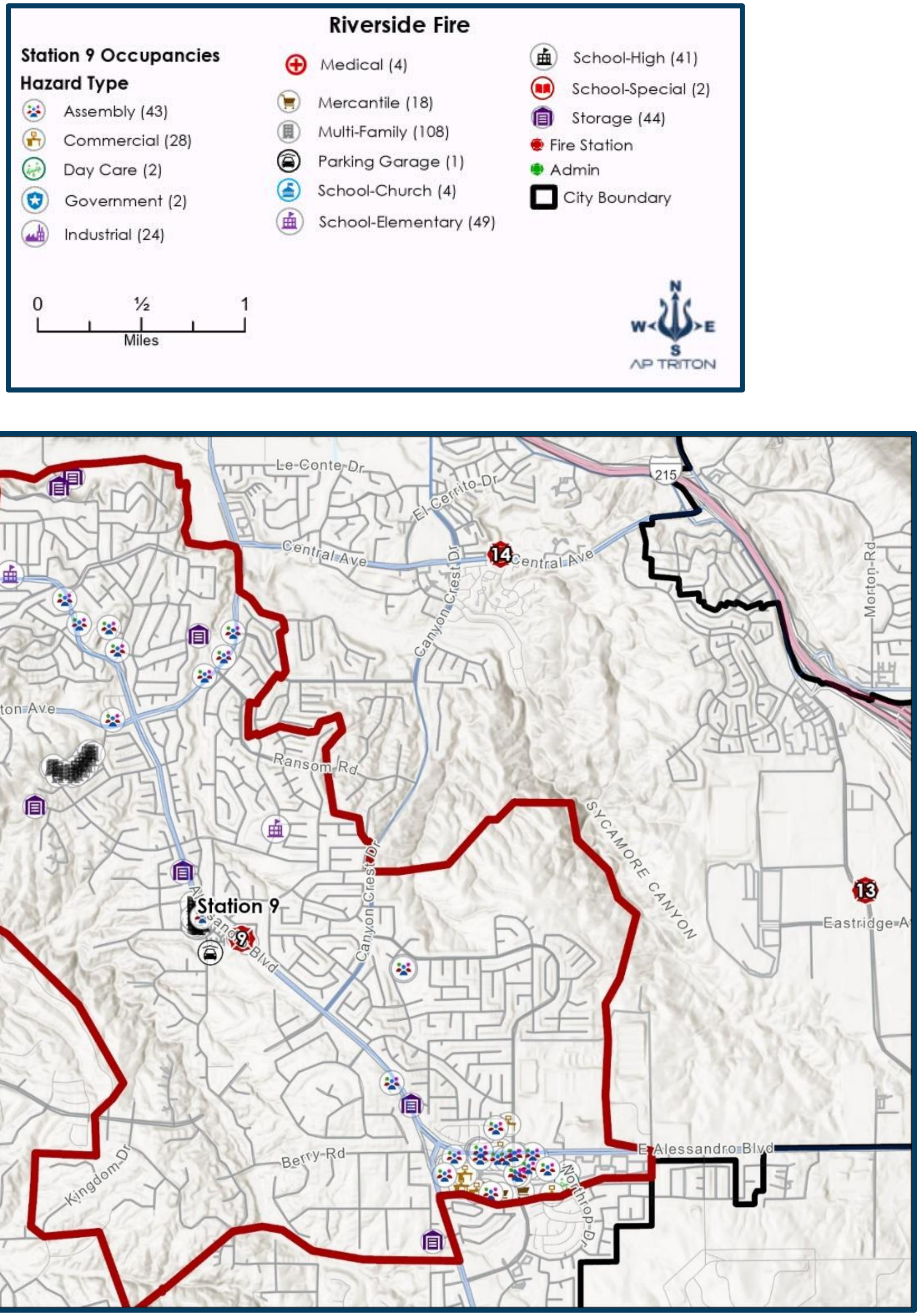
Figure 267: Station 9 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 9	89%	82%	82%	78%	78%	80%	81%	81%	10.6	4

Hazard Evaluation

The following figure illustrates the response area for Station 9, covering a roughly 10.6-square-mile suburban-urban zone in northeastern Riverside, within the city's boundaries (black outline). The terrain features moderate elevation changes, with shaded hills in the east (near Sycamore Canyon), residential neighborhoods, and commercial strips along arterials such as Central Avenue and Alessandro Boulevard. Hazard types are represented by color-coded icons with counts in parentheses, totaling approximately 370 occupancies. The area exhibits a balanced mix of residential multi-family housing and educational facilities, with notable industrial and storage risks located near the eastern boundary. These risks may be potentially exacerbated by adjacent wildland-urban interface (WUI) zones in Sycamore Canyon, a well-known high-hazard area for medical emergencies and vegetation fires.

Figure 268: Station 9 Hazards/Occupancies



Key Occupancy Types and Hazard Profiles

- **Assembly (43)** Clustered in the central and southern zones near Central Ave; likely community centers or event venues, posing evacuation risks during gatherings.
- **Commercial (28)** Concentrated along western arterials (e.g., Arlington Ave); strip malls and businesses that could facilitate rapid fire spread in retail corridors.
- **Day Care (2)** Isolated in residential pockets south of the station; small-scale facilities with vulnerable child populations requiring priority response.
- **Government (2)** Minimal; one near the station and another in the northwest institutional area, potentially administrative buildings with public access.
- **Industrial (24)** Grouped in the eastern quadrant near Alessandro Blvd and hills; manufacturing sites with potential hazardous materials, heightening spill/fire risks near WUI.
- **Medical Facility (4)** Scattered, with clusters in the north (e.g., near Central Ave); clinics or care centers are critical for patient safety and medical resource demands.
- **Mercantile (18)** Abundant in shopping areas along eastern roads (e.g., Alessandro Blvd); retail outlets overlap commercial zones, increasing inventory fire loads.
- **Multi-Family (108)** Dominant type, widespread in apartment complexes throughout residential blocks (e.g., south and west); high population density amplifies exposure risks. These appear in three distinct clusters: one in the northwest of Arlington Avenue, one just south of Arlington Avenue near Alessandro Blvd., and the third, surrounding Station 9.
- **Parking Garage (1)** Single site in the central commercial hub; vehicle fuels pose secondary ignition and exposure hazards.
- **Schools (60)**
    - **Church Affiliated (1)** Isolated in the western residential area; community gathering spot with potential for assembly-like events.
    - **School (General) (4)** Distributed in family neighborhoods, especially central, broad educational sites with daytime occupancy.
    - **School–Elementary (49)** Numerous in southern and western suburbs (e.g., near Le Conte Dr); high child density demands rapid, coordinated evacuations.
    - **School–High (4)** Clustered in the northeastern educational corridor, larger teen populations increase life-safety complexities.
    - **Special School (2)** Sparse, likely specialized facilities (e.g., for disabilities) in quieter zones; vulnerable students elevate urgency.

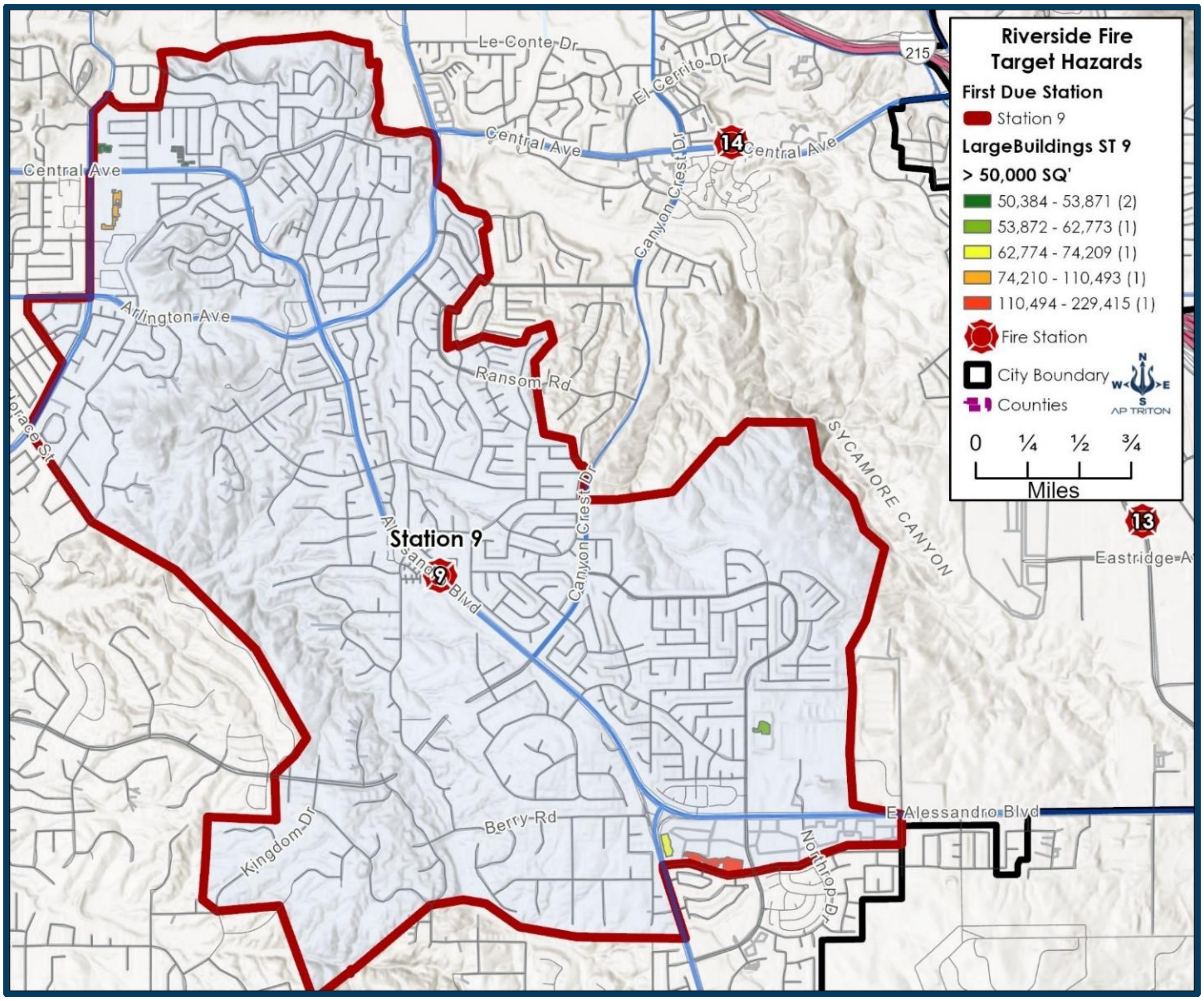
- **Storage (44)** Prevalent in peripheral eastern areas near industrial clusters; high combustible contents could sustain large-scale fires, especially with wind exposure from canyons.

This response area represents a moderate-to-high hazard suburban environment with a strong emphasis on residential (108 multi-family) and educational (59 schools total) occupancies, accounting for over 85% of the sites and posing significant life-safety risks due to population density (e.g., children in schools, families in apartments). Commercial/mercantile (46 combined) and assembly (43) sites along key roads, such as Central Avenue, create interconnected urban risks for fire propagation in business districts. Industrial (24) and storage (44) hazards in the east introduce material and fuel load threats, compounded by proximity to Sycamore Canyon's wildland areas, where dry vegetation and access challenges could escalate brush fires into structure exposures. Medical facilities (4) and day cares (2) highlight vulnerable groups needing specialized tactics. Station 9's central location provides coverage at the 1-mile scale, but the volume (~**370** occupancies) and terrain suggest a need for quick mutual aid, particularly for eastern industrial/WUI incidents. Strategic focus should include school evacuation pre-plans, residential fire prevention, and canyon patrol resources to address seasonal fire risks. No extreme high-rise or mega-facility hazards are evident, but cumulative residential density could strain resources during multi-unit or wind-driven events.

Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 9, highlights significant structures within its response area, located at the center of the map. The map covers a region bounded by the city boundary, with a scale of 0 to 1 mile, and includes surrounding stations (13 and 14) for context.

Figure 269: Station 9 Large Buildings Greater than 50,000 Sq. Ft.



Square Footage Range

- **> 50,384–53,871–Dark Green (2)** Commercial Retail (e.g., Big-Box Stores), Likely located along Central Ave or Alessandro Blvd, aligning with 28 commercial and 18 mercantile sites. Risks include high occupancy, large fuel loads (inventory), and potential rapid fire spread in open retail spaces.

- **53,872–62,773–Green (2)** Multi-Family Residential (e.g., Apartment Complexes): Consistent with 108 multi-family units; possibly mid-rise complexes in residential pockets (e.g., near Arlington Ave). Risks involve high resident density (dozens per building), limited egress, and vertical fire spread.
- **62,774–74,209–Yellow (1)** Educational Facility (e.g., High School): Matches 4 high schools and 49 elementary schools; likely in the northeastern educational corridor. Risks include large student populations (hundreds), daytime peak occupancy, and complex evacuation needs.
- **74,210–110,493–Orange (1)** Industrial/Warehouse (e.g., Distribution Center): Correlates with 24 industrial and 44 storage sites; possibly near eastern hills (e.g., Sycamore Canyon). Risks include hazardous materials, large combustible storage, and potential for prolonged fires near the wildland-urban interface (WUI).
- **110,494–229,415–Red (1)** Major Commercial or Institutional (e.g., Shopping Mall or Hospital): Rare, potentially a significant hub along Central Ave or near medical facilities (4 sites). It could be a regional mall or a large healthcare complex. Risks include massive occupancy, critical infrastructure, and the potential for multi-alarm fires.

Seven structures exceed 50,000 sq. ft., with a balanced distribution across commercial, residential, educational, industrial, and institutional uses. The single 110,494–229,415 sq. ft. building stands out as a high-priority risk. This is highly probable to be the Mission Grove Shopping Center (Mall).

Commercial/retail (dark green) buildings, as well as multi-family (green) buildings, are likely scattered across central and western residential-commercial zones. The educational facility (yellow) may be located in the northeast. At the same time, the industrial site (orange) and the central building (red) are located to the east, near the industrial/storage clusters and Sycamore Canyon.

The industrial warehouse (74,210–110,493 sq. ft.) and central building (110,494–229,415 sq. ft.) pose the highest fire loads due to the storage of goods or complex infrastructure, with WUI proximity increasing exposure risks. Commercial retail (50,000–53,871 sq. ft.) adds secondary fire propagation potential along arterials.

Multi-family residences (53,872–62,773 sq. ft.) and the educational facility (62,774–74,209 sq. ft.) house vulnerable populations (residents, students), requiring rapid evacuation and rescue operations. The central building could involve hundreds during peak use, amplifying life-safety demands.

Hilly terrain in the east may delay access to industrial and major sites. Station 9's central location aids coverage, but mutual aid from Stations 14 or 11 may be needed for large incidents, especially near the eastern boundary.

RFD should:

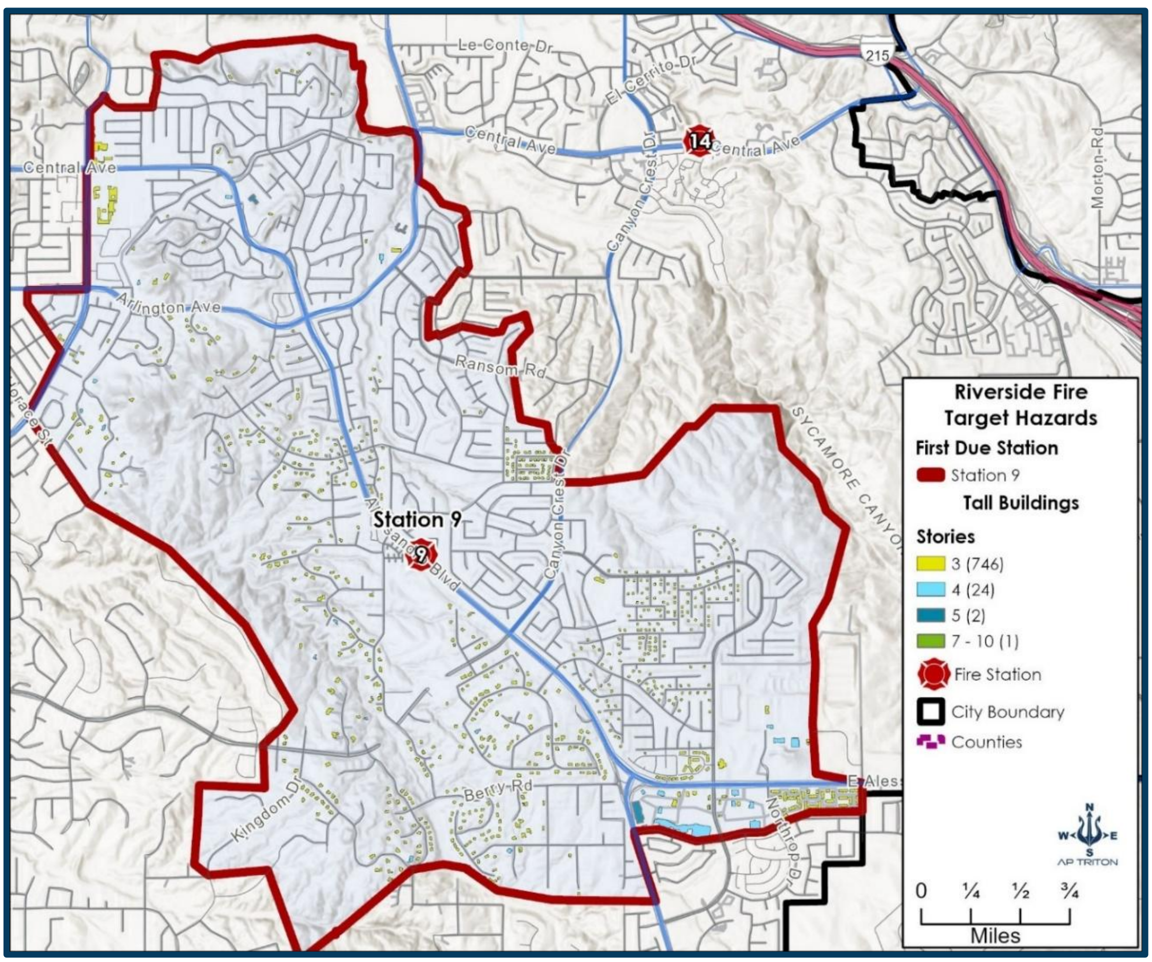
- Pre-plan for industrial fire suppression (e.g., water supply, HazMat) and WUI patrols.
- Conduct evacuation drills for schools and multi-family units.
- Ensure robust mutual aid for the major building, which may require specialized resources (e.g., aerial units).

This assessment reveals a moderate hazard profile, characterized by diverse large buildings, with the eastern industrial/major site posing the greatest challenge. At the same time, residential and educational structures heighten life-safety concerns.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 9's area.

Figure 270: Station 9 Multi-Story Buildings



The figure depicts the response area for Station 9, covering a roughly 1-mile by 1.5-mile suburban-urban zone in northeastern Riverside, California, within the city boundaries (black square outline). The terrain includes moderate hills, with adjacent stations (1, 3, 4, 10, 11, 13, 14) providing overlapping coverage. Tall buildings are identified by story height using color-coded markers, with counts indicating their frequency. Based on their distribution and the prior context of occupancy types (e.g., 108 multi-family, 49 elementary schools), speculative uses can be inferred for community risk assessment.

Story Range

- **3 Stories–Yellow (746)** Multi-Family Residential (e.g., Apartments). Most common, widely scattered across residential blocks (e.g., near Arlington Ave and Central Ave). Likely 3-story apartment complexes with 108 multi-family units. Risks include high resident density (dozens per building), limited egress, and potential floor-to-floor fire spread.
- **4 Stories–Light Blue (24)** Multi-Family Residential or Hotels Concentrated in denser residential zones; could include mid-rise apartments or the four medical facilities repurposed for housing. Risks include increased evacuation time, smoke management challenges, and the potential for stranded occupants on upper floors.
- **5 Stories–Blue–(2)** Medical Facilities or Office Buildings, Rare, possibly near the four medical facilities or commercial hubs (e.g., along Central Ave). It could be clinics or administrative offices. Risks include vulnerable patients/staff, critical infrastructure (e.g., power, HVAC), and complex rescue operations.
- **7–10 Stories–Green (1)** High-Rise Apartments or Commercial Towers, Sparse, likely in central or eastern zones near major roads (e.g., Alessandro Blvd). Could be luxury apartments or office buildings from the 28 commercial sites. Risks include significant vertical fire spread, reliance on elevators, and demand for aerial apparatus that exceeds the immediate reach of Station 9.

There are **773** structures with three or more stories, with the vast majority (746) being 3-story buildings, indicating a predominantly mid-rise residential area. Higher stories (5–10) are less common but critical due to their height and complexity. Three-story buildings are densely distributed across the central and western residential zones. 4–5 story buildings cluster in denser pockets, possibly near Central Avenue, while 7–10 story buildings are likely located near key infrastructure (e.g., commercial strips or the eastern hills). The high count of 3-story buildings (746) suggests widespread risk of floor-to-floor fire propagation, especially in multi-family units. Higher buildings (7–10 stories) pose challenges for aerial ladder reach, requiring mutual aid from adjacent stations (e.g., 14 or 11). Multi-family residences (3–5 stories) house hundreds of residents, increasing evacuation demands and exposure to smoke inhalation. Medical or office buildings (5 stories) often house vulnerable populations or experience dense daytime occupancy, necessitating specialized response tactics.

Hilly terrain in the east and north may delay access to some sites. Station 9's central location provides coverage within a 1-mile radius, but the volume of tall buildings suggests potential strain on resources during simultaneous incidents.

RFD should:

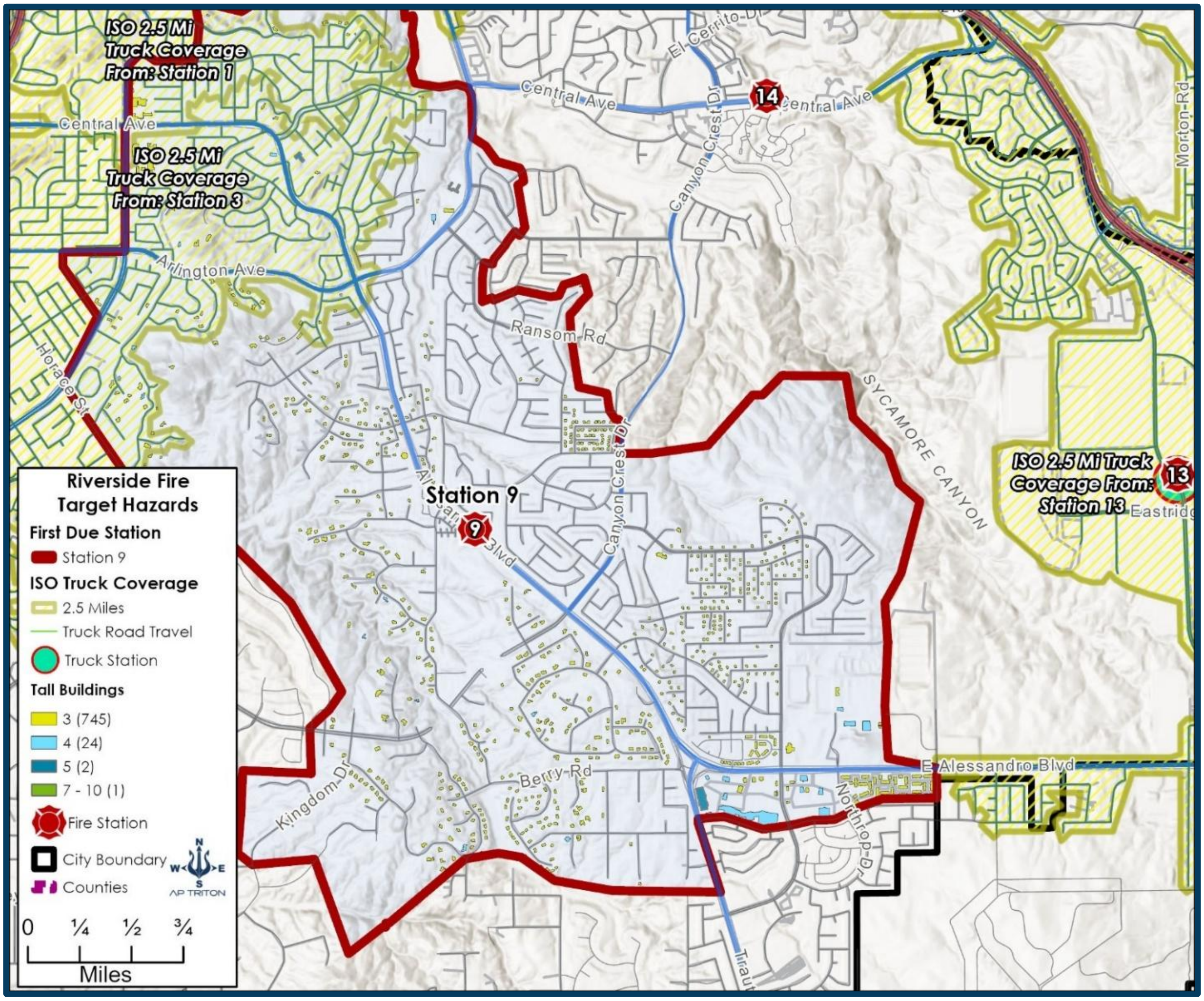
- Focus on residential fire safety education (e.g., sprinklers, egress planning) for buildings with three to four stories.
- Pre-plan high-rise sites (7–10 stories) for aerial operations and ensure coordination with adjacent stations for large-scale events.
- Conduct regular drills for medical and commercial evacuations.

This assessment highlights a high volume of mid-rise residential risks, with rare but significant high-rise hazards requiring enhanced response capabilities, particularly in the eastern and central zones.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 9's area. Sources of the nearest ladder resources are also displayed.

Figure 271: Station 9 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

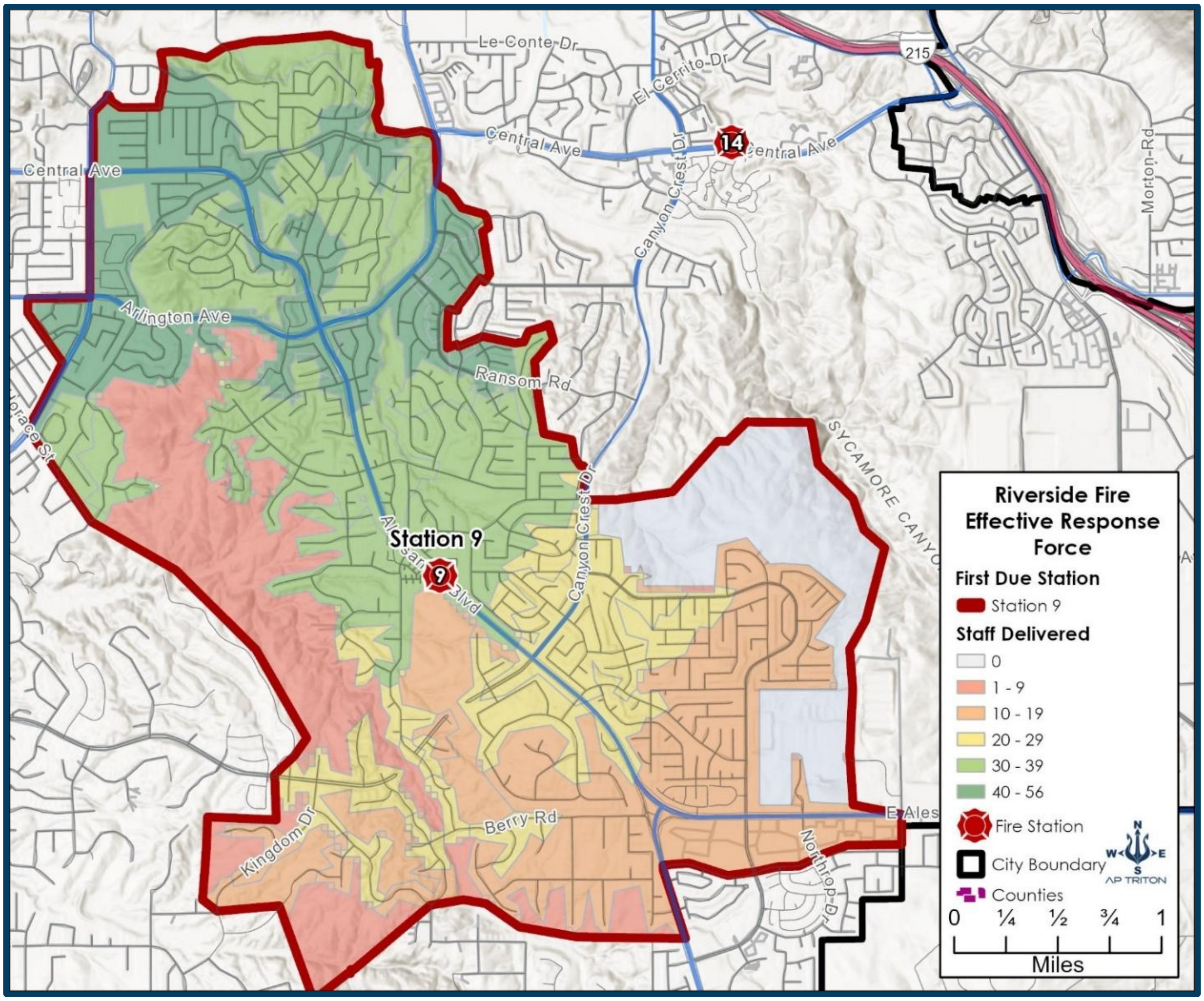


As shown in the previous figure, a few of the tall building load is covered by the aerial apparatus within the required ISO parameter. The district contains many taller buildings (mostly 3-story) that fall outside the 2.5 mile coverage area. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 1, 3, or 13.

Effective Response Force

Station 9, centrally located within its red-outlined first-due area, serves a suburban landscape with hilly terrain and adjacent stations (e.g., Station 14), suggesting a need for adequate coverage to handle the diverse hazards identified in prior maps (e.g., 108 multi-family dwellings, 49 elementary schools, seven large buildings).

Figure 272: Station 9 ERF at 8 Minutes



The map uses a color gradient to represent the staff response force delivered, based on the legend:

- **White (0 Staff):** No areas are marked white, indicating no complete lack of coverage within the first-due area.
- **Pink (1–9 Staff):** Small isolated pockets, primarily in the southwestern and western hilly sections, suggest limited staffing capacity. These areas likely reflect low-density or hard-to-access zones where response may be constrained.

- **Orange (10–19 Staff):** Significant portions, especially in the central and southern zones around Station 9, indicate a moderate staffing level. This coverage aligns with residential and multi-story building clusters (746 3-story buildings), adequate for initial response but potentially insufficient for larger incidents. This staffing level indicates that minimal staff contribution is coming from Station 13 due to poor road network connectivity.
- **Yellow (20–29 Staff):** A substantial central area, including the immediate vicinity of Station 9, shows a baseline effective force of 20–29 staff. This suggests a capacity to handle typical incidents (e.g., single-family fires, small commercial calls), but may be stretched by the **773** tall buildings and 7 large structures.
- **Light Green (30–39 Staff):** Larger patches in the northern and western sections indicate enhanced staffing, possibly due to higher-risk zones or overlap with adjacent stations (e.g., 3, 10). This area covers the large clusters of multi-family occupancies, which are likely the source of increased service requests.
- **Dark Green (40–56 Staff):** Limited to the northwestern corner, this suggests the highest staffing concentration, potentially near critical infrastructure or overlapping coverage areas.

The CRA identifies key risks, including 108 multi-family units, 49 elementary schools, 7 large buildings (exceeding 50,000 sq. ft.), and 773 multi-story structures. The predominant staff range of 20–29 (yellow) aligns with a moderate risk profile but may fall short for high-hazard scenarios (e.g., industrial fires, mass evacuations), which require 30–56 staff, as indicated in the green zones.

CFAI SOC requires sufficient personnel for initial attack, ventilation, rescue, and command within acceptable timeframes (typically 4–6 minutes for suburban areas). The 10–19 staff (orange) and 20–29 staff (yellow) ranges suggest a capability for standard responses, but gaps in the pink zones and the need for 40–56 staff in the dark green areas indicate a reliance on mutual aid for complex incidents.

The pink (1–9) areas in the southwest and east highlight potential gaps, likely due to hilly terrain or distance from Station 9. Dark green (40–56) zones suggest strategic reinforcement, possibly planned for high-density or critical sites.

The tiered staffing model, with Station 9 as the primary responder and adjacent stations (e.g., 14) providing backup accounts for daily fluctuations. A 20–29 staff force covers most routine incidents, but the high volume of multi-story (783) and large buildings (7) suggests a need for 30–56 staff for worst-case scenarios (e.g., high-rise fires, mass casualty events), especially in pink/orange zones.

Mitigation strategies include enhancing staffing in pink (1–9) and orange (10–19) zones through repositioning or additional units. Pre-plan for mutual aid triggers (> 29 staff needed) and ensure aerial apparatus availability for 7–10 story buildings (11 sites). Coordinate with Station 14 for eastern coverage.

The 1-mile radius suggests good initial response times; however, hilly terrain and traffic congestion could extend this, necessitating a robust road network analysis in accordance with CFAI standards.

In summary, Station 9's effective response force, predominantly 10–29 staff with peaks at 40–56, meets baseline SOC requirements for suburban risks but may be strained by the area's tall and large buildings.

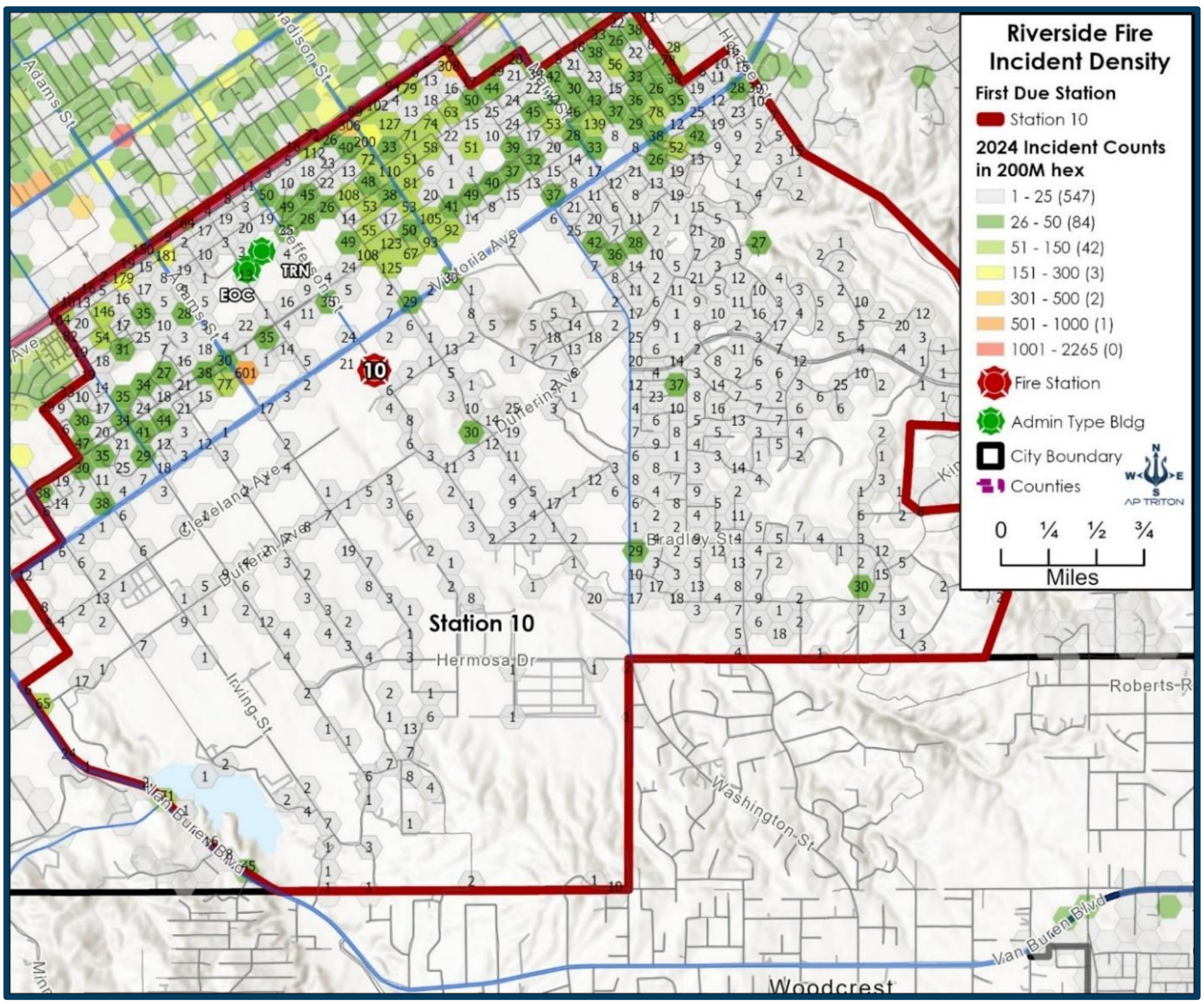
STATION 10

Incident Evaluation

Station 10 is situated in the southern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The Riverside Fire Training facility and Emergency Operations Center are located in this district. This is the largest of all Riverside fire districts at 16.3 square miles.

The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 10 area; other stations are included for context, showing how often Station 10 apparatus could be engaged as second-arriving units.

Figure 273: Station 10 Incident Counts

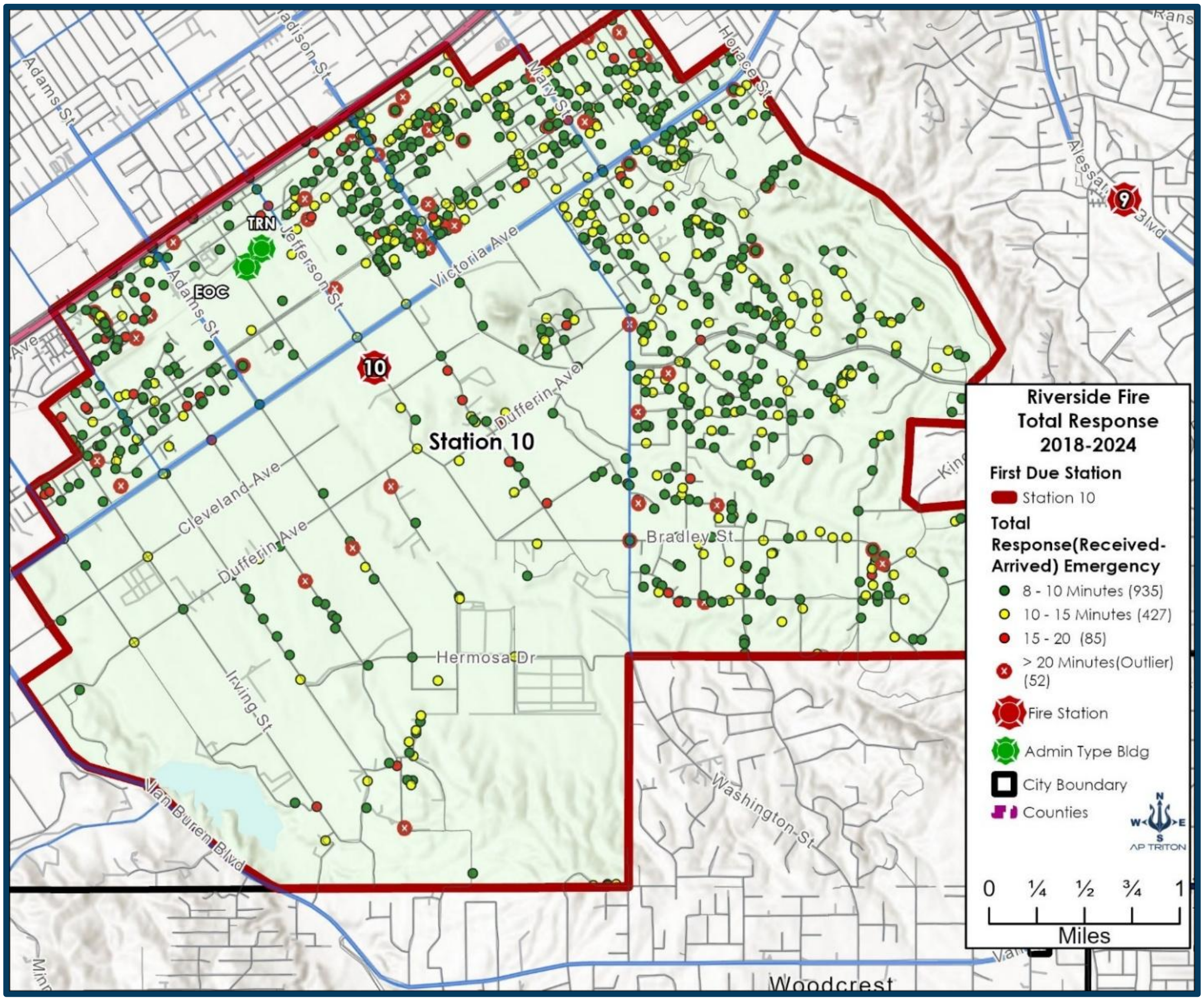


Between 2018 and 2024, Station 10 responded to **13,370** incidents. Of these incidents, from 2018 to 2024, a Station 10 assigned unit arrived first on the scene **8,933** times. This averages out to a reliability of **67**%. This indicates that Station 10 may be used as a second due resource more often than usual; response reliability is lower, but this should be a strategic goal to improve. Other parameters, such as staffing and proximity to a central road corridor (SR-91), seem to contradict the reliability parameters.

Station 10 cannot meet the NFPA total response time standard for an incident, measured from the time a call is initiated until arrival on scene. Ninety percent of the time, Station 10 can arrive at the location in **8** minutes, **33** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard and took even longer than the 90th percentile. The following figure describes this history and performance. These incidents are clustered around the station location. There are **1,499** 8-minute or greater total response time exceptions representing 11.2% of all responses (emergency and non-emergency). It is likely, as shown in this figure, that low call volume and poor access to the east-southeast portions of the district have resulted in an elevated number of total response exceptions in that area.

Figure 274: Station 10 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 10 is shown in the following figure. The probability that a Station 10 resource would be the first to arrive at the scene of an emergency request in Station 10's district is very high. Station 10 ties Station 7 for the second-least reliable Station district at **67%**. Station 10 has to cover more than twice the average response area with the same staff as other stations.

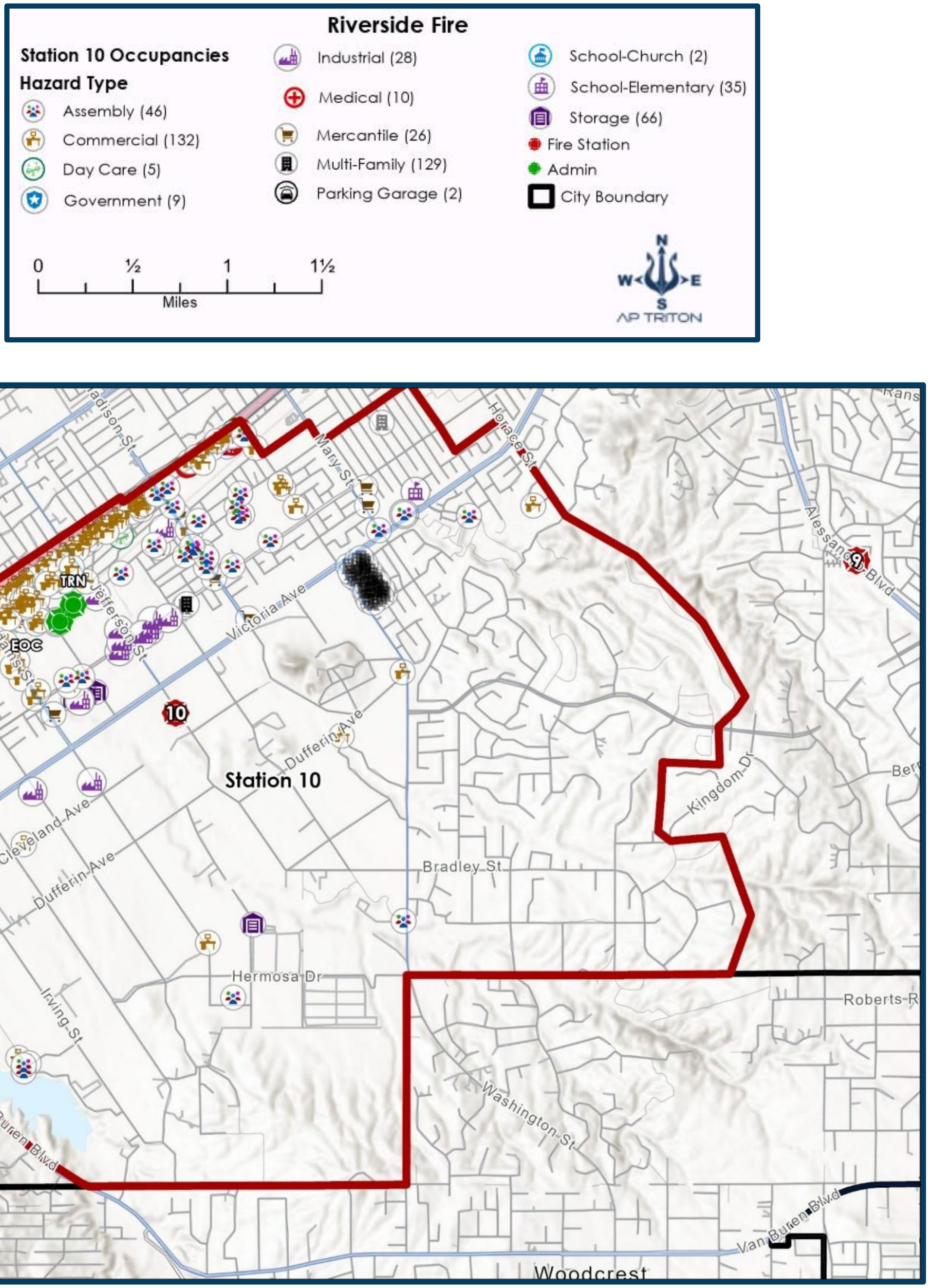
Figure 275: Station 10 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 10	80%	65%	65%	62%	63%	67%	67%	67%	16.3	4

Hazard Evaluation

Station 10 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment. The following figure depicts the response area for Station 10, covering a roughly 16.3-square-mile urban/suburban zone in southern Riverside, within the city boundaries (black outline). The terrain is relatively flat, with minor elevation changes near Van Buren Boulevard, and features a mix of residential neighborhoods, commercial districts along arterials like Indiana Avenue and Cleveland Avenue, and industrial pockets. Hazard types are represented by color-coded icons with counts in parentheses, totaling approximately 460 occupancies. The area exhibits a high concentration of commercial and multi-family residential sites, with significant storage and assembly risks, potentially influenced by proximity to transportation corridors (e.g., rail lines) that could introduce hazardous material incidents.

Figure 276: Station 10 Hazards/Occupancies



Key Hazard Types and Distribution

- **Assembly (46):** Clustered in the northern and western zones near commercial strips (e.g., along Indiana Ave); likely theaters, gyms, or event spaces posing high evacuation risks during peak occupancy.
- **Commercial (132):** Most prevalent, densely packed along east-west arterials (e.g., Cleveland Ave, Victoria Ave); continuous retail/office corridors vulnerable to rapid fire spread and business interruptions.
- **Day Care (5):** Scattered in residential areas south of the station; small facilities with child populations requiring immediate life-safety priorities.
- **Government (9):** Distributed across central and eastern zones; administrative buildings with public access, potentially including offices or civic centers.
- **Industrial (28):** Grouped in the southeastern quadrant near Van Buren Blvd, manufacturing sites with potential for chemical releases or large-scale fires.
- **Medical Facility (10):** Concentrated in the north (e.g., near hospitals on Adams St); healthcare centers are critical for patient mobility and medical gas hazards.
- **Mercantile (26):** Abundant in shopping districts along western roads (e.g., Main St); retail stores overlap commercial areas, increasing combustible inventory loads.
- **Multi-Family (129):** Widespread in apartment complexes throughout residential blocks (e.g., east and south); high density amplifies population exposure and evacuation challenges. There is one very prominent cluster near Victoria Avenue and Munroe Avenue. This cluster may indicate that individual dwelling units were surveyed as an occupancy.
- **Parking Garage (2):** Isolated in commercial cores (e.g., near Cleveland Ave); vehicle concentrations pose fuel fire and exposure risks.
- **Schools (37):**
  - Church Affiliated (2): Sparse in western residential pockets; community sites with occasional assembly use.
  - School–Elementary (35): Numerous in family-oriented neighborhoods, especially central and southern sections; daytime child occupancy demands rapid response and drills.
- **Storage (66):** Prevalent in peripheral eastern and southern areas (e.g., near rail lines); high fuel loads from contents could lead to prolonged incidents.

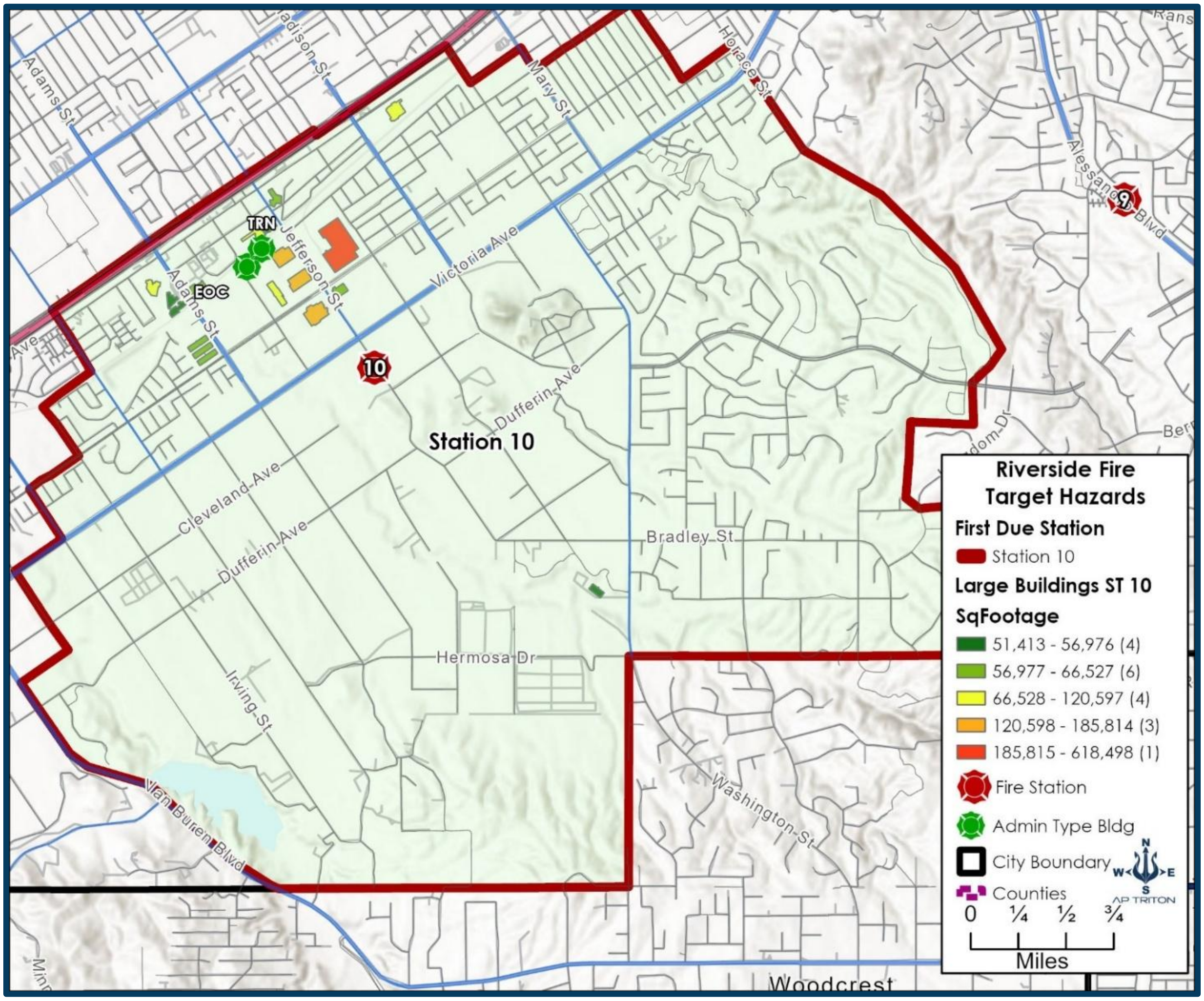
Station 10 itself provides an immediate response base, offering rapid access to the heaviest concentration of occupancies.

This response area presents a high-hazard urban environment dominated by commercial (132), multi-family residential (129), and storage (66) occupancies, which together account for over 90% of sites and estimated over 320 structures—indicating dense population and economic activity with elevated risks for fire propagation, evacuations, and resource demands. Assembly (46) and mercantile (26) venues along key arterials, such as Indiana and Cleveland Aves, create interconnected gathering and retail risks. Meanwhile, industrial (28) and storage clusters in the southeast pose potential hazardous-material threats, which may be exacerbated by nearby rail transport. Vulnerable populations are evident in medical facilities (10), day cares (5), and schools (35), totaling over 50 life-safety-critical sites. Station 10's central location supports efficient coverage within the 1.6-mile scale, but the volume (~360 occupancies) suggests high call volumes, particularly for commercial strip fires or multi-unit residential incidents. Strategic priorities include pre-planning for storage/rail exposures, school evacuation routes, and medical corridors to prevent cascading failures. Adjacent wildland-urban interface near hills (shaded gray) may add seasonal brush fire threats, though the core area is urban-focused.

Large Buildings

The following figure, the map for large buildings (over 50,000 square feet) around Station 10, highlights significant structures within its response area, located at the center of the map.

Figure 277: Station 10 Large Buildings Greater than 50,000 Sq. Ft.



Square Footage Range

The map depicts the response area for Station 10 (red fire station icon, located in the northern section of the district). The terrain is relatively flat, with minor elevation changes, and is surrounded by adjacent stations (e.g., 2, 3, 5, 9, and 11). Large buildings (over 50,000 square feet) are color-coded by size range, as indicated in the legend, with counts indicating their frequency. Based on their distribution and the prior context of occupancy types (e.g., 132 commercial, 129 multi-family), speculative uses can be inferred for community risk assessment.

Square Footage Range

- **51,413–56,976 Dark Green (4):** Located Northwest near Adams St & Jefferson, One is the fire training center, Two scattered west of Victoria Ave. These locations could be Wholesale nurseries/greenhouses (e.g., T&R Nursery complex), Small tilt-up industrial (light manufacturing or contractor yards), a possible church or private school annex. The risk profile includes a moderate fire load (vegetation, fertilizers, equipment), low daytime occupancy, and high fuel load and ember production near the wildland interface.
- **56,977–66,527 Light Green (6):** Located in a cluster near Jefferson & Adams, one of which could be the EOC building. One near Irving St, several along the Victoria Ave corridor. Possible uses:
  - One confirmed: Emerald Grove Care/EGC–60-bed congregate living (seniors/memory care)
  - Mid-size apartment complexes (3–4 story garden style)
  - Jefferson Elementary School (or similar public school)
  - Possible charter school or religious education building

  High life-safety risk–vulnerable populations (children + functionally impaired seniors). Fixed mobility issues and high EMS call volume. Most are sprinklered but still drive upgraded alarms and 2nd-alarm responses for fire events.
- **66,528–120,597 Yellow (4):** Locations include, near Jefferson Avenue & Victoria Avenue, two in an industrial pocket near Hermosa Drive, Possible Uses:
  - One South, possibly a corporate yard
  - Large auto dealership service/parts buildings (Riverside Auto Center)
  - Tilt-up warehouses (contractor storage, distribution)
  - Possible big-box retail or gym

  Moderate-to-high property risk; high fire flow (3,000–5,000 gpm). Daytime occupancy 100–300. Hazardous processes (paint booths, tire storage, forklifts).
- **120,598–185,814 Orange (3):** Locations include one very close to Station 10 (Jefferson corridor), one near City Corporate Yard, and finally, one on Victoria Avenue commercial strip. Potential uses include:
  - City of Riverside Corporate Yard/Fleet Maintenance (confirmed nearby)
  - Large grocery anchor or home-improvement store
  - Multi-tenant industrial (food processing or foam manufacturing)

High risk–critical city infrastructure + high daily occupancy (200–600). Significant exposure to Station 10 itself (defend-in-place implications). Usually sprinklered but require defensive master-stream operations early.

- **185,815–618,498 Red (1):** Location, one large single building northeast, near Victoria Avenue and Monroe Avenue/industrial zone. This could be the Carpenter company warehouse for construction materials. Almost certainly a major distribution warehouse or the Maximum risk target hazard–potential for 8,000–12,000 gpm fire flow, large-volume hazmat (fuels, chlorine, transformers), and community-wide impact if lost (water/sewer operations). Drives automatic mutual-aid and 3rd-alarm response on confirmed fire.

Eighteen structures exceed 50,000 sq. ft., with a balanced mix across commercial, residential, educational, industrial, and institutional uses. The 185,815–618,498 sq. ft. range (1 building) stands out as a high-priority risk. Commercial/retail (dark green) buildings, as well as multi-family (green) buildings, are likely scattered across central and northern commercial-residential zones. Educational facilities (yellow) may be located in the southern or central areas. At the same time, industrial sites (orange) and significant buildings (red) are likely to be located in the north, near industrial/storage clusters and rail lines.

Station 10's large buildings might include vulnerable populations (schools + senior care). There may also be critical city infrastructure (Corporate Yard, Public Works). The most concerning buildings are high-fire-load industrial/warehouse storage and commercial big-box/auto center occupancies with moderate life hazard but very high water demand.

Most of these buildings are within 4–6 minutes of Station 10 at best travel times. Still, several sit in pockets with only one or two access routes (railroad, Gage Canal, or congested arterials), making second-due units from Station 3 or 9 critical for effective initial operations.

The flat terrain aids access, but dense urban layout and rail crossings may delay response. Station 10's central location supports coverage, but mutual aid from Stations 2, 5, or 3 may be needed for large north/northwestern incidents.

RFD should:

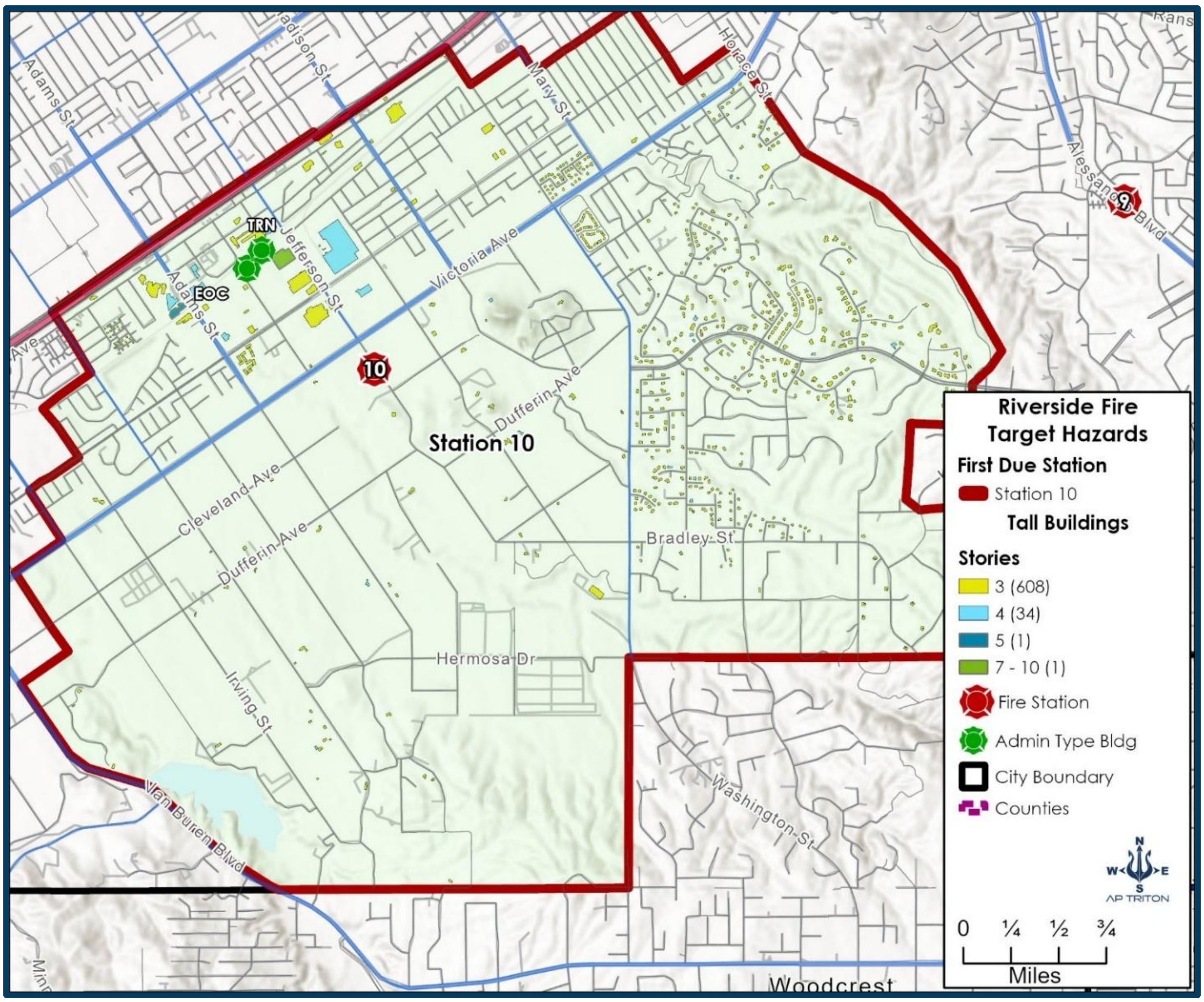
- Pre-plan for industrial fire suppression (e.g., water supply, HazMat) and rail exposure risks.
- Conduct evacuation drills for schools and multi-family units.
- Ensure robust mutual aid for major buildings, which may require specialized resources (e.g., aerial units).

This assessment highlights a high hazard profile, characterized by a diverse array of large buildings. Northern industrial/major sites pose the most significant challenge, while residential and educational structures heighten life-safety concerns.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 10's area.

Figure 278: Station 10 Multi-Story Buildings



The preceding figure depicts the response area for Station 10. Tall buildings are identified by story height using color-coded markers, as indicated in the legend, with counts indicating their frequency. Based on their distribution and the prior context of occupancy types (e.g., 129 multi-family, 132 commercial), speculative uses can be inferred for community risk assessment.

Story Range:

- **3 Stories–Yellow (608)** Multi-Family Residential (e.g., Apartments): Most common, widely scattered across residential blocks (e.g., east and south of Station 10). Likely 3-story apartment complexes with 129 multi-family units. Risks include high resident density (dozens per building), limited egress, and potential floor-to-floor fire spread.
- **4 Stories–Light Blue (34)** Multi-Family Residential or Hotels: Concentrated in denser residential zones; could include mid-rise apartments or a few of the 10 medical facilities repurposed for housing. Risks include increased evacuation time, challenges with smoke management, and the potential for stranded occupants on upper floors. One of these tall buildings is likely the Carpenter Company's large warehouse/manufacturing facility.
- **5 Stories–Blue (1):** This building could be related to the automotive industry. The building sits on the west side of Adams Street, just north of the railroad and south of SR-91.
- **7–10 Stories–Green (1):** Automotive-related business like Car-Max, likely clustered with like businesses in northern zones near major roads (e.g., Jefferson Street). Risks include significant vertical fire spread, vehicle involvement, reliance on elevators, and demand for aerial apparatus that exceeds Station 10’s immediate reach.

There are 644 structures with three or more stories, with the vast majority (608) being 3-story buildings, indicating a predominantly mid-rise residential area. Higher stories (5–10) are rare but critical due to their height and complexity. Three-story buildings are densely distributed across the central, eastern, and southern residential zones. 4–6 story buildings cluster in denser urban pockets (e.g., near Indiana Avenue), while 7–10 story buildings are likely near key commercial infrastructure (e.g., Jefferson Street).

The high count of 3-story buildings (608) suggests widespread risk of floor-to-floor fire propagation, especially in multi-family units. Higher buildings (7–10 stories) pose challenges for aerial ladder reach, requiring mutual aid from adjacent stations (e.g., 2, 3, 5, or 9). Multi-family residences (3–5 stories) house hundreds of residents, increasing evacuation demands and exposure to smoke inhalation, particularly during daytime hours (e.g., 09:00 AM). Medical or office buildings (5–6 stories) that serve vulnerable populations or have dense occupancy require specialized tactics.

The flat terrain facilitates access, but dense street networks and traffic (e.g., morning rush hour) may delay responses. Station 10’s central location supports coverage within the 16.3-square mile area, but the volume of tall buildings suggests potential resource strain.

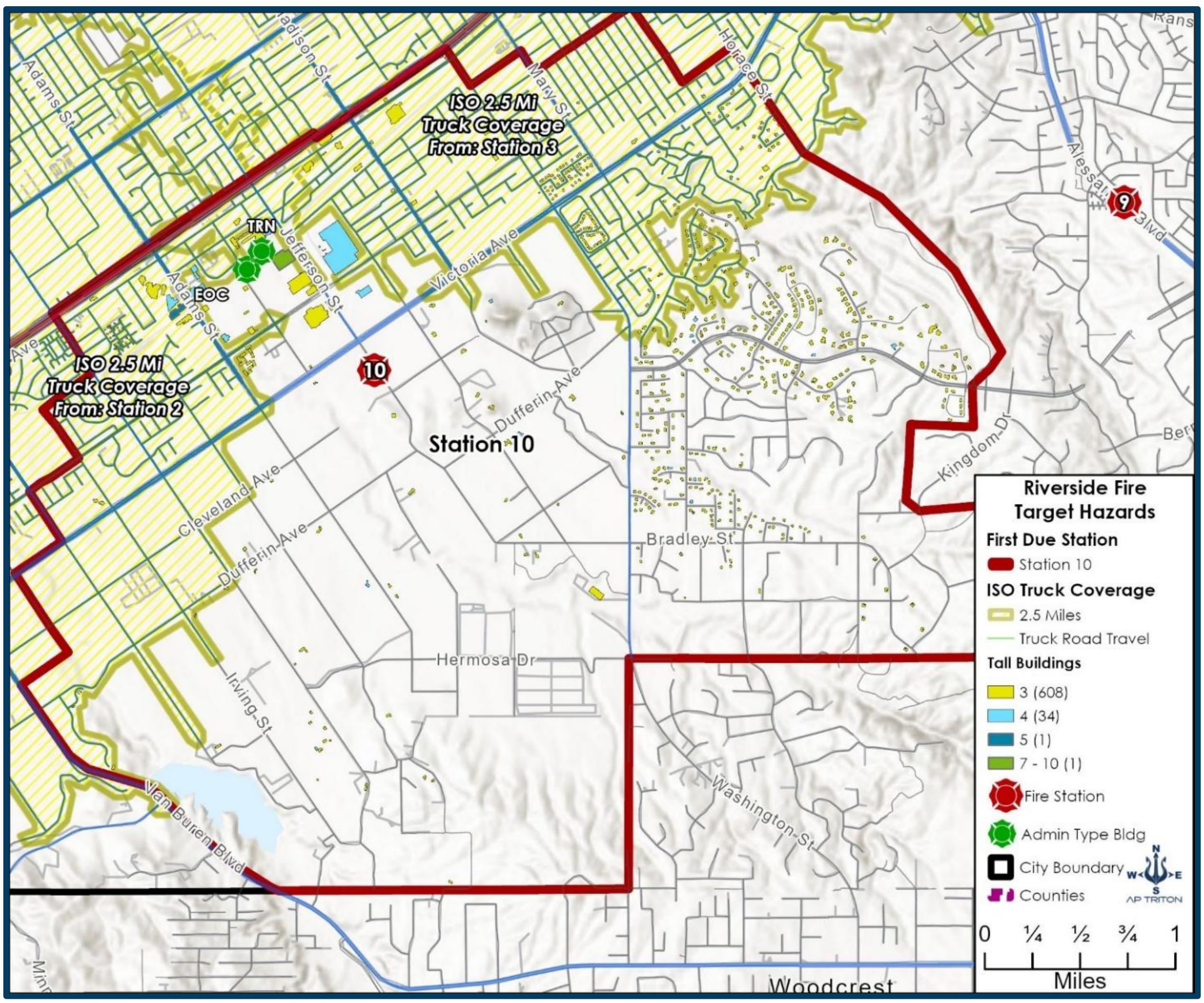
RFD should:

- Focus on residential fire safety education (e.g., sprinklers, egress planning) for buildings with three to four stories.
- Pre-plan high-rise sites (5–10 stories) for aerial operations and ensure coordination with adjacent stations for large-scale events.
- Conduct daytime evacuation drills for medical and commercial occupancies.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 10's area. Sources of the nearest ladder resources are also displayed.

Figure 279: Station 10 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

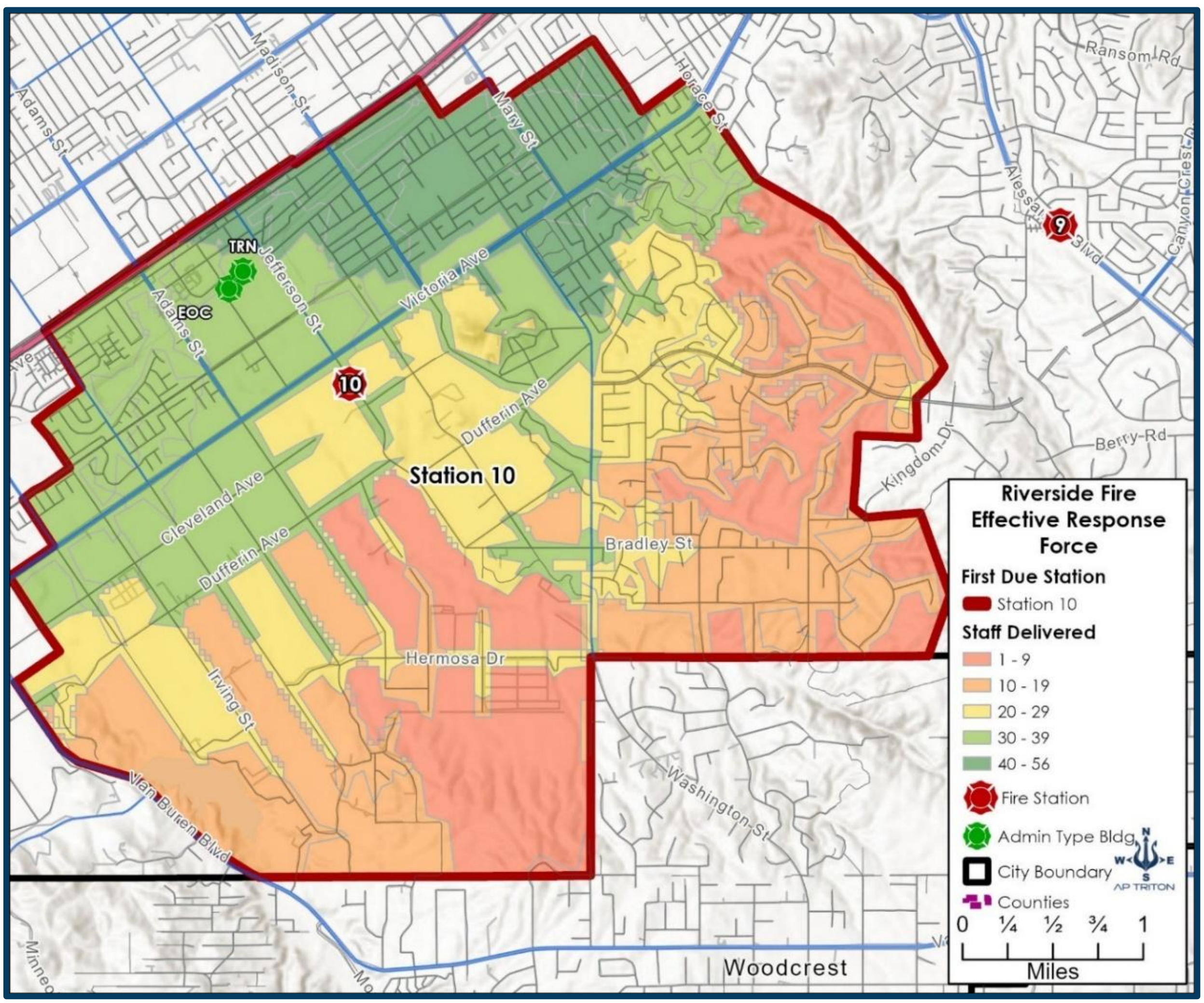


As shown in the previous figure, most residential 3-story buildings face south–southeast, is not covered by the aerial apparatus within the required ISO parameter. The district contains many taller buildings (mostly 3-story) that fall outside the 2.5-mile coverage area. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 2 or 3.

Effective Response Force

The effective response force refers to the staffing and resource deployment capability required to address the range of risks within a fire station's first-due area. The map for Station 10 illustrates this through color-coded zones, indicating the staff response force delivered, measured in terms of personnel availability. Station 10, centrally located within its red-outlined first-due area, serves a dense urban landscape with flat terrain and adjacent stations (e.g., Stations 2, 3, 5, and 9), suggesting a need for robust coverage to handle the identified hazards.

Figure 280: Station 10 ERF at 8 Minutes



Effective Response Force

- **White (0 Staff):** No areas are marked white, indicating no complete lack of coverage within the first-due area.
- **Pink (1–9 Staff):** Small isolated pockets, primarily in the southeastern, east, and southern corners, suggest limited staffing capacity. These areas likely reflect low-density or peripheral zones where response may be stretched.
- **Orange (10–19 Staff):** Significant portions, especially in the eastern and southern zones, indicate a moderate staffing level. This coverage aligns with multi-story residential and commercial clusters (1,123 3-story buildings, 132 commercial buildings), which are adequate for initial response but may be insufficient for larger incidents.
- **Yellow (20–29 Staff):** The majority of the first-due area, centered around Station 10, shows a baseline effective force of 20–29 staff. This suggests the capability for handling typical incidents (e.g., single-family fires, small commercial calls) but may be strained by the 1,183 tall buildings and 16 large structures (> 50,000 sq. ft.) during peak hours.
- **Light Green (30–39 Staff):** Larger patches in the northern and northeastern sections indicate enhanced staffing, possibly due to higher-risk commercial corridors or overlap with adjacent stations (e.g.,2,5, and 9).
- **Dark Green (40–56 Staff):** Limited to the central-north area near major arterials, this suggests the highest staffing concentration, likely planned for critical infrastructure or high-density zones. This reflects the contribution of Stations 3 and 9 in this area, with the enhanced access of SR-91.

The CRA identifies key risks, including 129 multi-family units, 132 commercial sites, 35 elementary schools, 16 large buildings, and 639 multi-story structures. The predominant 20–29 staff range (yellow) aligns with a moderate-to-high risk profile but may fall short in peak-hour scenarios (e.g., industrial fires, mass evacuations), which require 30–56 staff, as indicated in the green zones.

CFAI SOC requires sufficient personnel for initial attack, ventilation, rescue, and command within acceptable timeframes (typically 4–6 minutes for urban areas). The 10–19 staff (orange) and 20–29 staff (yellow) ranges suggest a capability for standard responses, but gaps in the pink zones and the need for 40–56 staff in the dark green areas indicate a reliance on mutual aid for complex incidents, especially during daytime traffic.

Pink (1–9) areas in the southeast and south highlight potential gaps, possibly due to distance or lower priority zones. Most of these areas are inaccessible by road and may not have buildings. Dark green (40–56) zones suggest strategic reinforcement, likely near commercial hubs or transportation corridors (e.g., rail lines).

A staff force of 20–29 covers most routine incidents, but the high volume of multi-story buildings (639) and large buildings (16) suggests a need for 30–56 staff for worst-case scenarios (e.g., high-rise fires, mass casualty events), especially in pink/orange zones during peak hours.

Strategic mitigation involves enhancing staffing in pink (1–9) and orange (10–19) zones through repositioning or additional units. Pre-plan for mutual aid triggers (> 29 staff needed) and ensure aerial apparatus availability for 7–10 story buildings (4 sites). Coordinate with Stations 3 and 9 for coverage in the southeastern region.

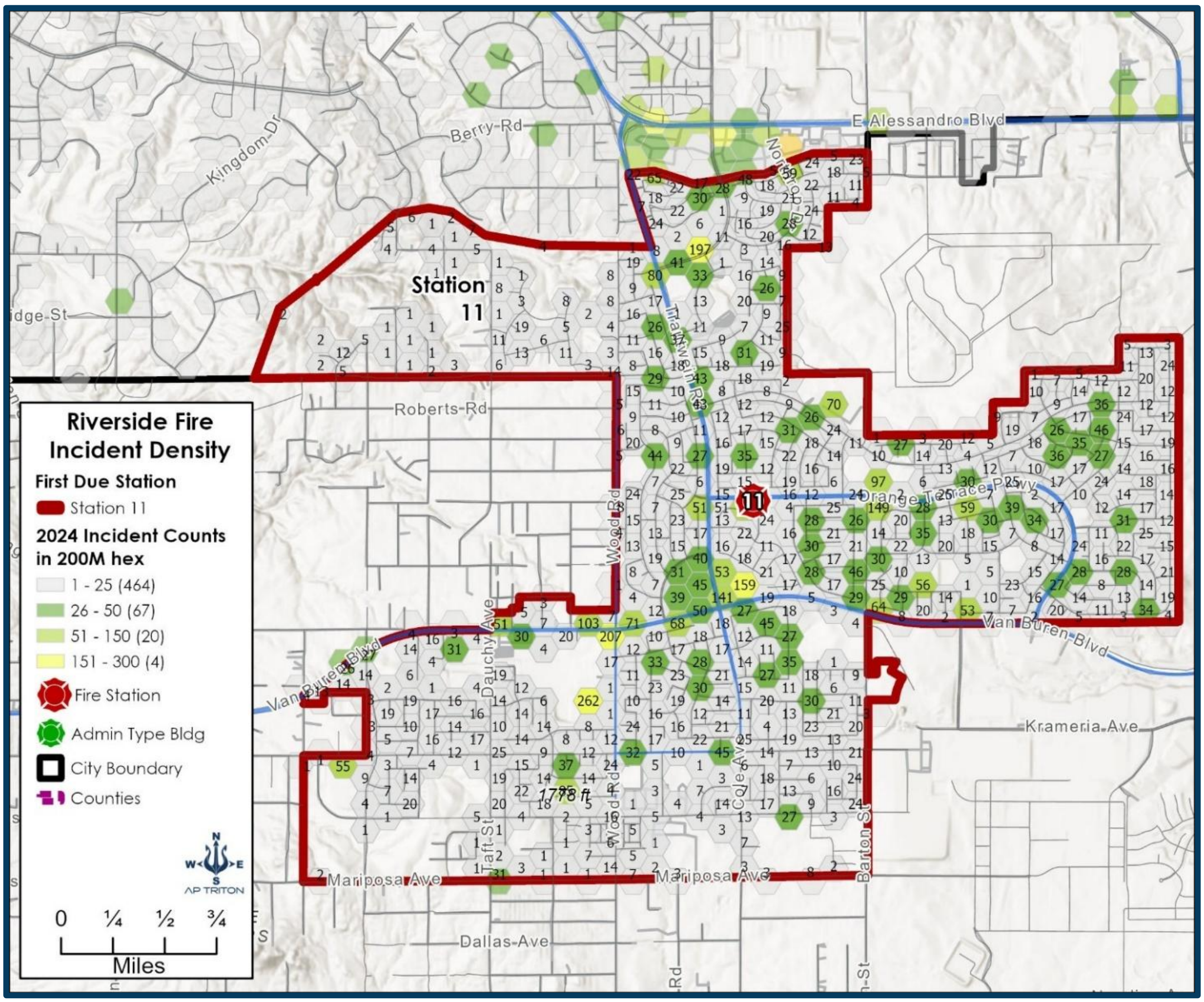
In summary, Station 10's effective response force, predominantly comprising 10–29 staff with peaks at 40–56, meets baseline SOC requirements for urban risks but may be strained by the area's dense, tall, and large building profile during peak hours, requiring strategic enhancements and mutual aid coordination.

STATION 11

Incident Evaluation

Station 11 is situated in the southern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The following figure displays the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 11 area; other stations are included for context, showing how often Station 11 apparatus could be engaged as second-arriving units.

Figure 281: Station 11 Incident Counts

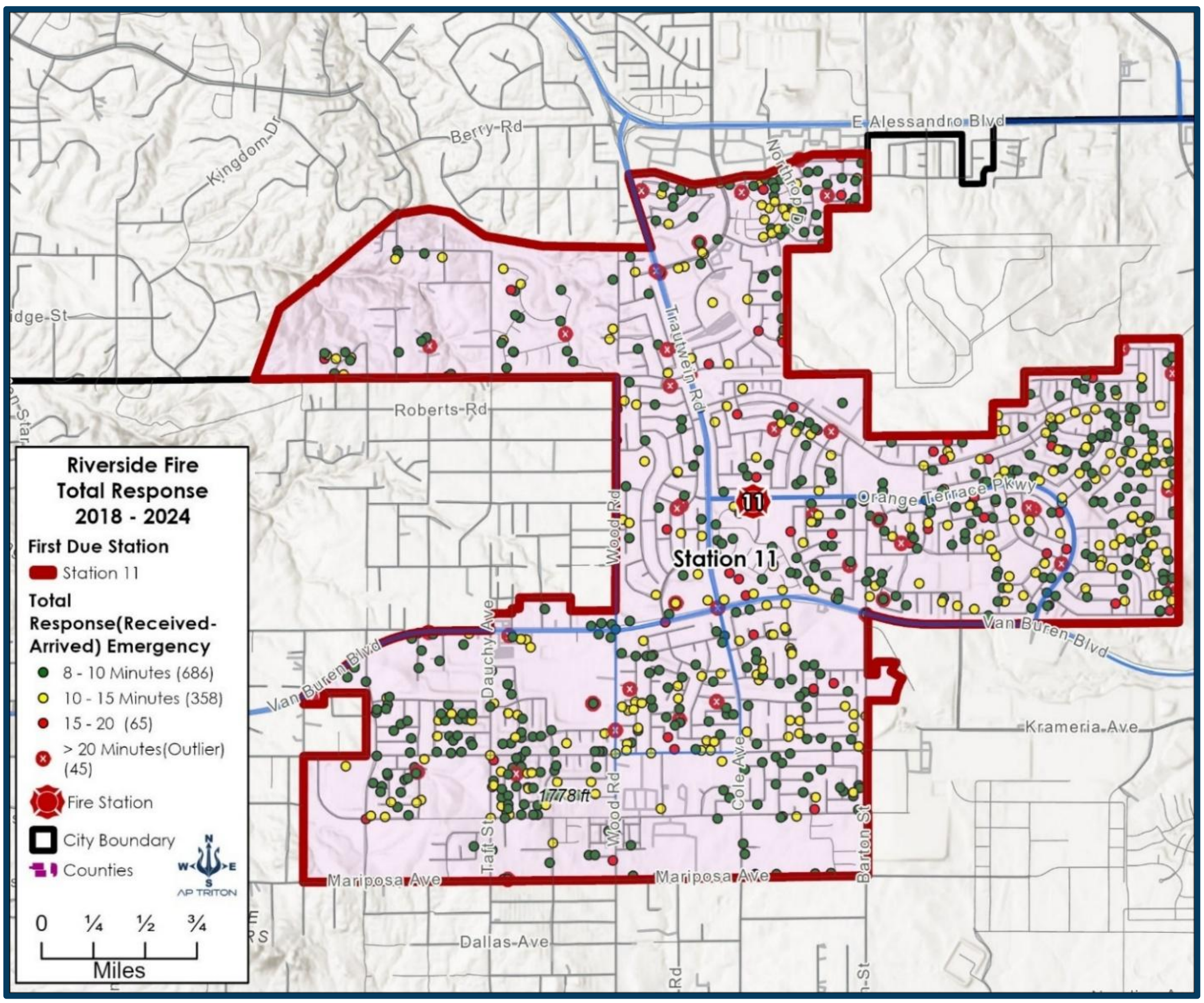


Between 2018 and 2024, Station 11 responded to **10,830** incidents. Of these incidents, from 2018 to 2024, a Station 11 assigned unit arrived first on the scene **9,011** times. This averages out to a reliability of **83**%. This indicates that, even though the station is located in a remote area away from high-efficiency roadways, response reliability remains high.

Station 11 fell short of the NFPA total response time standard for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 11 can arrive at the location in **8** minutes, **30** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the eight-minute total response NFPA standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **1,154** 8-minute or greater total response time exceptions representing 10.3% of all responses (emergency and non-emergency).

Figure 282: Station 11 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 11 is shown in the following figure. The probability that a Station 11 resource would be the first to arrive at the scene of an emergency request in Station 11's district is very high. Station 11 has few of the reliability-improving parameters.

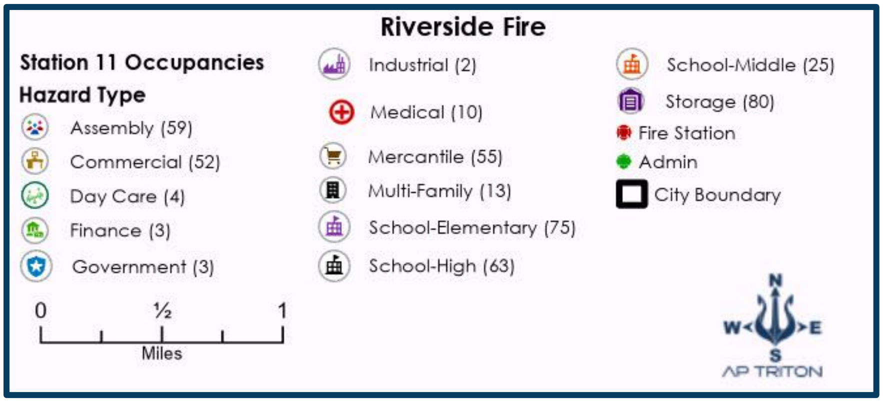
Figure 283: Station 11 Reliability 2018–2024

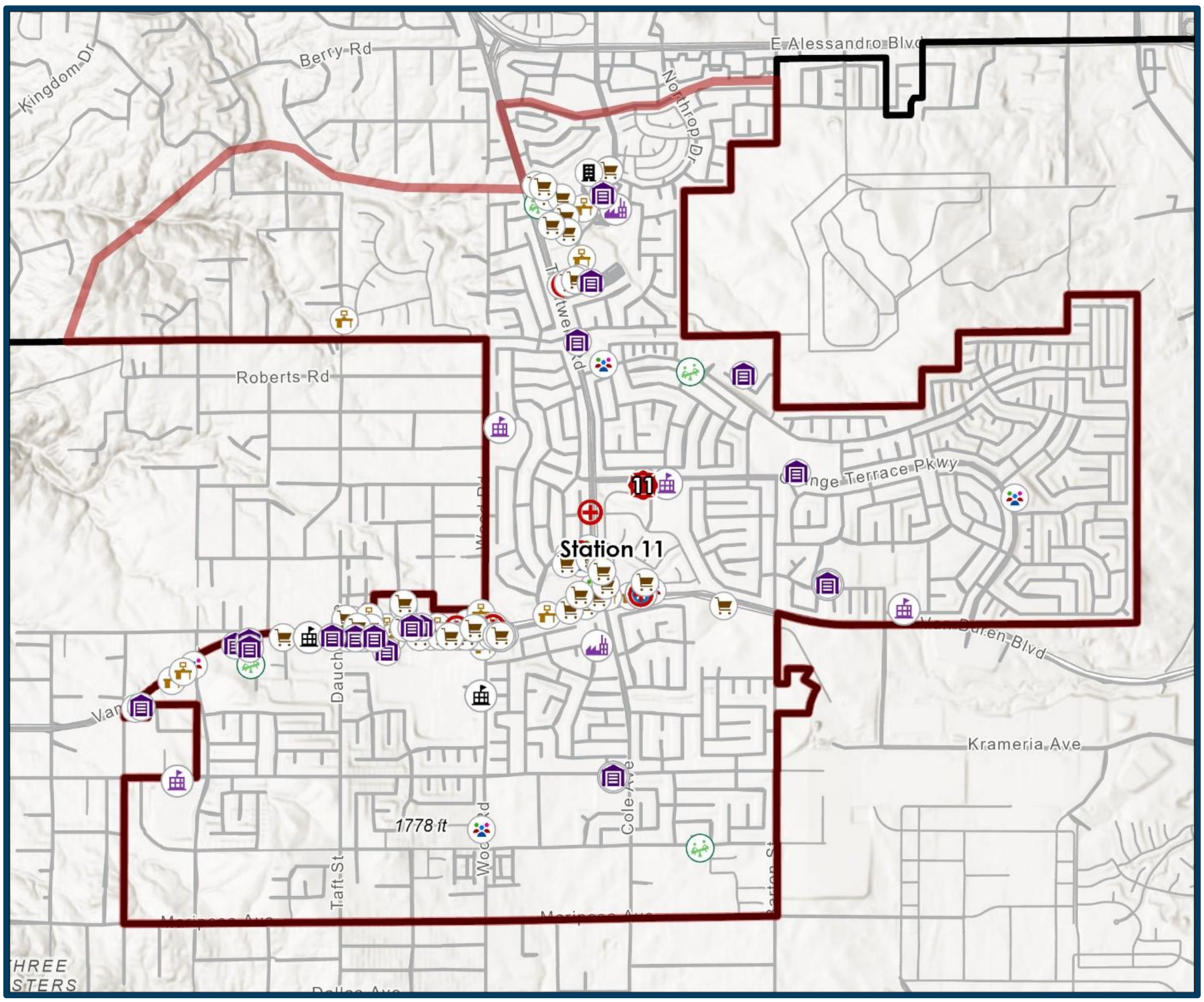
STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 11	88%	83%	85%	81%	80%	81%	85%	83%	8.3	4

Hazard Evaluation

Station 11 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment. The following figure depicts the response area of Station 11. Station 11 is centrally located within this area, near the intersection of major roads, including Alessandro Boulevard and Wood Street. The response area covers approximately 8.3 square miles. It encompasses a mix of suburban neighborhoods, commercial zones, and light industrial pockets, with varied terrain that includes hilly sections to the north and east. Hazards are represented by icons clustered throughout the area, with higher concentrations along major corridors, such as Alessandro Boulevard, Van Buren Avenue, and the southern boundary near Mariposa Avenue. Overall, the area features a moderate to high density of occupancy hazards, dominated by assembly and commercial sites, interspersed with residential and institutional uses. This suggests a diverse risk profile requiring versatile firefighting capabilities, with potential for high-traffic incidents in commercial zones and evacuation challenges in multi-family residential areas.

Figure 284: Station 11 Hazards/Occupancies





Key Occupancy Types and Hazard Profiles

- **Assembly (59 sites):** Indicating places like theaters, restaurants, or event venues with high occupant loads. These are densely clustered in the central and eastern sections, particularly along Alessandro Blvd and near the station, forming potential hotspots for crowd-related emergencies. A notable concentration appears southeast of the station, near commercial strips.
- **Commercial (52 sites):** Retail, offices, or businesses, posing risks from fire spread in connected structures. These are widespread but focused on the north-central and southern zones, with linear groupings along Trautwein Road and the western boundary. Proximity to assembly sites amplifies combined risks in mixed-use areas.
- **Multi-Family Residential (13 sites):** Apartment buildings or condos, vulnerable to rapid fire propagation and large-scale evacuations. Scattered throughout residential neighborhoods, with clusters in the southwest (near Iowa Ave) and northeast (along the boundary). These are less dense than commercial hazards, but they represent significant life-safety concerns in suburban areas.
- **Day Care (4 sites):** Childcare facilities, heightening vulnerability due to young occupants. Limited in number, they are situated in residential areas, with one located near the station's south side and others on the west and east fringes.
- **Finance (3 sites):** Banks or financial offices, typically low hazard but with secure structures. Sparsely distributed in the central commercial core.
- **Government (2 sites):** Public administration buildings. Minimal presence, one in the northwest near the boundary and another centrally.
- **Industrial (2 sites):** Factories or warehouses, potential for hazardous materials incidents. Isolated in the north, near hilly terrain along the western edge.
- **Mercantile (55 sites):** Stores or markets with storage risks. Concentrating on commercial strips east of the station.
- **Medical Facilities (10 sites):** Critical infrastructure like clinics or laboratories. Dotted across the area, with emphasis on the northern and eastern boundaries.
- **Schools (163)**
    - School-Elementary (75 sites): Primary schools, high-risk for pediatric evacuations. Grouped in the southeast residential zones.
    - School-Middle (25 Sites): usually a smaller student population
    - School-High (63 sites): Secondary schools, with larger footprints. One prominent site is located south of the station, and others are situated in the east.

- **Storage-Medium (25 sites):** Warehouses or mid-sized storage, fire load concerns. Heavily concentrated in the industrial-transition zones along the southern and western boundaries, near Iowa Ave and Roberts Rd.

The core around Station 11 (within 0.5 miles) has overlapping assembly, commercial, and mercantile hazards, suggesting urban commercial districts with elevated flashover risks. Response times here would be shortest, but the incident scale could be significant.

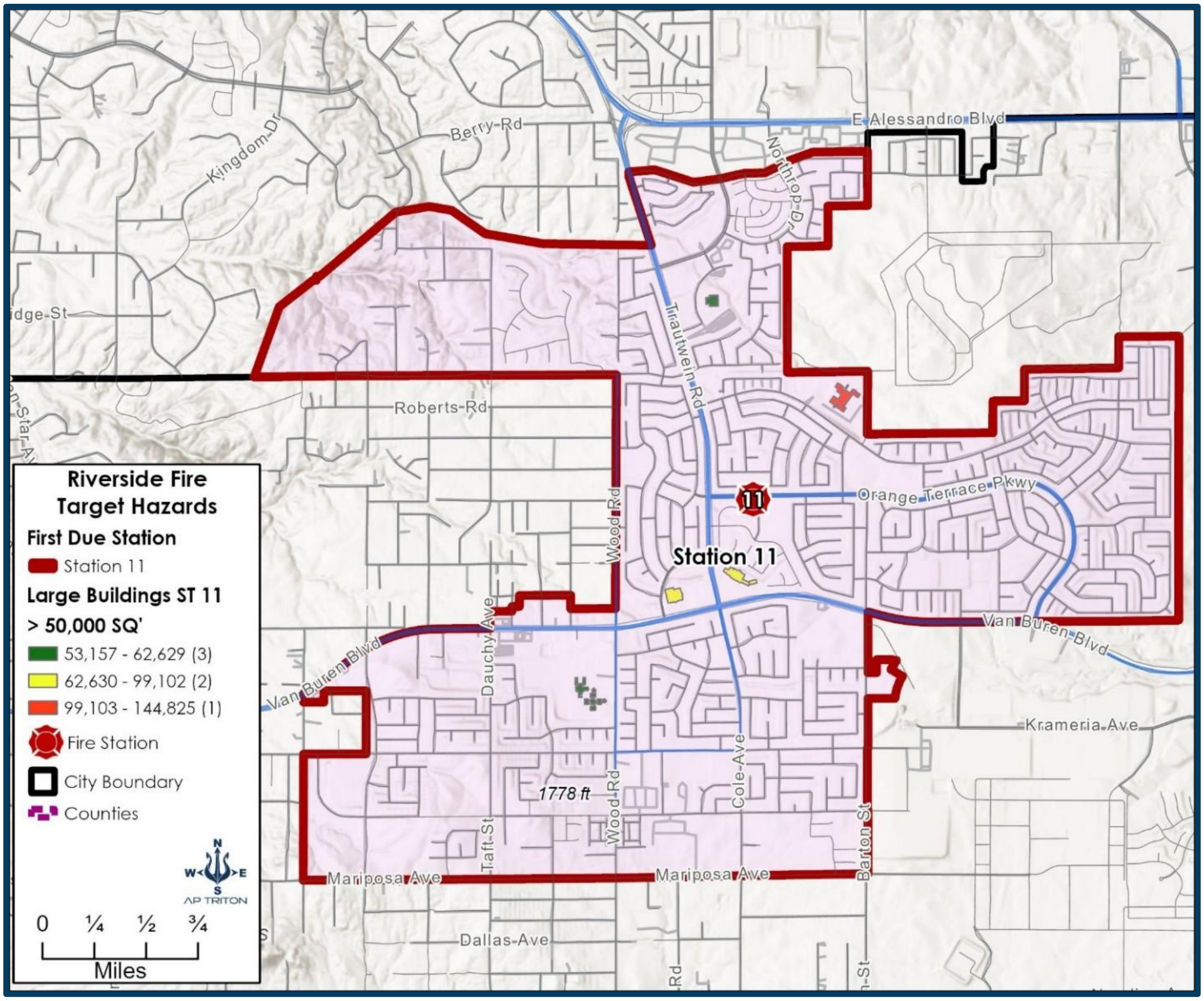
Northern hills host fewer but more isolated industrial and storage sites, potentially complicating access. Southern and eastern residential areas feature multi-family and school clusters, increasing vulnerability during peak hours.

With 59 assembly and 52 commercial sites in a compact 1-square-mile area, the hazard load is intense, comparable to a bustling suburban commercial hub. Residential (multi-family) and educational sites add layers of life-safety priorities, while low counts in industrial/government indicate limited heavy-process risks.

Large Buildings

The following figure highlights large buildings (greater than 50,000 sq. ft.) within the response area of Station 11. These buildings are categorized by square footage ranges, with specific counts and locations provided. Based on their distribution and the surrounding context, a community risk assessment can speculate on potential uses, considering factors such as proximity to residential areas, commercial corridors, and infrastructure.

Figure 285: Station 11 Large Buildings Greater than 50,000 Sq. Ft.



Square Footage Range

- **53,157–62,629 sq. ft. (3 buildings, green icons):** These mid-sized, large buildings are scattered across the area. One is located centrally near Station 11, another in the northwest near Roberts Rd, and the third in the southeast near Orange Terrace Pkwy. Given their size and placement near residential and mixed-use zones, they could serve as community centers, large retail stores (e.g., supermarkets), or multi-tenant office buildings. The central location suggests a public or commercial hub. At the same time, the peripheral sites might support local retail or administrative functions, posing moderate fire risks due to occupant density and potential storage.

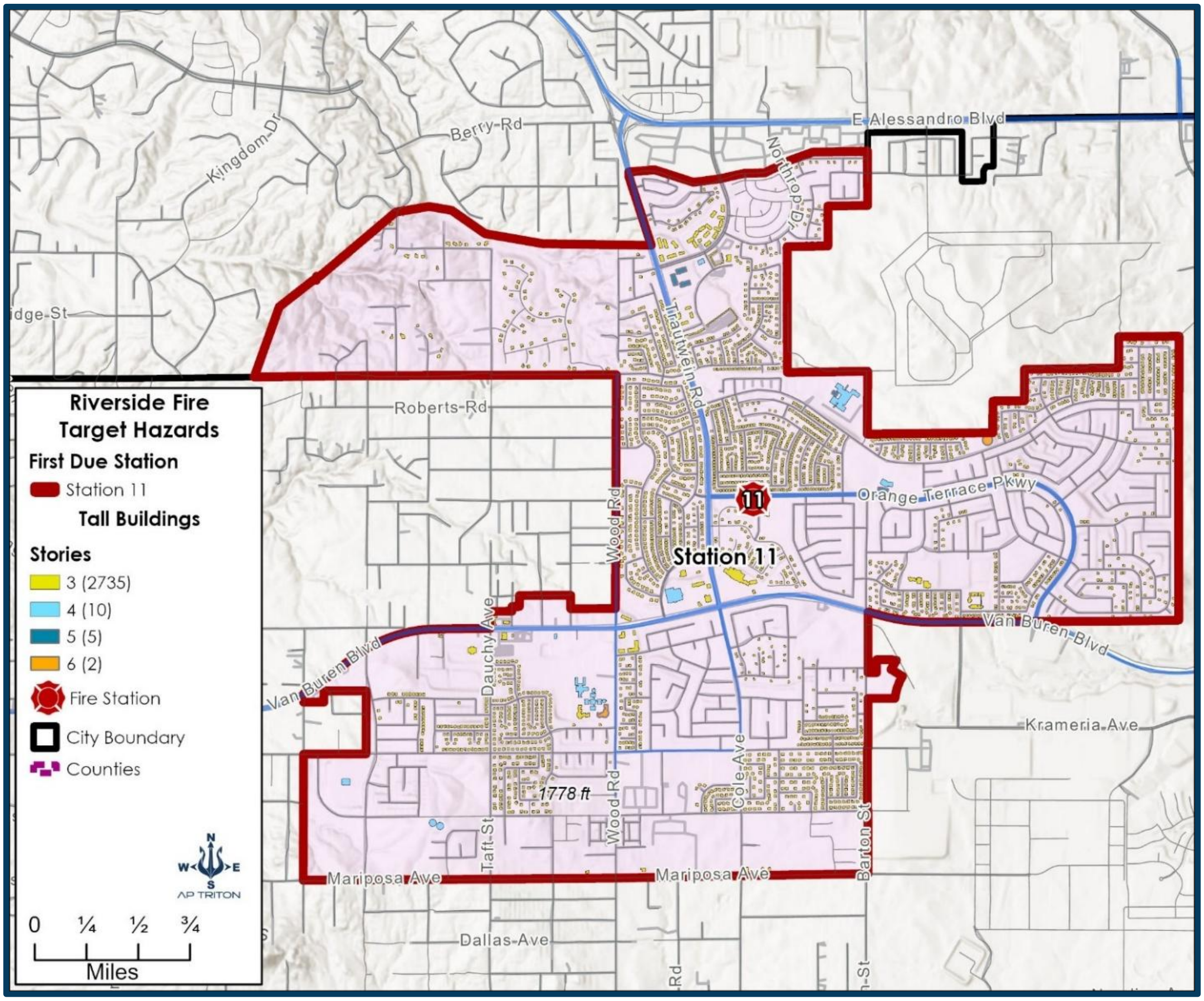
- **62,630–99,102 sq. ft. (2 buildings, yellow icons):** These larger structures are positioned in the central-southern part of the response area, near 1,778 ft and Wood St. Their size and location along a developed corridor imply uses such as big-box retail stores (e.g., department stores or warehouses), educational facilities (e.g., a school or college building), or light industrial operations. The proximity to residential neighborhoods suggests a community-serving purpose, with higher fire hazards resulting from the storage of merchandise or equipment, necessitating robust sprinkler systems and well-maintained access routes. Probably big-box retail (e.g., Target, Walmart) or educational buildings (e.g., high school). These carry risks from flammable goods or large student populations, with potential for rapid fire growth if unsuppressed.
- **99,103–144,825 sq. ft. (1 building, red icon):** The most prominent building is located in the northeast, near the boundary with Station 13. Its significant size suggests a major facility, potentially a regional shopping center, distribution warehouse, or institutional complex (e.g., hospital or government office). Further research reveals that this facility is listed as an assembly occupancy, possibly a religious gathering center. The isolated location, situated near hilly terrain, could complicate emergency access. At the same time, the scale implies substantial fire load risks from extensive storage, electrical systems, or high occupant loads during peak hours. This poses the highest risk due to extensive fire load, evacuation challenges, complex layouts, and possible hazardous materials, necessitating specialized response strategies.

The presence of six large buildings, totaling over 500,000 sq. ft., indicates a moderate-to-high community risk due to potential fire spread, evacuation challenges, and resource demands. The central concentration near Station 11 enables rapid response, but the northeast outlier may strain coverage, particularly in terrain-obstructed areas.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are taken into consideration to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 11’s area.

Figure 286: Station 11 Multi-Story Buildings



The map highlights multi-story buildings within the response area of Station 11. These buildings are categorized by the number of stories, with specific counts provided for each. Based on their distribution and surrounding context, a community risk assessment can speculate on potential uses, considering factors such as proximity to residential areas, commercial corridors, and infrastructure. The legend provides the following breakdown:

- **3 Stories (273 buildings, yellow):** These are the most numerous, scattered densely across the response area, particularly in residential neighborhoods like those near Orange Terrace Parkway, Wood Street, and the central zone around Station 11. Their prevalence suggests uses such as multi-family residential units (e.g., apartments or condos), small office buildings, or mixed-use structures with retail on the ground floor. The high count indicates a significant life-safety risk due to potential evacuation challenges, with fire spread risks in closely packed residential blocks.

- **4 Stories (10 buildings, blue):** These taller structures are less common, located in the central and southern parts, including near 1778 ft and Dauchy St. Their size and placement along developed streets suggest uses like mid-rise office buildings, hotels, or larger apartment complexes. The limited number reduces overall risk but increases per-building hazard due to higher occupant loads and complex layouts, requiring enhanced firefighting access and egress planning.
- **5 Stories (5 buildings, light blue):** These are sparsely distributed, with notable instances in the southeast near Orange Terrace Parkway and the southwest near Iowa Avenue. Potential uses include upscale residential towers, small hospitals, or institutional buildings (e.g., community centers). Their height poses risks of prolonged evacuation times and vertical fire spread, necessitating aerial firefighting capabilities and robust sprinkler systems to mitigate these risks.
- **6 Stories (2 buildings, orange):** The tallest in the area, located near the central zone, close to Station 11, and in the northeast near the boundary. These could serve as high-rise apartments, office towers, or specialized facilities (e.g., medical clinics). The low count limits the widespread risk, but each building presents significant challenges due to height, potential for smoke accumulation, and limited escape routes, requiring advanced response strategies.

The presence of **290** multi-story buildings, with a dominant 3-story category, indicates a moderate community risk, primarily driven by the high density of residential structures. The taller 4–6-story buildings create localized high-risk zones due to increased height, occupant density, and structural complexity. Central proximity to Station 11 facilitates rapid response, but the dispersed layout across a roughly 1-mile radius may strain resources during simultaneous incidents.

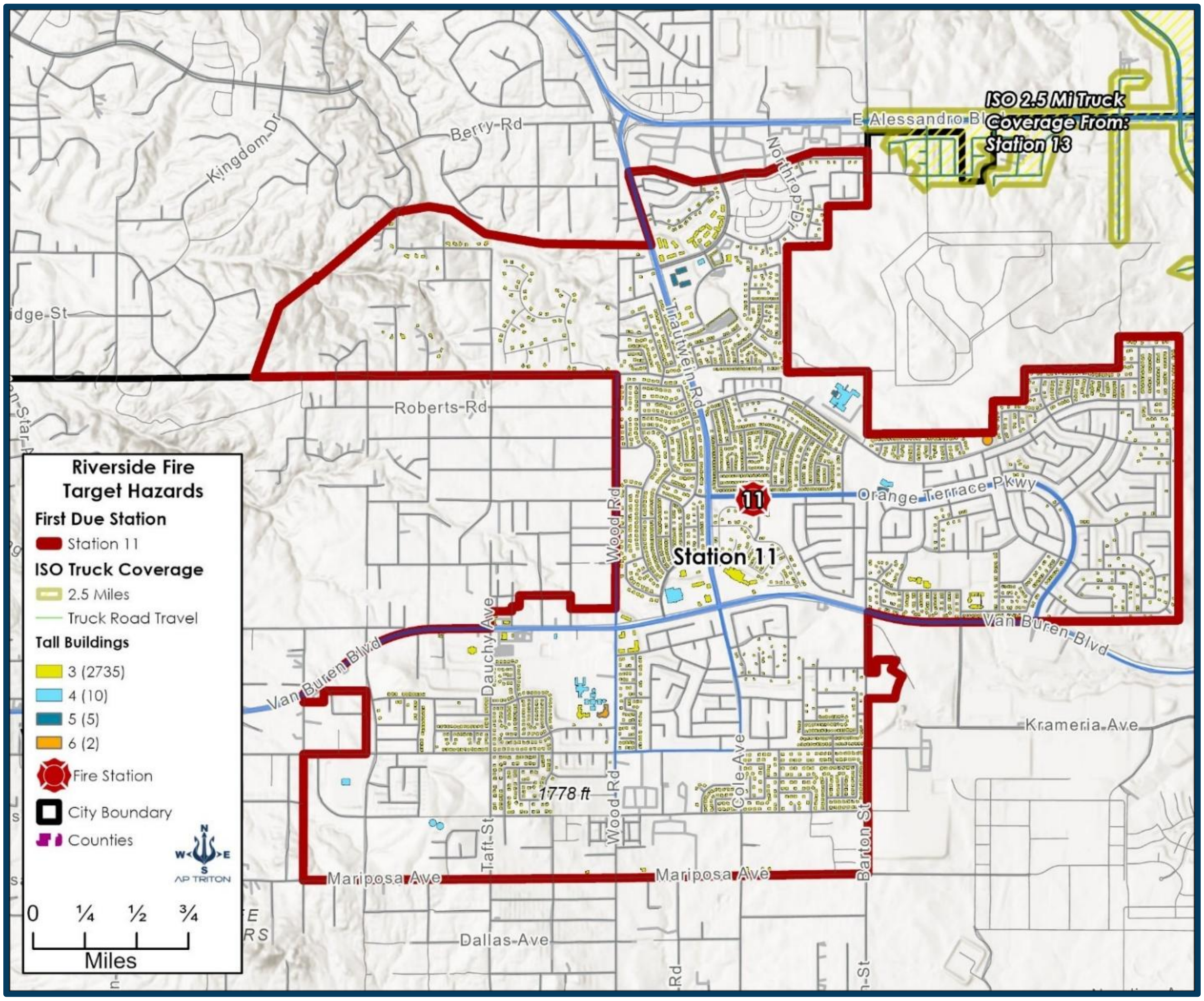
Dense 3-story residential zones require the widespread installation of smoke detectors and clear egress paths. Taller buildings (4–6 stories) require regular high-rise drills, updated fire codes, and enhanced water supply infrastructure. The central location of the 6-story buildings near Station 11 is advantageous, but the northeast outlier may need mutual aid support. Station 11 is the only district outside any 2.5-mile ISO coverage area. Since this district is so far from an aerial apparatus, it may be prudent to consider upgrading to a Quint type apparatus. It is, however, highly likely that aerial apparatus from Stations 1, 3, or 13 could arrive within 7 minutes.

This assessment highlights a predominantly residential, multi-story landscape with escalating risks in taller buildings, underscoring the need for tailored fire prevention and response strategies.

ISO 2.5 Mile Aerial Coverage Assessment

The following figure shows the effect of ISO ladder coverage on the tall buildings in Station 11's area. Sources of the nearest ladder resources are also displayed in the following figure:

Figure 287: Station 11 Tall Buildings vs 2.5 Mile ISO Aerial Coverage

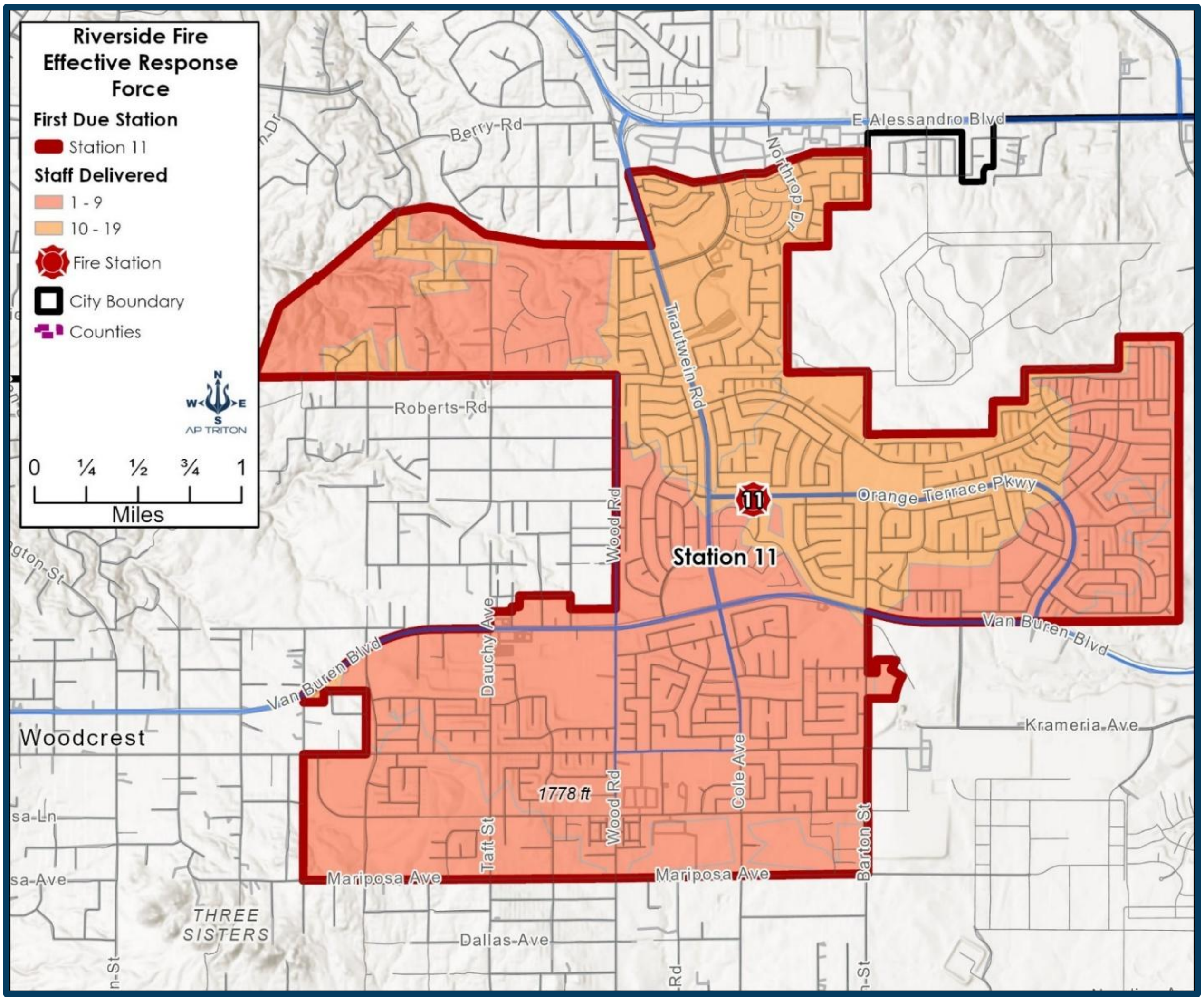


As shown in the previous figure, all of the tall building load is entirely outside of the coverage of the aerial apparatus within the required ISO parameter. Station 13, along Allesandro Boulevard, is the only station that nears the ISO coverage range, but falls short of covering any of district 11. The district contains many taller buildings (mostly 3-story) that fall outside the 2.5 Mile coverage area. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from any of Stations 1, 3, or 13.

Effective Response Force

The effective response force refers to the staffing and resources available to respond to emergencies within a specified time frame, ensuring adequate coverage and safety for the community. The map for Station 11's study area provides a visual representation of the first due station and the ERF. The first due station is Station 11, designated as the primary responding station within the red boundary, covering the entire study area. This indicates that Station 11 is responsible for the initial response to all incidents within this jurisdiction. The area, which spans approximately 8.3 square miles and encompasses residential neighborhoods, commercial corridors, and hilly terrain.

Figure 288: Station 11 ERF at 8 Minutes



Color coding indicates the staffing levels delivered 1–9 staff (light orange). This covers the majority of the study area, particularly the central and eastern residential zones around Station 11. In CFAI CRA-SOC terms, this implies a baseline response force capable of handling low-to-moderate risk incidents (e.g., medical calls, small fires) with minimal staffing requirements. However, this level may be insufficient for high-risk scenarios (e.g., multi-story fires or mass casualty events), potentially requiring mutual aid or additional resources.

Effective Response Force:

- **White (0 Staff):** No areas are marked white, indicating no complete lack of coverage within the first-due area.
- **Pink (1–9 Staff):** Small isolated pockets, primarily in the southeastern and northwestern corners, suggest limited staffing capacity. These areas likely reflect low-density or peripheral zones where response may be stretched. Substantial portions of Station 11's response area are only reachable by 1–9 staff in 8 minutes.
- **Darker orange (10–19 Staff): T**his applies to specific pockets, notably in the northwest and southeast corners near the boundary. These areas are likely to include higher-risk zones (e.g., commercial strips or multi-family residences), where increased staffing is deemed necessary for effective initial attack or containment. This aligns with CFAI standards for scaling response based on risk assessment, ensuring adequate personnel for complex incidents.

The variation in staffing levels reflects a community risk assessment identifying differential hazards. The 1–9 staff zones suggest lower risk (e.g., single-family homes), while 10–19 staff areas indicate higher risk (e.g., commercial or multi-story buildings), consistent with CRA principles of tailoring resources to hazard density.

The compact size of the study area (within 1 mile) supports rapid response times from Station 11, a key CFAI metric. However, the hilly terrain in the northwest may delay access, necessitating higher staffing in those zones to compensate.

The map suggests a strategic deployment model in which Station 11's resources are distributed to achieve balanced coverage. The 10–19 staff zones identify pre-identified critical areas, aligning with CFAI's emphasis on deploying an effective response force to mitigate risks efficiently. However, Riverside's critical tasking analysis for a moderate-level structure fire requires three engines, one truck, a Rescue, and a Chief officer, totaling 19 staff. This analysis suggests that this level of response is not attainable in most parts of the district.

The effective response force appears adequate for routine calls across most of the area. Still, the limited higher-staffing zones (10–19) may indicate potential gaps in addressing simultaneous or large-scale incidents. This could prompt recommendations for enhanced staffing, mutual aid agreements, or additional stations (e.g., Station 9 or 13) to meet CFAI standards for reliability and redundancy. The number of staff required to complete critical tasks during a moderate-level structure fire event is unlikely to be met.

Strategic mitigation steps include adding a second unit and more staffing to enhance the ability to achieve critical tasks.

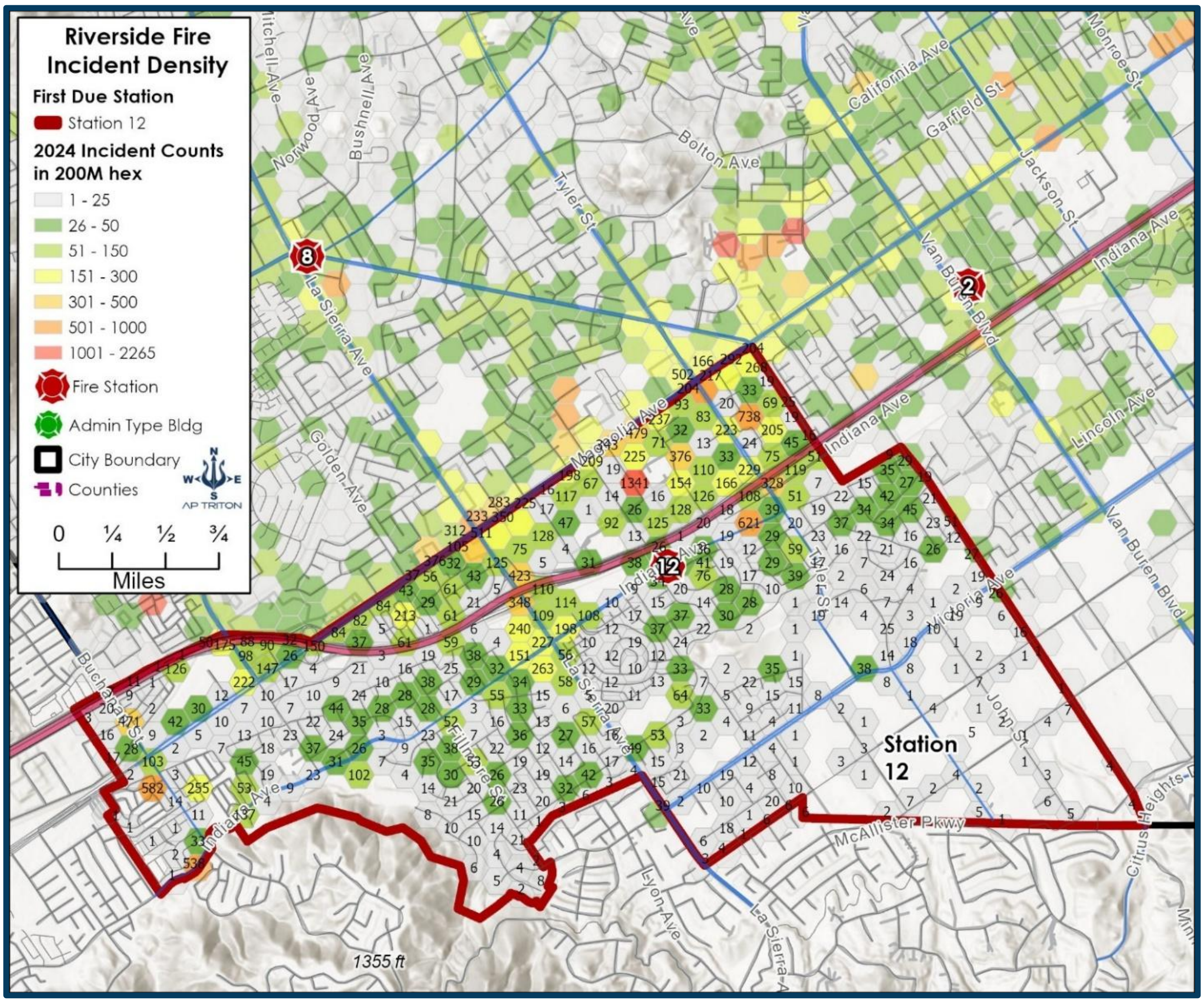
In summary, the effective response force for Station 11's study area is inadequate and should be a strategic planning priority.

STATION 12

Incident Evaluation

Station 12 is situated in the far southwestern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 12 area; other stations are included for context, showing how often Station 12 apparatus could be engaged as second-arriving units.

Figure 289: Station 12 Incident Counts

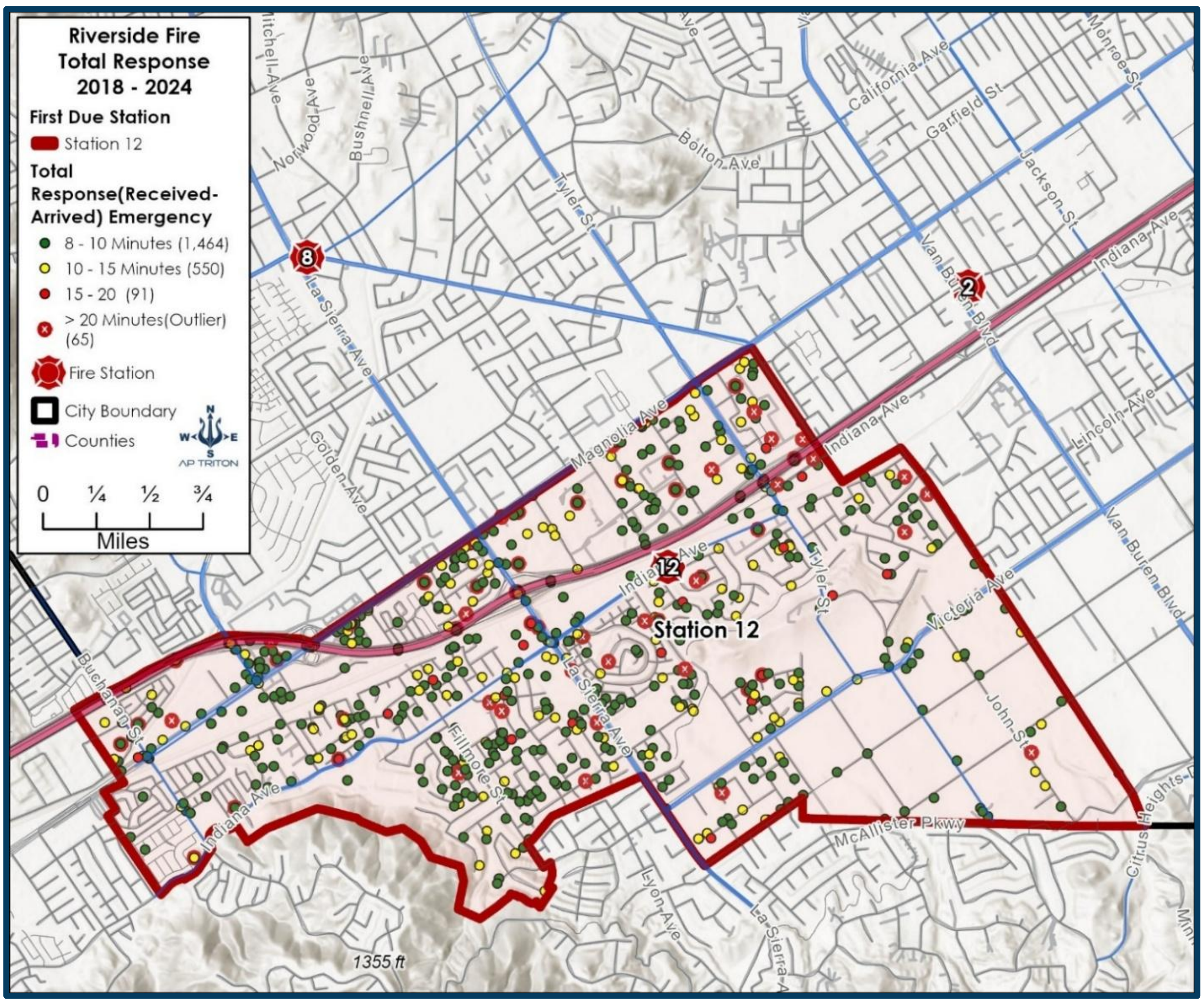


Between 2018 and 2024, Station 12 responded to **17,009** incidents. Of these incidents, from 2018 to 2024, a Station 12 assigned unit arrived first on the scene **12,775** times. This averages out to a reliability of **75**%. This indicates that, even though the station is located in a remote area away from high-efficiency roadways, response reliability remains high.

Station 12 did not meet NFPA total response time standards for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 12 can arrive at the location in **8** minutes, **18** seconds. This exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the eight-minute total response NFPA standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are 2,170 8-minute or greater total response time exceptions representing 12.7% of all responses (emergency and non-emergency).

Figure 290: Station 12 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 12 is shown in the following figure. The probability that a Station 12 resource would be the first to arrive at the scene of an emergency request in Station 12's district is high. Station 12 meets some of the reliability-improving parameters.

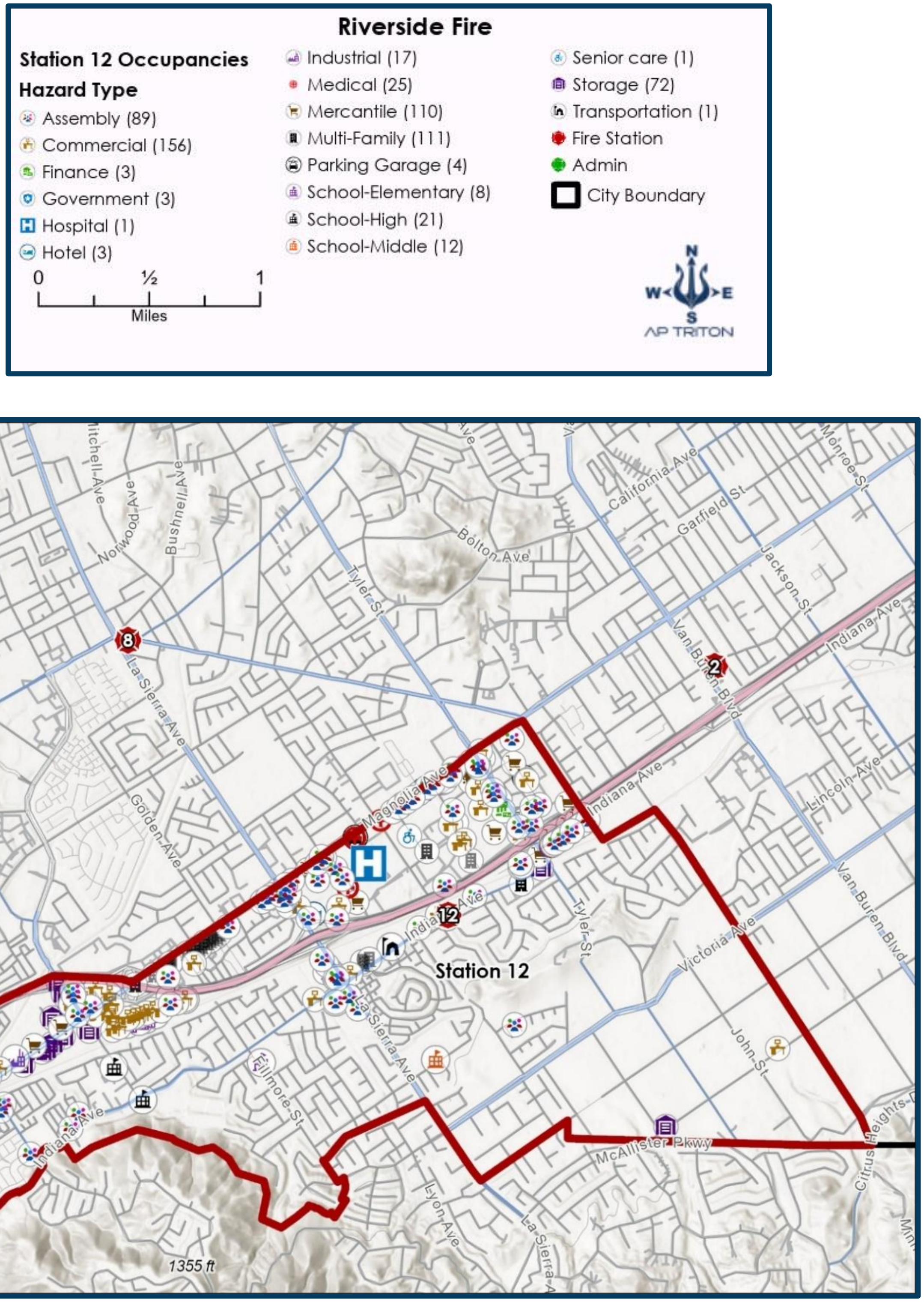
Figure 291: Station 12 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 12	80%	75%	74%	72%	74%	74%	76%	75%	6.5	4

Hazard Evaluation

Station 12 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment. The following figure depicts the response area for Station 12. Station 12 is centrally positioned near Indiana Ave and Abbotsford Drive, within a densely developed urban zone featuring a mix of commercial strips, residential neighborhoods, and institutional sites, with hilly terrain to the north and east (e.g., near Arlington Mountain). Hazards are indicated by icons clustered along major corridors, such as Indiana Ave, Tyler St, and the southern boundary near McAllister Pkwy. The area exhibits a high density of occupancy hazards, primarily comprising commercial and residential properties, with notable institutional and storage facilities also present. This configuration suggests an intensive urban risk profile, with elevated potential for high-occupant incidents in commercial districts, evacuation complexities in multi-family areas, and access challenges in elevated terrains.

Figure 292: Station 12 Hazards/Occupancies



Key Occupancy Types and Hazard Profiles

- **Assembly (89 sites):** The highest volume hazard, representing venues like theaters, restaurants, or community halls with substantial crowd capacities. These are heavily concentrated in the central commercial core around Station 12 and along Tyler St, forming dense clusters that could lead to mass casualty risks during peak hours. A secondary grouping appears in the southeast near Indiana Ave.
- **Commercial (156 sites):** The most abundant hazard, including retail, offices, and businesses prone to rapid fire spread in interconnected buildings. Widespread across the entire area, with linear alignments along major roads (e.g., Indiana Ave, Van Buren Blvd), particularly dense in the north-central and southern zones. This dominance underscores high economic and life-safety stakes in business districts.
- **Finance (3 sites):** Banks or financial institutions, generally low-hazard but with secure enclosures. Sparsely placed in the central commercial hub near the station.
- **Government (3 sites):** Public buildings like offices or civic centers. Limited distribution: one centrally near Station 12, others in the northwest and southeast.
- **Hospital (1 site):** A critical care facility, marked prominently in the central area near Tyler St. Its singular presence elevates life-safety priorities, demanding specialized medical and evacuation responses.
- **Hotel (17 sites):** Lodging facilities, vulnerable to transient occupant risks. Clustered in the central and eastern commercial strips, with a notable group along Sierra Ave.
- **Medical Facility (25 sites):** Clinics or healthcare centers, posing risks from patient mobility issues. Dotted throughout residential and commercial areas, with concentrations in the south near McAllister Pkwy and central zones.
- **Mercantile (110 sites):** Stores and markets with storage and display hazards. Abundant in commercial corridors, especially east and south of the station, overlapping with assembly sites for compounded risks.
- **Multi-Family Residential (111 sites):** Apartments or condos, susceptible to vertical fire spread and significant evacuations. Prevalent in suburban pockets, with heavy clustering in the southwest (near Citrus Heights Dr) and northeast residential blocks.
- **Multi-Family Garage (4 sites):** Attached parking structures for residential complexes. Located adjacent to multi-family sites in the southwest and central areas.

- **Schools:**
  - **School-Elementary (8 sites):** Primary schools, high-risk for child evacuations. Grouped in residential neighborhoods to the east and south.
  - **School-High (2 sites):** Secondary schools with larger populations. One is located in the northwest near the boundary, and another is centrally positioned.
  - **School-Middle (1 site):** A single middle school, positioned in the eastern residential zone.
- **Storage (72 sites):** Warehouses or storage units, with significant fire load potential. Concentrating in transitional industrial zones along the western and southern boundaries.
- **Transport (1 site):** Likely a transit hub or vehicle depot, isolated in the central area.
- **High-Density Zones:** The epicenter around Station 12 (within 0.5 miles) features overlapping commercial, mercantile, assembly, and hotel icons, indicating a vibrant downtown-like commercial district with acute risks from simultaneous or cascading incidents.

Southwestern hills near 1,355 ft host fewer hazards but include isolated storage and assembly sites, where terrain could hinder access to apparatus. Southern and eastern residential expanses emphasize multi-family and school clusters, heightening daytime vulnerabilities.

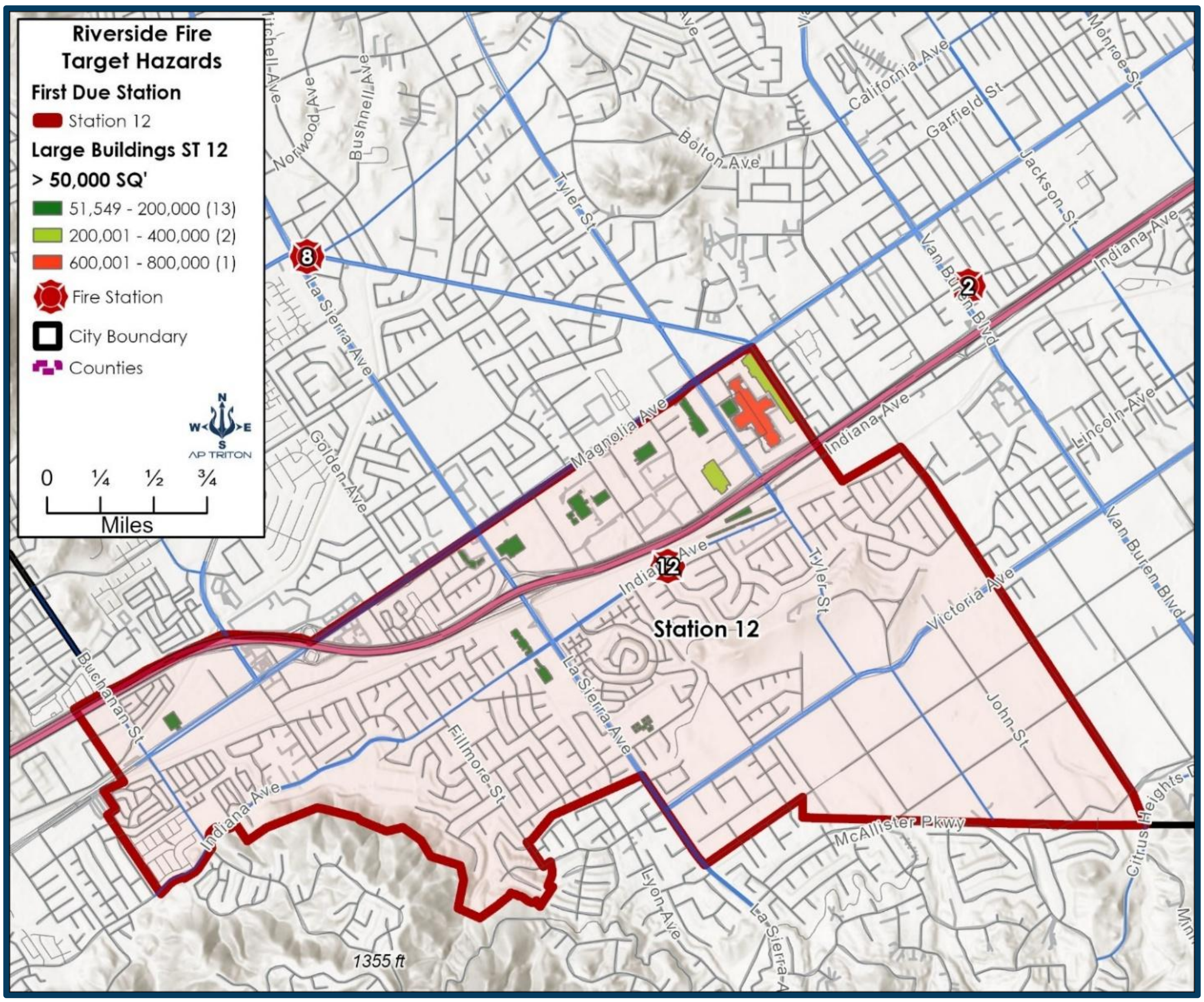
With 156 commercial and 111 multi-family sites in a compact urban footprint, the hazard load is exceptionally high, exceeding typical suburban profiles and akin to a mixed-use city core. Institutional elements (e.g., hospitals, schools) add critical infrastructure layers, while low counts in heavy industrial or transportation settings suggest moderated, specialized risks.

The central station placement enables quick core responses, but the expansive boundary demands robust traffic control in commercial arteries and pre-incident planning for residential evacuations. Hilly peripheries may require greater attention to the wildland-urban interface, given Riverside's history of fires.

Large Buildings

The following figure highlights large buildings (greater than 50,000 sq. ft.) within the response area of Station 12, delineated by a red city boundary line, which spans approximately 1 mile in scale. Station 12 is centrally located near Indiana Avenue and Tyler Street, surrounded by a mix of residential neighborhoods, commercial zones, and hilly terrain (e.g., an elevation of 1,355 ft). The buildings are categorized by square footage ranges, with specific counts provided. Based on their distribution and context, a community risk assessment can speculate on their potential uses. The legend provides the following breakdown:

Figure 293: Station 12 Large Buildings Greater than 50,000 Sq. Ft.



Square Footage Range

- **51,549–200,000 sq. ft. (13 buildings, green):** These mid-sized to large buildings are scattered across the area, with a notable concentration in the central and northern zones near Magnolia Ave and La Sierra Ave. Their prevalence suggests uses such as community centers, large retail stores (e.g., supermarkets), multi-tenant office buildings, or educational facilities (e.g., schools). The widespread distribution suggests a community-serving role, with moderate fire risks associated with occupant density and storage, necessitating accessible water supplies and effective egress planning.
- **200,001–400,000 sq. ft. (2 buildings, light green):** These larger structures are located in the northeast, near the boundary with Station 2. Their size and isolated placement imply uses such as big-box retail (e.g., Walmart, Home Depot), distribution warehouses, or institutional complexes (e.g., hospitals or universities). The proximity to commercial corridors suggests the presence of economic hubs, which are associated with higher fire hazards due to extensive merchandise or equipment, necessitating robust firebreaks and rapid response coordination. One of these buildings is, in fact, the Kaiser Permanente hospital.
- **600,001–800,000 sq. ft. (1 building, red icon):** This is the largest building and is prominently marked in the northeast, near the intersection of Indiana Ave and Van Buren Blvd. Its significant size suggests a major facility, potentially a regional shopping mall, a large industrial warehouse, or a significant institutional structure (e.g., a medical center or a government complex). The isolated location and scale imply substantial fire load risks from storage, electrical systems, or high occupant loads, with potential access challenges due to terrain, requiring specialized response strategies. Further investigation reveals that this is the Galleria at Tyler, a major retail complex.

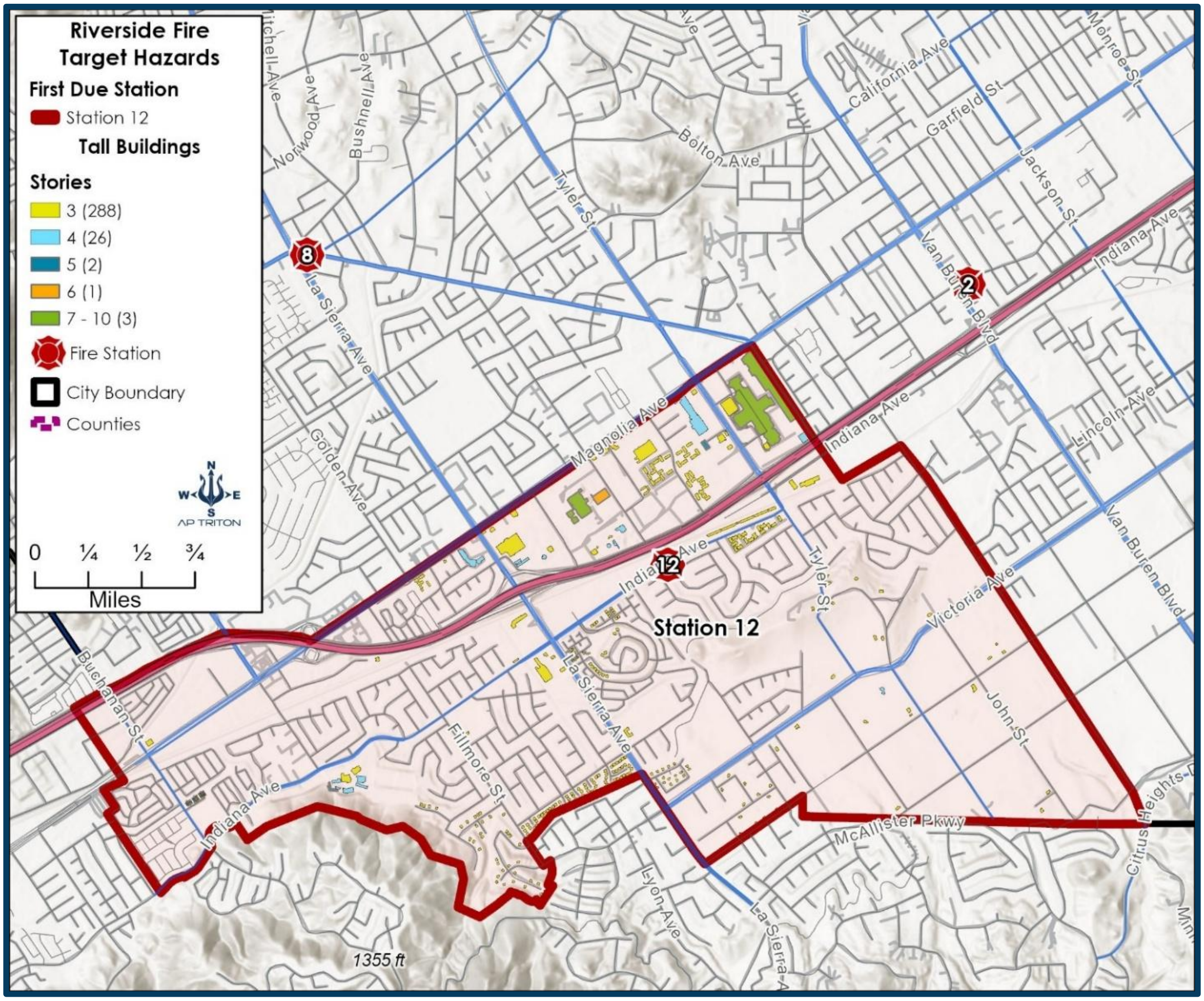
The presence of 16 large buildings, totaling over 1.5 million sq. ft., indicates a moderate-to-high community risk due to potential fire spread, evacuation challenges, and resource demands. The central location of Station 12 supports rapid response to the 13 mid-sized buildings. Still, the northeast outliers (especially the 600,001–800,000 sq. ft. structure) may stretch coverage, particularly given the hilly terrain that complicates access.

The dense mid-sized building cluster near Station 12 requires zoned fire prevention (e.g., hydrants, alarms), while the larger northeast buildings need enhanced access roads and pre-incident plans. The hilly terrain highlights the need for terrain-adapted apparatus and preparedness for the wildland-urban interface.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 12's area.

Figure 294: Station 12 Multi-Story Buildings



The figure highlights multi-story buildings within the response area of Station 12. The buildings are categorized by the number of stories, with specific counts provided for each category. Based on their distribution and surrounding context, a community risk assessment can speculate on their potential uses.

Story Range:

- **3 Stories (288 buildings, yellow):** These are the most numerous, densely scattered across the entire response area, particularly in residential neighborhoods near La Sierra Ave, Magnolia Ave, and the central zone around Station 12. Their prevalence suggests uses such as multi-family residential units (e.g., apartments or condos), small office buildings, or mixed-use structures with retail on the ground floor. The high count indicates a significant life-safety risk due to potential evacuation challenges and the risk of fire spread in closely packed residential blocks.
- **4 Stories (26 buildings, Light blue):** These taller structures are sparsely located, with one near the central area close to Station 12 and another in the southwest near Iowa Ave. Their placement along developed corridors suggests uses like mid-rise office buildings, hotels, or larger apartment complexes. The limited number reduces overall risk but increases per-building hazard due to higher occupant loads and complex layouts, requiring enhanced firefighting access. Of particular concern is the proximity of some of these structures to the western hills, elevating wildfire damage in the urban interface area.
- **5 Stories (2 buildings, dark blue):** These are also rare, positioned in the central zone near Tyler St and the northeast near the boundary. Potential uses include residential towers, small hospitals, or institutional buildings (e.g., community centers). Their height poses risks of prolonged evacuation times and vertical fire spread, necessitating aerial firefighting capabilities and robust sprinkler systems to mitigate these risks.
- **6 Stories (1 building, orange):** This taller building is located in the central area near Station 12. It could serve as a high-rise apartment building, office tower, or specialized facility (e.g., a medical clinic). Its singular presence presents a localized challenge due to height, potential for smoke accumulation, and limited escape routes, requiring advanced response strategies.
- **7–10 Stories (3 buildings, green):** These are the highest structures, clustered in the northeast near Tyler Avenue and Magnolia Avenue. Typical applications include high-rise apartments, office towers, or extensive facilities (e.g., hospitals or retail buildings). Each building poses a significant hazard due to height-related evacuation delays and structural fire loads, requiring specialized equipment (e.g., ladder trucks) and coordination with adjacent stations (e.g., Station 2).

The presence of **320** multi-story buildings, with a dominant 3-story category, indicates a moderate to high community risk, primarily driven by the high density of residential structures. The taller 4-to 10-story buildings create localized high-risk zones due to increased height, occupant density, and structural complexity. The central location of Station 12 facilitates rapid response, but the northeast outliers (especially those 7–10 stories high) may strain coverage, particularly given the hilly terrain that complicates access.

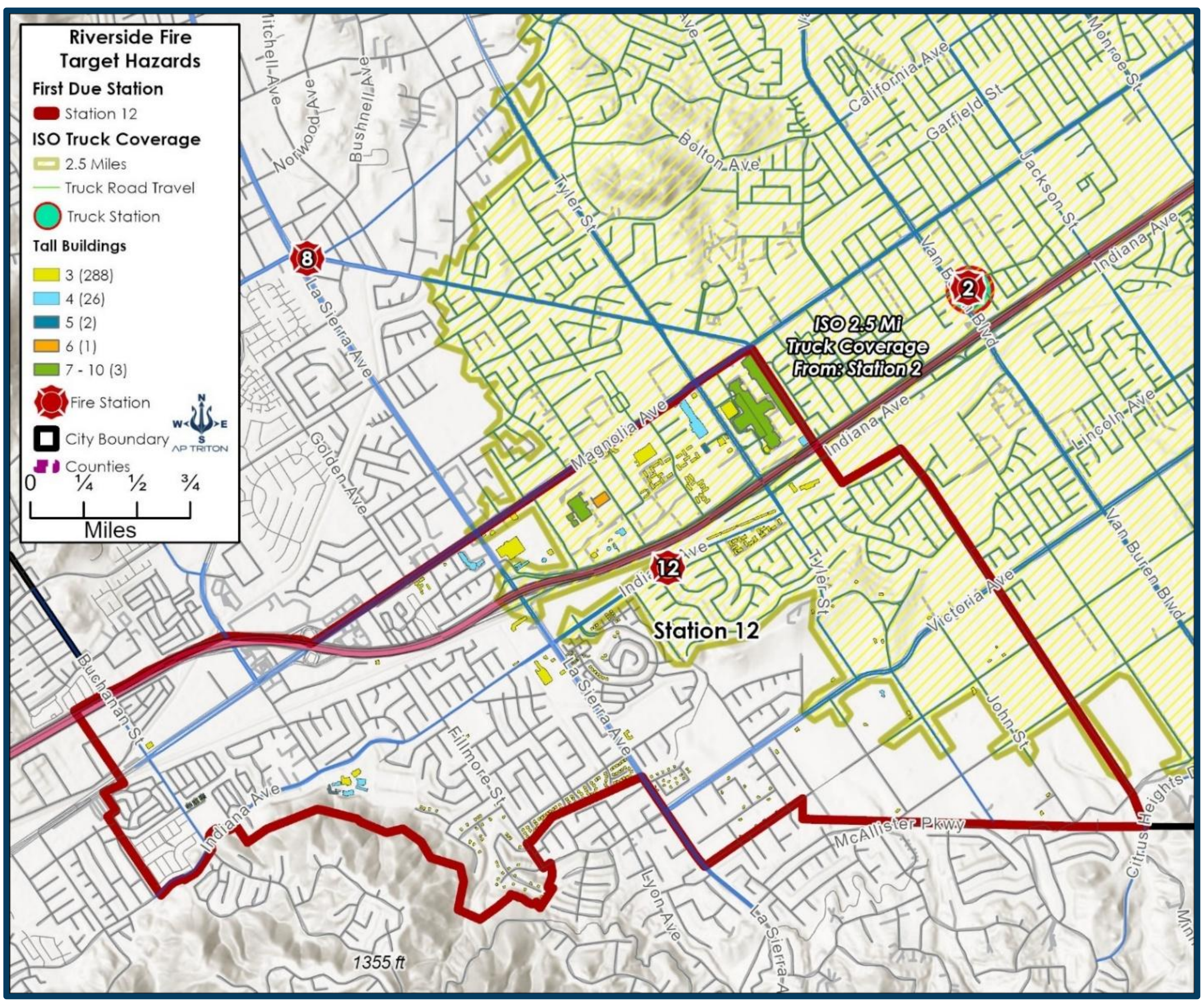
Dense 3-story residential zones require widespread smoke detector installation and clear egress paths. Tall buildings (4–10 stories) require regular high-rise drills, updated fire codes, and enhanced water-supply infrastructure. The northeast cluster of 7-to 10-story buildings may require additional station support (e.g., Station 2) due to terrain and distance.

This assessment highlights a predominantly residential, multi-story landscape with escalating risks in taller structures, emphasizing the need for tailored fire prevention and response strategies.

ISO 2.5 Mile Aerial Coverage Assessment

As shown in the following figure, some of the west side tall building loads are entirely outside of the coverage of the aerial apparatus within the required ISO parameter. The district contains many taller buildings (mostly 3-story) that fall outside the 2.5-mile coverage area. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 2.

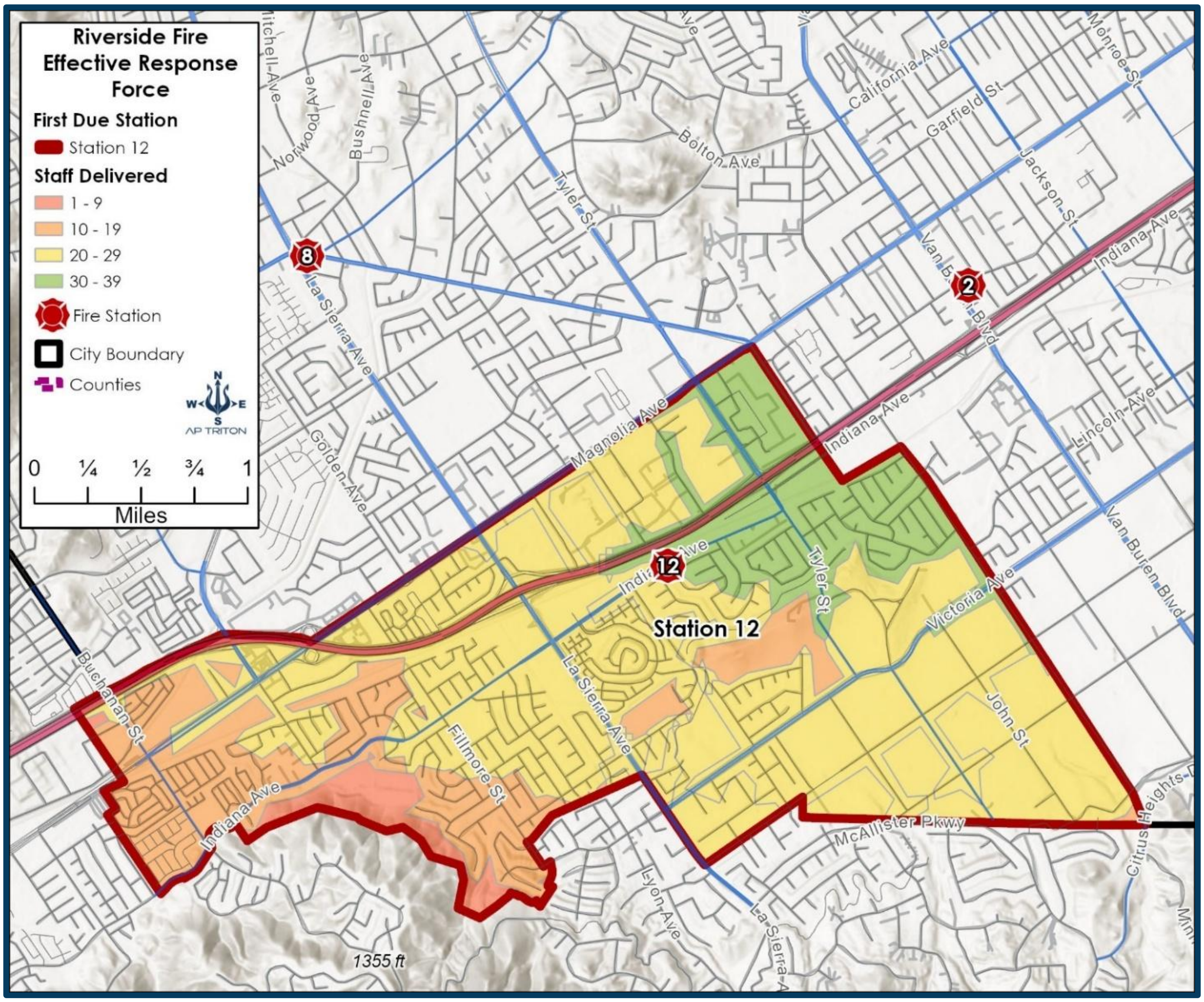
Figure 295: Station 12 Tall Buildings vs 2.5 Mile ISO Aerial Coverage



Effective Response Force

The effective response force refers to the staffing and resources deployed to address emergencies within a specified time frame, ensuring adequate coverage and safety for the community. The map for Station 12's study area provides a visual representation of the first due station and ERF, which can be analyzed as follows. Station 12 is designated as the primary responding station within the red boundary, covering the entire study area, approximately 6.5 square miles in area. This indicates that Station 12 is responsible for initial response to all incidents within this jurisdiction, encompassing residential neighborhoods, commercial corridors, and varied terrain, including hilly sections.

Figure 296: Station 12 ERF at 8 Minutes



Effective Response Force

- **1–9 Staff (light pink):** This covers a small portion in the southwestern corner of the response area. In CFAI CRA-SOC terms, this suggests a minimal response force suitable for low-risk incidents (e.g., medical calls or minor fires). Still, it may be inadequate for more complex scenarios that require supplemental resources. Several of the taller buildings fall in this area.
- **10–19 Staff (orange):** This applies to a broader central and western section, including areas south of Station 12. This staffing level indicates a moderate response capacity, capable of handling mid-level risks (e.g., residential fires or minor commercial incidents), aligning with CFAI standards for balanced resource allocation based on assessed hazards.
- **20–29 Staff (yellow):** This dominates the majority of the area, particularly the eastern and northern zones. This suggests a robust response force designed for higher-risk incidents (e.g., multi-family fires, commercial conflagrations), reflecting a community risk assessment identifying significant hazard concentrations.
- **30–39 Staff (green):** This is concentrated in the central-northeastern quadrant near Station 12. This highest staffing level indicates a critical response capacity for major incidents (e.g., large-scale fires, hazardous-material events), consistent with CFAI's emphasis on scaling resources to match the highest-risk profiles.

The graduated staffing levels (1–9 to 30–39) reflect a detailed community risk assessment, with the 30–39 staff zone likely corresponding to areas with dense multi-story or large commercial buildings, as identified in prior maps. The 20–29 staff dominance suggests a broad high-risk baseline, while 10–19 and 1–9 staff areas indicate lower-risk residential or peripheral zones.

The compact size of the study area (within 0.6 miles) supports rapid response times from Station 12, a key CFAI metric. The central placement of higher staffing zones (30–39) enhances coverage for critical areas; however, the hilly terrain in the southwest may pose access challenges, necessitating adjustments to the lower staffing levels (1–9).

The map suggests a strategic deployment model in which Station 12's resources are tiered to address varying risk levels. The 30–39 staff zone identifies pre-identified high-hazard areas, aligning with CFAI's focus on deploying an effective response force to mitigate risks efficiently. The presence of adjacent stations (e.g., Stations 2 and 8) indicates potential mutual aid support for peak demand.

The effective response force for Station 12's study area is well-structured, with a strong emphasis on staff levels of 20–29 and 30–39, indicating preparation for significant incidents across most of the area. The lower 1–9 and 10–19 staff zones in the periphery suggest potential resource gaps during simultaneous or large-scale events, which may require mutual aid or enhanced staffing plans to meet CFAI standards for reliability and redundancy. The western portions of this district present challenges in assembling a response force within 8 minutes. There are some target hazards (large and tall buildings) in the southwestern portions of the district, which are adjacent to what appears to be a Wildland Urban Interface zone. In light of these findings, AP Triton recommends increasing the unit count during daytime hours.

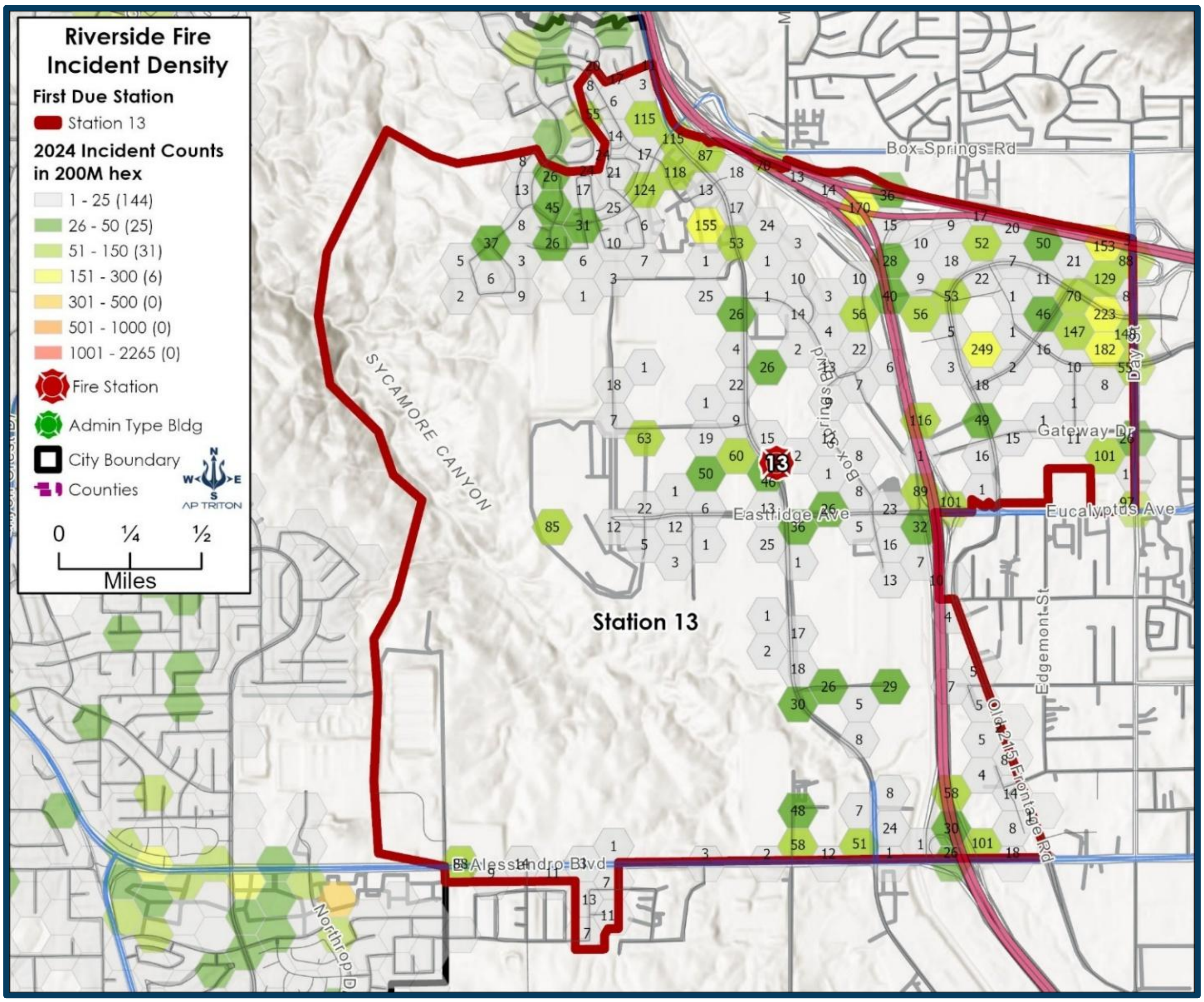
In summary, the effective response force for Station 12 is adequate for approximately 68% of the district area, reflecting a risk-based approach consistent with CFAI CRA-SOC standards, with coverage for high-risk zones and potential reliance on adjacent stations for peak scenarios. Several target hazards to the west pose a challenge to delivering enough staff to complete critical tasks during a moderate-level fire incident.

STATION 13

Incident Evaluation

Station 13 is situated in the far eastern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 13 area; other stations are included for context, showing how often Station 13 apparatus could be engaged as second-arriving units.

Figure 297: Station 13 Incident Counts

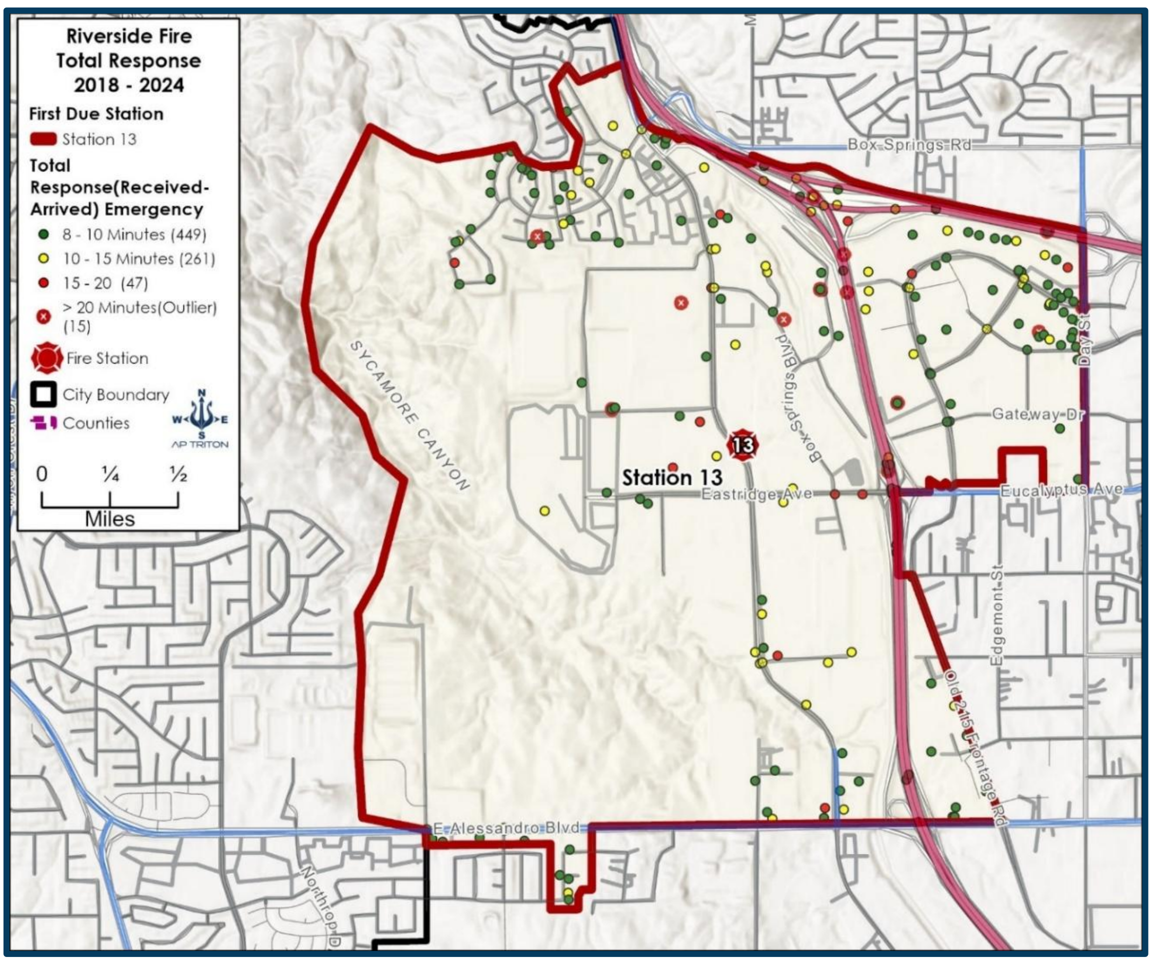


Between 2018 and 2024, Station 13 responded to **6,357** incidents. Of these incidents, from 2018 to 2024, a Station 13 assigned unit arrived first on the scene **5,000** times. This averages out to a reliability of **79%**. This indicates that, even though the station is located in a remote area away from high-efficiency roadways, response reliability remains acceptable.

Station 13 is unlikely to meet the NFPA total response time standard for an incident, measured from the time a call is initiated until the arrival on scene. Station 13 had the longest total response time of any station in Riverside. Ninety percent of the time, Station 13 can arrive at the location in **8** minutes, **59** seconds. Although this is the most extensive total response in the department, it exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **772** 8-minute or greater total response time exceptions representing 11.2% of all responses (emergency and non-emergency).

Figure 298: Station 13 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 13 is shown in the following figure. The probability that a Station 13 resource would be the first to arrive at the scene of an emergency request in Station 13's district is very high. Station 13 meets many of the reliability-improving parameters. The distance to the next closest station may directly affect the likelihood of using station 13 units more often, with consequent longer total response times.

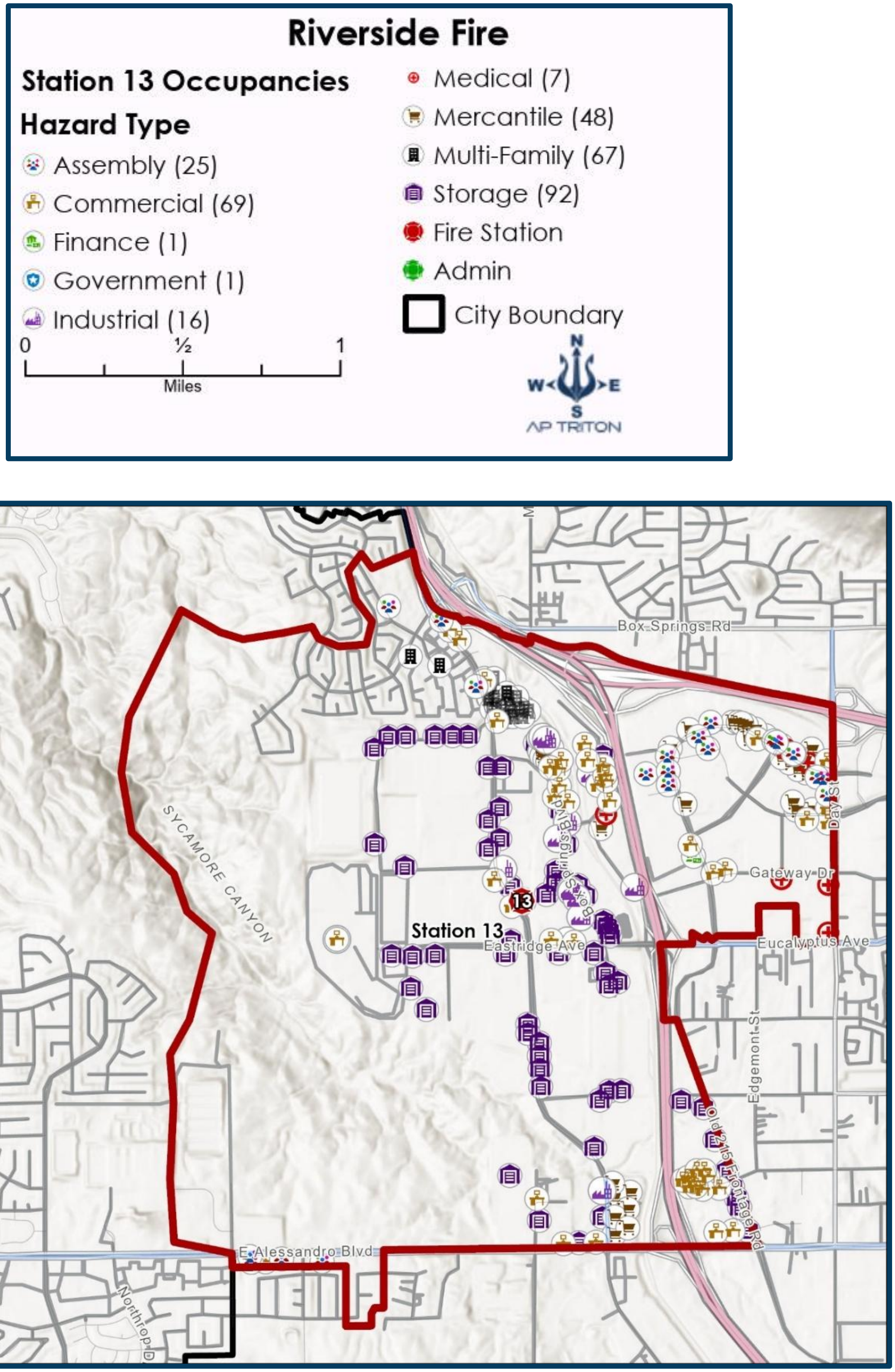
Figure 299: Station 13 Reliability 2018–2024

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 13	82%	77%	78%	77%	77%	79%	79%	79%	5.9	4

Hazard Evaluation

Station 13 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment. The following figure depicts the response area of Station 13, spanning approximately 5.9 square miles in area. Station 13 is centrally located near the intersection of Alessandro Blvd. and Gateway Dr., within a suburban-urban transition zone featuring residential developments, commercial strips, and hilly terrain to the north (e.g., near Sycamore Canyon). Hazards are represented by icons clustered along major corridors, such as Box Springs Road, Alessandro Boulevard, and the eastern boundary near University Avenue. The area exhibits a moderate-to-high density of occupancy hazards, dominated by commercial and multi-family residential sites, with significant storage and industrial elements. This suggests a suburban risk profile with potential for commercial fire spread, residential evacuation challenges, and wildland-urban interface (WUI) threats in the northern canyon areas, consistent with Riverside's history of fire hazards in Sycamore Canyon.

Figure 300: Station 13 Hazards/Occupancies



Key Hazard Types and Distribution

- **Assembly (25 sites):** Venues like theaters, restaurants, or community halls with high occupant loads. These are concentrated in the central and southeastern commercial zones near Gateway Dr and University Ave, posing risks for crowd-related emergencies during events.
- **Commercial (69 sites):** Retail, offices, or businesses, vulnerable to interconnected fire spread. Widespread across the area, with dense linear groupings along Alessandro Blvd and Box Springs Rd, particularly in the north-central and eastern sections, indicating high economic exposure.
- **Finance (1 site):** A single bank or financial office, low-hazard but secure. Located centrally near the station.
- **Government (1 site):** One public administration building, minimally hazardous. Positioned in the southwestern residential fringe.
- **Industrial (6 sites):** Factories or light manufacturing facilities, with potential for hazardous material releases. Clustered in the northeastern industrial pocket near the boundary, near elevated terrain.
- **Medical Facility (7 sites):** Clinics or healthcare centers, with risks from patient vulnerabilities. Scattered in residential and commercial areas, with a focus in the south near University Ave.
- **Mercantile (48 sites):** Stores or markets with storage/display hazards. Abundant along commercial corridors east and south of the station, overlapping with assembly sites for amplified risks.
- **Multi-Family Residential (67 sites):** Apartments or condos, prone to vertical fire propagation and mass evacuations. Heavily concentrated in suburban neighborhoods to the west and south, including clusters near Northrop Dr and the boundary. There is a distinct cluster of multi-family occupancies on the north end of Sycamore Canyon Boulevard.
- **Storage (92 sites):** Warehouses or storage units, high fire load potential. The most prevalent hazard is densely packed in the central and eastern zones near Gateway Dr and the I-215 freeway, suggesting significant suppression challenges.

The core around Station 13 (within 0.5 miles) shows overlapping commercial, mercantile, and storage icons, forming a busy suburban commercial hub with risks of rapid incident escalation. The medical facilities nearby heighten life-safety priorities.

Northern hills near Sycamore Canyon host fewer icons but include heavy multifamily concentrations, isolated industrial, and storage sites, where WUI interfaces could exacerbate wildfire threats. Western and southern residential areas feature multi-family clusters, increasing vulnerability during off-hours.

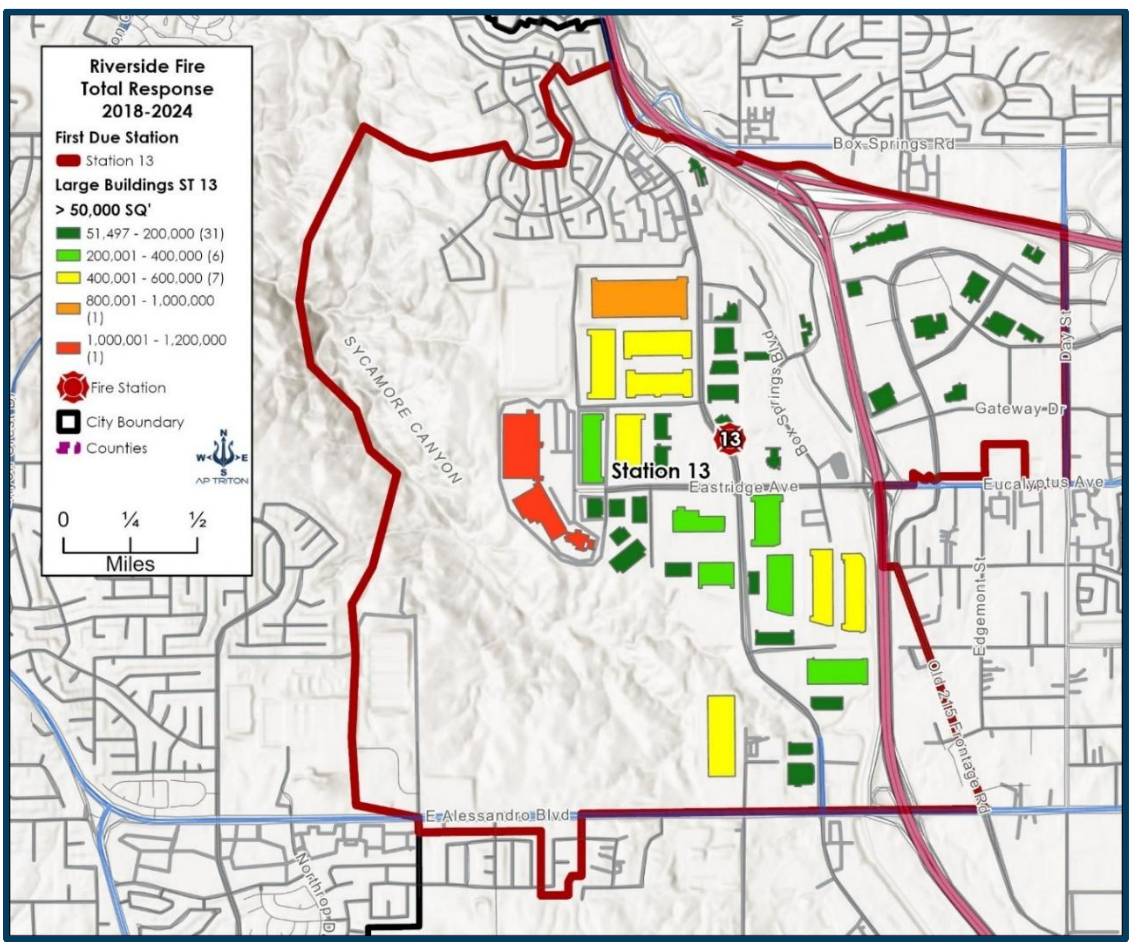
With 69 commercial and 92 storage sites in a compact 1-square-mile area, the hazard load is intensive, blending suburban residential growth with commercial development. Low institutional counts (e.g., one finance, one government) indicate limited critical infrastructure risks, but storage dominance suggests high fuel load concerns.

The central station placement supports efficient responses to core hazards, but canyon terrain may delay access to northern sites, aligning with known high-hazard patrols in Sycamore Canyon. Pre-plans for storage fires and residential evacuations are essential, alongside WUI defensible space measures.

Large Buildings

The map highlights large buildings (greater than 50,000 sq. ft.) within the response area of Station 13. Station 13 is centrally located near Alessandro Blvd and Gateway Dr, surrounded by a mix of suburban residential areas, commercial strips, and hilly terrain (e.g., Sycamore Canyon). The buildings are categorized by square-footage range, with specific counts provided. Based on their distribution and context, a community risk assessment can speculate on their potential uses. Station 13 is adjacent to some of the city's most significant buildings.

Figure 301: Station 13 Large Buildings Greater than 50,000 Sq. Ft.



Square Footage Range

- **51,549–200,000 sq. ft. (31 buildings, green):** These mid-sized to large buildings are distributed across the area, with concentrations in the central zone near Gateway Dr. and the eastern section along University Ave. Their placement suggests uses such as community centers, large retail stores (e.g., supermarkets), multi-tenant office buildings, or educational facilities (e.g., schools). The spread indicates a community-serving role, with moderate fire risks from occupant density and storage, requiring accessible water supplies and egress planning. A deeper look into what businesses are represented here yields the following list:
  - These larger structures are located in the northeastern corner near the boundary with Station 14 and the southeast near Sycamore Canyon Boulevard and Eastridge Drive. Their size and position along commercial corridors imply uses such as big-box retail (e.g., Target, Home Depot), distribution warehouses, or institutional complexes (e.g., colleges or medical offices). The proximity to residential zones suggests the presence of economic hubs, which are associated with higher fire hazards due to extensive merchandise or equipment, necessitating robust firebreaks and rapid response coordination. Aligns with industrial listings near Box Springs Rd., Logistics Plus handles warehousing for various clients. High fire loads from stored goods; hazardous materials in food processing.
- **200,001–400,000 sq. ft. (6 buildings, light green):** Located on either side of Sycamore Canyon Boulevard, north and south of Eastridge Drive. These are mainly distribution warehouses for a variety of retail vendors.
- **400,001–600,000 sq. ft. (7 buildings, yellow):** These large buildings are also located in the central area near Station 13, close to Sycamore Canyon Boulevard, and Eastridge Drive. The significant size suggests a major facility, potentially a large industrial warehouse, or a significant institutional structure (e.g., an educational or government complex). The central location implies substantial fire load risks from storage, electrical systems, or high occupant loads, with potential access challenges due to nearby terrain, requiring specialized response strategies.
- **800,001–1,000,000 sq. ft. (1 building, orange icon):** This is a huge building, in the northern central corridor. It is a large logistics and distribution center for the sporting goods retailer Big 5.
  - Multi-tenant industrial complex (e.g., Erlanger Distribution Center or similar at 6688 Box Springs Blvd, ~800,000 sq. ft. aggregate, consumer electronics/giftware distribution).
  - Fits large warehouse hubs; area supports logistics near I-215. Risks: Extended suppression times due to size; potential for rapid spread in undivided spaces.
- **1,000,001–1,200,000 sq. ft. (1 building, red icon):** This is the largest building in Station 13's district, located at the end of Eastridge Avenue on the edge of Sycamore Canyon, which could be in the WUI zone.

- This is actually three separate buildings that look interconnected.
- Grocery stores for part of the buildings to the south.
- JOA control systems, an industrial equipment/supplies distributor to the north.

Warehousing/logistics (e.g., for e-commerce and food) prevails in the east, driven by proximity to ports and freeways, while retail and restaurants cluster centrally. UCR influences western buildings with educational/research functions.

High-capacity storage buildings warrant enhanced sprinklers and HazMat response; retail areas need evacuation plans. The area's affluence supports community fire safety programs.

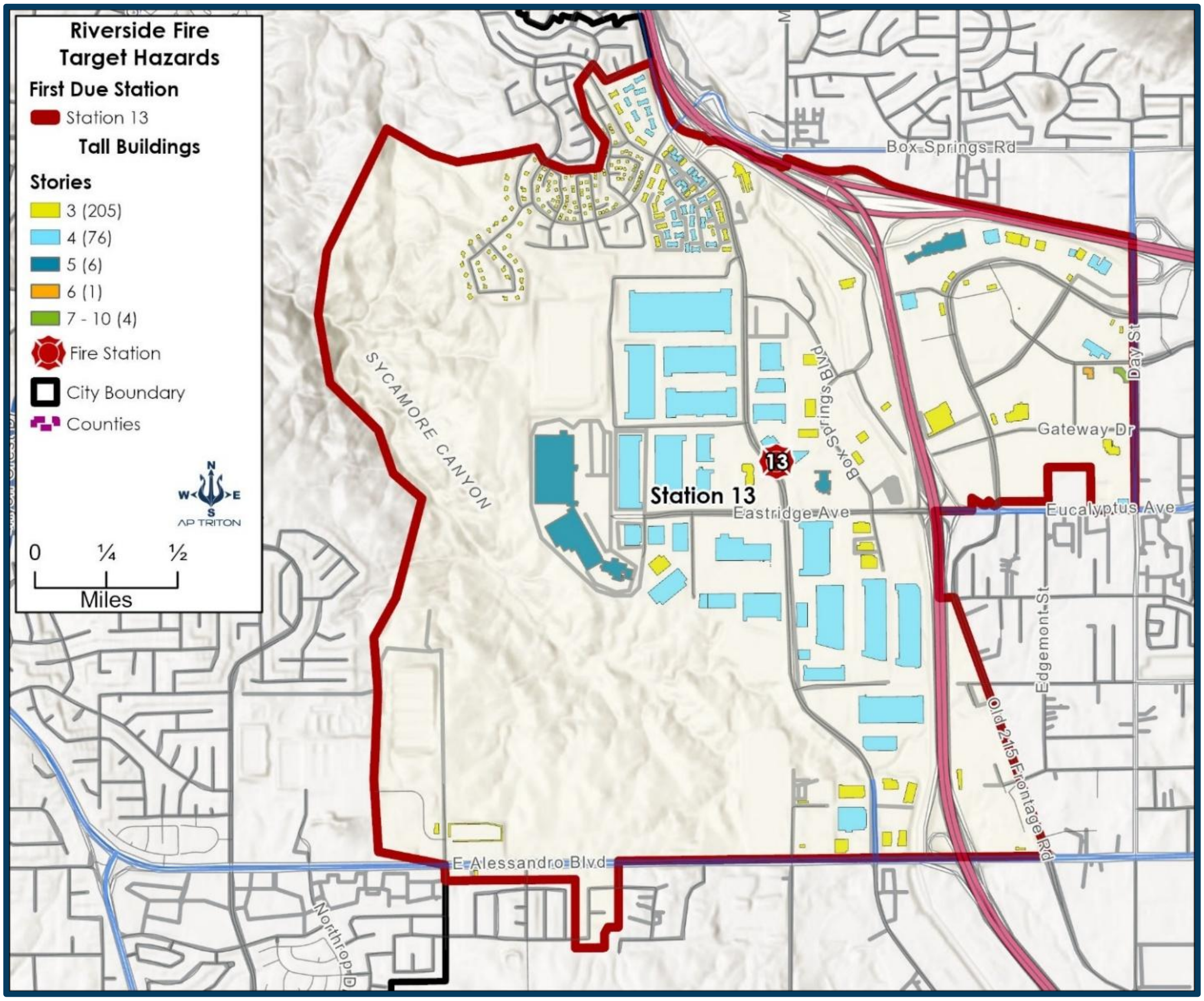
The presence of 46 large buildings indicates a moderate-to-high community risk due to potential fire spread, evacuation challenges, and resource demands. The central location of Station 13 supports rapid response to the eight mid-sized and one largest building. Still, the northeastern and southeastern outliers may stretch coverage, especially with hilly terrain complicating access in the north.

The dense mid-sized building cluster near Station 13 requires zoned fire prevention (e.g., hydrants, alarms), while the larger northeast and southeast buildings need enhanced access roads and pre-incident plans. The northern hilly terrain underscores the need for terrain-adapted apparatus and preparedness for the wildland-urban interface, given Sycamore Canyon’s fire history.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are taken into consideration to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 13's area.

Figure 302: Station 13 Multi-Story Buildings



This figure shows Station 13 is located in the Sycamore Canyon area of a suburban and semi-rural district characterized by residential neighborhoods, canyons, and some commercial/industrial pockets. The map depicts the station's first-due response area as a roughly 3–4 square mile zone bordered by natural terrain (hills and a river), major roadways (including a freeway), and the city boundary. This area falls within a moderate to high fire hazard severity zone due to its proximity to wildland-urban interfaces, dry vegetation, and seasonal wildfire risks, as outlined in Riverside's 2023 Community Risk Assessment and Standards of Cover. The CRA emphasizes multi-story buildings as elevated risks because they complicate evacuation, require specialized ladder operations, and can strain water supplies during incidents—particularly in this district where response times average 5–7 minutes but can extend in canyon terrain.

The map highlights multi-story buildings using color-coded polygons based on story height, with counts in parentheses indicating the number of such structures. These are clustered, consisting of scattered yellow and light blue polygons in the northern and eastern residential zones (likely near Canyon Crest) and larger blue and dark blue polygons in the southwestern industrial/commercial sector near the station. Overall, the district has a modest density of tall buildings, with risks amplified by the area's mix of urban sprawl and wildland edges—where embers from wildfires could ignite structures. Speculations on uses are informed by the CRA's risk profiling (e.g., residential occupancies dominate life-safety risks, while commercial/industrial occupancies pose property and hazardous materials threats) and the map's visual context (e.g., rectangular blue clusters suggest warehouses, whereas clustered polygons suggest apartments). The following list summarizes the buildings by legend category, including risk assessments and speculated uses. Risks consider CRA factors like occupant load, access challenges (e.g., narrow canyon roads), and fire flow needs (e.g., multi-story structures require 1,500–3,000+ GPM per California Fire Code standards).

Story Range

- **3 Stories (205):** Most abundant, appearing as small, dispersed yellow polygons primarily in the northern and eastern residential hillsides, forming dense clusters amid single-family homes. Low to moderate risk overall due to high volume but smaller scale; the primary concern is rapid fire spread in clustered wood-frame construction during wind-driven events. Evacuation challenges in hilly terrain can elevate life-safety risks, with CRA noting that 20–30% of district calls involve residential fires/medical emergencies. Primarily low-rise apartment complexes or townhome-style multi-family housing, serving as affordable workforce residences in this suburban area. Some may include small mixed-use ground floors (e.g., retail or offices) near roadways.

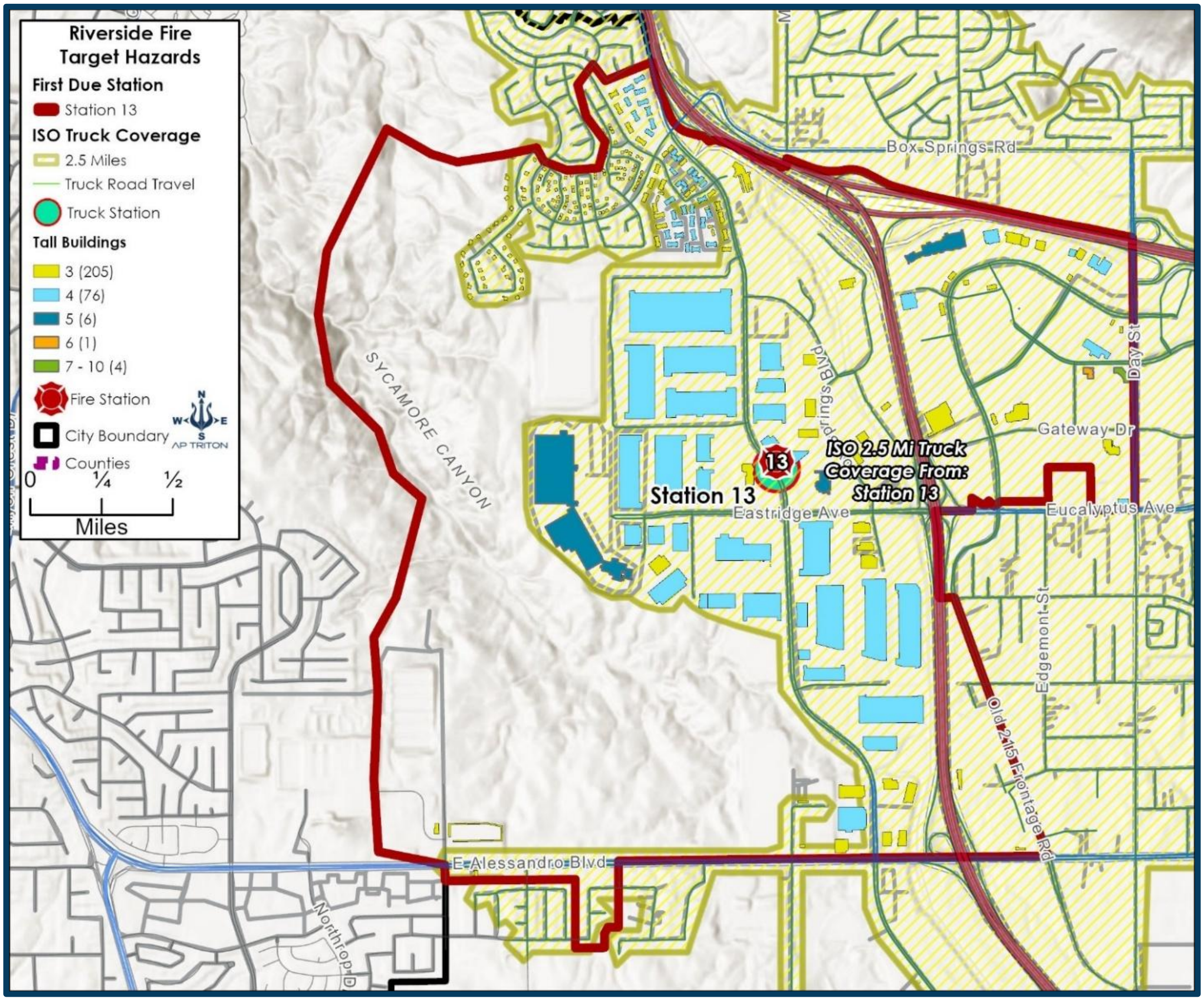
- **4 Stories (76):** Moderate density, shown in light blue polygons clustered in the northeast near residential zones and scattered along eastern edges, often adjacent to yellow 3-story groups. Moderate risk, as these represent a step-up in height requiring aerial operations; CRA identifies them as "medium-risk occupancies" for collapse potential and hose-line extension needs, mainly if clustered (e.g., 10+ in one block increases mutual aid demands). Proximity to freeways aids access but exposes to traffic-related HazMat incidents. Mid-rise residential apartments or condominium buildings are the standard in Riverside's Canyon Crest/Sycamore Canyon suburbs, catering to young families and UC Riverside students/affiliates—possibly including senior living facilities, given the area's demographics.
- **5 Stories (6):** Sparse, with dark blue polygons in isolated spots, mainly in the southwest industrial pocket near the station and one outlier in the east. Elevated risk due to rarity but height; CRA flags 5+ story buildings for high water demand (up to 4,000 GPM) and ventilation challenges, with potential for 50+ occupants per structure. Wildfire ember intrusion is a key threat in this interface zone. Likely small office buildings or medical clinics (e.g., outpatient centers), given the district's service-oriented economy. The southwestern ones could be budget hotels or motels catering to travelers near I-215.
- **6 Stories (1):** Single prominent dark orange polygon in the southwestern cluster, adjacent to large blue warehouse-like rectangles. High risk as a standalone tall structure; CRA prioritizes such buildings for pre-incident planning due to single-point failure potential (e.g., elevator rescues, roof collapses). Industrial adjacency increases the likelihood of combined fire/HazMat scenarios. A mid-rise office tower or corporate headquarters, possibly tied to logistics firms (Riverside's proximity to ports)—alternatively, a student housing dorm for UC Riverside commuters.
- **7–10 Stories (4):** Rare green polygons, concentrated in the southwest near the station, appear as larger, elongated shapes amid blue industrial buildings, suggesting a semi-urban node. Very high risk; these tallest structures require specialized resources (e.g., trucks from Station 13), with CRA estimating 2–3x the response time for high-angle rescues. They amplify district-wide risks in multi-casualty events, especially with prevailing winds carrying smoke into residential areas. High-rise office or commercial buildings, such as administrative centers for nearby warehouses/distribution hubs (e.g., Amazon or logistics ops in Riverside's industrial corridor). It could include a university-affiliated research facility, given the area's educational ties.

In summary, the district's tall buildings skew residential (3-4 stories) with a commercial tilt in the southwest, aligning with CRA data that shows 60% of risks from life-safety in housing versus 25% from property in business occupancies. Mitigation recommendations from the CRA include enhanced defensible space around clusters and annual inspections for high-rises to address wildfire-urban interface vulnerabilities. This profile suggests that Station 13's quint truck is well-positioned for ladder needs, but resource sharing with adjacent stations (e.g., 9 and 14) is critical during peak periods.

ISO 2.5 Mile Aerial Coverage Assessment

As shown in the following figure, the entire Station 13 district, supplied with roads, is within the coverage of the aerial apparatus, meeting the required ISO parameter. The district contains many taller buildings (mostly 3-story) that fall outside the 2.5 Mile coverage area.

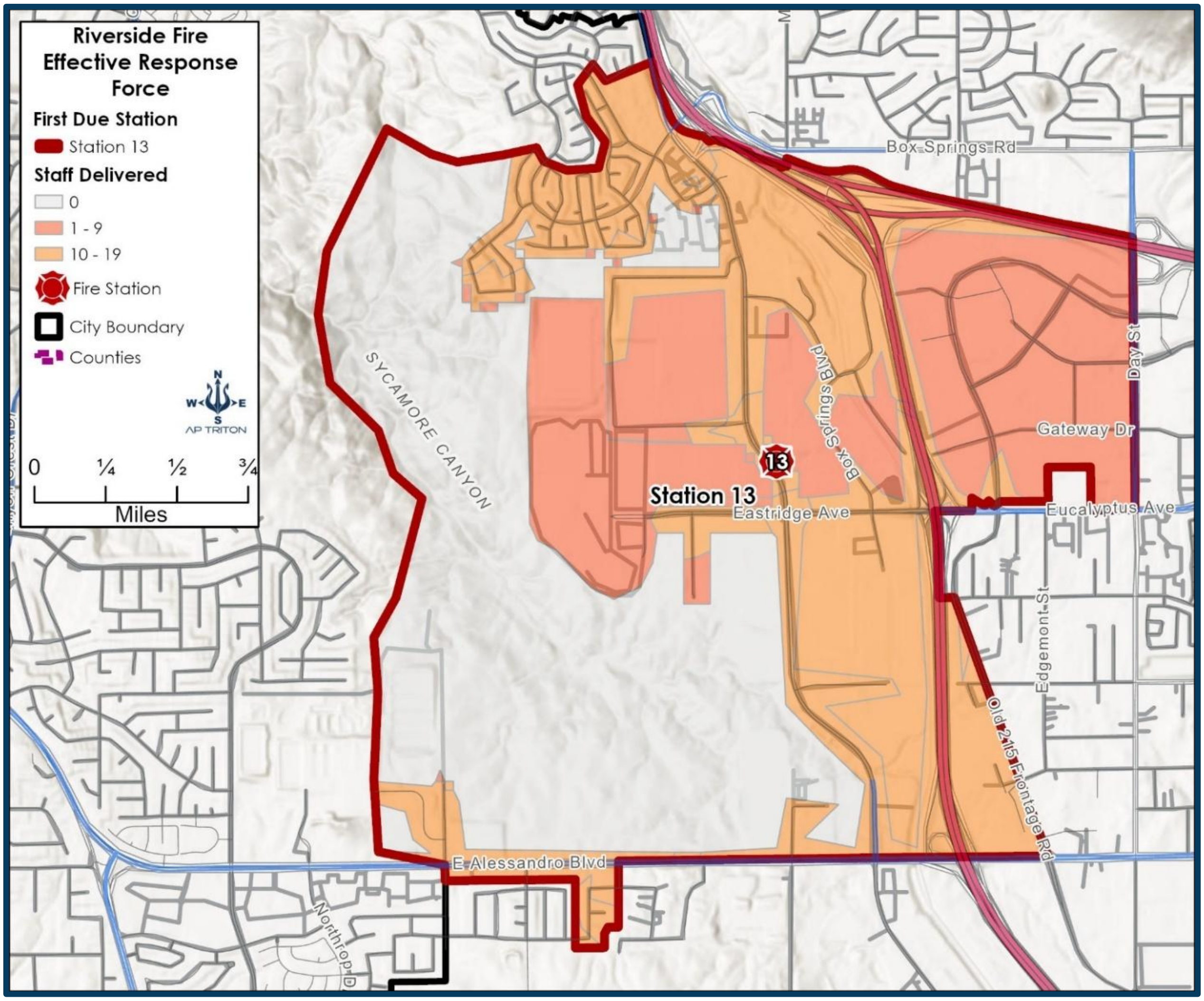
Figure 303: Station 13 Tall Buildings vs 2.5 Mile ISO Aerial Coverage



Effective Response Force

The ERF represents the minimum number of on-scene firefighters required to achieve defined risk mitigation objectives for a given incident type within a jurisdiction's first-due response area. This is outlined in CFAI's SOC methodology, which emphasizes the distribution and concentration of resources to ensure safe and effective operations—typically aligning with NFPA 1710 benchmarks for initial full-alarm assignments (e.g., 15–24 personnel for single-family residential fires, scaling up for multi-story or high-hazard risks).

Figure 304: Station 13 ERF at 8 Minutes



The ERF accounts for task completion (e.g., incident command, water supply, search/rescue, ventilation) while factoring in local risks, such as wildland-urban interfaces, population density, and apparatus capabilities. RFD's 2023 CRA-SOC document applies to this model citywide, using GIS mapping to visualize ERF "staff delivered force" across districts, stratified by risk levels to guide resource deployment and accreditation (RFD achieved CFAI re-accreditation in 2024 through 2028). The map provided for Station 13 (located in Sycamore Canyon, a suburban/residential district with industrial pockets and wildfire exposure) illustrates the first-due area's ERF under standard (effective) staffing conditions. The red boundary delineates the ~3–4 square mile zone, with overlaid color gradients representing staff-delivered ERF levels (firefighter count arriving within target response times, typically 5–7 minutes per RFD SOC). White areas indicate zero staff (unprotected gaps, often due to terrain or coverage overlaps). This visualization supports CRA goals by highlighting reliability—e.g., areas that require auto-aid from adjacent stations (12 or 14) during peak periods.

Effective Response Force Staff Level

- **0 Staff–White:** ~20–25% (scattered pockets in northern hills and eastern edges). No initial response coverage; high vulnerability in wildland-adjacent zones per CRA (e.g., ember risks from Santa Ana winds). Rely on mutual aid, increasing response times to 8–10+ minutes.
- **1–9 Staff–Light Pink:** ~50-60% (broad swaths in central residential clusters and along river/canyon edges) Basic initial attack capability (e.g., engine company of 3–4 for medical/vegetation fires); aligns with low-risk residential objectives but insufficient for multi-story incidents (205+ 3-story buildings in district). CRA notes this as a "yellow" risk for life safety in dense housing.
- **10–19 Staff–Light Orange** ~15–20% (concentrated southwest near station and industrial zones) Meets moderate-risk benchmarks (e.g., complete engine + quint for commercial structure fires); supports tasks like ladder ops for 4–6 story buildings. Proximity to I-215 aids concentration, but CRA flags gaps during high-call volume (district averages 1,200–1,500 annual incidents).

The map does not depict levels at or above 20 staff, suggesting the district's baseline ERF caps below that threshold under standard deployment. It is possible to attain a 19-staff ERF in Station 13's district, but only under optimal conditions with resource concentration from beyond the first-due area—not as a sustained "effective" (standard) level, as per CFAI SOC principles. Here's the reasoning: RFD staffs all stations with frontline engine companies (typically 3–4 firefighters each, including a paramedic). Station 13 uniquely houses a rear-mount quint truck (aerial ladder/pump combo), also staffed at 3–4 personnel, enhancing high-rise response for the district's 287+ multi-story buildings. Initial dispatch (engine + quint) delivers ~6–8 staff members within 4–6 minutes, according to SOC travel-time analysis. RFD's daily on-duty strength is ~70 firefighters across two battalions (24-hour shifts), enabling rapid reinforcement. For a 19-staff ERF (e.g., for a 5+ story commercial fire or wildfire interface event), a full alarm could include: Station 13: Engine (4) + Quint (4) = 8 staff. Currently, this station is cross-staffed and only has four personnel available. Mutual/auto-aid: 2-3 additional engines (4 each) from nearby stations (e.g., 9 in La Sierra or 14 in Wood Streets) + Battalion Chief = 11–15 more staff. Total: 19+ achievable in 7–10 minutes, aligning with CRA benchmarks for medium-high risks (e.g., industrial warehouses near the station) would be challenging to attain. Most large fire-load buildings are outside the 19+ staff ERF zone.

The 2023 CRA document identifies Sycamore Canyon as a "moderate-risk" district (60% residential life-safety calls, 25% property/HazMat), with a baseline ERF of 6-12 staff to avoid overcommitment. Attaining 19 routinely would strain city resources (e.g., during multi-incident days, common in wildfire season), potentially dropping reliability below 90% (CFAI threshold). Gaps in the 0–9 staff areas further complicate concentration.

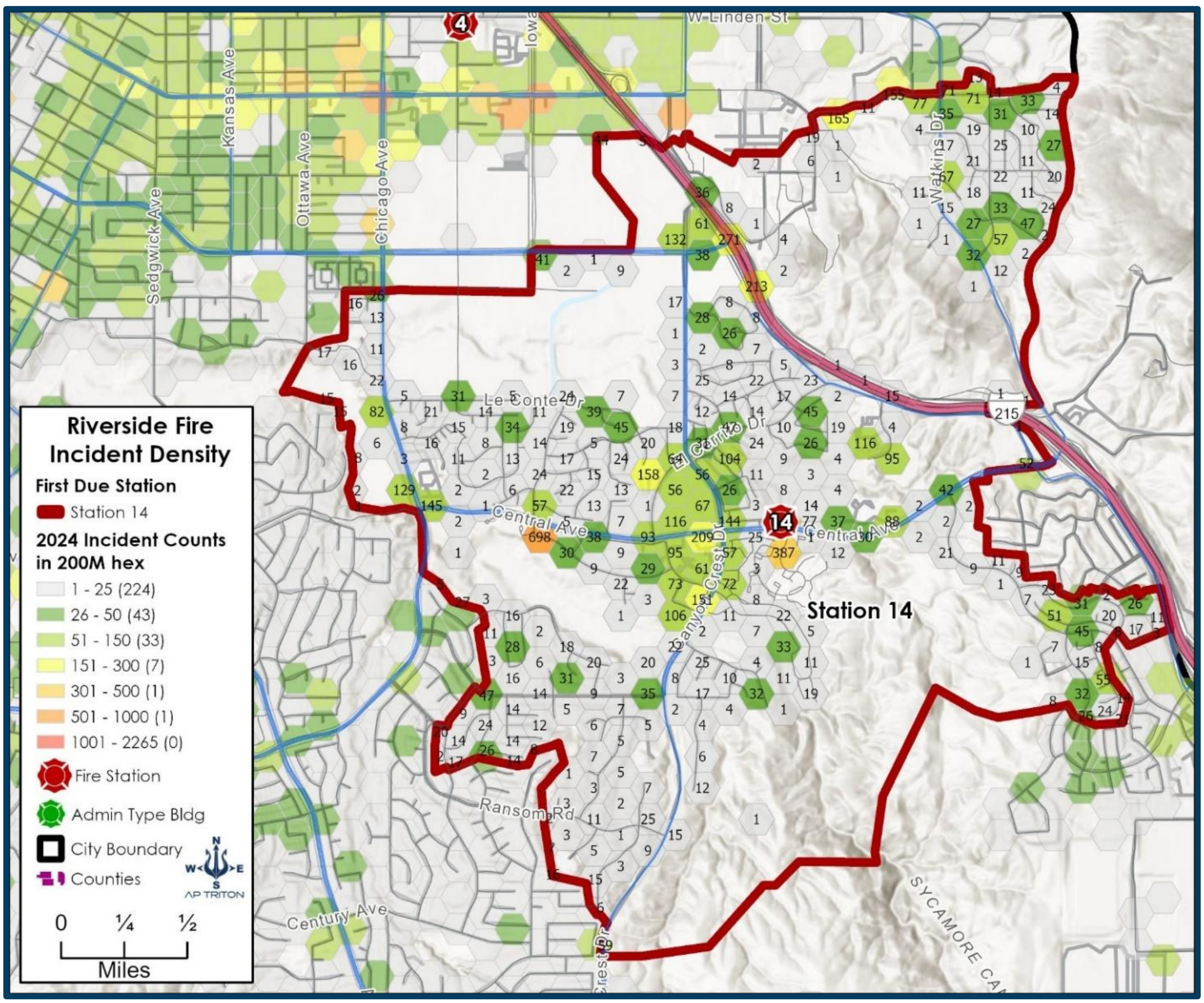
In summary, while the map shows that effective ERF peaks at 10–19 staff in core zones (adequate for most calls), full 19-staff attainment is viable through augmentation for escalated risks, supporting the RFD's accredited SOC. Ongoing CRA updates (e.g., 2024 wildfire mapping) recommend enhanced auto-aid protocols to sustain this.

STATION 14

Incident Evaluation

Station 14 is situated in the far eastern section of Riverside and, as such, has a lower population density and incident rate compared to other stations in the city. The following figure describes the historical distribution of incident counts by 200-meter hexagon. This hexagon covers an area of approximately two football fields, including the end zones. The counts of the number of hexes by volume of incidents are in the legend of the map. This map shows only the counts for the Station 14 area; other stations are included for context, showing how often Station 14 apparatus could be engaged as second-arriving units.

Figure 305: Station 14 Incident Counts

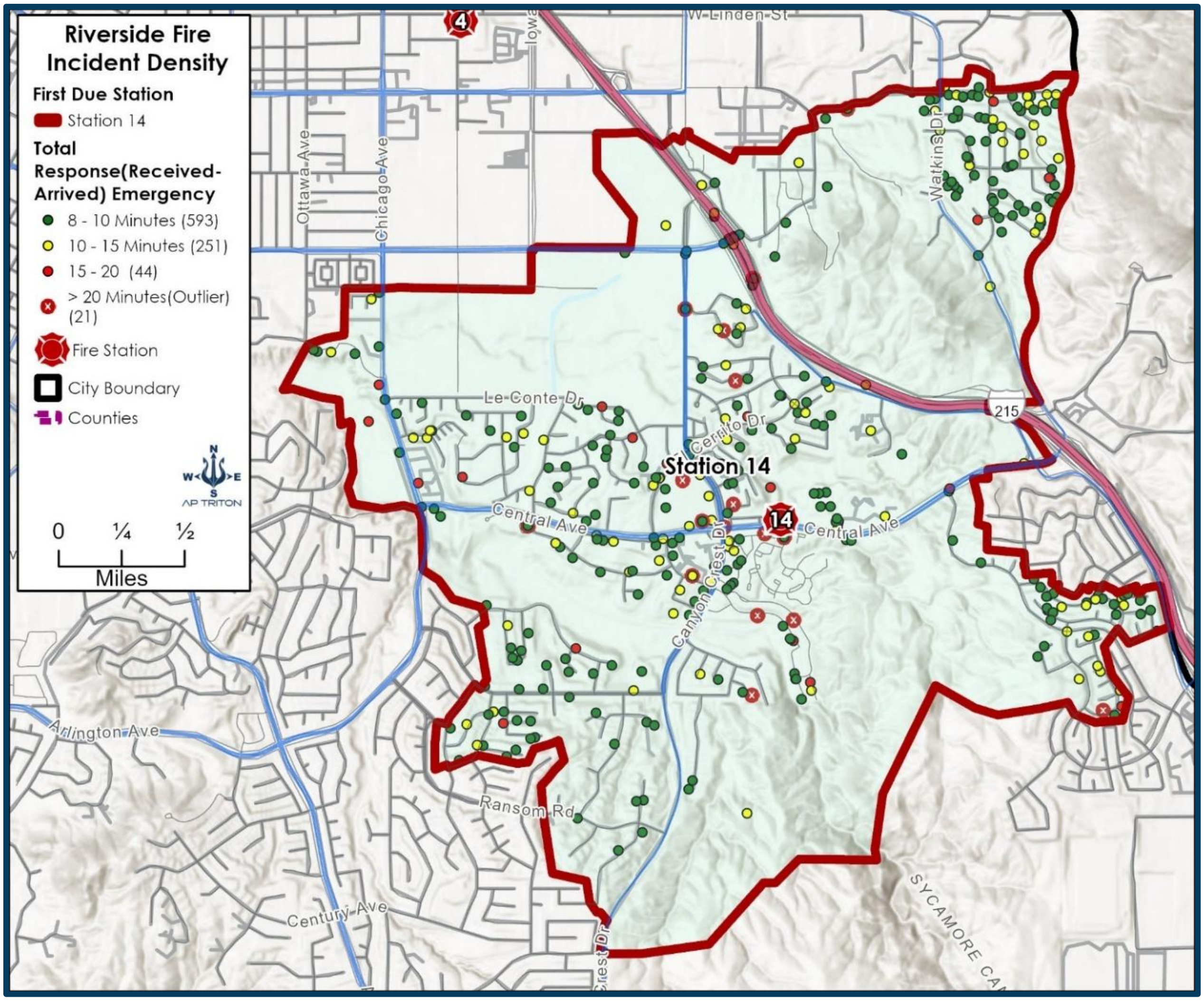


Between 2018 and 2024, Station 14 responded to **7,316** incidents. Of these incidents, from 2018 to 2024, a Station 14 assigned unit arrived first on the scene **5,630** times. This averages out to a reliability of **77%**. This indicates that, even though the station is located in a remote area adjacent to a large highway (**I-215**), response reliability remains acceptable.

Station 14 does not meet the NFPA total response time standard for an incident, measured from the time a call is initiated until the arrival on scene. Ninety percent of the time, Station 14 can arrive at the location in **8** minutes, **21** seconds. Although this is the most extensive total response in the department, it exceeds the 8-minute target. Any incidents lasting more than **12** minutes, **10** seconds were deemed outliers and not evaluated for performance.

There are, however, other emergency incidents that did not meet the NFPA 8-minute total response standard. The following figure describes this history and performance. These incidents are clustered around the station location. There are **909** 8-minute or greater total response time exceptions representing 12.3% of all responses (emergency and non-emergency).

Figure 306: Station 14 Incident Exceptions (Long Response 2018–2024)



Station Response Reliability

The response reliability for Station 14 is shown in the following figure. The probability that a Station 14 resource would be the first to arrive at the scene of an emergency request in Station 14's district is very high. Station 14 meets most of the reliability-improving parameters.

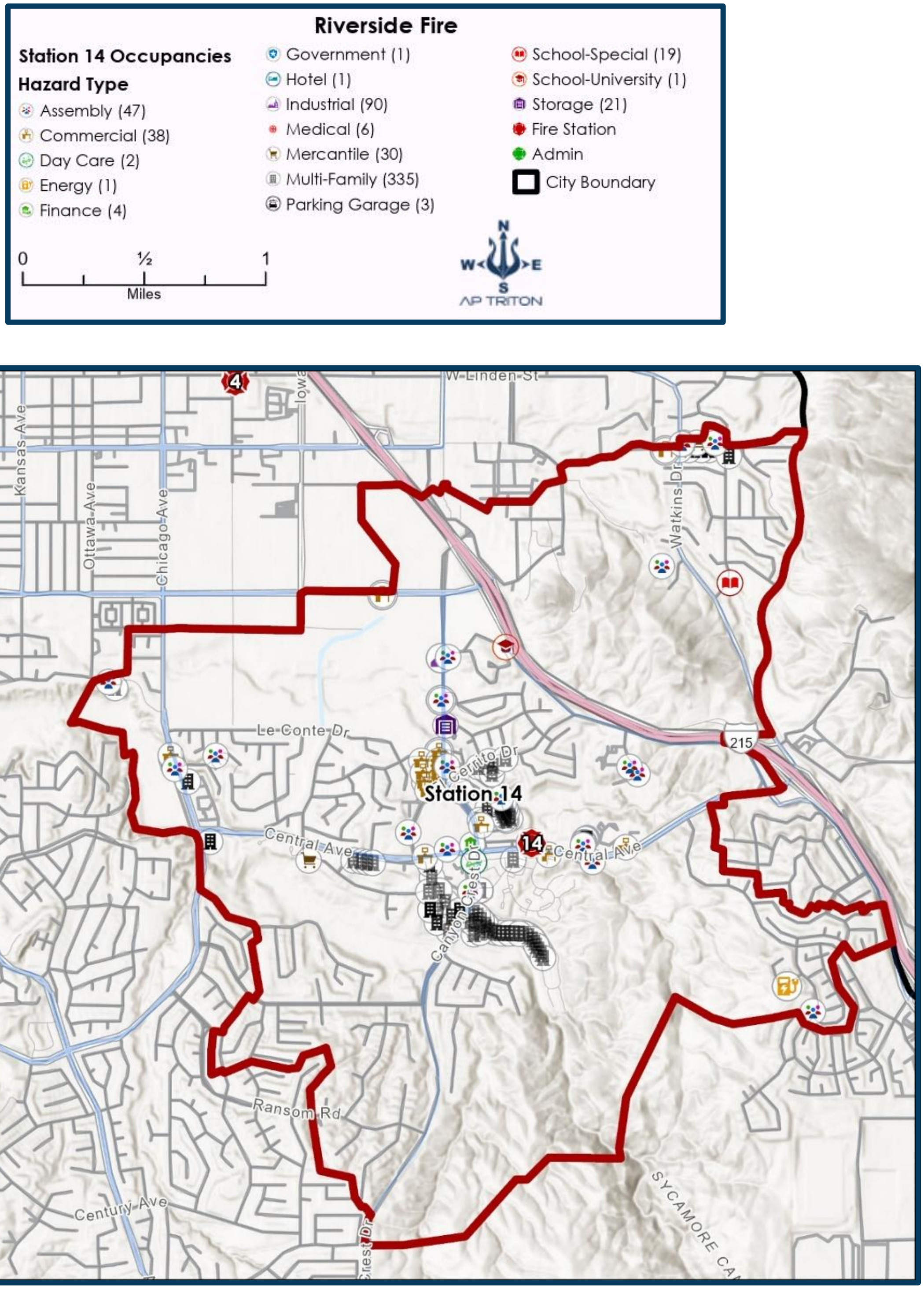
Figure 307: Station 14 Reliability

STATION	2018	2019	2020	2021	2022	2023	2024	Average	District Sq. Mi.	Staff
Station 14	83%	78%	72%	75%	77%	77%	77%	77%	6.8	4

Hazard Evaluation

Station 14 has a variety of occupancy types that represent hazards requiring either a special response modification, elevated training, or staff assignment.

Figure 308: Station 14 Hazards/Occupancies



The previous figure shows the response area of Station 14, located in the Wood Street historic district (near Central Avenue and Canyon Crest Drive), which serves a compact first-due area of approximately 6.8 square miles. This zone encompasses a mix of older urban residential neighborhoods, commercial corridors, light industrial pockets, and hilly wildland-urban interface (WUI) edges along Sycamore Canyon and Box Springs Mountain. The district features a dense grid of streets in the central urban core transitioning to rugged terrain in the south and northeast, with the I-215 influencing access.

As part of the Riverside Fire Department's (RFD) 2023 Community Risk Assessment (CRA) and Standards of Cover (SOC), this district is classified as "high-density urban with moderate WUI exposure," contributing to ~1,800–2,000 annual incidents (60% medical, 20% structure fires, 15% vegetation). Hazards are amplified by aging wood-frame buildings (pre-1950s construction in Wood Streets), narrow streets limiting apparatus access, and seasonal wildfire risks from dry canyons—exacerbated by climate trends noted in RFD's 2024 wildfire annex. The map's sites (with counts from the legend) highlight key occupancies driving these risks, focusing on life-safety (high occupant loads in assemblies/schools), property loss (industrial/storage), and HazMat potential (energy infrastructure). The sites are clustered centrally around the station for quick response (e.g., within 2–3 minutes to core areas) but disperse eastward into higher-risk WUI zones. Below is a breakdown by legend category, including site descriptions, counts, map distributions, and CRA-aligned hazard assessments. Risks include fire flow demands (e.g., 1,500–2,500 GPM for commercial purposes), evacuation challenges, and mutual aid needs from adjacent stations (e.g., 13 in Sycamore Canyon).

Key Occupancy Types and Hazard Profiles

- **Assembly (47):** Dense cluster in central commercial strip along Central Avenue (e.g., near Iowa Ave intersection); scattered singles in residential pockets. High life-safety risk due to large occupancy loads (200–500+ per venue); CRA flags rapid fire spread in older theaters/churches (e.g., wood interiors). Evacuation bottlenecks on narrow streets could lead to multi-casualty events; primary calls involve overcrowding or electrical faults.
- **Commercial (38):** Linear along main arterials (Central Ave, Iowa Ave); groups near rail lines in southeast. Moderate property/HazMat risk from retail/office strips; exposed to vehicle-pedestrian incidents and LP gas leaks. Aging structures increase the potential for collapse during fires; they support the district's tourism (historic downtown adjacency).
- **Day Care (2):** Isolated in the northwest residential hills (near Le Conte Dr) and one central near the station. Elevated vulnerability for non-ambulatory occupants (infants/children); CRA prioritizes rapid EMS response, with risks from nap-time fires or blocked egress in single-story wood frames.

- **Energy Infrastructure (1):** Southwest edge near rail/industrial transition (possibly a substation). High HazMat/explosion risk; potential for widespread outages or arc flash incidents affecting 10,000+ residents. CRA notes integration with PG&E for pre-planning, with WUI exposure amplifying arc-over from vegetation contact.
- **Finance (4):** Central cluster along commercial corridors (e.g., banks on Central Ave). Low-to-moderate risk, focused on secure vaults complicating forcible entry; secondary threats from ATM vandalism or electrical overloads.
- **Government (1):** Central near station (likely a municipal office or post office). Moderate risk from public access and document storage; potential for civil unrest or biohazards in high-traffic lobbies.
- **Hotel (1):** Southeast near industrial (possibly budget motel off Iowa Ave). High transient occupant risk (50–100 guests); smoke alarm failures are common in older buildings, as per CRA data, which shows that 15% of district hotel calls involve CO poisoning.
- **Industrial (90):** Heavy concentration in southeast industrial park (near rail and canyon edge); outliers along western boundary. Very high property/HazMat risk from manufacturing/warehousing (e.g., flammable liquids, dust explosions); the most significant cluster (20+ sites) poses a cascade-failure risk, straining water supplies. CRA identifies rail adjacency as the top district hazard, with potential for spillage and train derailment.
- **Medical Facility (6):** Scattered in central residential/commercial (e.g., clinics on Central Ave); one in the northwest hills. Critical life-safety/EMS risk for vulnerable patients (bedridden, oxygen-dependent): power outages could cause ventilator failures. Supports an aging population (district median age 38).
- **Multi-Family (335):** Ubiquitous in residential grids (e.g., dense apartments in Wood Streets); heaviest in north-central hills. High volume drives frequent calls (e.g., cooking fires in 2–3 story wood-frame buildings); CRA notes overcrowding and balcony exposures as flashover accelerators, with WUI winds spreading embers into canyons. There is a very prominent cluster of these occupancy types along Via Paloma and Via Zapata near Sycamore Canyon.
- **Schools**
    - **Special School (9):** Central and eastern edges (e.g., near Watkins Dr); groups in residential zones. Similar to daycare, but for K–12/special education; busier during hours with 100–300 students. Risks include lockdown scenarios or hazardous materials (HazMat) from art/science labs.

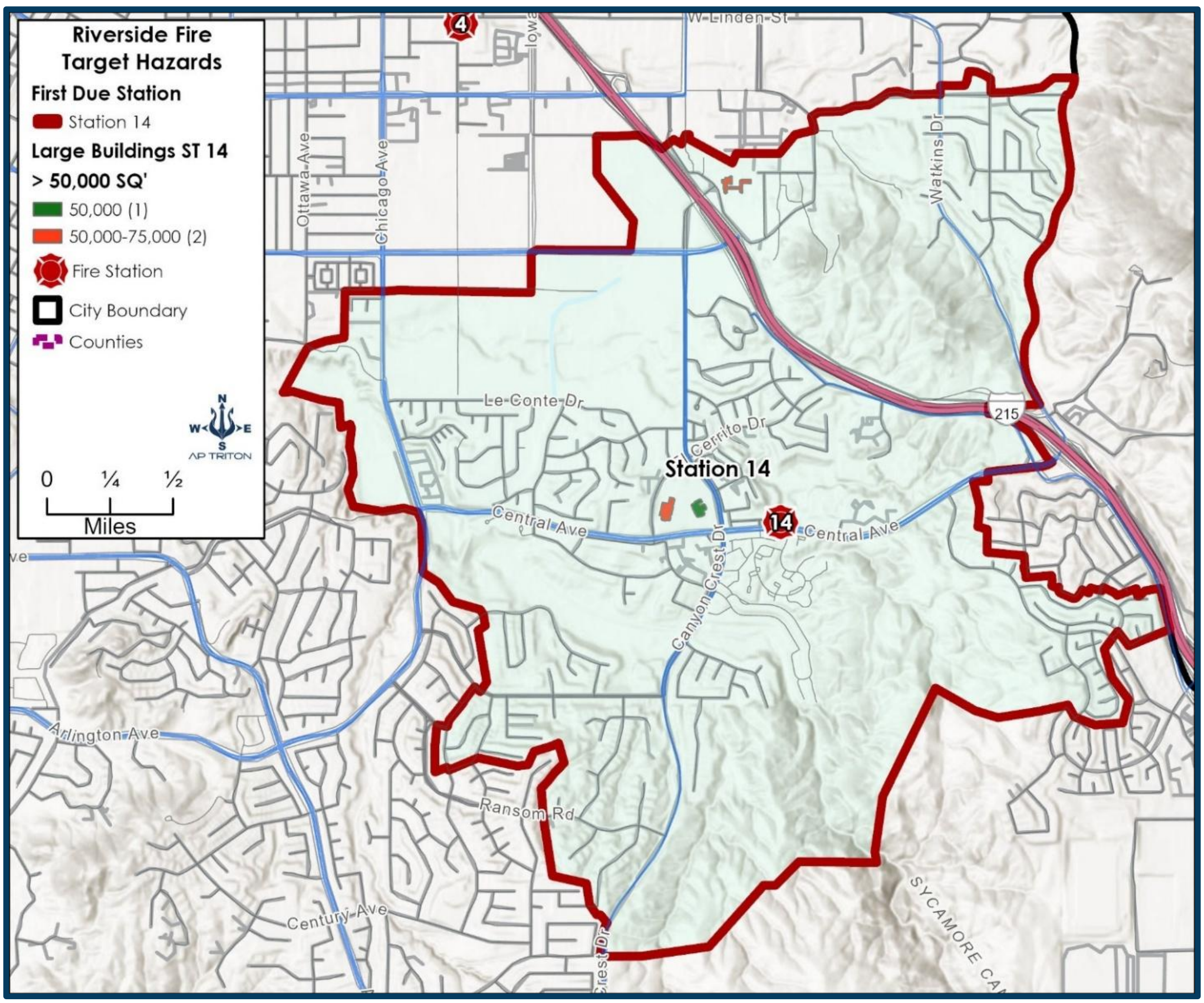
    - **University/College (1):** Northeast near canyon (likely UC Riverside extension or community college outpost). Moderate risk with student housing ties; lab/lecture hall fires or alcohol-related incidents common, amplified by hillside access delays.
- **Storage (21):** Mixed with industrial in the southeast; some standalone in residential (e.g., self-storage units). Moderate-to-high fire load risk (compressed combustibles); under-ventilated designs can lead to prolonged incidents, according to CRA.

In summary, the hazard profile is dominated by high-volume residential (multi-family) and assembly occupancies in the urban core, transitioning to industrial/storage threats in the southeast industrial node—creating a "layered risk" per RFD's SOC. The single energy infrastructure site underscores systemic vulnerabilities, while WUI terrain (hills/canyons) elevates all threats during Santa Ana winds. Station 14's engine and reserve apparatus (including ATVs for canyon access) are optimized for this, but CRA recommends annual HazMat drills and enforcement of defensible space to mitigate wildfire exposure of 20–30%. Overall, the district's 500+ mapped occupancies reflect a balanced urban hazard landscape, with effective response reliant on an initial ERF of 6–12 staff.

Large Buildings

The following figure highlights large buildings (greater than 50,000 sq. ft.) within this district as part of the RFD's 2023 Community Risk Assessment and Strategic Plan. These structures are critical in the CRA due to their high fire load, water demand (e.g., 2,500–4,000 GPM per the California Fire Code), and potential for multi-casualty incidents, especially given the area's aging infrastructure and WUI exposure (as noted in RFD's 2024 wildfire annex). The district's ~1,800–2,000 annual incidents (60% medical, 20% structure fires) underscore the need for robust pre-planning, with Station 14's engine and reserve apparatus tailored to this profile. The map shows a sparse distribution of large buildings, concentrated near the station and along Central Avenue, with risks amplified by narrow streets and canyon adjacency.

Figure 309: Station 14 Large Buildings Greater than 50,000 Sq. Ft.



All of these buildings are within the Canyon Crest Towne Centre shopping mall.

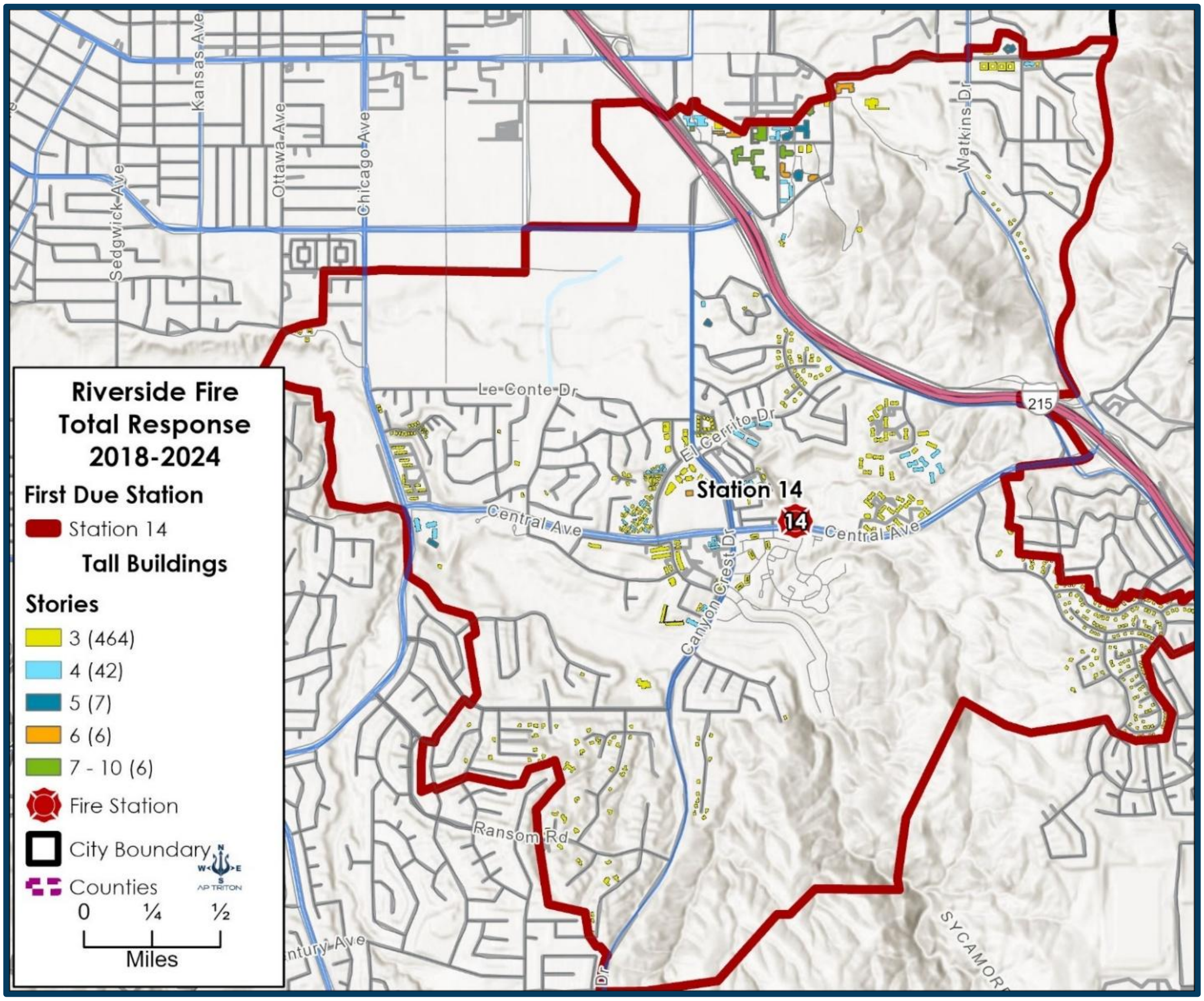
- **50,000 sq. ft. (Green–1):** Southwest near Central Avenue, close to Station 14 and industrial transition zone. Moderate risk due to single-structure focus; high fire load (e.g., 50,000 sq. ft. requires ~2,500 GPM) and potential for rapid spread in non-sprinklered older builds. Proximity to station aids response (3–4 minutes), but WUI ember risk elevates seasonal threats. A likely candidate is a mid-sized retail store (e.g., a grocery store or department store like Target or Walmart) or a community center, serving the dense residential area along Central Avenue. It could also be a warehouse/distribution hub tied to local logistics.
- **50,000–75,000 sq. ft. (Red–2):** One near Station 14 (central) and one slightly east along Central Avenue, near commercial strip. Elevated risk from dual structures; increased water demand (up to 3,000 GPM each) and occupant load (100–300+ potential). Aging wood-frame construction in Wood Streets increases the potential for collapse, with the CRA noting that 15–20% of calls involve commercial fires. Canyon winds could spread embers to these sites. Probably commercial buildings such as a large office complex (e.g., insurance or government annex) or a big-box retail outlet (e.g., Ralphs). The eastern one might be a multi-tenant strip mall or a school/college facility (e.g., UC Riverside extension), given the area's educational ties.

The district contains only three large buildings (> 50,000 sq. ft.), reflecting a primarily residential and small commercial character with limited industrial-scale development. The CRA prioritizes these as "high-value property risks" due to their size and potential economic impact. Station 14's initial response (6-8 staff via engine and quint) is adequate for early suppression but requires mutual aid (e.g., from Station 4 or 13) for full engagement. The central location of two buildings near the station mitigates response time (4–5 minutes), but the eastern site's proximity to Sycamore Canyon increases wildfire vulnerability—especially during Santa Ana wind events (common September–October 2025). Speculated uses lean toward commercial/retail (e.g., retail chains, offices) due to Central Avenue's commercial spine, with possible educational or institutional use (e.g., school) aligning with Riverside's demographic trends. Mitigation per CRA includes annual inspections for sprinklers and defensible space buffers, critical given the district's historic building stock and WUI interface.

Tall Buildings

As part of this strategic analysis, the size and concentration of tall (> three-story) buildings are considered to determine the efficacy of apparatus deployment, planning, and training. The following figures describe the counts and sizes of these buildings in Station 14's area.

Figure 310: Station 14 Multi-Story Buildings



The previous figure shows Station 14, located in the Wood Streets area near Central Avenue and Iowa Avenue, which covers a first-due response area of approximately 2 to 3 square miles. The station blends historic urban residential zones, commercial corridors, and wildland-urban interface (WUI) edges along Sycamore Canyon. The map, part of the RFD's 2023 Strategic Plan and Community Risk Assessment, identifies multi-story buildings (three or more stories) within this district using color-coded icons, reflecting their height in stories. These structures are significant in the CRA due to increased fire load, elevated water demand (e.g., 1,500–3,000 GPM for 3-6 stories, up to 4,000+ for 7–10 stories per California Fire Code), and life-safety risks, particularly given the area's aging wood-frame construction and WUI exposure (noted in RFD's 2024 wildfire annex). The district handles ~1,800–2,000 annual incidents (60% medical, 20% structure fires), with Station 14's engine and quint apparatus designed for rapid response (4–5 minutes to core areas). Tall buildings are clustered near Central Avenue and scattered along residential hills, posing challenges due to narrow streets and canyon adjacency.

- **3 Stories (Yellow–464):** Widespread across the district, densely packed in central residential zones (e.g., Wood Streets) and along Central Avenue; extends into northern hills near Le Conte Drive. Moderate risk due to high volume; primary life-safety concern from rapid fire spread in wood-frame apartments/townhomes, with CRA noting 15–20% of calls involve residential fires. Narrow streets and WUI ember risk (Sycamore Canyon) complicate evacuation and access. Predominantly low-rise apartment complexes or multi-family housing units, serving as affordable residences for the district's diverse population. Some may include mixed-use ground floors (e.g., small retail or offices) along commercial corridors.
- **4 Stories (Light Blue–42):** Sparse, located in central areas near Station 14 and north of Central Avenue, often adjacent to 3-story clusters. Most of the 4-story buildings are in the northeast, near UCR's campus. Moderate-to-high risk; height requires aerial operations (supported by Station 13's quint), with increased water demand (~2,000 GPM). CRA flags these as "medium-risk occupancies" due to potential collapse and hose-line extension needs, especially in older buildings. Likely mid-rise residential apartments or condominiums, catering to young families or UC Riverside affiliates. Possible inclusion of senior living facilities, given the area's aging demographic (median age ~38).
- **5 Stories (Dark Blue–7):** Mostly clustered on the UCR campus to the northeast, with one outlier in the northern hills and to the west, along Central Avenue. Elevated risk due to height and rarity; demands high water flow (~2,500–3,000 GPM) and specialized ventilation. CRA highlights potential for 50+ occupants, with wildfire ember intrusion a key threat in WUI zones. Possibly small office buildings, medical clinics (e.g., outpatient centers), or budget hotels/motels near Central Avenue, supporting the district's commercial spine and transient population.

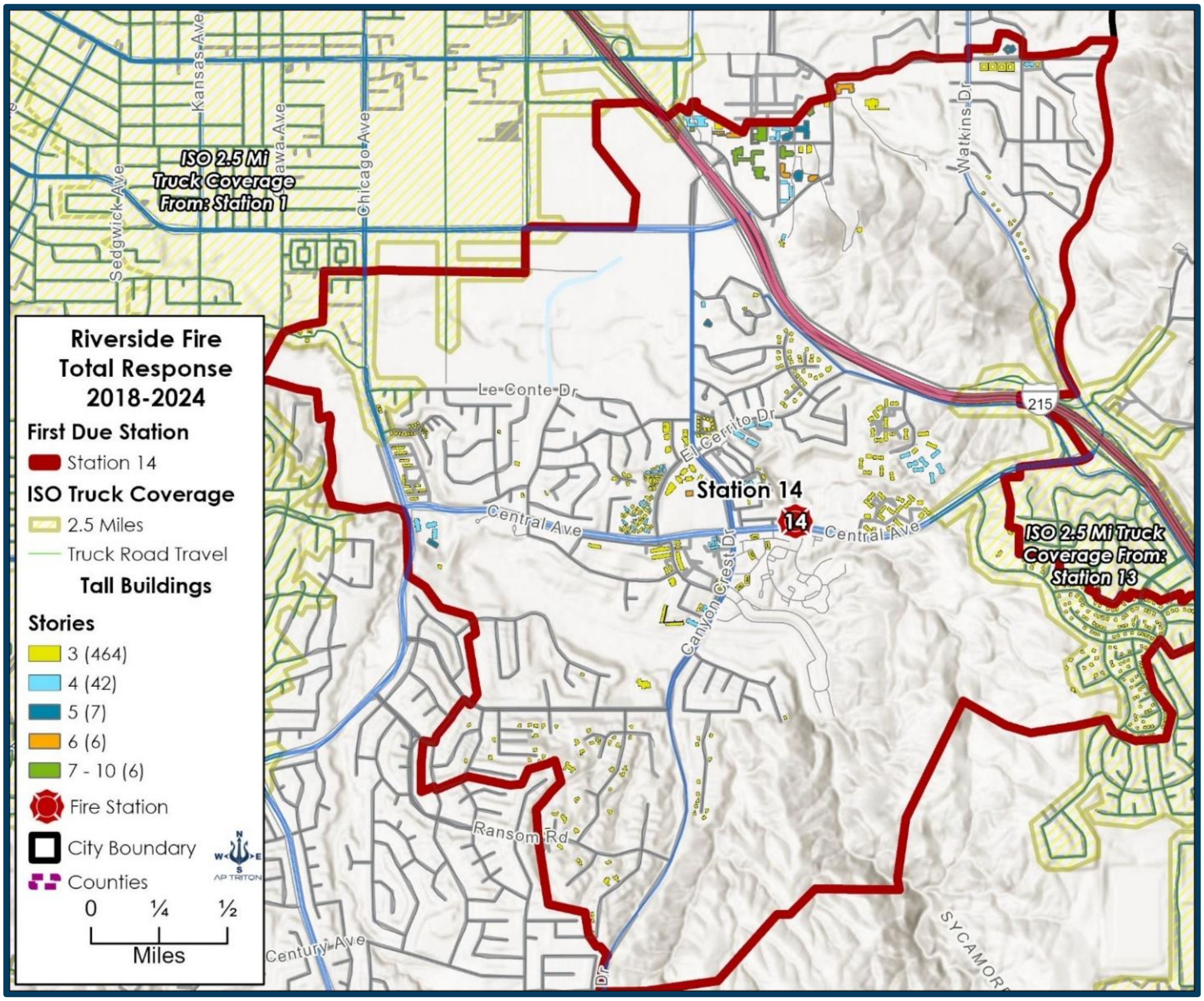
- **6 Stories (Orange–6):** Concentrated in the UCR area in the northeast section of the district. There is also a central commercial strip along Central Avenue near Station 14, which contains one 6-story building. High risk as standalone tall structures; requires ladder trucks and pre-incident planning per CRA, with dangers of elevator rescues or roof collapses. Industrial adjacency (e.g., southeast) adds HazMat potential. Likely mid-rise office towers or corporate headquarters, possibly tied to local businesses or logistics firms. It could also include student housing dorms for UC Riverside commuters.
- **7–10 Stories (Green–7):** Rare, clustered in the northeast area near UCR's campus. Very high risk; demands specialized resources (e.g., tiller trucks from mutual aid), with CRA estimating 2-3x response times for high-angle rescues. High occupant loads (100–300+) and smoke spread into residential areas are concerns. High-rise office or commercial buildings, such as administrative centers or university-affiliated research facilities. It could also be a large student housing complexes (e.g., apartments), given the education corridor's prominence.

The district contains **474** multi-story buildings, with a heavy concentration of 3-story structures (456), which pose significant residential life-safety risks, while taller buildings (4–10 stories) present commercial/property hazards. The CRA classifies this as a "moderate-to-high-risk" district, with 60% of incidents tied to housing and 25% to commercial occupancies. The central location of taller buildings near Station 14 supports rapid response (4–5 minutes), but WUI exposure along Sycamore Canyon heightens seasonal wildfire threats, particularly for 3–5-story residential clusters. Speculated uses align with Wood Street's historic urban character, dominated by multi-family housing, with commercial growth along Central Avenue suggesting offices, retail, or institutional uses (e.g., education/ healthcare) for 4-to 10-story buildings. Mitigation, as per the CRA, includes enhanced defensible space, sprinkler retrofits for older structures, and annual inspections, which are critical given the area's fire history and terrain challenges.

ISO 2.5 Mile Aerial Coverage Assessment

As shown in the following figure, most tall building loads are entirely outside the coverage of the aerial apparatus within the required ISO parameter. The district contains many taller buildings (mostly 3-story) that fall outside the 2.5 Mile coverage area. Even though these buildings are more than 2.5 miles from an aerial apparatus, the entire district can be reached within 7 minutes from Station 1or 13.

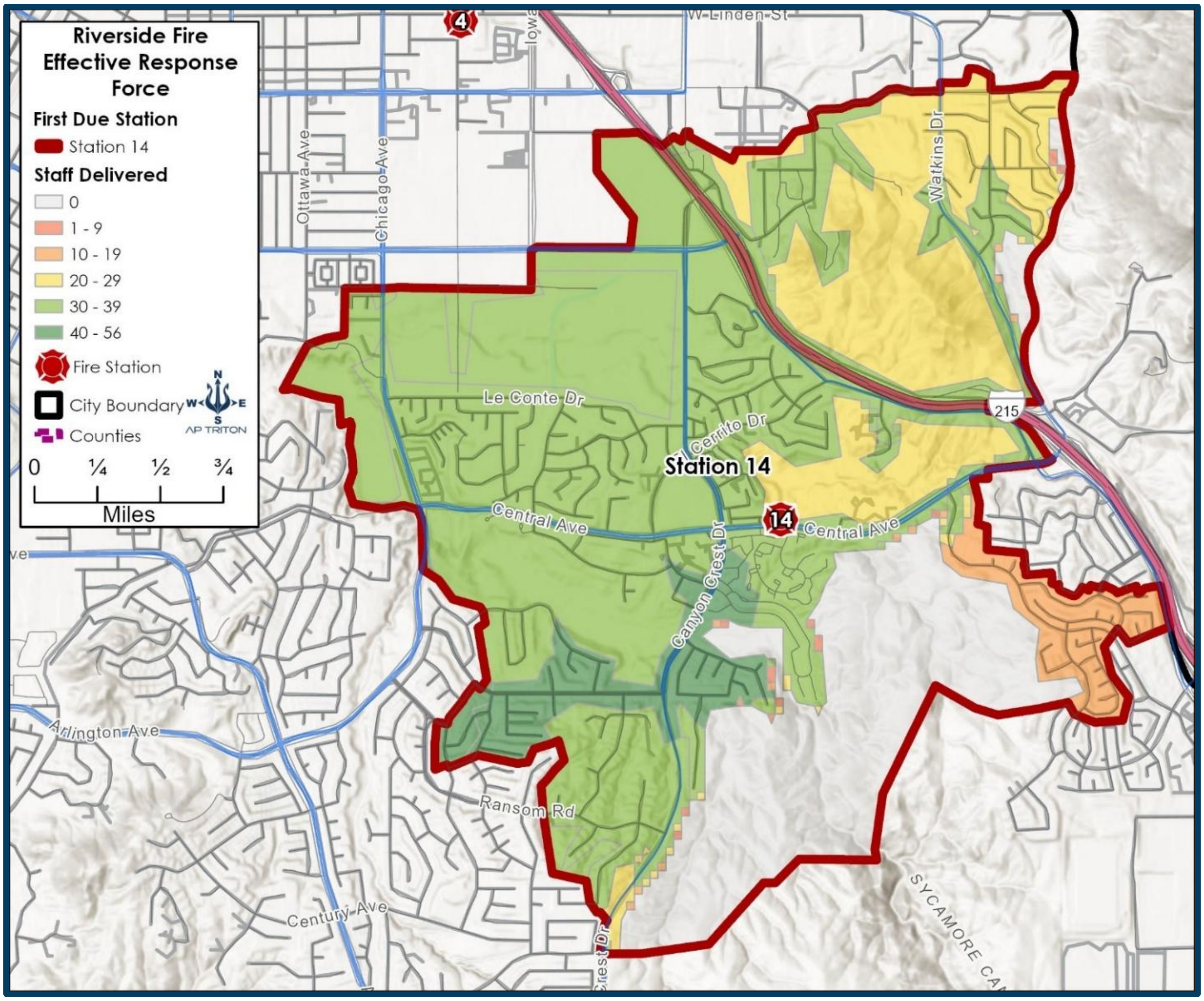
Figure 311: Station 14 Tall Buildings vs 2.5 Mile ISO Aerial Coverage



Effective Response Force

The ERF represents the minimum number of on-scene firefighters required to safely and effectively mitigate defined risk levels within a jurisdiction's first-due response area. This aligns with NFPA 1710 standards, which typically require 15–24 personnel for a full initial alarm (e.g., a residential structure fire), scaling with incident complexity (e.g., high-rise or wildland-urban interface [WUI] events). The ERF ensures task completion—such as incident command, water supply, search/rescue, and ventilation—while accounting for local risks, response times, and resource distribution. The Riverside Fire Department's 2023 CRA-SOC, updated in 2024, applies this model citywide, utilizing GIS mapping (as shown in the provided Station 14 map) to visualize the "staff delivered force" under effective staffing conditions, guiding resource allocation and supporting CFAI re-accreditation (2024–2028). The map for Station 14, located in the Wood Streets area near Central Avenue, depicts a ~3–4 square mile first-due area bounded by a red polygon. This district features a mix of historic residential neighborhoods, commercial corridors, and WUI edges along Sycamore Canyon, with ~1,800–2,000 annual incidents (60% medical, 20% structure fires, 15% vegetation). The ERF is color-coded to show staff levels delivered within target response times (typically 4–6 minutes per RFD SOC), reflecting reliability and concentration. The area's hilly terrain, narrow streets, and WUI exposure (noted in the 2024 wildfire annex) challenge response, with Station 14's engine and quint apparatus optimized for rapid deployment.

Figure 312: Station 14 ERF at 8 Minutes



Effective Response Force Staff Level

- **0 Staff–White:** ~5–10% (small pockets in areas not served by the road network). No initial coverage; high vulnerability to wildfire spread or isolated residential fires. Relies on mutual aid (e.g., Station 4 or 13), with response times extending to 8–10+ minutes, per CRA.
- **1–9 Staff–Pink:** ~10–15% (small pockets scattered along western and southern residential fringes) Basic initial attack capability (e.g., engine company of 3–4 for medical/vegetation fires); sufficient for low-risk calls but inadequate for multi-story (474+ buildings) or commercial incidents. CRA classifies this as a "yellow" risk for life safety in dense housing.
- **10–19 Staff–Yellow:** ~30–35% (central and eastern residential/commercial zones near Central Avenue). Meets moderate-risk benchmarks (e.g., engine + quint for structure fires); supports ladder ops for 3–5 story buildings (456+ 3-story units). Proximity to the station aids concentration, but high call volume (1,800+ incidents) strains reliability.

- **20–29 Staff–Orange:** ~10–20% Located in the far southeast residential area. Adequate for medium-high risks (e.g., commercial fires or WUI interfaces); aligns with complete alarm assignments (2 engines + quint + chief) for 6–10 story buildings (14 total). CRA notes 85–90% reliability here during normal operations.
- **30–39 Staff–Green:** ~10–15% (core area immediately around Station 14 and along major roads). northeastern hills, and University of California, Riverside campus buildings). High capability for complex incidents (e.g., high-rise or industrial fires); supports 7–10 story structures (4 buildings) with mutual aid. CRA flags this as sufficient for 90% of escalated risks, though terrain delays response to outer zones.
- **40–56 Staff–Dark Green:** ~5–10% (Near Canyon Crest and Country Club, and immediate vicinity). Maximum ERF for catastrophic events (e.g., multi-alarm fires or mass casualty); exceeds NFPA 1710 benchmarks for urban districts. Achievable with a citywide resource surge, but not sustained, per CRA.

The map shows a robust ERF gradient, peaking at 40–56 staff near Station 14, reflecting RFD's capacity to concentrate resources in this high-density urban-WUI district. Baseline ERF of 10–19 staff covers most calls (e.g., residential fires with 456 3-story buildings), aligning with CRA's "moderate-risk" classification (60% life-safety, 25% property). The 20–29 and 30–39 staff zones support escalated responses for taller structures (4–10 stories) and commercial hubs along Central Avenue, with the 30–39 staff zone feasible via mutual aid from Stations 4 and 13 (5–7-minute reinforcement). The 40–56 staff level, while possible during major incidents (e.g., wildfires or industrial HazMat incidents), requires citywide mobilization (~70 on-duty firefighters across two battalions), which drops reliability below 90% during multi-incident peaks (typical in wildfire season).In summary, Station 14's ERF profile supports CFAI SOC goals, with effective staffing ranging from 10–39 staff for 90% of risks, bolstered by proximity to resources. The CRA recommends enhanced WUI defensible space and auto-aid protocols to address staff gaps 0–9, ensuring sustained coverage.

Section VI: APPENDICES

APPENDIX A: **SURVEYS OVERVIEW**

INTRODUCTION

To support the Riverside Fire Department's Master Plan, AP Triton conducted two complementary surveys:

- **A Community Survey**, completed by **120 respondents** (119 answered most questions, with minimal skip rates).
- **An Internal Survey**, completed by **90 personnel**, with response counts varying slightly by question due to optional items.

Together, these surveys provide a clearer understanding of public expectations, perceptions of service quality, and internal perspectives on operational strengths and future needs. While each survey reflects the viewpoint of its respective audience, several themes align strongly and inform the department's strategic direction.

Executive summaries of the survey results, including all quantitative data and a summary of open-ended responses, will be provided as supplementary documents to this report.

COMMUNITY SURVEY SUMMARY

Total Respondents: 120

Participation

The community survey received strong engagement, with 120 respondents answering most questions and very few skipping items. Responses reflected a diverse range of experiences and expectations.

Key Insights

High Satisfaction with Service Delivery

Residents consistently expressed confidence in the department's professionalism, compassion, and emergency response performance. Many shared personal accounts demonstrating trust in RFD's crews and appreciation for timely, effective service.

Strong Appreciation for Community Presence

Respondents frequently highlighted positive experiences with community events, social media communication, and general visibility around the city.

Desire for Expanded Capacity

The most common improvement themes included:

- Additional fire stations and staffing to keep pace with population growth.
- More wildfire mitigation activities, prevention programs, and brush management.
- Continued investment in technology, equipment, and training.
- Expanded EMS capabilities or alternative service delivery models.

Unmet Expectations

Most respondents indicated their expectations are being met; however, some respondents noted concerns that included:

- Response time variability in certain neighborhoods.
- Limited station coverage relative to city expansion.
- The need for more visible mitigation efforts in wildfire-prone zones.
- Increased community engagement and prevention education.

Overall, the community expressed strong support for the department and a clear desire to see its capacity grow alongside Riverside.

INTERNAL SURVEY SUMMARY

Total Respondents: 90

Participation

The internal survey achieved broad participation across ranks and assignments. Most questions received 85–90 responses, reflecting meaningful input from the workforce.

Key Insights

Commitment to Mission and Service Excellence

Personnel frequently emphasized pride in their work, strong team cohesion, and dedication to providing excellent service despite high operational demands.

Operational Strengths Identified by Staff

- Highly trained and professional crews.
- Strong teamwork and adaptability.
- Consistent commitment to training.
- Positive community interactions.
- Pride in service and departmental identity.

Areas Identified for Improvement

Common themes included:

- Staffing levels that do not reflect call volume or city growth.
- Need for additional stations, units, and upgraded facilities.
- Expanded training opportunities, including multi-company and specialized training.
- Greater emphasis on leadership development and internal communication.
- Facility and equipment modernization.
- Stronger physical and mental wellness supports.

Future Priorities

Personnel highlighted the need to strengthen:

- Wildland response capability.
- Data-driven deployment and technology use.
- EMS system efficiency and potential service model improvements.
- Community outreach and risk reduction.
- Career development, succession planning, and internal support systems.

Collectively, internal responses reflect a highly dedicated workforce seeking structural support to sustain service quality and meet growing community expectations.

COMBINED OBSERVATIONS ACROSS BOTH SURVEYS

1. Growth and Resource Alignment

Both surveys reinforced the need for:

- Additional fire stations and deploying units strategically.
- Increased staffing to reduce workload stress and improve response reliability.
- Facility modernization and equipment upgrades.

2. Training and Preparedness

Respondents across both groups emphasized:

- Continued investment in training.
- Expanded wildfire and WUI capacity.
- Broader community preparedness and prevention initiatives.
- Access to modern tools, technology, and information systems.

3. Response Performance

While satisfaction remains high, concerns centered on:

- Response times in certain areas.
- Increasing call volume without corresponding expansion in resources.

4. Community Interaction and Visibility

Both audiences value:

- Ongoing community outreach.
- Education and prevention programs.
- Visibility within neighborhoods.

5. EMS System Considerations

Both surveys reflected interest in evaluating:

- The current EMS transport model.
- Opportunities for improved coordination and service delivery.
- Potential benefits of enhanced internal EMS capabilities.

APPENDIX B: **SAMPLE PERFORMANCE BENCHMARK RESOLUTION**

RESOLUTION NO. __

Series of 2025

RESOLUTION ADOPTING RIVERSIDE FIRE DEPARTMENT POLICY ON RESPONSE PERFORMANCE OBJECTIVES

WHEREAS, the Riverside Fire Department (herein referred to as "RFD") provides fire and non-fire-related emergency response to the City of Riverside and outlying boundaries through contract and mutual aid agreements; and

WHEREAS, industry standards based on **NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments**, provide achievable standards for response to fire, EMS, hazardous materials, and other types of emergency incidents; and

WHEREAS, the City of Riverside provides an effective emergency response force that must deliver reasonable total response times to properly mitigate emergency incidents; and

WHEREAS, adopting formal performance standards for the Riverside Fire Department is essential to meeting current and future service demands; and

WHEREAS, low-level, moderate-level, high-level, and extreme-risk levels are defined as risk category measurements in which threats are measured by probability of occurrence, and hazard, danger, or loss is measured by consequence; and

WHEREAS, the following formal standard response performance benchmarks are hereby established as core goals for the Riverside Fire Department for responses within the boundaries of the City of Riverside.

Alarm Handling Times

1. For 90% (percentile) of all incident responses, alarm handling shall be **1 minute, 0 seconds (1:00)**.

Turnout Time (Emergent Response)

1. For 90% (percentile) of all emergent responses, apparatus turnout time shall be **1 minute, 0 seconds (1:00)** during day response (8:00 a.m.–10:00 p.m.) and **1 minute, 30 seconds (1:30)** during night response (10:00 p.m.–8:00 a.m.).

Fire Suppression Benchmarks

1. For 90% (percentile) of all low-, moderate-, high-, and extreme-risk fire-related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be:
   a. **7 minutes, 0 seconds (7:00)** during the day and **7 minutes, 30 seconds (7:30)** at night.
   b. The first-due arriving unit shall carry a minimum of 500 gallons of water and be capable of producing a 1,250-gallon-per-minute (GPM) pumping capacity.
   c. The first-due unit shall establish command, declare scene priorities, establish an uninterrupted water supply, perform lifesaving and property-saving interventions, and provide scene safety and accountability for RFD members and the public.
2. For 90% of moderate-risk fires, the minimum effective response force (ERF) staffing shall be 19 firefighters, with the total response time of the 6th unit being **17 minutes, 0 seconds (17:00)** during the day and **17 minutes, 30 seconds (17:30)** at night.
3. For 90% of high-risk fires, the minimum ERF staffing shall be 23 firefighters, with the total response time of the 7th unit being **19 minutes, 0 seconds (19:00)** during the day and **19 minutes, 30 seconds (19:30)** at night.
4. For 90% of extreme-risk fires, the minimum ERF staffing shall be 49 firefighters, with the total response time of the 18th unit being **41 minutes, 0 seconds (41:00)** during the day and **41 minutes, 30 seconds (41:30)** at night.

EMS Benchmarks

1. For 90% (percentile) of all ALS EMS-related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of two firefighters, shall be **7 minutes, 0 seconds (7:00)** during the day and **7 minutes, 30 seconds (7:30)** at night.
2. For 90% (percentile) of all BLS EMS-related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of two firefighters, shall be **16 minutes, 0 seconds (16:00)** during the day and **16 minutes, 30 seconds (16:30)** at night.

Rescue Benchmarks

1. For 90% of all low-, moderate-, and high-risk rescue-related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be **7 minutes, 0 seconds (7:00)** during the day and **7 minutes, 30 seconds (7:30)** at night in all response zones within the City of Riverside.

2. For 90% of moderate-risk rescue incidents, the minimum ERF staffing shall be eight firefighters, with the total response time of the 2nd unit being within **9 minutes, 0 seconds (9:00)** during the day and **9 minutes, 30 seconds (9:30)** at night. The ERF shall be capable of safely controlling the incident in accordance with adopted RFD standard operating and medical care standards.
3. For 90% of high-risk rescue incidents, the minimum ERF staffing shall be twelve firefighters, with the total response time of the 3rd unit being within **11 minutes, 0 seconds (11:00)** during the day and **11 minutes, 30 seconds (11:30)** at night, in all response zones within the City of Riverside.

Hazardous Materials Benchmarks

1. For 90% of all low-, moderate-, and high-risk hazardous materials-related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be within **7 minutes, 0 seconds (7:00)** during the day and **7 minutes, 30 seconds (7:30)** at night in all response zones within the City of Riverside. The first-due unit shall be staffed with personnel trained to the minimum level of hazardous materials operations and equipped with air monitoring and commodity identification software or references.
2. For 90% of moderate-risk hazardous materials incidents, the minimum ERF staffing shall be eight firefighters, with the total response time of the 2nd unit being within **9 minutes, 0 seconds (9:00)** during the day and **9 minutes, 30 seconds (9:30)** at night in all response zones within the City of Riverside. The ERF shall be capable of safely controlling the incident in accordance with adopted RFD standard operating standards.
3. For 90% of high-risk hazardous materials incidents, the minimum ERF staffing shall be 14 firefighters, with the total response time of the 3rd unit being **11 minutes, 0 seconds (11:00)** during the day and **11 minutes, 30 seconds (11:30)** at night.

Wildland Fire Benchmarks

1. For 90% of all low-, moderate-, and high-risk wildland fire-related incidents, the total response time for the arrival of the first-due unit, staffed with a minimum of one officer and three firefighters, shall be within **7 minutes, 0 seconds (7:00)** during the day and **7 minutes, 30 seconds (7:30)** at night in all response zones within the City of Riverside.
2. For 90% of moderate-risk wildland fire incidents, the minimum ERF staffing shall be 13 firefighters, with the total response time of the 4th unit being within **13 minutes, 0 seconds (13:00)** during the day and **13 minutes, 30 seconds (13:30)** at night. The ERF shall be capable of safely controlling the incident in accordance with adopted RFD standard operating and medical care standards.
3. For 90% of high-risk wildland fire incidents, the minimum ERF staffing shall be 21 firefighters, with the total response time of the 6th unit being within **17 minutes, 0 seconds (17:00)** during the day and **17 minutes, 30 seconds (17:30)** at night, in all response zones within the City of Riverside.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF RIVERSIDE, CALIFORNIA, THAT:

Section 1. The findings, conclusions, and statements of fact contained in the preamble are hereby adopted, ratified, and incorporated herein.

Section 2. It is the policy of the City of Riverside to establish and maintain internal controls and procedures to ensure that applicable standards are adopted in full or in part and followed with regard to the good order of the Fire Department. It is further the policy of the City of Riverside to receive benchmark performance versus actual performance comparisons annually from the Riverside Fire Department to ensure efforts are made to meet these industry-established standards.

Section 3. This Resolution shall take effect and be in force from and after its adoption.

APPENDIX C: **TABLE OF FIGURES**