RIVERSIDE COUNTY FIRE DEPARTMENT
CALIFORNIA




Operational, Standards of Cover, and Contract Fee Analysis

FINAL REPORT

March 2016

Prepared by:

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RIVERSIDE COUNTY, CA

OPERATIONAL, STANDARDS OF COVER, AND CONTRACT FEE ANALYSIS

FINAL REPORT

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FOREWORD

TriData was contracted to conduct a standards of cover and financial review for the Riverside County Fire Department (RCFD). TriData is a nationally recognized firm specializing in public safety research and consulting. It has been conducting fire and emergency service research and studies similar to this one since 1981. TriData started as a subsidiary of System Planning Corporation, and now is an LLC registered in the state of Maryland.

Over the past 34 years, TriData has completed over 250 fire and EMS studies for communities of all sizes, including over 20 in California. In addition, TriData has undertaken research on a wide range of public safety issues for the U.S. Fire Administration, Department of Homeland Security, other Federal and state agencies, and the private sector. TriData also conducts international research on emergency response topics and has conducted extensive research on effective fire prevention strategies worldwide.

ACKNOWLEDGEMENTS

We wish to thank the staff of the Riverside County Fire Department (RCFD) for their assistance on this study. Fire Chief John Hawkins, along with other members of the RCFD as well as State, County and City government officials, were gracious in providing insights and data during the project.

The project team wishes to especially acknowledge Deputy Chief Todd Williams, Chief of Support Services, who was the Department's project manager and our primary contact. His assistance and guidance, which included coordinating the transfer and accuracy of data, were instrumental to the success of the project. Chief Williams also coordinated our multiple site visits and meetings throughout the project.

Following are the principal contributors to the study and the TriData project team.

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EXECUTIVE SUMMARY

TriData LLC, a firm specializing in emergency services consulting, was contracted to analyze the deployment of resources and services provided by the Riverside County Fire Department (RCFD). A nationally recognized firm specializing in fire and emergency services research and consulting, TriData has conducted over 300 studies since 1982. The scope of work for this project was to:

- Analyze incident and response time data provided by the RCFD
- Perform a trend analysis of fire, EMS, and other incident data
- Assess the response performance and capabilities of RCFD
- Analyze the location of fire stations, apparatus, and staffing
- Analyze the workloads and reliability of response units
- Review cost allocation and fee formula of contact agencies and provide alternative formula ideas

Riverside County contracts for emergency response from the California Department of Forestry and Fire Protection (CAL FIRE). Riverside is 1 of 21 Units within the CAL FIRE system. RCFD provides its services to the unincorporated areas of Riverside County and 21 contract agencies. The fourth most populous county in California, the County's population of 2.3M is expected to increase significantly to 3.2M over the next 15 years. To deliver its services, RCFD has 94 strategically located fire stations. Nine state-operated fire stations and the Ryan Air Attack Base, all of which are part of CAL FIRE services, are also located in Riverside County.

To analyze the County and RCFD services, 29 planning areas were developed by TriData. These were then discussed these with the County's planning department. Twenty planning areas were for the contract cities and nine for unincorporated areas. The development of planning areas allowed the study to efficiently analyze the services and costs of services by areas of the county.

Fire Station Location Analysis

ArcGIS, a commercially available software program, was used to analyze travel times for each of the RCFD stations to determine coverage. Travel time is the time interval that begins when a unit is enroute to an emergency incident and ends when the unit arrives at the scene. Travel time is a function of geography, road conditions, and traffic congestion. Travel-time goals used by RCFD of 4 minutes (urban), 8 minutes (rural), and 15 minutes (outlying) are reasonable. These goals were used to analyze the locations of fire stations.

Unlike many communities that have too many fire stations, the issue for RCFD is not coverage overlap from multiple stations, but uncovered areas, especially in high-growth areas. Unincorporated areas near cities where the demand is already high are the areas where additional stations are needed. The locations of fire stations in the contract cities are very good. Fire stations in the contract cities can reach large parts of the county within eight minutes and county units can provide overlapping coverage to the contract cities. Sharing of resources by the county and contract agencies is the best way to maintain a robust system without having unnecessary resources. As it stands, the level of overlap in coverage is good.

Fire station changes recommended by this study are:

- Cajalco Planning Area (three new stations)
  - North of Station 59 and Station 4, and southeast of Station 8
  - South of Lake Mathews and Santa Rosa Roads, north of Lake Elsinore
  - North of Station 64 along the Temescal Canyon Road area
- Foothill Planning Area (one station relocation)
  - Move Station 22 west near Cherry Valley Boulevard
- Lakes Planning Area (two new stations)
  - Western Lakes along Winchester Road south of Scott Road (Pourroy Area)
  - Central Lakes along Sage Road, north of Station 28 (also consider an automatic-aid agreement with Hemet)
- Coachella Valley Planning Area (one station relocation and two new stations)
  - Relocate Station 37 south of Hacienda Avenue along Mountain View Road near the Desert Hot Springs border (alternative is to add a new station in the northern section of the Coachella planning area near Mountain View and Dillon Roads)
  - New station along Harrison Street, south of 62nd Avenue
  - New station (5 to 10 years) along Harrison Road, north of the intersection of Pierce Street
- Blythe Planning Area
  - Close Station 43 and consolidate personnel at FS45
- City of Temecula
  - Open Station 95 and relocate units from Station 12 to 95

RCFD Operations

The organization and staffing of RCFD is excellent and it has a long history of providing effective and efficient service. To continue this legacy RCFD needs to improve its commitment to training and professional development, especially for Chief and Company Officers. Better coordination is also needed by RCFD division and battalion chiefs with contract agency officials, who often are not well informed about RCFD operations. Our recommendations to improve operations and service delivery include:

- Reducing the number of battalions from 15 to 12 or 13 and eliminating the policy of allowing battalion chiefs to go home nights and weekends.
- Evaluating the sustainability of the 72-hour work week due to the high workload, especially for paramedics.
- Maintaining the minimum three-person staffing and increasing Calimesa from two to three Temecula from four to three.
- Adding six Medic Squads by cross-staffing ladder trucks at Stations 2, 17, 73,76,90,and 97.

Contract Agency Fees

Contract agencies with services provided by the County are charged according to the direct and indirect costs for the units and personnel within that city. The problem is RCFD is really a regional service with cities and county zones each having different proportions of responses within their area. Most cities and county zones with stations near cities receive assistance from units from another city or county zone. This study analyzed the current cost-sharing formula and possible alternatives, which are:

- County-wide model
- Regional model based on RCFD operational areas
- Local model with smaller operational areas

The Countywide cost-sharing formula model makes no distinctions among the different areas of Riverside County and applies three factors: assessed property value, population, and number of incidents. The divisional and local regional cost-sharing models provide a more localized approach to cost-sharing, while still recognizing that RCFD is a county-wide service.

- Countywide Model
  - Advantage – Simple and easy to implement and calculate
  - Disadvantages – Does not consider ability to pay; significant shifts in funding between the cities and the County; potential inequities

- Regional Model
  - Advantages – Accounts for regional area coverage defined by RCFD; shifts in funding from cities to the County is substantially less than the Countywide approach
  - Disadvantages – Large changes still occur in the amount some cities pay; there are varying shifts in costs paid by cities in different regions
- Local Model
  - Advantages – Based on smaller local groupings of cities and county areas; shift in funding is substantially less than the Countywide and regional approach
  - Disadvantage – While funding shifts between the County to cities is smaller than the County and regional models, some significant cost changes do occur; shifts in costs among some cities that may not be able to absorb the increased cost

Within the three models are other sub options, for a total of nine cost-sharing alternatives to the current one used. Changes in the amounts paid by each jurisdiction for all of the options are provided in Chapter VII. Contract Fee Analysis.

Whether to keep the current cost-sharing formula or adopt a new one is a policy question for the county and cities. A recommendation of this study is to adopt a formula that provides funding for services based on how services are actually provided, which is regionally, instead of on geographical boundaries, which is the current methodology.

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The RCFD overall is doing an excellent job in a very complex environment. We offer 46 recommendations to be even better prepared going into the future.

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CHAPTER I. INTRODUCTION

This chapter discusses the project scope, methodology, and organization of the report. An overview of Riverside County and the Riverside County Fire Department (RCFD) is also provided here.

Project Scope

The work requested by the RCFD was to evaluate the current allocation of fire stations and resources throughout the county. The project was to "analyze the Department's current configuration, deployment, support and management of the all-risk fire suppression and emergency medical services delivery system in order to determine the best and most appropriate method to allocate all department operating costs to the county and all contract partners."[1]

The study also was to provide "an industry compliant review using best practices consistent with the recommendations of the Commission on Fire Accreditation International (CFAI), the National Fire Protection Association (NFPA), the Insurance Service Office (ISO), and federal, state and local mandates.

Among the key tasks to be completed during this study were:

- Collecting and reviewing data and background information provided by the RCFD and other agencies
- Conducting multiple on-site meetings and the facilitation of a senior staff review process with RCFD
- Analyzing trends in fire, emergency medical service (EMS), and other incident types and projecting future demand
- Evaluating RCFD emergency response performance standards and recommending changes to the standards, where appropriate
- Developing the first-ever set of planning areas for the County to be used in the analysis of fire service delivery
- Reviewing and analyzing apparatus locations and staffing patterns
- Analyzing unit workloads and utilization/ reliability
- Analyzing cost allocations and fees of the contact cities and recommending possible changes to the fee structure

[1] Request For Proposal - Appendix A, Purpose/ Background

Methodology

The process used for this project combined multiple research techniques including interviews, collecting and reviewing background information, and analyzing computer-aided dispatch (CAD) and incident data provided by the RCFD.

Following an initial site visit and interviews with RCFD staff, TriData analyzed incident data and conducted a series of tasks related to the assessment of population growth, risk and demand and response times from the current set of fire stations. Also analyzed were the workloads of the various fire and rescue units deployed to fire stations, as well as the reliability of services from these stations. TriData met with Riverside County planning officials to understand the expected growth and development patterns in future years and we discussed the process to develop planning areas to be used during the study.

During its first week-long site visit TriData's project team toured the County and visited many of the fire stations to become familiar with the geography, road network, risks, and community attributes (rural, suburban, urban, commercial, residential, etc.). Following these tours and after analyzing data provided, TriData again visited Riverside County to review the preliminary findings of the data analysis to the Department's management team.

Feedback and discussion of the data analysis revealed some data reporting errors, which were then corrected and the data re-analyzed (improving the quality of data is a by-product of the study). This meeting also provided opportunity for the RCFD staff to comment on the initial findings of TriData's project team. Changes to the proposed planning area design were also recommended by RCFD. Throughout the project members of the project team and RCFD staff exchanged phone calls and e-mails.

Draft and final reports were submitted to the RCFD project manager with comments and edits on the draft provided to TriData by RCFD's project manager, who solicited feedback from multiple sources. After the final report was presented, TriData representatives then made formal presentations to the County Supervisors and representatives of the contract cities.

Overview of Riverside County

Riverside County is the fourth most populous county in California and 2nd largest in geography size with 7,206 miles of land area and 97 water for a total of 7,300 square miles. The county is roughly shaped as a long rectangle, extending approximately 190 miles from Orange County on the West and to the Arizona border on the East, and approximately 40 miles between its northern to southern borders. The eastern portion of Riverside County from the Coachella Valley to Blythe is mostly open desert with sporadic rural occupancy. The north portion borders San Bernardino County and the South - San Diego County, where the City of Temecula borders on the southwest. Riverside County includes 28 cities, one Fire Protection District, tribal lands and a portion of the Salton Sea.

Riverside County was formed in 1892 out of a change in boundaries with San Bernardino County to the north and San Diego and Imperial Counties to the south. During the years prior to and after WWII, eastern county desert areas served as military training bases. Riverside County is a General Law County, authorized by California Government Code, and governed by five elected supervisors. Supervisors are elected to four-year terms.

Riverside County's 2015 population is estimated at 2,472,000. The County's planning department estimates are that by 2030 the population will increase to 3.24 million, an increase of 31 percent, with most of the population increases in the incorporated areas. Such a substantial increase in population is significant as it will drive upwards the demand for emergency service. Even if population growth estimates are lower than the projected 31 percent, RCFD must begin to plan now for the demand expected from a large population increase, especially for EMS service.

Riverside County Areas and Roadways – Riverside County contains portions of the Cleveland National Forest, Coachella Valley National Wildlife Refuge, Dos Palmas Preserve, and a portion of the Joshua Tree National Park, a portion of the San Bernardino National Forest, the Santa Rosa and San Jacinto Mountains National Monument. Riverside County has 19 official wilderness areas that are under the National Wilderness Preservation System, with 11 solely managed by the Bureau of Land Management, which also manages a portion of other open space areas managed by Riverside and neighboring Counties. Riverside County contains 3 State Parks and 3 County Parks.

Three interstate highways (I-10, I-15, 1-215) run through Riverside County, each requiring a significant number of RCFD responses each year, primarily for motor vehicle accidents. I-10 extends from Calimesa in North Western Riverside County for approximately 350 miles to Arizona on the East. I-15 travels from Eastvale in the northwest corner of the county, for approximately 45 miles to Temecula and the San Diego County border in the Southwest traveling along the far western portions of Riverside County. I-215 travels approximately 50 miles from State Route 60 in the City of Riverside to I-215 in Murrieta Ca.

The County has one commercial airport, (Palm Springs International Airport); one military air base, (March Air Reserve Base) and 10 general aviation airports:

- Hemet-Ryan Airport which houses one of 22 CAL FIRE Air Attack Bases within the State
- Banning Municipal Airport
- Bermuda Dunes Airport
- Blythe Airport
- Corona Municipal Airport
- Flabob Airport

- French Valley Airport
- Jacqueline Cochran Regional Airport
- Perris Valley Airport
- Riverside Municipal Airport

The County often is visualized as having three major areas, Western, Central and Eastern.

Western Riverside County – West County begins at the Orange County border and goes to open space east of Banning. It is an area of mostly residential development and light to heavy industry. Over the past 20 to 30 years, most of the growth in this area has been due to people fleeing the soaring cost of living in Los Angeles and Orange Counties, a force that continues. Temperature averages from June through September in the 80's and 90's, and can be as high as 113+. Major jobs sources are government, construction, industrial, manufacturing, military and business. A majority of residents in west County commute to work in San Diego, Orange, San Bernardino, and Los Angeles Counties.

West County, like most of Riverside County, has significant potential for structure fires, wildland fires, floods, mud slides, earthquake, vehicle accidents, hazardous material releases, aircraft crashes, and train accidents. High winds are also a problem, especially during wildland fire season. The San Andreas Earthquake Fault follows the I-10 from the west through the San Gorgonio Pass south of I-10 into Los Angeles County, and poses the potential for a huge surge in demand for RCFD services during and after a major earthquake.

Central Riverside County – Central County contains a substantial amount of open desert and is referred to as the Coachella Valley. Nine cities are located in the Coachella Valley region, which has a desert climate, averaging more than 100 and up to 125 degrees during the summer months of June through September and 70 to 90 degree during other months. Cities in the Coachella Valley region are below the northwest face of the San Jacinto and Santa Rosa Mountain ranges. As with most desert areas, this region is subject to violent weather, including thunder storms, flash flooding and wind events.

The economy in Central County is mostly based on tourism, agriculture, service industry and small business. A major rail line runs east to west in the Valley and provides transport for agriculture, fuel, and hazardous materials. Passenger service is also provided. The Salton Sea is in the Coachella Valley, located approximately 10 miles to the southeast of the City of Coachella at 227 feet below sea level. This lake sits directly on the San Andreas Fault, and resides in both Riverside and Imperial Counties.

Eastern Riverside County – This region extends from the Coachella Valley to the State of Arizona Border along the Colorado River, with the major portion open desert. The City of Blythe is the only city located in Eastern County and is along the Colorado River. I-10 extends from the northwest of the county east through the City of Coachella and the southern portion of

the county, and through the City of Blythe. Route 95 extends north and south adjacent to the Colorado River. Noting the size of the County, it is a three-hour drive from the City of Riverside to Blythe. East County is the least developed area of Riverside County and emergency service response times are extremely long. Agriculture is the predominant economy.

Following is a table showing the incorporated cities in the County, population and projected population, followed by a County map that includes Supervisorial Districts.

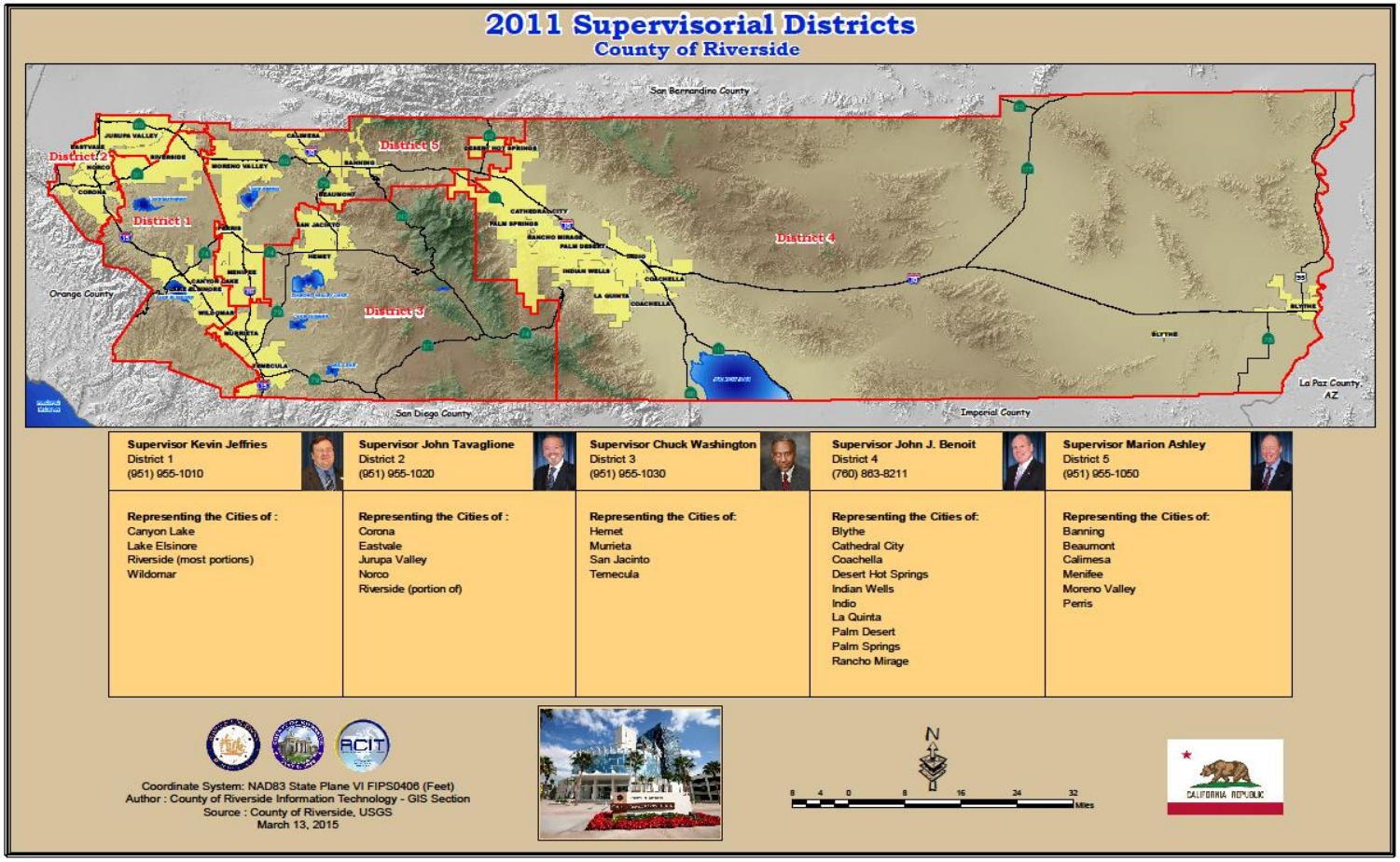
Table 1: Incorporated Cities, Current and Projected Population

Cities in Riverside County	2015 Population	2030 Population Estimate	Percent Growth
Banning	35,648	56,885	60
Beaumont	46,712	76,639	64
Blythe **	22,501	24,830	10
Calimesa	11,605	21,754	87
Canyon Lake	11,380	12,069	6
Cathedral City **	58,595	65,367	12
Coachella	52,000	117,500	126
Corona **	155,335	161,370	4
Desert Hot Springs	47,806	57,149	20
Hemet **	92,442	124,682	35
Indian Wells	5,452	5,928	9
Indio	93,757	113,681	21
Jurupa Valley	98,030	116,656	19
Lake Elsinore	62,724	88,011	40
La Quinta	46,537	51,495	11
Menifee	81,357	109,928	35
Moreno Valley	199,703	244,284	22
Murrieta **	105,513	117,147	11
Norco	29,121	32,442	11
Palm Desert	53,539	58,690	10
Palm Springs **	50,423	57,441	14
Perris	76,129	103,064	35
Rancho Mirage	17,293	21,372	24
Riverside **	326,096	369,024	13
San Jacinto	55,191	91,834	66
Temecula	109,136	119,317	9
Wildomar	37,289	49,884	34
Unincorporated Areas	508,405	825,526	62
Total Population	**2,474,220**	**3,237,084**	**31**

** Cities not served by the Riverside County Fire Department

RCFD protects the communities with the greatest projected increase in population. Coachella is expected to see the highest population increase (126 percent), followed by Calimesa (87), San Jacinto (66), and Beaumont (64). Unincorporated areas of Riverside County will also see significant population growth (66 percent). Cities not protected by RCFD are expected to have the lowest population growth (average of 13 percent for eight cities). Of these cities, Hemet is expected to see the highest population increase (35 percent).

Figure 1: Riverside County Map and Supervisorial Districts[2]



[2] http://rctlma.org/Portals/0/Britts/Supervisorial%20_Districts_2011March2015.pdf

Riverside County Fire Department

The County of Riverside contracts for emergency response from the California Department of Forestry and Fire Protection, known as (CAL FIRE), to serve as the Riverside County Fire Department (RCFD). CAL FIRE serves two missions within Riverside County: 1) emergency response to unincorporated Riverside County and the incorporated municipal and district areas under contract to RCFD; 2) wildland fire protection for State of California open space. Uniformed personnel of RCFD, though they may be assigned to a city, are all state employees and may be deployed to state wildland fire missions when the situation warrants.

RCFD serves all unincorporated areas of the county, 21 cities, and one community services district (Rubidoux). Services to the cities and district are by individual contract. RCFD also provides dispatch command services to County Environmental Health, three Tribal Fire Departments and the Idyllwild Fire Protection District.

Riverside County has a long relationship with CAL FIRE to provide emergency response services. Originally contracted to provide wildland firefighting assistance in the early 1920's, which at that time was titled the California Department of Forestry & Fire Protection (CDF), the relationship continued and in 1946 the County contracted with CDF to become the County's "Fire Warden". In 2007, CDF officially changed its name to CAL FIRE. Under the arrangement with CAL FIRE, emergency response and dispatch services are provided for all types of emergencies including structural and wildland firefighting, emergency medical services, hazmat, technical, and water rescue. Other services such as code enforcement, training, public education, and fire investigation are also provided by CAL FIRE.

"The largest and most visible part of CDF operations is fire suppression. Operations are divided into 21 Operational Units, which geographically follow county lines. Each unit consists of the area of one to three counties. Operational Units are grouped under two regions: North and South. The CAL FIRE Air Program is one of the largest non-military air programs in the country, consisting of 23 Grumman S-2T 1,200 gallon air tankers, 14 OV-10A air tactical aircraft and 12 UH-1H Super Huey helicopters. From the 13 air attack and 10 Heli-tack bases located statewide, aircraft can reach most fires within 20 minutes."[3]

[3] https://en.wikipedia.org/wiki/California_Department_of_Forestry_and_Fire_Protection

Riverside is the largest Unit within the 21 'Units' of CAL FIRE and is truly an Integrated, Cooperative, Regional Fire Protection System agency. A Fire Chief appointed by CAL FIRE, with concurrence of the County, is the senior-most position within RCFD.[4] Seven cities and one Fire Protection District do not contract with the County for emergency services.

Within Riverside County are 94 fire stations with fulltime staffing. In addition, there are nine fire stations operated by the State of California, plus the Air Attack Base from which air support is provided for wildland firefighting missions throughout California.

- Vision – The Riverside County Fire Department is committed to exemplary service and will be a leader in fire protection and emergency services through continuous improvement, innovation and the most efficient and responsible use of resources.
- Mission – The Riverside County Fire Department is a public safety agency dedicated to protecting life, property and the environment through professionalism, integrity and efficiency.
- Values – Leadership, Competence, Integrity, Safety and Customer Service

Organization of Operations – Within RCFD there are three geographical areas (West, Central, and East) from which emergency response resources and activities are coordinated. Each area has a deputy chief with subordinate division chiefs commanding daily operations. The divisions are further organized into 15 battalions, along with the Hemet Ryan Air Attack Base, located at the Hemet Air Port. There are also three Fire Camps for hand crews and heavy equipment from which the primary resources for wild-land fire protection are coordinated. Fire Camps are managed by RCFD division chiefs and staffed primarily by inmates located at the particular camp.

Administration – RCFD administration provides budget, personnel, and other administrative services. Funding for RCFD is provided by the state, county, and contract cities and these are tracked separately by administration. Administration also manages the finance and purchasing needs of county fire stations, vehicles and equipment for the provision of fire protection and related services. The County provides human resources, payroll, employment, facility financing and repairs, employee performance and a memorandum of understandings for all 200 County employees in regards to working conditions and pay. The State oversees the CAL FIRE/Riverside Unit under contract with Riverside County, mostly for emergency response personnel for the nine State Fire Stations, equipment and vehicles.

Emergency Command Center – Located in Perris, this function provides dispatch services and command assistance to on-scene emergency command officers with a Fire Captain on duty 24/7 on the dispatch floor. The center processes approximately 400,000+ phone calls a

[4] Incredibly, the current Fire Chief, John Hawkins, has been a firefighter and fire officer with Cal Fire for over 52 years. His experience and knowledge are two reasons for the success of Cal Fire in Riverside County, a large and complex jurisdiction for which to provide emergency services.

year for all types of incidents, both emergency and non-emergency situations. Predetermined Emergency Medical Dispatching (EMD) protocols and a computer-aided dispatch system are used to dispatch resources. A major function of the command center is to coordinate RCFD resources when deployed on wildland fires as part of a State mission.

Office of Emergency Services (OES) – is responsible to provide public training, related grant management and cost recovery. This office also provides the training and organization for Community Emergency Response Teams (CERTs). When major damage results from any type of significant emergency, they assist the public. OES provides multiple disaster preparedness presentations and supports the public and fire department personnel at major emergencies. An important accomplishment was the development and maintenance of the Riverside County Local Hazard Mitigation Plan and County Emergency Operations Plan to ensure their practicality, effectiveness and compliance with the Federal Emergency Management Agency. Though depicted as part of the RCFD, OES was recently moved from under the fire department's control to another area of county government.

Training – is a key component for effective delivery of emergency response services and is provided to all full-time uniformed and volunteer firefighting personnel. The Training Bureau schedules all training, which includes EMS, firefighting, rescue and hazardous materials, and many programs provided through the (JAC) Joint Apprentice Committee Program (JACP). This is facilitated with two training facilities, one in the West County (Ben Clark Training Center) and one in the East County (Roy Wilson Training Center)

Health and Safety Bureau – is responsible to investigate accidents to fire personnel, such as motor vehicle accidents and personal injury in facilities or the field. The Bureau also provides safety training and guidance to reduce reoccurrence and to correct conditions that contributed to injury.

Public Affairs and Education Bureau – is responsible to provide timely and accurate information to the public about emergency activity and other significant incidents, 24/7. It coordinates press conferences with involved partners. This Bureau also provides public safety programs for the public, including kindergarten through second grade students.

Office of Fire Marshal – is an extremely important part of loss reduction management. It is achieved by providing fire and building code enforcement for structures and processes; public education; and development of ordinances that can reduce the magnitude of loss. Fire Prevention also provides law enforcement for arson and malicious fire activity. It collects evidence of cause. For arson, they try to determine who is responsible. The Bureau is also responsible for hazard abatement for vegetation clearance, power distribution systems and railroad tracks. It also monitors large special projects, such as Solar Energy Farms, to determine impacts on emergency response services and the public. Eastern Riverside County is home to several solar energy farms and there are plans for more as legal challenges to potential impacts are resolve.

Pre-fire Management – is a program that monitors and regulates controlled burns and abatement of vegetation hazards within 100 feet or more of structures. The program provides assistance to landowners for the removal of dead trees and manages grants and contracts to clear vegetation, including the rehab of fire breaks, and it assists with the Department goal of creating Fire Safe communities.

Communication and Information Technology – is made up of four sections: Communications; Information Technology (IT); Applications of Technology; Geographic Information Systems. Their responsibility includes management of hilltop towers, radio frequency bands, fire station communication infrastructure; emergency communications from the field; smartphone infrastructure; and 911 infrastructure. It provides an IT help desk system with software and internet assistance. The Bureau is also responsible for the integration of protocols for dispatchers using built-in software and the installation of an automated budget submission system.

Strategic Planning – is responsible for facility planning and the remodel or expansion, development, relocation and replacement of fire department facilities. In the past few years it has remodeled or replaced approximately 10 facilities.

Volunteer Reserve Program – is responsible to develop and maintain the department's Volunteer Reserve Firefighter, Chaplain, Photographer, Mobile Communication Technician, Water Tender and Breathing Support programs. This bureau trains approximately 100 volunteer recruits each year, using in-house programs and the State Fire Marshal Fire Academy, to ensure all achieve and maintain the desired level of proficiency and required certifications.

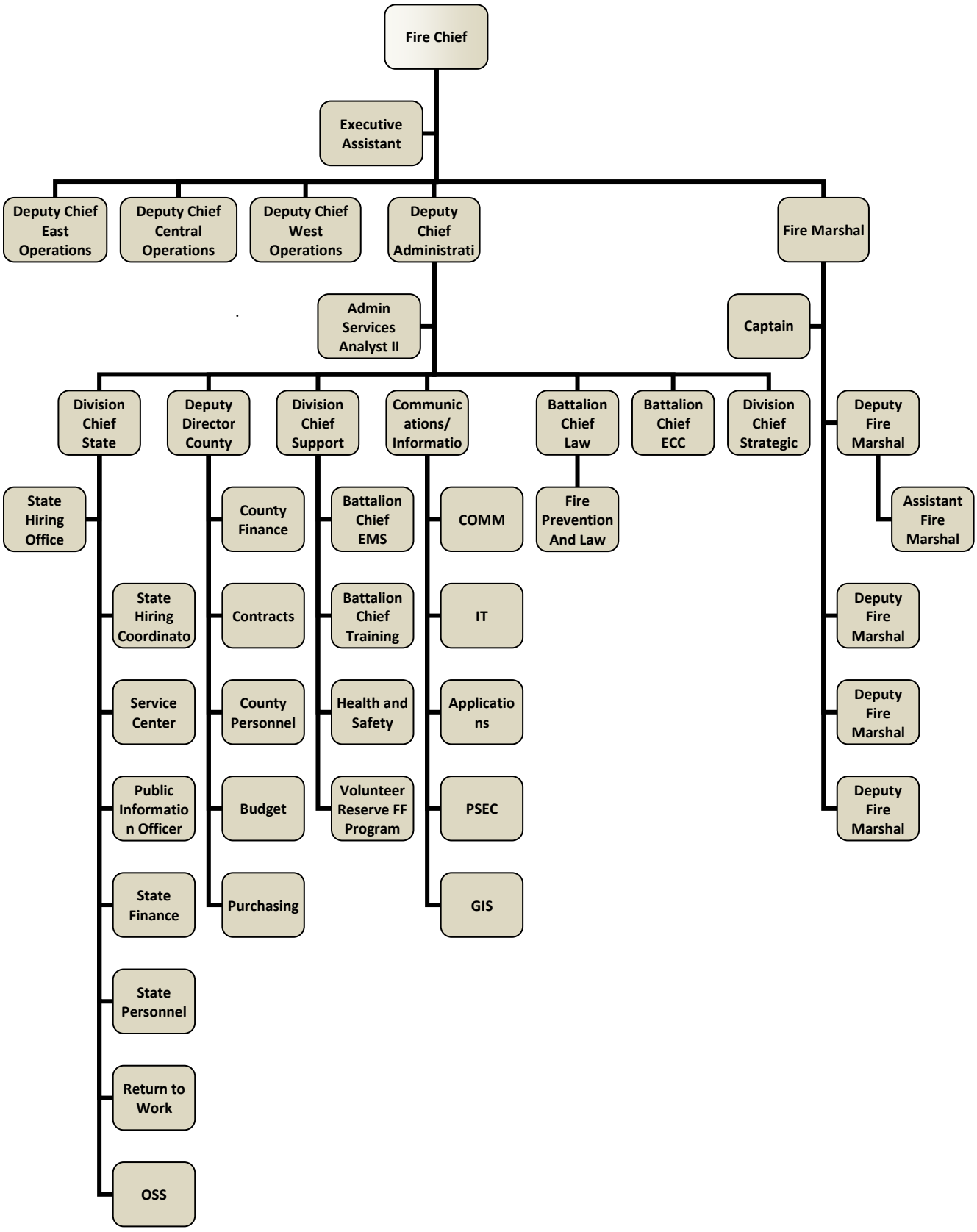
Fleet Services – is the department's automotive maintenance section, responsible to provide year-round maintenance of all emergency response and non-emergency vehicles, as well as motorized equipment. This bureau conducts training classes for emergency response personnel, assists with KNOX Box installation on vehicles, provides field repairs at emergencies, ground support at major fires and prepares new vehicles for service.

Service Center – provides pickup and delivery of important emergency response supplies, such as oxygen cylinders and monitors and updates record management to account for and track supplies. This bureau also provides logistical support for supplies needed at emergencies and provides a logistics trailer with fire suppression materials and it provides delivery and pick up of supplies.

These support functions were not part of this study and are described only for understanding the breadth and depth of the RCFD organization. A mini- review of fire prevention and fleet services was completed, in part because they are critical to the future delivery of services by RCFD as they related to standards of cover.

Following is the table of organization for RCFD.

Figure 2: RCFD Table of Organization



Organization of the Report

Analysis, significant findings, and recommendations are addressed in the following chapters:

Chapter II, Development and Review of Planning Areas, provides a review and discusses each of the 29 planning areas developed for this study. This section is important for understanding the various service areas of Riverside County, in particular the population, development, and risks found in each area.

Chapter III, RCFD Organization; Fire, EMS, and Special Operations, discusses the overall organization of the fire departments and its management structure. The deployment of unit types such as engines, ladders, battalion chiefs, wildland firefighting and special services such as hazmat response are also presented here. A matrix of the 94 fire stations to include the occupancy date of the facility, and the general condition of each station is also included here.

Chapter IV, Population Growth and Risk Assessment, provides information on the population changes expected, as well as the current risks, and the expected future demand. Much of the analysis in this section is shown by the 29 planning areas developed for this study.

Chapter V, Response Time, Workload, and Reliability Analysis, discusses each unit deployed by the RCFD, their workloads, response times to calls in their area, and the reliability of service provided in the various battalions.

Chapter VI, Station Location Analysis, reviews the location of RCFD stations and the changes necessary to improve service delivery for the various planning areas in Riverside County.

Chapter VII, Contract Fee Analysis, is the cost analysis review for the RCFD and the 21 cities that contract services from Riverside County. A review is made of the current fee schedule used to determine the amount paid by cities for fire service and the cost increases incurred by contract agencies. Alternatives to improve the current contract fee formula are also provided.

Chapter VIII, Fire Marshal and Fleet Services, reviews the fire prevention and investigation activities and staffing, and the maintenance of the RCFD fleet.

Chapter IX, Summary of Recommendations, includes a table and page reference for all of the recommendations made in earlier chapters. This puts them all in one place.

Chapter X, Appendices, included here are references and discussion about the technical aspects of the analysis, maps, data, and background information not included in the body of the report.

CHAPTER II. DEVELOPMENT AND REVIEW OF PLANNING AREAS

For a study of this complexity, especially one that covers such a large and diverse area as Riverside County, it is best to analyze services using smaller geographical areas, not countywide. For this reason planning areas were developed that include the contract cities and unincorporated areas.

This section discusses how the planning areas were developed, and presents information about each area. Analysis of the services, response times, and recommendations on station location and deployment are provided later in the report.

Description of Cities and Planning Areas

To develop a useable format from which to analyze the County, TriData's project team discussed options with the RCFD staff and the County's planning department. These discussions resulted in a preliminary planning area format, which was then slightly modified based on input from RCFD staff.

While developed for this study, the planning areas might be useful for analyses of other services in the county. For example, tracking new building permits, police responses, or other government geodata can be layered on planning area maps. Each of the contract cities and the unincorporated areas of the County were placed into separate planning areas. In this way contract cities could be analyzed independently from the unincorporated areas, an important consideration because the fee structures of the contract cities were also to be analyzed. Services in these communities are funded under contract, whereas County property tax pays for services in the unincorporated areas.

There are 29 planning areas created for this study: 20 contract cities and 9 unincorporated areas.

Cities

Banning	Beaumont	Calimesa
Coachella	Desert Hot Springs	Eastvale
Indian Wells	Indio	Jurupa Valley
Lake Elsinore	La Quinta	Menifee
Moreno Valley	Norco	Palm Desert
Perris	Rancho Mirage	San Jacinto
Temecula	Wildomar	

Unincorporated Areas

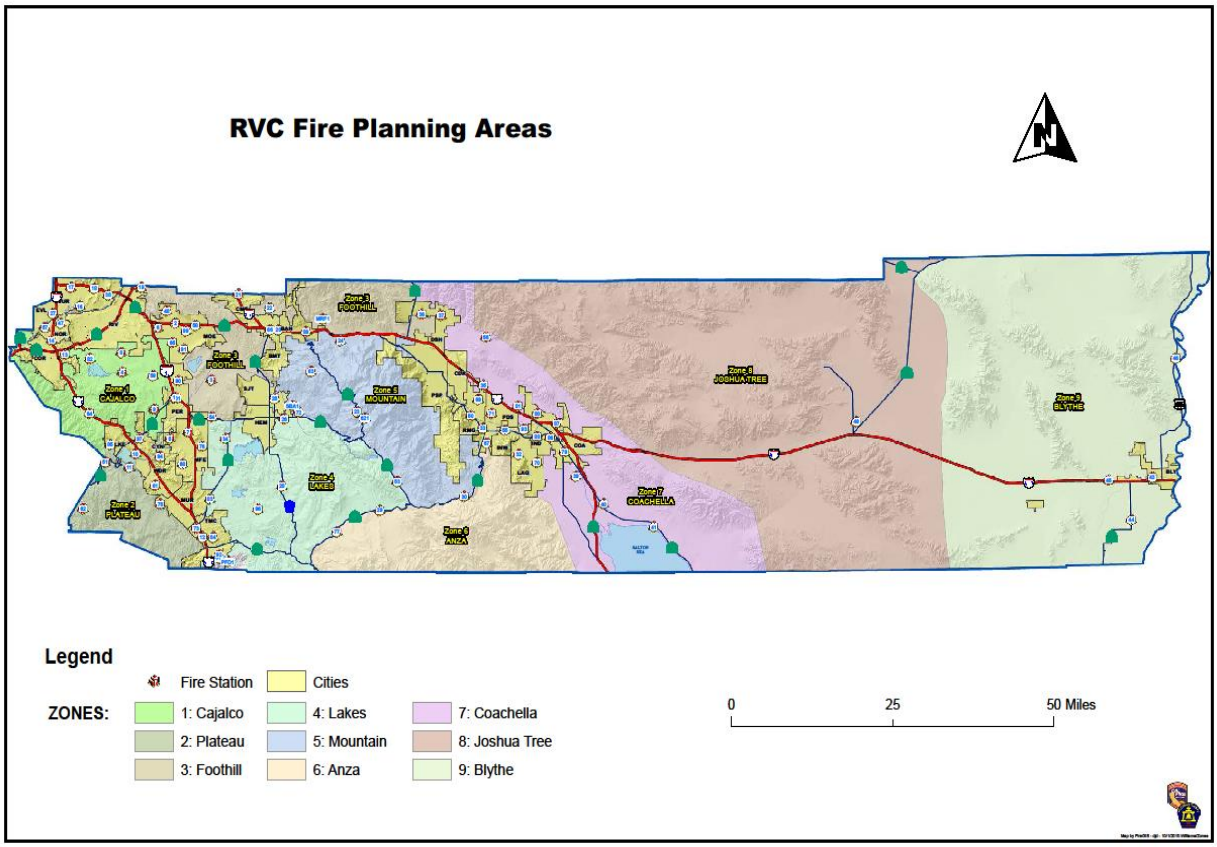
Anza	Blythe	Cajalco
Coachella	Foothill	Lakes
Mountain	Plateau	Joshua Tree

There is also one fire district and three tribal fire departments within the County: 1) Idyllwild; 2) Morongo; 3) Pechanga and; 4) Soboba. Morongo, Pechanga, Soboba and Idyllwild, which are all in the Mountain planning area, have their own fire departments and contract with RCFD for 911 dispatch services.

The boundary lines for planning areas in the unincorporated areas generally follow major highways, a waterway, or other geographical or regulatory feature. The largest planning areas, Joshua Tree and Blythe, cover more than half of Riverside County's 7,200 square miles; however, they are sparsely populated with very low demand for service.

Figure 3 shows the location of the planning areas in unincorporated Riverside County. More detailed maps that show city boundaries and fire station locations are provided at the end of this chapter.

Figure 3: RCFD Planning Areas



Following are the general descriptions of each planning area, beginning with the contract cities.

City of Banning

Existing Fire Stations:	89
Description:	Banning covers 23 square miles between the City of Beaumont and the Morongo Indian Reservation, which has a resort approximately five miles east on Interstate 10. This area is referred to as the San Gorgonio Pass with an elevation of approximately 2,600 feet. Its northern limits extend to Riverside County jurisdictional limits at the San Bernardino Mountains. In the south east portion of the City, Route 243 intersects with I-10 extending south through Idyllwild to Route 74. Only one station is located in Banning: • Fire Station 89 has one Type 1 engine (staffed).

City of Beaumont

Existing Fire Stations:	20, 66
Description:	Beaumont covers 31 square miles and is approximately 2,612 feet at the summit of the San Gorgonio Pass and situated between Banning on the northeast, Calimesa on the north west, and San Jacinto on the south. I-10 extends from Route 60 eastward through Banning on the northern city limits and Route 79 travels north and south along its westerly jurisdictional limits. Beaumont was formerly mostly ranch properties and orchards, though now is more populated and known for its many master-planned residential communities. • Fire Station 20 has one staffed Type 1 engine (staffed), two Type 3 engines (staffed), and a state-owned dozer and dozer tender. • Fire Station 66 has one Type 1 engine (staffed), one Type I engine (unstaffed reserve), and one squad unit (also not staffed).

City of Calimesa

Existing Fire Stations:	21
Description:	Incorporated in 1999, Calimesa covers 14.87 square miles between the Riverside County limits near the city of Yucaipa. Calimesa has an elevation of approximately 2,400 feet and contains approximately 4,000 households. • Station 21 has one Type 1 engine (staffed). It is the only engine in Riverside County with two-person staffing. Just over 1200 calls occurred in Calimesa in FY2015.

City of Coachella

Existing Fire Stations:	79
Description:	Coachella covers 29 square miles in the Coachella Valley at an elevation of 69 feet below sea level. Incorporated in 1946, the city has approximately 11,379 households. Approximately 28 miles east of Palm Springs, Coachella remains largely rural. • Station 79 has one Type 1 engine (staffed) and one Type 1 reserve engine (unstaffed). A medic squad (unstaffed) and one water tender (unstaffed) are also maintained by Coachella. Station 79 handles approximately 2600 calls per year.

City of Desert Hot Springs

Existing Fire Stations:	36, 37
Description:	Desert Hot Springs is situated on 24 square miles of land in the Coachella Valley at an elevation of 1,076 feet. Incorporated in 1963, Desert Hot Springs is located north of I-10 approximately 10 miles east of the City of Banning, with Palm Springs and Cathedral City to the south. Primary access for the city is by local roads, which intersect with I-10. Desert Hot Springs has two fire stations: • Fire Station 36 has one Type 1 engine (staffed). • Station 37 has one Type 1 engine (staffed) and one Type 1 reserve engine (unstaffed). An unstaffed squad is also kept at Station 37. Combined, Stations 36 and 37 respond to approximately 5746 calls in FY15 year.

City of Eastvale

Existing Fire Stations:	27
Description:	Eastvale covers 11 square miles and was incorporated in 2010. Located on the western-most border of Riverside County, it is only six miles east of the Los Angeles County and five miles northeast of the Orange County, Eastvale has many commuters due to the easy access to I-15 and SR 91, 60 and 71. • Fire Station 27 has one Type 1 engine (staffed) and one Type 1 (unstaffed) reserve engine. One medic squad (staffed) is also located at Station 27. Approximately 2600 calls for service occur in the city each year.

City of Indian Wells

Existing Fire Stations:	55
Description:	Covering an area of 14 square miles, Indian Wells was incorporated in 1967. Indian Wells is located in the Coachella Valley between Palm Desert on the north, La Quinta on the southwest and Rancho Mirage on the east. Notable is the second-largest tennis stadium in the world is in Indian Wells. Primary access roads to Indian Wells are from I-10. • The city has one fire station (55) with one Type 1 engine (staffed). Indian Wells also has two ambulances (staffed (one funded by Palm Desert)) and one reserve (unstaffed) ambulance. Indian Wells had just over 1,000 calls for service to its fire station in FY2015.

City of Indio

Existing Fire Stations:	80, 86, 87, 88
Description:	Indio is also located situated in the Coachella Valley, between Coachella on the East and La Quinta on the west. Primary access is by I-10, approximately 27 miles east of Palm Springs. Indio has four fire stations: • Station 80 has one Type 1 engine (staffed), one medic unit (staffed), and one reserve medic unit (unstaffed). • Station 86 has one Type I engine, one aerial ladder truck, and one ambulance, all of which are staffed. One reserve medic unit is also located at Station 86. • Station 87 has one Type 1 engine and one Type 1 reserve engine, which is not staffed. A water tender is also maintained at Station 87. • Located at Station 88 are one Type 1 engine and one ambulance, both of which are staffed. One reserve medic unit is also located at this station. With 7100 calls per year, Indio is the sixth busiest in total calls of the 21 contract cities. Station 86 is the busiest of the four stations.

City of Jurupa Valley

Existing Fire Stations:	16, 17, 18, 38
Description:	Jurupa Valley is a new city, incorporated in 2011. Covering 43 square miles, Jurupa Valley borders the Santa Ana River on the South, San Bernardino County on the northeast, Norco on the southwest and Riverside on the south. The Rubidoux Community Services District (CSD) lies within the City limits of Jurupa. Jurupa Valley has three stations: • Station 16 has staffed Type 1 engine. • Station 17 has one staffed Type 1 engine, one 100' aerial ladder truck (staffed), one squad and one urban search and rescue (USAR) vehicle (both unstaffed). • Station 18 has one Type 3 engine (unstaffed), one Type 1 engine (staffed), one medic unit (staffed), and one state-owned Type 3 engine (staffed). • Station 38 has one Type I engine (staffed) and one reserve Type I engine. A breathing support unit (unstaffed) is also at this station. The City had 8700 calls in FY2015.

City of La Quinta

Existing Fire Stations:	32, 70, 93
Description:	La Quinta covers 36 square miles and has a population of approximately 40,000. Known as a prime winter tourist destination, La Quinta is the southernmost city in the Coachella Valley. It is bordered by Indian Wells and Indio, both of which are RCFD contract cities. • Station 32 has one Type 1 engine (staffed) and one squad-type vehicle (unstaffed). • Station 70 has one Type 1 engine (staffed) and one Type reserve. • Station 93 has one Type 1 engine (staffed). La Quinta had 3700 calls for service in FY2015.

City of Lake Elsinore

Existing Fire Stations:	10, 85, 94, 97
Description:	Lake Elsinore was officially given its name in 1972, but was incorporated in 1908 as the town of Terra Cotta and Laguna Grande. The City covers 36 square miles and includes a 3,000-acre lake that has spurred additional development. Lake Elsinore is located in the Temescal Valley in the shadow of the Santa Ana Mountains to the west. I-15 is directly through the city. • Station 10 has one Type 1 engine (staffed) and two state-owned Type 3 engines (both staffed). • Station 85 has one Type 1 engine (staffed) and one rescue boat (unstaffed). • Station 94 operates with two Type 1 engines (one staffed and one reserve). • Station 97 has one 75' aerial ladder truck (staffed) and one reserve ladder truck (unstaffed). A squad unit (unstaffed) is also kept at Station 97. Lake Elsinore has approximately 4700 calls for fire and EMS service each year.

City of Menifee

Existing Fire Stations:	5, 7, 68, 76
Description:	Menifee was incorporate in 2008 and was born out of retirement developments. Covering 47 square miles, Menifee is surrounded on the north, south, and west by the cities of Perris, Canyon Lake, Lake Elsinore, Wildomar, and Murrieta. East of Menifee is unincorporated area. I-215, a major commuter route to San Diego and Riverside runs directly through the center of Menifee. Menifee has four fire stations: • Station 5 has one Type 1 engine (staffed). • Station 7 has one Type 1 engine (staffed) and one Type 1 engine (unstaffed reserve). A squad (unstaffed) is also kept at Station 7. • Fire Station 68 operates with one Type 1 engine (staffed). • Station 76 has one Type 1 engine (staffed), one 100' aerial ladder truck (staffed), and one squad (unstaffed). A USAR vehicle (unstaffed) is also located at Station 76. Menifee is the second busiest city on the 20 contract cities in Riverside County with just over 9000 calls in FY2015. Only Moreno Valley is busier.

City of Moreno Valley

Existing Fire Stations:	2, 6, 48, 58, 65, 91, 99
Description:	Moreno Valley, which was incorporated in 1984, covers 51 square miles. The city is widely known for the location of March Air Force Base that remains in partial operation as the March Joint Air Reserve Base. Moreno Valley is bordered on the north and east by unincorporated Riverside County and west by Riverside City and on the south by the city of Perris. Route 60 extends from the West to the east through northern Moreno Valley from Jurupa Valley and Riverside into Calimesa where it joins I-10. Moreno Valley has seven fire stations, the most of any of the contract cities: • Fire Station 2 has one Type 1 engine (staffed) and one100' aerial ladder truck (staffed). A USAR vehicle (unstaffed) is also at Station 2. • Station 6 has one Type 1 engine (staffed) and one unstaffed Type 1 reserve engine. • At Station 48 is one Type 1 engine (staffed). • Station 58 has one Type 1 engine (staffed) and one unstaffed Type 3 engine. • Station 65 has one Type 1 engine (staffed) and one Type 1 unstaffed reserve engine. • Fire Station 91 houses one Type 1 engine, one squad and one aerial ladder truck, both of which are unstaffed. • Located at Station 99 is one Type 1 engine (staffed). Moreno Valley is the busiest of the 30 planning areas with almost 17,000 calls per year. Next to the city of Riverside (not served by RCFD), Moreno Valley is also the most populated (199,700) in the County.

City of Norco

Existing Fire Stations:	14 (state), 47, 57
Description:	Incorporated in 1964, Norco covers 20 square miles. It is known uniquely as a city where residents can ride their horse into town and tie it up while conducting business. In 2006, Norco was aptly labeled 'Horsetown U.S.A.'. Norco is located in northwest County on the borders of San Bernardino County, Jurupa Valley, Riverside, and Corona. I-15 runs through the center of the city. The city's three fire stations include two owned by the city and one state-operated facility: • Station 47 is a city-owned station with one Type1 engine (staffed). • Station 57 has one Type 1 engine (staffed) and one Type 1 engine (unstaffed reserve). An unstaffed animal rescue unit is also located at Station 57. • Fire Station 14 is a state-operated facility that operates within Norco. It has one Type 3 engine (staffed) and one reserve Type 3. Units in Norco handled just over 2200 calls in FY2015.

City of Palm Desert

Existing Fire Stations:	33, 67,71
Description:	Palm Desert is 27 square miles and located in central County along I-10. It is bordered primarily by Rancho Mirage, Indian Wells, and Indio, all of which are contract cities, and Cathedral City, which is not. A major tourist destination, Palm Desert rapidly grew between 1980 and 2,000, and is primarily a resort destination with residential communities. Palm Desert has three fire stations: • Station 33 has one Type 1 engine and one aerial ladder truck, both of which are staffed. Also located here are one medic unit (staffed), one reserve medic unit, and one reserve aerial ladder truck. A squad-type vehicle and USAR unit are also at Station 33. • Station 67 has one Type 1 engine (staffed), and one medic transport units (staffed). • Located at Station 71 are one Type 1 engine (staffed) and one medic unit, both of which are staffed. A reserve Type 1 engine and reserve medic are also located here as is a breathing support unit, which is not staffed. Palm Desert is in the upper tier of cities in terms of call volume. In FY2015, units in Palm Desert responded to almost 8700 calls.

City of Perris

Existing Fire Stations:	1, 90, 101
Description:	Incorporated in 1911, Perris is 31 square miles. It is bordered on the north by Moreno Valley and south by Canyon Lake and Menifee, with mostly open space and rural areas to the west and east. I-215, a major transportation route through the County runs through Perris. Notably, Perris was the area that suffered considerably more than some other areas during the economic recession with many homes being foreclosed. Perris has three fire stations: • Station 1 is located on the site of the RCFD headquarters. Units at this location include three Type 3 engines, two of which are staffed; two dozers and two dozer tenders are also maintained at Station 1, along with one water tender. As the units suggest, the primary mission for units at Station 1 is wildland firefighting. • Station 90 has one 75' aerial ladder truck (staffed). One Type 1 engine, squad and breathing support unit, all of which are unstaffed, are also located at this station. • Fire Station 101 has one Type 1 engine (staffed). In FY2015, Perris experienced almost 5900 calls for service. Notably, this was 84 percent higher than 2011, when the city had 3200 calls. This was the highest increase in call volume for any area in Riverside County.

City of Rancho Mirage

Existing Fire Stations:	50, 69
Description:	Incorporated in 1973, Rancho Mirage covers 24 square miles. It is located in central county between Cathedral City, Palm Desert, and Indian Wells. The city is known for its upscale residential areas, which includes 12 golf courses and resorts. Fire Stations 50 and 69 are located in Rancho Mirage: • Station 50 has one Type 1 engine (staffed) and one medic unit (unstaffed). • Station 69 has one staffed Type 1 engine and one medic unit (staffed). A reserve medic unit (unstaffed) is also kept here. Combined, the two stations in Rancho Mirage handled just over 4300 calls in FY2015.

City of San Jacinto

Existing Fire Stations:	25
Description:	San Jacinto is one of the oldest cities in Riverside County, as it was incorporated in 1888. Covering 26 square miles, the city is in near-west County and bordered by the city of Hemet on the south and Beaumont on the north. East and west of San Jacinto is mostly rural and open space unincorporated areas with the San Jacinto Mountains located east of the city. The state and city co-share Station 25. San Jacinto also has a new fire station(78) that was closed for budgetary reasons • Station 25 has one Type 1 engine (staffed), and one Type 1 reserve engine (unstaffed), while the state provides one Type 3 engine (staffed). An unstaffed squad is also located at Station 25. San Jacinto had just over 4800 calls in FY2015.

City of Temecula

Existing Fire Stations:	12, 73, 84, 92, 95
Description:	Incorporated in 1989, Temecula covers 20 square miles and is fifth in Riverside County population. Temecula is known for its upscale residential properties, due in part to its proximity to San Diego. I-15 extends through western Temecula from the northwest to the south. Many portions of open space areas are wine vineyards in rolling hills. Temecula is the only city whose contract requires four-person staffing on fire units. Temecula also has a brand new fire station (95) that is not occupied. The five stations are: • Fire Station 12 (a state-owned fire station) has one (staffed) and one unstaffed Type 1 engine. Two state-owned (and staffed) Type 3 engines are also located here. • Fire Station 73 has one Type 1 engine (staffed) and one 100' aerial ladder truck (staffed). One squad-type and one USAR vehicle (both unstaffed) are also maintained at this station. • Fire Station 84 has one Type 1 engine (staffed) and one unstaffed reserve Type 1 engine. One unstaffed medic squad reserve unit is also at Station 84. • Fire Station 92 has one Type 1 engine (staffed). One breathing support unit and one squad vehicle, both of which are not staffed are also maintained here. • Station 95, which was completed in 2006, is located at 32131 Calle Chapos, Temecula. The facility was constructed by a developer in anticipation of additional homes that were not completed. It is currently unstaffed. Just over 7400 calls occurred in Temecula in FY2015.

City of Wildomar

Existing Fire Stations:	61
Description:	Only recently incorporated (2008), Wildomar covers 24 square miles. I-15 (Temecula Valley Freeway), extends from the northwest to the southwest through western portions of Wildomar, which is bordered by Lake Elsinore, Canyon Lake, and Menifee. Lake Elsinore and Menifee are both contract cities as was Canyon Lake, before it decided to stop its contract with the County. Open space and rural areas are located on the west to the San Diego County jurisdictional limits. Wildomar has one station: • Fire Station 61 has one Type 1 engine (staffed) and one Type 1 engine reserve (unstaffed). Station 61 had just over 2,000 calls in FY2015.

Rubidoux Community Service District (RCSD)

Existing Fire Stations:	38
Description:	The RCSD was formed in 1952 to manage water, trash and fire protection services. It signed a contract with RCFD for emergency response services in 1991. The Santa Ana River is the eastern boundary with the City of Riverside and Moreno Valley to the west and southwest and San Bernardino County to the North. Highway 60 extends through the center of the District. Rubidoux District has one station. • Station 38 has one district-owned Type 1 engine (staffed) and one reserve Type 1 engine (unstaffed). A breathing support unit is also maintained at Station 38. Due to its location within Jurupa Valley, the RCSD is being analyzed as part of the Jurupa Valley planning area. The District had 2600 calls in FY2015.

Following are descriptions of the nine unincorporated planning areas.

Anza Unincorporated Area

Existing Fire Stations:	29, 30, 77
Description:	Anza covers 396 square miles and is located between Routes 74 and 79 to the east, Imperial County to the south, and the Santa Rosa Mountains. Anza is a sparsely populated desert and mountain area. • Station 29 has one county-owned medic unit (staffed) and one Type 2 engine (unstaffed). A state-owned Type 3 engine (staffed) is also here. • Station 30 has one county-owned Type 2 engine (staffed). This station also has one squad-type vehicle and one water tender, both of which are unstaffed. • Station 77 has one county-owned Type 2 engine (staffed). In FY2015, the Anza planning area had 714 calls.

Blythe Unincorporated Area

Existing Fire Stations:	43, 44, 45, 46
Description:	Blythe covers 1622 square miles. It is bordered on the south by Imperial County, the north by San Bernardino County, the east by Arizona and the west by Highway 177 at the intersection of I-10. This area is very rural with few residents. The city of Blythe, which has its own volunteer fire department, is in this planning area but is not being studied. • Station 43, which is located within the corporate limits of Blythe, has one county-owned Type 1 engine (staffed) and one county-owned rescue boat. The rescue boat is not staffed. • Station 44 has one Type 1 engine (staffed). • Station 45 has one county-owned Type 1 engine (staffed) and one unstaffed reserve Type 1 engine. A breathing support and USAR vehicle, both of which are not staffed, are also maintained here. • Station 46 was formerly a volunteer station and is now used for storage. Located here is a county-owned rescue boat and one reserve Type 1 engine. The Blythe planning area had the second lowest number of calls for any of the 30 planning areas, 543 in FY2015.

Cajalco Unincorporated Area

Existing Fire Stations:	4, 8, 9, 13, 59, 64, 82
Description:	The Cajalco Planning Area covers 230 square miles. It is between the Orange County limits and the Cities of Corona, Riverside, Moreno Valley, Perris, Canyon Lake and Lake Elsinore. I-15 runs through this planning area on the western edge, the major commuter route between LA and San Diego. The Ben Clark Riverside County West Training Center located at 16902 Bundy Avenue, Riverside (March Air Base) is located in this planning area. Though unincorporated, the Cajalco area is heavily residential with many areas subject to urban interface wildland fires. • Station 4 has one county-owned Type 1 engine (staffed) and one Type 3 engine (unstaffed). • Station 8 has one county-owned Type 1 engine (staffed) and one unstaffed squad and water tender. • Station 13 has one county-owned Type 1 engine (staffed) and one squad-type vehicle (unstaffed). • Station 9 has one county-owned Type 1 engine (staffed) and one unstaffed water tender. • Station 59 has one county-owned Type 1 engine (staffed) and one unstaffed reserve Type 1 engine. • Station 64 has one county-owned Type 1 engine (staffed) and one unstaffed reserve Type 1 engine. • Station 82 has one county-owned Type 1 engine (staffed). Cajalco is the busiest of the nine unincorporated planning area with 7700 calls in FY2015.

Coachella Valley Unincorporated Area

Existing Fire Stations:	35, 39, 40, 41, 56, 81
Description:	The Coachella Planning Area covers 661 square miles. Six fire stations are located within the Coachella planning area. RCFD's East Ops Training Facility is also located within this area, just east of Station 35. • Station 35 has one county-owned Type 1 engine (staffed) and one breathing support unit (staffed). A reserve breathing support unit is also here. • Station 39 has one county-owned Type 1 engine (staffed) and one Type 3 engine (unstaffed). A water tender (unstaffed) is also at this station. • Station 40 has one county-owned Type 1 engine (staffed) and one unstaffed reserve Type 1 engine. One medic squad (staffed) and one unstaffed Type 3 engine are also located here. • Station 41 has one county-owned Type 1 engine. • Station 56 has one county-owned Type 1engine (staffed). • Station 81 has one county-owned Type 1 engine. A hazmat unit and hazmat squad (both staffed) is also located at this station. Coachella had 7200 calls in FY2015.

Foothill Unincorporated Area

Existing Fire Stations:	3, 19, 54
Description:	Foothill is located north of Highway 74 and bordered by Moreno Valley and Perris on the west and Hemet San Jacinto, Beaumont and Calimesa on the east. Its northern border is San Bernardino County. Foothill covers 324 square miles. Extensive development is occurring in this planning area, in particular along the perimeters of the border cities listed above. Fire Stations 3, 19, 54 are located in the planning area: • Station 3 has one county-owned Type 1 engine (staffed). • Station 19 has one county-owned Type 1 engine (staffed). • Station 54 has one county-owned Type 1 engine (staffed) and one unstaffed squad unit. This area had 4600 calls in FY2015.

Lake Unincorporated Area

Existing Fire Stations:	26, 28, 34, 72, 83, 96
Description:	The Lake planning area is located west of Menifee, Murrieta and Temecula and south of the Foothill planning area and city of Hemet. Covering 464 square miles this area is experiencing heavy development on the east side nearest the cities. • Station 26 has one county-owned Type 1 engine staffed) and one water tender (unstaffed). • Station 28 has one county-owned medic squad (staffed) and one unstaffed Type 2 engine. Two state-owned Type 3 engines (staffed) and one water tender (unstaffed) are also at this station. • Station 34 has one county-owned Type 1 engine, one hazmat unit, and one hazmat squad, all of which are staffed. A reserve hazmat units and hazmat squad are also here. • Station 72 has one county-owned Type 1 engine (staffed) and one squad (unstaffed). • Station 83 has one county-owned Type 1 engine (staffed), one water tender, and one OES Type 1 engine. The water tender and OES engine are not staffed. • Fire Station 96 has one county-owned Type 1 engine (staffed). • The Lake area also has one of the three CAL FIRE Conservation Camps • (Bautista). Bautista Conservation Camp has 6 Type 1 Hand crews and one Battalion Chief (staffed) and one Type 3 reserve engine (unstaffed). The Lake planning area is the busiest of the nine unincorporated planning areas. This planning area had slightly less than 8200 calls in FY2015.

Plateau Unincorporated Area

Existing Fire Stations:	11, 51, 62, 75
Description:	The Plateau planning area is in southwest Riverside County and covers 158 square miles. Lake Elsinore, Wildomar, Murrieta, and Temecula border this area on the east with the westernmost border being San Diego/Orange County. This area is also heavily residential, especially along the border cities listed above. The region is also highly susceptible to wildland-urban interface fires. • Station 11 has one county-owned Type 1 engine (staffed) and one Type 2 engine (unstaffed). • Station 51 is a county-owned trailer on the Cleveland Forest Service Station 23 site. Located here is one Type 2 engine (staffed). • Station 62 has one county-owned reserve squad vehicle, which is staffed part time by reserve (volunteer) firefighters. • Station 75 has one county-owned Type 1 engine (staffed) and one unstaffed Type 3 engine. A Type 3 federally-owned engine (CNF24) is also at this station. In FY2015, the Plateau area had 1500 calls.

Mountain Unincorporated Area

Existing Fire Stations:	22, 23, 24, 53, 63
Description:	Located between the Santa Rosa Mountains on the East, Route 74 on the South and southeast, San Bernardino to the north and San Jacinto and Banning to the west, the Mountain area covers 388 square miles. This area is very rural, mountainous, and sparsely populated. The County's Mountain Resource Center (MRC), which is the Administrative Office for the County Resource and Forester Personnel is located in this planning area. • Station 22 has one county-owned Type 1 engine (staffed), one Type 1 engine reserve (unstaffed) and one water tender (unstaffed). • Station 23 has one county-owned Type 1 engine (staffed) and one state-owned Type 3 engine (staffed). • Station 24 has one county-owned Type 1 engine (staffed). One Type 3 engine from the Forest Service (BDF) is also staffed during the high-fire season. • Station 53 has one county-owned Type 1 engine and state-owned Type 3 engine, both of which are staffed). A Type 1 reserve engine and water tender (both unstaffed) are also here. • Station 63 has one county-owned Type 2 engine (staffed) and one Type 3 engine and squad (both unstaffed). The Mountain area had 3100 calls in FY2015.

Joshua Tree Unincorporated Area

Existing Fire Stations:	49
Description:	The Joshua Tree planning area covers 2113 square miles. It is bordered on the north by San Bernardino County and the west by the cities of the Coachella Valley. Its southern boundary is I-10. Extremely rural and sparsely populated in the central and east, the west side is more heavily populated nearest the cities of the Coachella Valley. • Station 49 has one Type 1 engine (staffed with four personnel), one unstaffed reserve Type 1 engine, and one water tender (unstaffed). In FY2015, the Joshua Tree planning area had the lowest number of calls (280) of all planning areas.

Cities Not Under Contract to RCFD

Quite a few cities and districts in Riverside County are not served by RCFD and were not analyzed as part of this study. However, the locations of stations within these communities are included in the GIS maps of this report, in part because they can provide and received mutual aid with the jurisdictions.

The cities not served by RCFD are:

Blythe – Covering an area of 26 square miles, the city of Blythe has a population of around 20,000. This city provides its own emergency services from one fire station, which is staffed by volunteers.

Cathedral City – Located within the Coachella Valley between Palm Springs and Rancho Mirage, Cathedral City is 22 square miles with a resident population of approximately 51,000. It has its own fire department with approximately 33 career personnel.

Corona – Covering 39 square miles with a population of 153,000, Corona is the second most populated city in Riverside County. It has seven stations and an all-career staff of 112 personnel.

Hemet – Is situated in the San Jacinto Valley and covers 28 square miles with a population of about 83,000. The Hemet-Ryan Regional Airport, which is home for the CAL FIRE Air Base, is located in Hemet. Hemet maintains its own career fire department and operates from four stations.

Murrieta – Covering 33 square miles with a population estimated at 108,000, the city borders Wildomar and Menifee. It has its own municipal fire department with five stations. Primarily career, it does recruit volunteers.

Palm Springs – Palm Springs has a population of approximately 44,552 and covers 94 square miles. Known primarily as a resort community, it maintains its own career fire department consisting of four stations.

Riverside – Riverside covers 99 square miles and is the County seat. Located in north Riverside County, along the San Bernardino County border and Moreno Valley, Riverside has a population of approximately 320,000. Its all-career fire department has 14 stations with approximately 212 personnel assigned to operations.

Planning Area Maps

Following are the maps depicting the County planning areas, moving from west to east. Contract city and planning area names are referenced throughout this report.

Figure 4: Unincorporated Cajalco Area and Northwest County

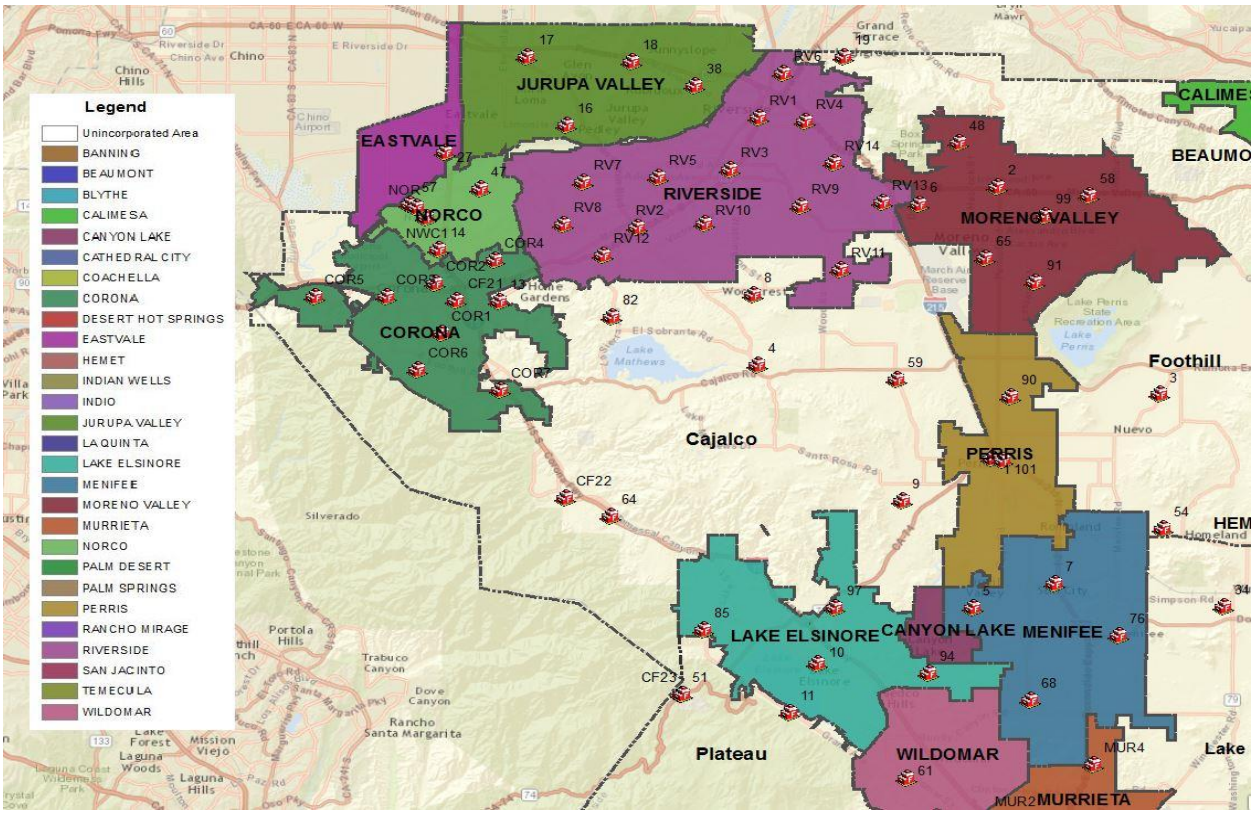


Figure 5: Unincorporated Plateau Area and Southwest County

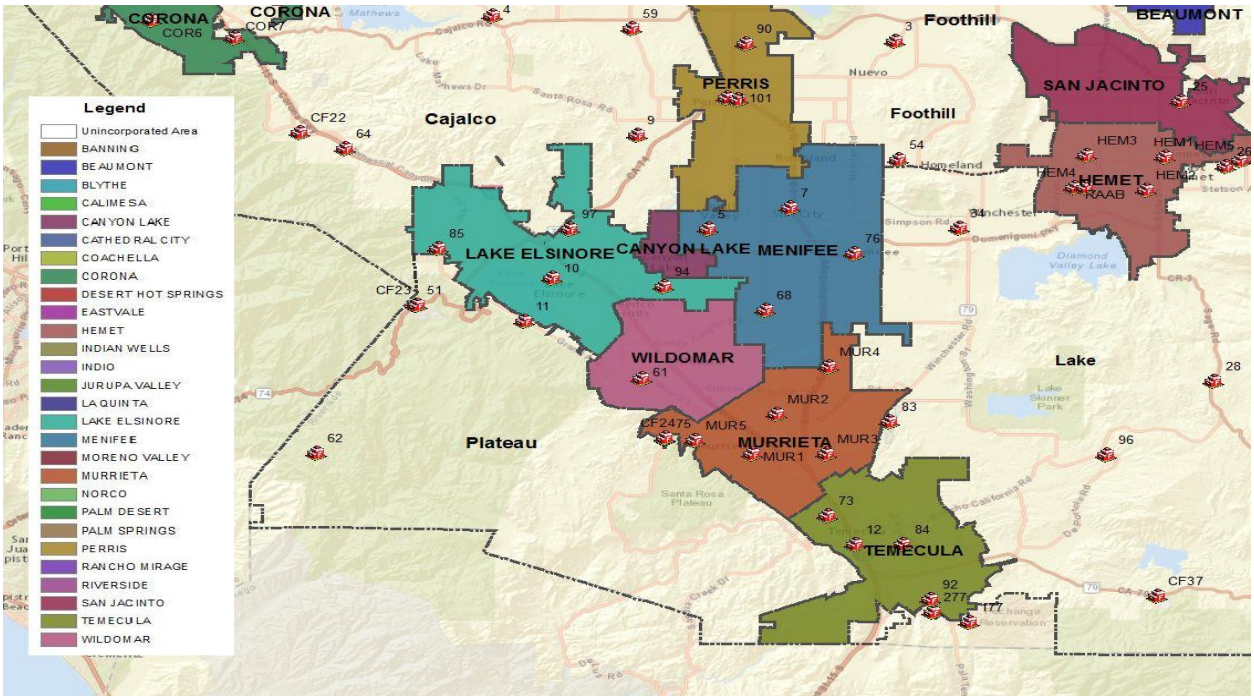


Figure 6: Unincorporated Lake Area and Near-West County

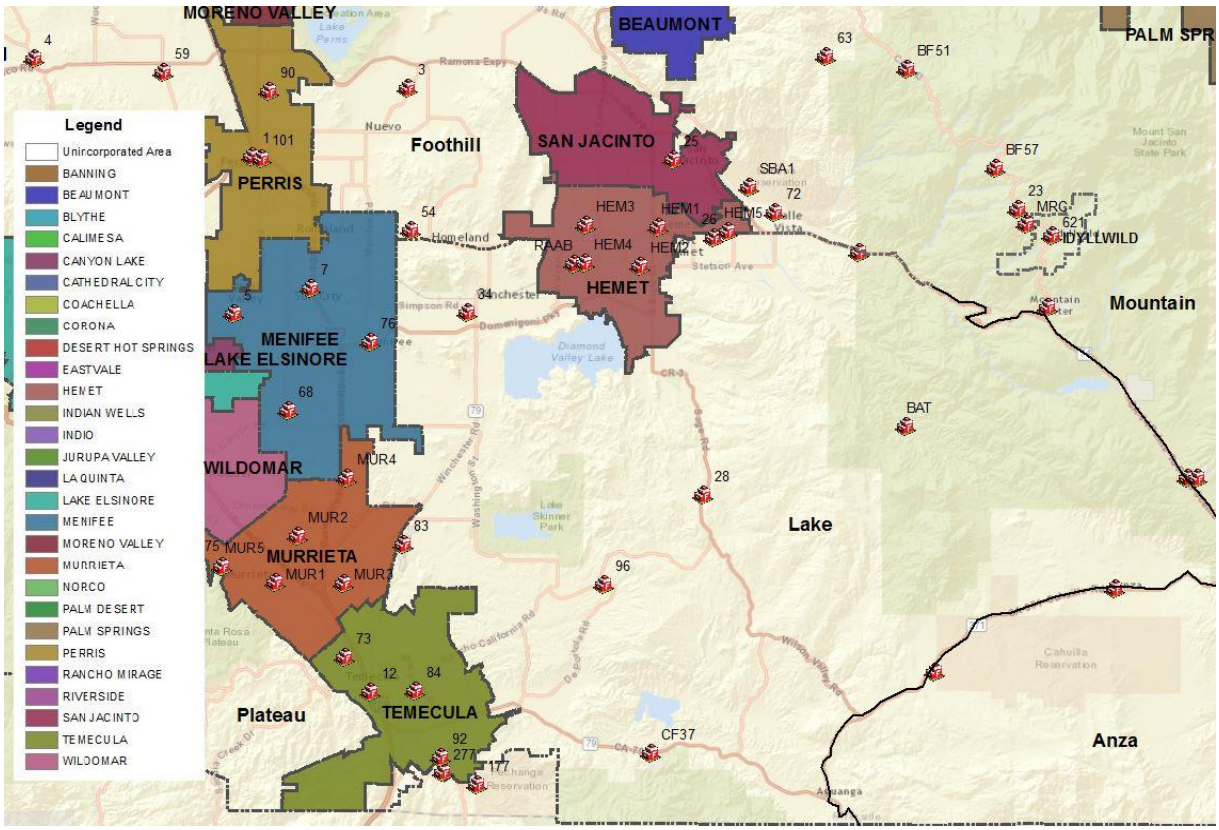


Figure 7: Unincorporated Mountain, Joshua-Tree Area and Central County

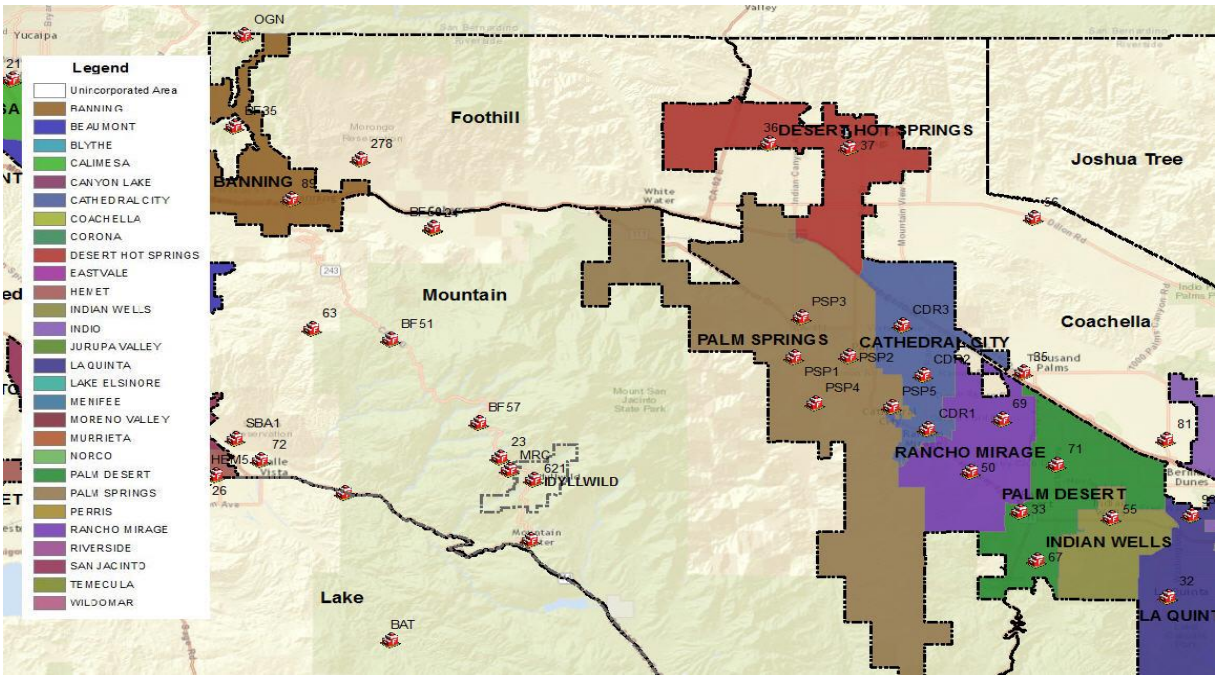


Figure 8: Unincorporated Anza, Joshua-Tree, Coachella Area and Central County

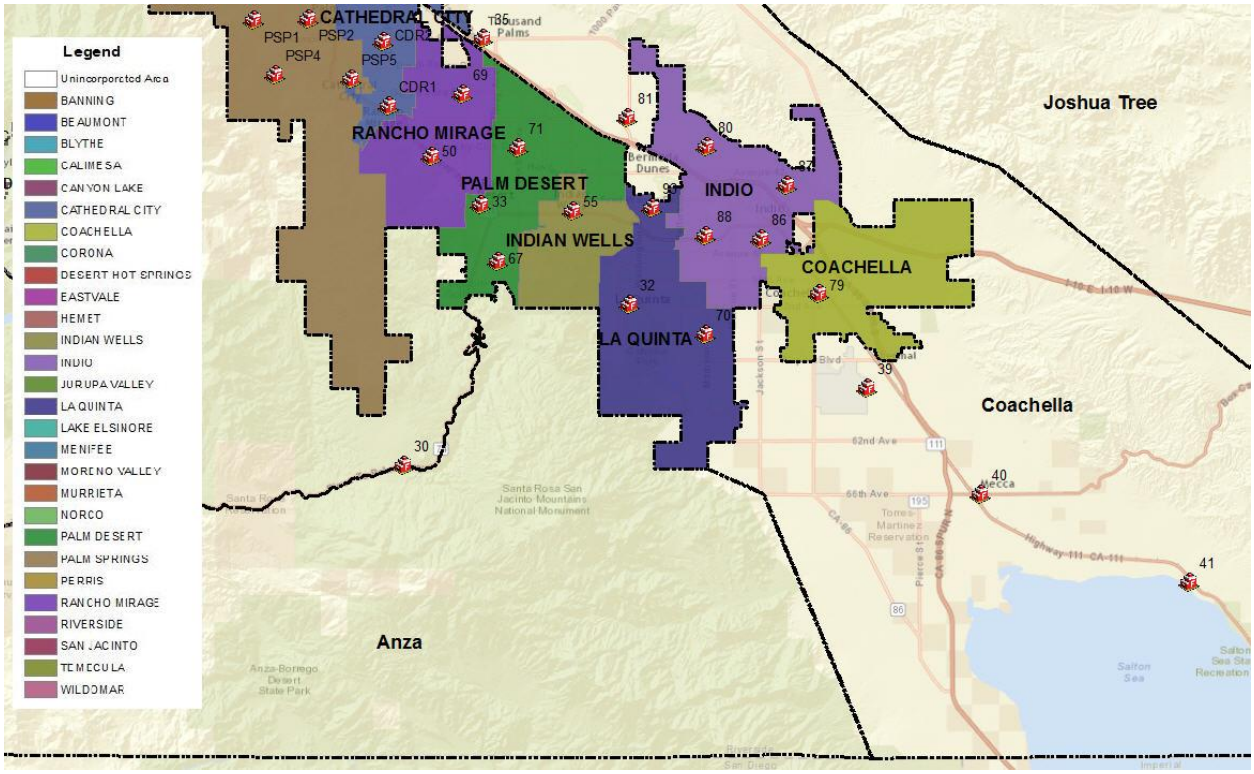


Figure 9: Unincorporated Joshua-Tree, Coachella Area and East County

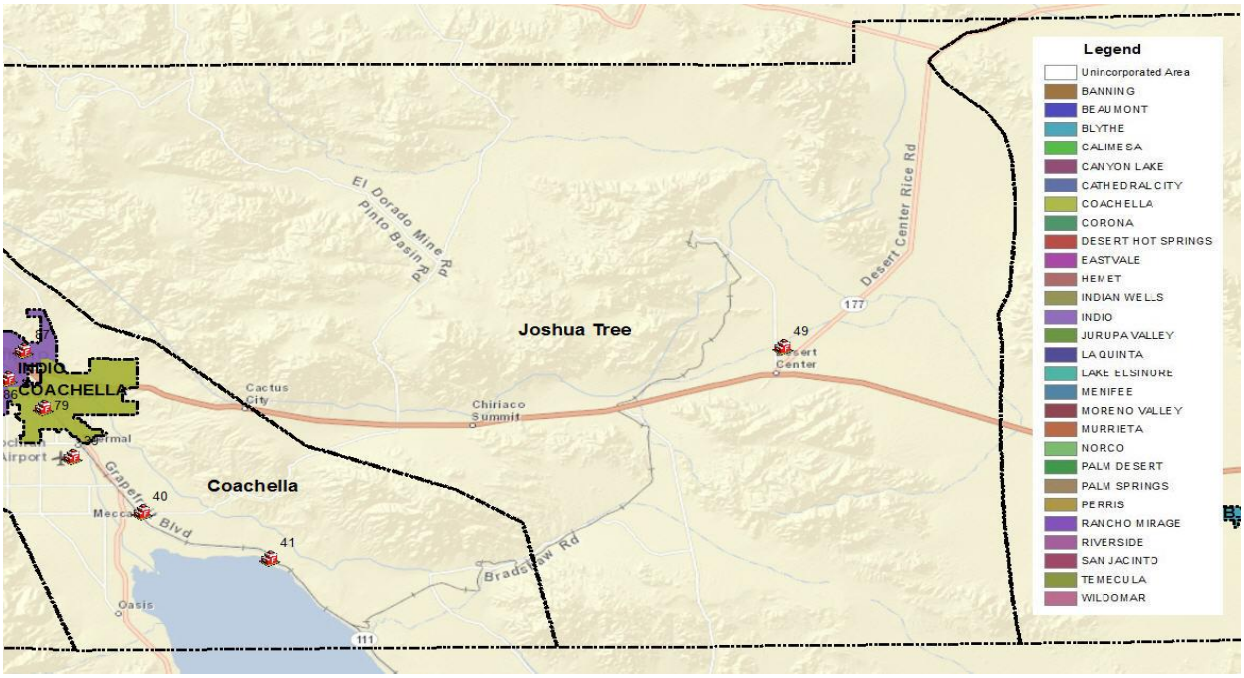
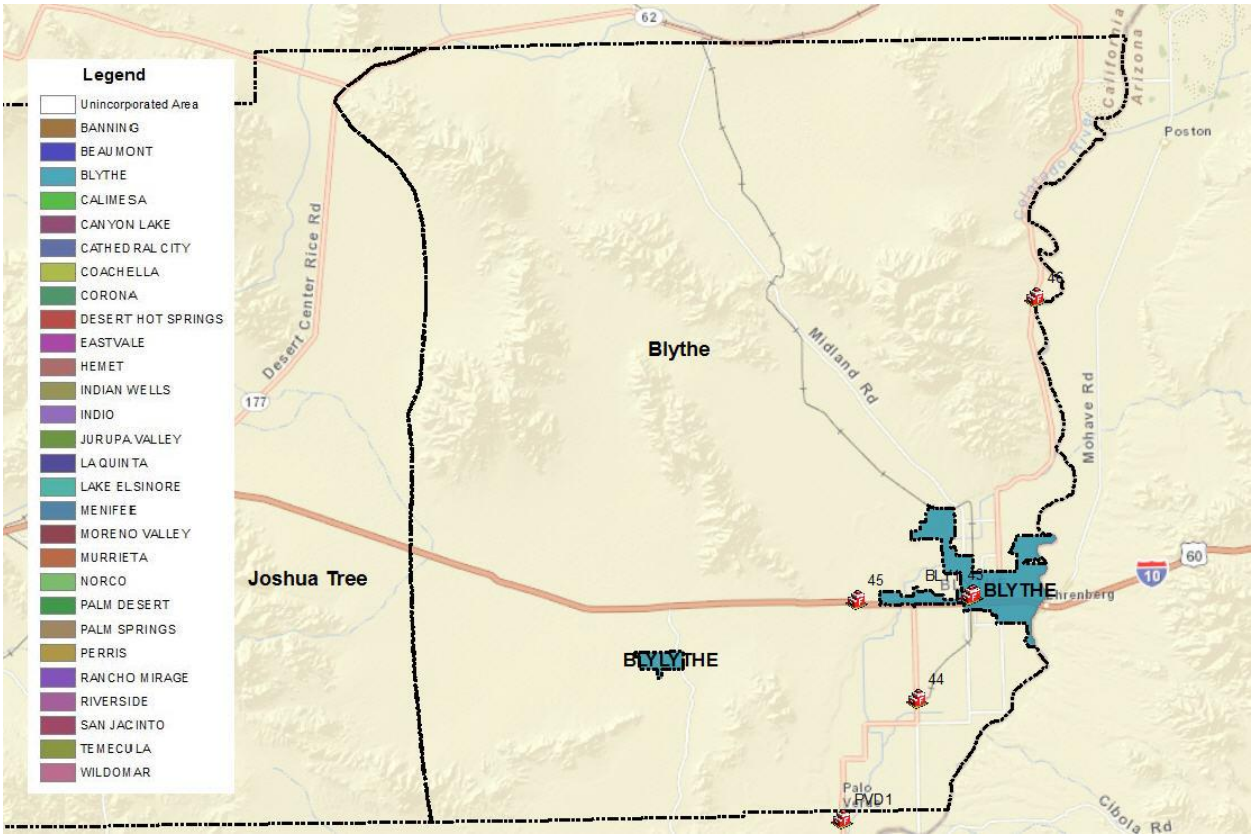


Figure 10: Unincorporated Blythe Area and East County



CHAPTER III. RCFD ORGANIZATION; FIRE, EMS, AND SPECIAL OPERATIONS

This chapter discusses the organization of the RCFD and the services delivered to the county and contract agencies.

RCFD is a department with a lot of heart and pride. Its officers and personnel are extremely knowledgeable and capable. Appropriately, RCFD considers itself an, "Integrated Cooperative Regional Fire Protection System", which it truly is. Its self-image is illustrated right in the entry of RCFD headquarters, as shown in Figure 11.

Figure 11: Entry of RCFD Headquarters: CAL FIRE & Contract Communities - Integrated Cooperative Regional Fire Protection System

A particular strength of RCFD is the work ethic of its personnel. The work schedule is 72 hours per week, or more, when the RCFD has been placed on "staffing pattern" due to large wildland fire, is unique in the U.S. fire service.[5]

Individuals hired by RCFD understand that as CAL FIRE (state) employees, they are joining an agency that is often deployed for long periods to a wildland fire, or held on overtime in the county, sometimes for several weeks. Being hired by RCFD (CAL FIRE) can be likened to joining the military. Riverside is one of units (departments) in CAL FIRE. It is the largest such

[5] Staffing pattern is a term used when Cal Fire has notified a particular unit within its system that its personnel have been placed on mandatory overtime. During a staffing pattern the state pays for all personnel on overtime, whether in county stations or contract agencies.

unit and CAL FIRE relies heavily on RCFD for resources and personnel during major fires. Because of its size, the RCFD has resources not available to most municipal agencies.

Significant Findings

RCFD has a long history of providing effective and efficient service. Even so, there are areas where improvements can be made such as by changing the policy of allowing battalion chiefs to go home at night and on weekends and keep them in their areas 24/7. There is also an issue of high workloads for response personnel, especially paramedics, who are sometimes required to work too many hours, often on overtime, which creates a serious potential for job-related fatigue.

Findings relative to the RCFD organization and its delivery of fire, EMS and special operations' services which are discussed in this chapter are:

- EMS response capabilities should be increased to cope with the calls and reduce the high workload of fire suppression units.
- A major benefit for the county and contract cities is that the state pays the cost for many of the senior officer positions, such as division and deputy chiefs, even though the positions are assigned to manage county and city operations.
- Improvements and additional commitment to training and professional development for Chief and Company officers are needed.
- There is opportunity to reorganize the RCFD, such as by eliminating a deputy chief and creating a chief of special operations.
- Better coordination of capital replacement improvement is needed among the state, county, and contract agencies on fire stations and services. For example, a new station in Perris was constructed only 1/16 of a mile from the RCFD headquarters station.
- Calimesa staffing should be increased to a minimum of three per fire unit and include Advanced Life Support (ALS), which is the standard countywide.
- The use of two-person medic squads is excellent; however, there are not enough of them, and some are not in the optimum locations.

A few of these findings will require major change, but most do not. And none of the findings are so critical that they need be addressed immediately. RCFD management is aware of most of the problems noted above, and is taking action to address them. Some changes, such as modification of the 72-hour workweek will require approval at the state level—not an easy proposition as the workweek is the standard for all CAL FIRE agencies.

Organization of RCFD

RCFD is a complex organization. The complexity is understandable considering its diverse and huge coverage area. That the state, county and 21 contract agencies—three levels of government—are all part of a unified system also adds to its complexity, but also are strengths in coordinating resources.

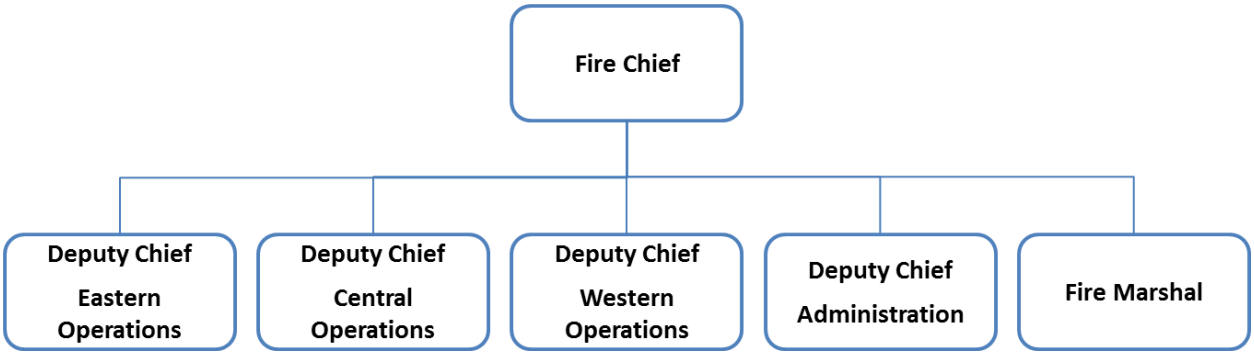
The organization of fire and EMS services provided to the county and contract agencies is fundamentally sound. Of importance for the county and contract cities is that the state funds most of the chief officer positions in RCFD, the number of which is based on a CAL FIRE formula determined by size of the organization and number of employees. If the contract agencies and county were to operate independently, none could likely afford such a robust management structure.

While the organizational structure of the RCFD is generally good, some functions such as fleet services seem misplaced for optimum operations. A more streamlined structure for operations is possible, such as by realigning (and potentially reducing the number of battalions. Some battalions have as many as eight stations reporting to a battalion chief while others have only four. Special operations, an important area that is responsible for hazmat and technical rescue, could also be improved by having a senior chief officer manage it—as was done several years ago before budget cuts eliminated the position. Hazmat and technical rescue units are critical in natural disasters, man-made disasters, and for some terrorist incidents.

The chief of RCFD is selected by CAL FIRE with the concurrence of the county supervisors. The current chief has been with CAL FIRE for 52 years, an incredible amount of time. His tenure is one of the reasons why RCFD has been successful for so long. The chief understands the system in a way that most, even insiders, do not. He also knows most of the players in the state, county, and local governments, which helps to minimize problems before they become major issues.

The top tier organization of RCFD is typical of many fire departments. The span of control is good, with five direct reports to the Unit (Fire) Chief, as shown in Figure 12.

Figure 12: RCFD Top Tier Organizational Chart



Three deputy chiefs are responsible for the day-to-day management of operations in three geographic areas that span the county, a fourth deputy chief is responsible for administration, including the business functions for all RCFD activities, whether paid for by the state, county, or contract agencies. RCFD also has a County fire marshal, recently hired from outside.

The four deputy chiefs are equal in authority. This works most of the time but problems do occur when ideas and opinions differ, as they ultimately do. More than one individual familiar with the RCFD staff reported that final decisions on important matters often fall through the cracks, or are not made at all. Even when time and discussion on a particular matter have been invested, follow through on the situation and accountability is not particularly good. Larger organizations like RCFD often have one individual as chief deputy to oversee the operations of the department. RCFD could benefit if such a position were created. Such a change is possible by reclassifying one of the deputy chief positions. Deputy Chiefs could then compete for the position.

Recommendation 1: Consider adding the position of chief deputy to oversee the entire operations division of the RCFD. Two deputy chiefs could each then manage a third of the coverage area. Well over 4,000 square miles of Riverside County from the Coachella Valley to Blythe is desert with little activity, so a deputy chief for the eastern area of the County is not really necessary.

As mentioned, RCFD has been fortunate to have as its chief an individual with 52 years of service with CAL FIRE. However, RCFD does not have a succession plan for when the current chief retires. RCFD also does not have a professional development program or criteria to prepare officers for senior-level responsibilities.

Presently, RCFD officers are not availing themselves of management programs such as the ones offered by the National Fire Academy or Naval Post Graduate School – both of which are free and open to senior fire officers. None of the department's chief officers have attended or graduated from the National Fire Academy's Executive Fire Officer Program (EFOP), a program that is also free, the only expense being transportation. The fire chief recognizes these issues and he wants the department to improve in these areas.

Recommendation 2: Institute a formal professional development and succession planning program for aspiring officers, especially those wanting to be chief officers. A best practice is to include specific educational requirements and attendance to executive-level programs such as the EFOP. As part of the program, identify officers who should attend such programs and assign them to attend. Unless for personal reasons, an individual that refuses professional development opportunities are probably not the best to be considered for advancement.

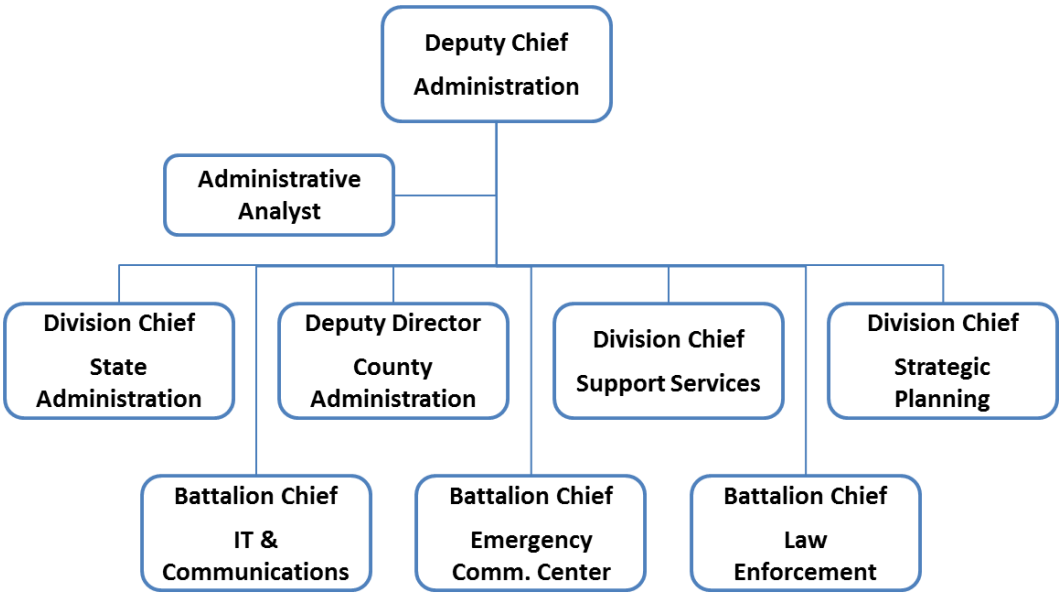
Administration – The fourth deputy chief is responsible for all of the department's administrative activities, such as budget and finance, support, and planning.

Under the current model with CAL FIRE as the county's fire service provider and cities contracting service from the county, it is necessary to have separate state and county budget administration, as shown in Figure 13. A uniformed division chief is responsible for the state

budget and personnel functions and a civilian manager is responsible for the county/ local budget and personnel. Though separate budget systems are a challenge, RCFD does make it work but only a few actually understand it completely.

While complex, RCFD's administrative division is generally well organized and no changes are recommended.

Figure 13: RCFD Administrative Division



To manage operations, which is where direct services to the public are provided, RCFD has three deputy chiefs. As noted earlier, each deputy chief has a geographical area: Western, Central, and Eastern. Division chiefs are then responsible for smaller areas within the three divisions with battalion chiefs then managing the stations in their area.

The organization of RCFD into three divisions that has the functional areas of fleet and fire marshal (prevention) as part of operations is somewhat unusual. Large fire departments typically do not have these functions as part of operations. The current organization may be preferable to the norm because of the large geographical area of Riverside. It is not a major issue in practice in Riverside, but the specialty of these areas suggests that their importance is better served by placing them elsewhere in the organization, not in operations.

RCFD has 1041 uniformed personnel, the majority assigned to the operations' division.

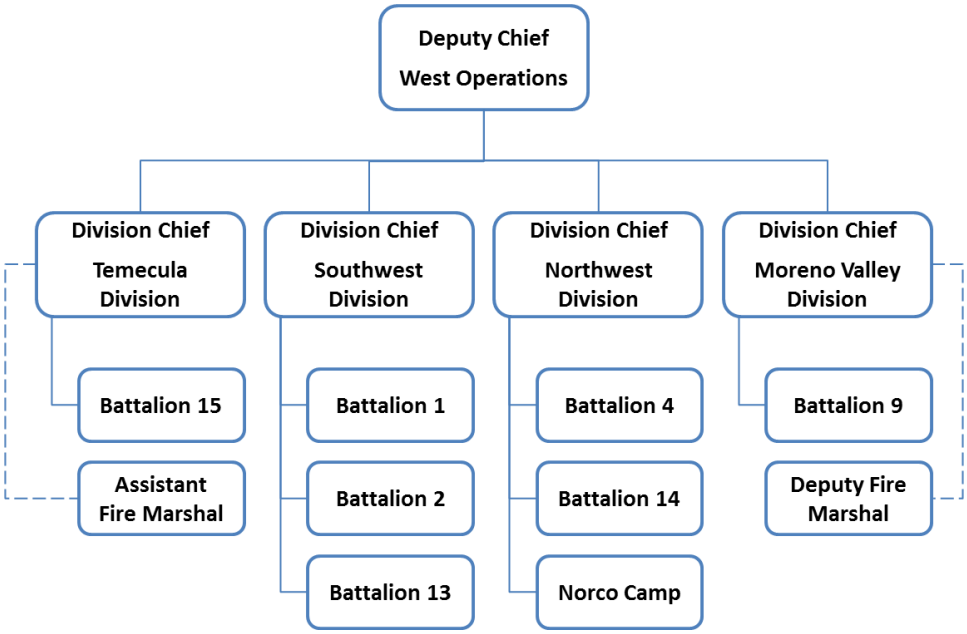
Table 2: RCFD Personnel by Rank

Rank	No. Positions
Unit Chief	1
Deputy Chief	4
Division Chief	11
Battalion Chief	35
Fire Captain	258
Fire Captain – Paramedic	21
Fire Apparatus Engineer	199
Fire Apparatus Engineer – Paramedic	75
Fire Fighter II – Paramedic	267
Fire Fighter II	158
Forest Pilot	2
Forester II	2
Heavy Fire Equipment Operator	8
Total Personnel	**1041**

Whether funded by the county or contract city, all RCFD uniformed personnel assigned to operations are considered state employees. A majority of the fire captains, engineers and firefighters work in stations paid for by contract cities. It is not surprising that more personnel would be assigned to contract cities, since these are the most populated areas where more fire and rescue apparatus are needed due to population density, which translates into higher demand.

Western Operations – RCFD's Western Operations is that area generally west of Moreno Valley, Menifee and Temecula. As shown Figure 14, this area is divided into four divisions: Temecula, Southwest, Northwest, and Moreno Valley. A division chief is responsible for each of these areas. Each division is further divided in to seven battalions, each having five to eight fire stations. The Norco Conservation camp is also in this division. With seven battalions, this operational area has the largest number of personnel. It is also the busiest in terms of call volume.

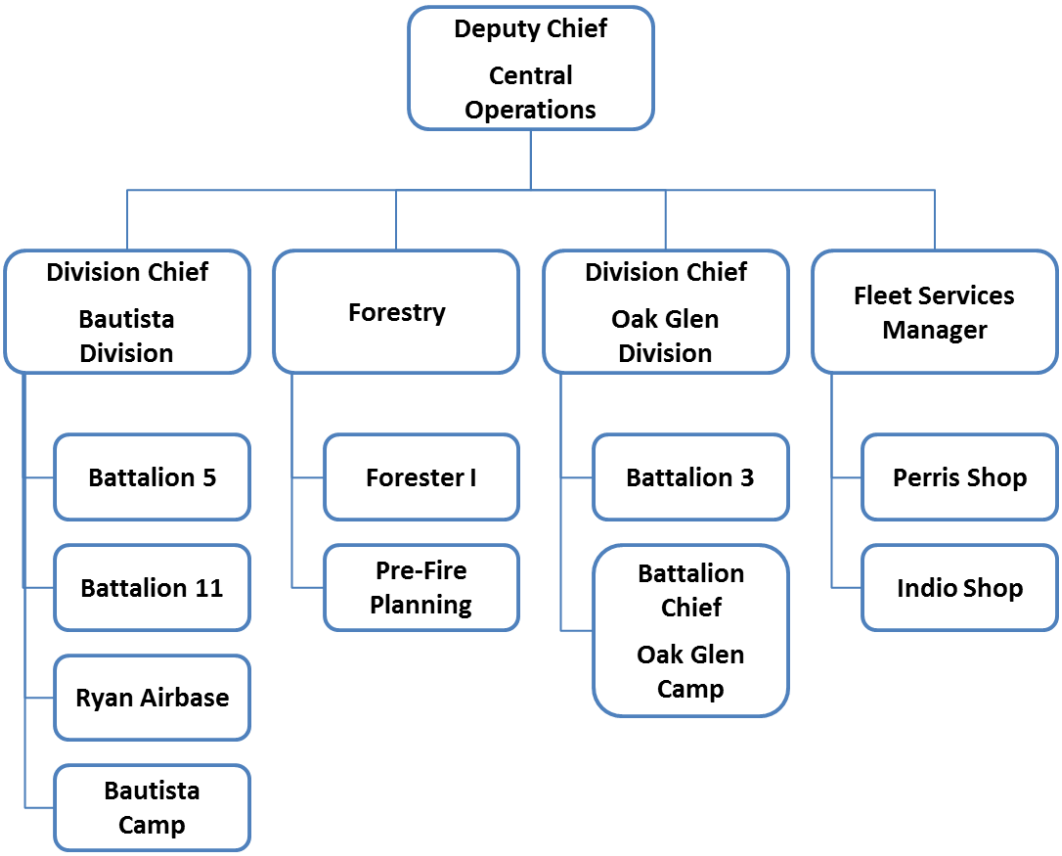
Figure 14: RCFD Western Operations



Battalions: 1, 2, 4, 9, 13, 14, and 15 are located in Western Operations. The Temecula and Moreno valley Divisions have only one battalion each.

Central Operations – This area is generally east of Moreno Valley, Menifee and Temecula and west of the Coachella Valley. The cities of Beaumont, Banning, Calimesa, and San Jacinto are in this operational area, which has two Division Chiefs, a Fleet Manager, and Forestry Manager. Three battalions, the Ryan Air Base, and the Bautista and Oak Glen Camps are in the Central Operations area, as are the Indio and Perris fleet services shops.

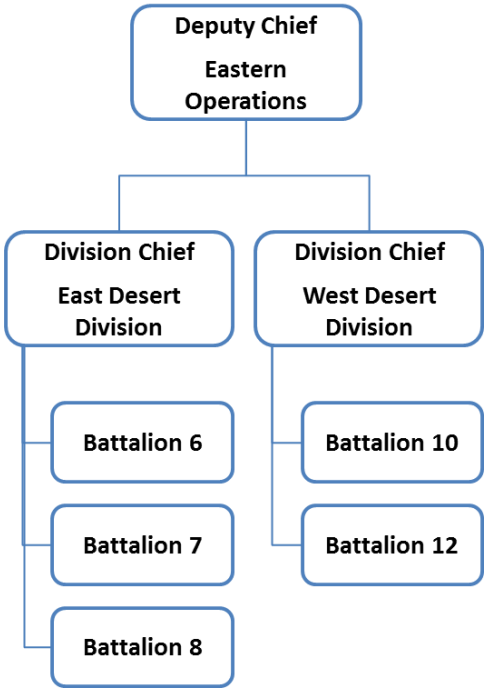
Figure 15: RCFD Central Operations



As Figure 15 shows, the Bautista Division has two battalions (5 and 11), along with Ryan Air Base and the Bautista Conservation Camp. The Oak Glen Division has one battalion (3) and the Oak Glen Conservation Camp.

Eastern Operations – This area includes all of the Coachella Valley and east to the County line at Blythe. The area is divided into the East and West Desert Divisions and has five battalions (6, 7, 8, 10, and 12), as shown in Figure 16.

Figure 16: RCFD Eastern Operations

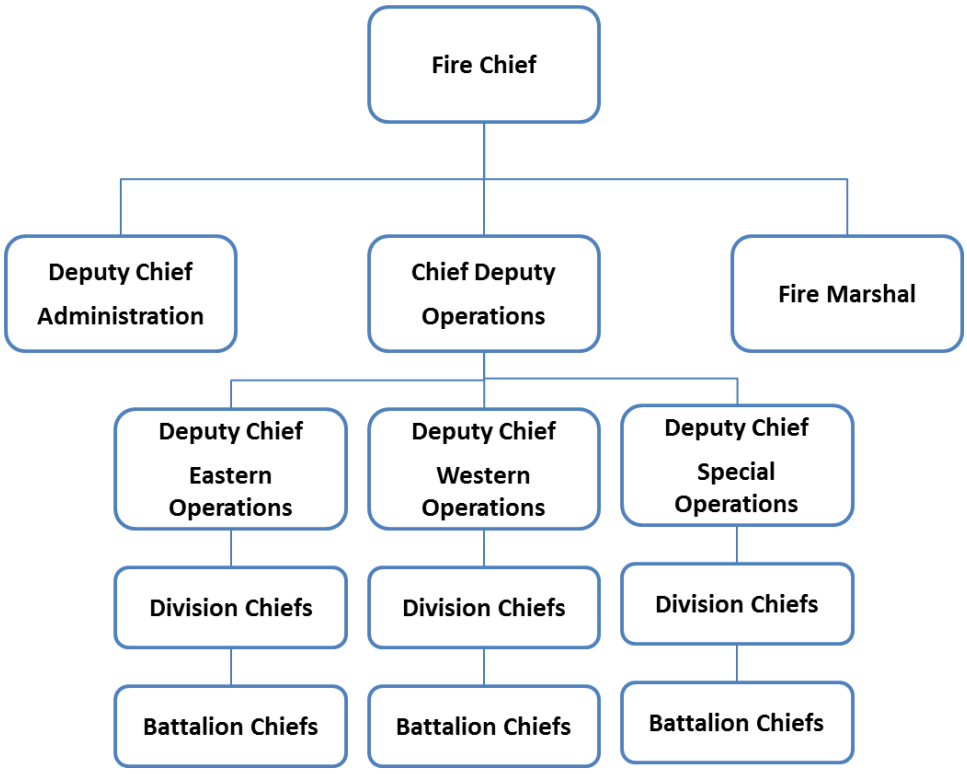


There is concern as to the balance of battalions between the three operational areas and divisions. Temecula and Moreno Valley Divisions of the Western area of operations have only one battalion each, as does the Oak Glen Division in the Central area. Improvements can be made to the span of control, with a realignment of the areas from three to two and by reconfiguring the division chief structure.

There is no single best way to organize a fire department. Many structures can and do work. Keys to an effective (and efficient) organizational structure are to provide good span of control while keeping the number of chief officer positions to a minimum. The ratio of chief officers to captains (first-line supervisors) in Riverside is very good (1:5.6). A ratio of 1:4 or 1:5 is about the norm.

Going forward, RCFD should consider a reorganization that better distributes the battalions and reinstitute the chief of special operations position. At the same time it should be considered to reassign fleet services and fire marshal functions to a support functional area. A table of organization with these changes, plus the chief deputy position recommended earlier would look like the following:

Figure 17: RCFD Suggested Reorganization



Recommendation 3: Consider reorganizing the RCFD to achieve a better balance of division and battalion chiefs, at the same time adding the position of chief, special operations. Later in this section we discuss the staffing for the various divisions and battalion to achieve better balance and to improve the 24/7 coverage of chief officers.[6]

RCFD Operations

The primary first response units for RCFD are its fire engines, aerial trucks, medic squads, medic units, and hazardous material units. RCFD also has other equipment such as dozers, water tenders, and specialized equipment such as technical rescue trailers. Within the County there are 92 fire stations under the direct control of RCFD. Every fire station has at least one engine capable of fire suppression. Strategically located throughout the County are also eight aerial ladder trucks, six medic squads, nine medic transport units, and two hazardous material units. A list of all RCFD stations and units is provided in Appendix A, RCFD Apparatus Resources and Locations.

[6] As this study was being completed, RCFD made a change to its organizational structure by changing the Deputy Chief (Central Operations) to a Deputy Chief (Support Services). The change is a reasonable one, though we still recommend that the Department have someone assigned to manage special operations. Going forward, RCFD should consider assigning a division or battalion chief to manage this important function.

Distribution of response units throughout Riverside County and the contract agencies is quite good, as was shown in an earlier chapter. The RCFD has a good handle for where resources should be located. The complex arrangement of the state, county and contract cities (and their special needs/wants) does make decision-making on resource deployment challenging for the RCFD. Even when it makes sense to change where or how resources are deployed, RCFD often does not have the final say.

Deployed throughout the County and 21 contract agencies are the following primary response units:

80 Type I Engines	4 Type II Engines	16 Type III Engines
8 Aerial Trucks	9 Medic Transport Units	6 Medic Squads
2 Hazmat Units	2 Hazmat Squads	
4 Dozers	4 Dozer Tenders	

Within the County there are also 16 state fire engines staffed by state firefighters. Two of these are staffed year round, the others just during high-fire season, or as conditions warrant; CAL FIRE makes the decision when they should be staffed. There are also three hand-crew ground firefighting camps totaling 17 Fire Crews and one Air Attack Base, located at the Hemet-Ryan Airport. Air support stationed in Hemet includes; one air tactics observation plane, two air tankers and one helicopter flight crew and rescue team. During fire season the air base can maintain up to 6 air tankers flying at a time by supplying fire suppressant material (phos-chek) from underground tanks.

The nine RCFD Medic Transport Units are all in Coachella Valley. American Medical Response (AMR) is the transport provider for the rest of the County. This study was limited in scope to an analysis of the RCFD, specifically its fire station and unit locations, thus it did not include a review of the medical delivery system or state fire programs. This study did consider the location of fire-based EMS delivery assets such as the nine medic units and medic squads, all of which are under RCFD's operational control.

Combined, all of the units make up one of the largest fire suppression forces in the Nation. A list of stations, units, and the minimum staffing for each is provided in Appendix A.

Staffing – Each day the RCFD must fill 379 positions to meet the minimum staffing level for all of its engines, ladders, and other response units. Another 10 battalion chief positions must also be filled. There is a minimum of one Division Chief and Deputy Chief daily.

Typically, fire unit staffing in RCFD is three personnel, except in Temecula where the service contract requires four. Fire station 49, located in the remote desert area of the Joshua-Tree planning area, where there are long response times for other units to provide support, is also required to be staffed with a four-person crew. Calimesa, has a two person engine company which is below the County standard.

Riverside County Supervisors adopted as the minimum staffing three persons on fire units, with the exceptions noted above. In light of historical fire experience, three-person staffing is adequate given the County's population density, structures and fire experience. To be consistent Calimesa staffing should be increased to three and Temecula, which requires four, could be reduced to three.

As we will discuss in Chapter VI. Station Location Analysis, Station 95 in Temecula is relatively new and not being used. By reducing staffing from four to three, Temecula could open Station 95 with a limited number of new hires. The GIS analysis shows that opening this station will improve response times. The decision to require four-person staffing in Temecula was supported by elected officials, who clearly had the best interests of firefighters in mind. Operating the units in Temecula with three personnel is reasonable. It is also the standard for the County.

Recommendation 4: Increase staffing at Calimesa to three and reduce staffing in Temecula from four to three and open Station 95.

CAL FIRE departments, including RCFD, work a 72-hour week, which results in considerable savings for taxpayers. The workweek is considerably longer (29 percent) than the 56-hour week of most firefighters in California. Some departments work 48 or 52 hours.

The 72-hour workweek is not particularly good for fire personnel, especially paramedics. Busy RCFD units respond to 10 and sometimes 15 or more calls in a 24-hour period, the majority EMS. Most vulnerable to the stresses for the longer hours and call volumes are the paramedics. The 72-hour week used by CAL FIRE is not as much of a problem for smaller communities, but the Riverside Unit is much busier.

The 72-hour work week requires personnel to work consecutive days, many in stations with very high call loads. Adding in overtime callbacks and times when the State has mandated personnel to be held over due to fire activity increase the average workweek for personnel and increase thus vulnerability of personnel (especially medical providers) to fatigue. Surprisingly, fatigue and stress do not appear to be a major problem now but could become so as the county's population and call volumes increase.

During our meetings it was noted that RCFD personnel sometimes are required to remain on duty for days. These occur when the State announces a "staffing pattern" whereby CAL FIRE personnel in the affected department are required to remain on-duty until the "staffing pattern" is revoked. We are aware that personnel often stay for a week to ten days. There are numerous examples of personnel remaining on duty for as much as 20 consecutive days, or more. This is not a recommended practice, particularly for emergency response for structural fire, rescue, hazardous materials and medical related emergencies.

Municipal fire departments typically limit the number of consecutive work cycles, except in rare circumstances. Understanding the uniqueness of CAL FIRE and its wildland fire mission it is understandable that extended work cycles are necessary. However, Riverside County is also

unique and consideration must be made of the extended duty cycles sometime required of RCFD personnel – especially those with ALS responsibilities.

Recommendation 5: RCFD should limit the number of consecutive work shifts for emergency responders assigned to structural and medical type duty.

Recommendation 6: Include as part of policy discussions concerning RCFD services and deployment, dialogue about the current workweek and schedule of fire personnel and its sustainability in the future. As the workweek and schedules are policies of the state (CAL FIRE), it will need to be part of any discussions about whether the situation in Riverside County is unique, as compared to other CAL FIRE departments that are considerably less busy.

Based on the 72-hour schedule and data concerning vacations, sick leave and other absences, CAL FIRE has developed staffing factors to determine the number fire personnel needed to staff fire units. The staffing factor for engines is 2.67 Fulltime Equivalents (FTEs) and the factor for ladder trucks is 3.0 FTEs. Under current policy one individual is permitted off on vacation for every five positions staffed; a leave allowance of 20 percent. The required daily staffing of 379 positions multiplied by the staffing factor shows that the 1012 FTE positions for RCFD is about right. However, when the 20 percent allowed on vacation factor is applied, the staffing factor seems quite low.

Reportedly, CAL FIRE routinely conducts analysis of its staffing factor. It does appear odd that staffing factors are different for engines and ladder trucks. It would be understandable if staffing factors were different for captains than for firefighters or battalion chiefs than captains, as individuals of different ranks often accrue and use leave differently. As shown earlier, RCFD has an authorized strength of 1041 personnel. Of these, 1020 are the battalion chiefs, captains, and firefighters assigned to stations.

Recommendation 7: Review the staffing factor used to determine the number of personnel needed to staff the RCFD. Going forward, continue to adjust the staffing multiplier as leave and work hours change.

RCFD leadership and the Union cooperatively decided it was best to change the way fire units are staffed. The former CAL FIRE model was three personnel, one of which could be an officer or an engineer (driver). The change was to go to a 'municipal model' where all fire units would be staffed by one captain, one engineer, and one firefighter. However, the change has been slow and there is some angst among fire personnel that many more units should be staffed with a fire captain. Given the call types and services provided by RCFD the municipal model is a much better model for the RCFD and more needs to be done to complete the change. In a municipal environment it is not good policy to have the same individual be the driver and crew supervisor. The CAL FIRE model is okay for wildfire incidents, but RCFD handles many more structure fires than wildland fires.

Recommendation 8: Intensify efforts to change the unit staffing to the 'municipal model' that has a fire captain on every fire unit.

Battalion Chiefs – A key component in the RCFD chain-of-command are the battalion chiefs who manage the day-to-day operations and coordinate activities such as training and fire prevention with the stations in their area. A battalion chief's primary responsibility is that of developing the strategy and managing activities to effectively and safely mitigate a fire, hazmat, or rescue incident.

In 2013, RCFD had 17 battalions. RCFD leadership had some concerns about the workload and distribution of battalion chiefs so two battalions were reduced, resulting in the 15 battalion organization currently in place. On most days all positions are staffed, either by the regularly assigned chief, or a chief from a support area assigned to cover the spot for the day.

Following is the current organization of the 15 battalions showing the stations assigned to each battalion.

Table 3: Western Operations

Battalion 1	**Battalion 2**
Station 1 Station 3 Station 4 Station 8 Station 9 Station 59 Station 90 Station 101	Station 10 Station 11 Station 51 Station 61 Station 62 Station 85 Station 94 Station 97
Battalion 4	**Battalion 9**
Station 13 Station 14 Station 47 Station 57 Station 64 Station 82	Station 2 Station 6 Station 48 Station 58 Station 65 Station 9 Station 99
Battalion 13	**Battalion 14**
Station 5 Station 7 Station 34 Station 54 Station 60 Station 68 Station 76	Station 16 Station 17 Station 18 Station 19 Station 27 Station 38
Battalion 15	
Station 12 Station 73 Station 75 Station 83 Station 84 Station 92 Station 96	7 Battalions 49 Stations Average: 7 Stations/ Battalion

The Western area has seven battalions with 49 stations.

Table 4: Central Operations

Battalion 3 Station 20 Station 21 Station 22 Station 24 Station 63 Station 66 Station 89	**Battalion 5** Station 25 Station 26 Station 72 Station 78
Battalion 11 Station 23 Station 28 Station 29 Station 30 Station 53 Station 77	3 Battalions 17 Stations Average: 6 Stations/ Battalion

The Central area of RCFD has only 3 battalions and 17 stations.

Table 5: Eastern Operations

Battalion 6 Station 32 Station 39 Station 40 Station 41 Station 70 Station 79 Station 93	**Battalion 7** Station 86 Station 87 Station 88 Station 80
Battalion 8 Station 43 Station 44 Station 45 Station 49	**Battalion 10** Station 35 Station 36 Station 37 Station 56 Station 81
Battalion 12 Station 33 Station 50 Station 67 Station 69 Station 71	5 Battalions 25 Stations Average: 5 Stations/ Battalion

The Eastern area of Riverside has 5 battalions and 25 stations.

Overall, the average number of stations per battalion is similar; however there are only four stations in Battalions 7 and 8 while Battalions 1 and 2 have eight stations. And the Western area of operations has 49 (or almost half of the fire stations) while the central area only has 17. The disparity in the number of stations in a battalion results in workload differences for battalion and division chiefs, since these are relative to the number of personnel managed.

Under the current structure the easternmost part of the County is organized into a battalion. Battalion 8 is one of the battalions staffed part time and supervised by a battalion chief about 1/3 of the year. This chief is responsible for four stations, located almost entirely in rural areas east of the Coachella Valley. Station 49 and Station 45 are 40 and 85 miles, respectively, east of Coachella. The drive time (non-emergency) is about 50 minutes to one hour-twenty minutes for a battalion chief to reach these stations. Total calls for all four stations in Battalion 8 were 825 responses, with few actual structure fires or major emergencies. To improve efficiency

while also providing command oversight, two options are possible.

- Maintain the four-person crew at Station 49 and have a battalion chief as one of the crewmembers. Most calls could be handled by a three-person crew with the chief responding as a fourth person, when necessary.
- Maintain the four-person crew at Station 49 and rotate the responsibility of supervising Stations 43, 44, and 45 amongst the three captains.

In both examples a battalion chief can be dispatched when necessary for calls to eastern Riverside County. Fire officials do have concerns about eliminating the battalion chief in the Blythe area, since there are times when an incident commander is needed. We recognize their concern; though do believe there are alternatives to having a chief there every day since the demand is so low.

Recommendation 9: Consider eliminating the battalion chief assigned to Battalion 8 and implement an alternative model, possibly one of the suggestions made above.

There may be other reasons for the RCFD organizing its divisions and battalions the way it does, though it is our opinion that the system can be streamlined, especially if the eastern part of the county is not slotted as a fulltime battalion. One way is to reduce from 15 to 12 or 13 the number of battalions with all battalions staffed 24/7. As mentioned, RCFD has 15 battalions but only 13 are required to be staffed 24/7. A reorganization of divisions, battalions and stations could result in a possible net reduction of two or three battalions. Such a structure would look as follows:[7]

Table 6: Proposed under West Area Deputy Chief

Division 1 (North West)	Division 2 (South West)
Battalion 1	Battalion 5
Battalion 2	Battalion 6
Battalion 3	Battalion 7
Battalion 4	

Table 7: Proposed under Central Area Deputy Chief

Division 3 (North Central)	Division 4 (South Central)
Battalion 8	Battalion 11
Battalion 9	Battalion 12
Battalion 10	Battalion 13

[7] The numbers used below are merely for representation. Decisions about the names for the areas and divisions as well as which battalions are in which division will need to be decided.

Under the proposed structure the more populated and busier west County would have seven battalions. This area would include the Cajalco, Plateau, Foothill, and Lakes planning areas, plus the contract cities. The central area would have five or six battalions and include the Mountain, Anza, and Coachella planning areas, plus the contract cities in the Coachella Valley. If a 13 battalion alignment were implemented, none would have more than seven stations. An organization with 12 battalions is also possible. With 12 battalions, a maximum of 8 is possible. The span of control and coverage (response time) is better with 13 battalions than with 12.

With the change to 24/7 coverage of battalion chiefs and the reduction of battalions from 15 to 12 or 13, the Fire Camps, Hand Crews and Ryan Air Base would continue to be under separate division and battalion chiefs, as they are now. It is also envisioned that Station 49 eastward to Blythe would be under the day-to-day supervision of a captain or battalion chief. This area could also report to a Camp division chief or even a chief at the Ryan Air Base.

It is our opinion that the already high demand and expected growth of the County are reasons to change the way battalion chiefs are deployed, especially in the most populated areas; central and west County. Going forward the delivery model for RCFD should more closely resemble a municipal organization and not a wildland response organization most typical for CAL FIRE units.

There are no national standards for how long it should take for a Battalion Chief to arrive on scene, though 8-10 minutes is believed to be good for most communities. For areas with little or no development, longer response times are fine. For central and western Riverside County, which are the most developed and areas of continued growth, a response time of 10-12 minutes is a reasonable goal.

RCFD (and CAL FIRE) have a standing policy that allows battalion chiefs to go home at night, regardless of where they live. They are then paged when a response occurs and the dispatch system identifies the chief officer that is closest to the scene to respond. Under this policy it is conceivable (and happens a lot) that a battalion chief from another area will be closer to the scene than the one who manages that area day-to-day and is most familiar with it. Such a policy probably makes sense in other CAL FIRE units but not Riverside. An example is that a battalion chief that lives in a high-demand area such as Moreno Valley is likely to be dispatched on many more calls than one who lives in the desert west of Coachella, even though the one in the desert knows the Moreno Valley better. In fact, data shows that some battalion chiefs get dispatched to dozens of calls while others very few.

A decision of that process was to agree that 30 minutes would be reasonable response time for battalion chiefs to arrive at the scene of an emergency. It is our opinion that a 30 minute response travel time is much too long. By that period major decisions have already been made and the incident strategy in place. Such a response time is probably reasonable for wildfire response, but not for structural fires, hazardous material or technical rescue incidents. For these calls, standards such as NFPA suggest eight minutes, though 10 or even 12 minutes might be reasonable for a large county like Riverside. Thirty minutes is not.

Recommendation 10: Reorganize the RCFD's divisions and battalion to provide 24/7 coverage by 12 or 13 battalion chiefs. Coverage and response time is better achieved by having battalion chiefs in their districts 24/7 than on-call at home after hours. Under either plan (12 or 13 battalions) these can be effectively managed under four division chiefs.

Recommendation 11: With any realignment of battalions, change the policy to require battalion chiefs to remain in their battalion at night, preferably at the station which is their battalion headquarters.

Fire Suppression, Rescue, and Special Operations

RCFD has considerable investment in apparatus and personnel to handle the volume and types of calls occurring in the county and contract cities. We did not find a situation of too many resources, as the RCFD staff does a good job of evaluating needs and it does not unnecessarily resource its department, as some fire departments are known to do. As mentioned, going forward there is a need to do a better job of coordination between the state, county, and cities on planning and capital purchases.

The GIS analysis of the project shows that fire stations in Riverside County are distributed pretty well. However, there are areas where demand has increased to a level where additional resources are needed, primarily to handle medical calls. Overwhelmingly, medical calls are already the greatest number of calls throughout the county. The anticipated population growth over the next 20-plus years and the expected increase in retirees, are reasons why the RCFD must begin now to prepare for more medical calls, such as by adding medic squads.

The data analysis for this study revealed some very important facts regarding RCFD units. The analysis does show there to be problem areas that need to be addressed; primarily by addressing the high workloads related to medical response:

- 84 percent of calls handled by RCFD are medical calls and motor vehicle accidents (MVAs); only 3 percent are fires
- Medical incidents increased from 88,300 in 2011 to 189,00 in 2015; fire incidents decreased from 4,000 to 3,700
- Moreno Valley saw the largest increase in demand from 13,500 incidents in 2011 to 17,000 incidents in 2015
- The Menifee, Lake planning area, and San Jacinto had increases of 25 percent or more from 2011 to 2015
- Anza, Joshua Tree, and the Blythe planning areas (4,130 square miles) had only 1,500 calls total in 2015
- In 2015, Medic Squad 28 had only 243 calls vs. Engine 7 (where there is no Medic Squad) had 4,000 calls

- 11 Engines already have demand exceeding 3,000 calls per years (2,6,7,20, 25, 37, 71, 81, 86, 91, 101)
- In 2015, Station 86 handled 8,000 calls between the engine, ladder and medic unit vs. Station 63 which had only 65 calls

Among the findings of the analysis is that Riverside is very generally good in terms of station locations. The real issue is capacity – demand being so high in some places that response times are (or will be) compromised.

Engines – RCFD engines are generally Type 1, Type 2, or Type 3. Type 1 engines are deployed to most fire stations and primarily for structural firefighting. Type 2 engines are smaller engines capable of structural firefighting but also outfitted for rural use such as wildland fire suppression. Type 3 engines designed for rural operations and wildland firefighting, carry more water but have smaller pumps.

	Tank Size (Gal.)	Pumping Capacity (GPM)
Type 1 Engine	500	1500
Type 2 Engine	500	1000
Type 3 Engine	500	150

Figure 18: Type 1 Engine

Figure 19: Type 2 Engine

RCFD has a total of 95 engines deployed throughout the County. Of these, 15 are Type 2 or Type 3 engines, the remaining (80) are Type 1. Seven of the County's stations have two engines, one Type 1 and one Type 3: Stations 10, 12, 18, 20, 23, 25, and 53. The deployment of two engines to the same station may be of some benefit operationally, though we question the merits of doing so when so many stations have workloads approaching a critical level. Of particular interest are the two-engine stations with low or only moderate demand.

- Station 10 – 2,200 calls combined; Type 3 engine handled only 700 of the calls
- Station 12 – Recommendation already made to move the city engine to a new station (already constructed but unused)
- Station – 18 – This station has a medic squad, plus two engines; either the Type 3 engine or the Medic Squad could be moved
- Station 20 – Very high demand; both units probably make sense
- Station 23 – Very low demand; the Type 3 could possibly be moved
- Station 25 – Both units are needed due to very high demand
- Station 53 – Very low demand; the Type 3 could possibly be moved

During the review process it was noted that Stations 10, 12, 18, 20 and 25 are State-operated fire stations with Type 3 engines funded by the State. City contract engines and/or squads are also located at these stations, which saves contract cities money by not having to build facilities. Stations 23 and 53 are County stations with a State-funded Type 3 engine staffed only during fire season due to the increased risks in Direct Protection Areas (DPAs). The cooperation between the state, county, and contract agencies in sharing facilities is good, but the

justification for two units at the same station is not always warranted, especially when workloads are higher at other locations.

One of the stations with two engines is Station 25 (San Jacinto). San Jacinto did have two stations but closed Station 78 due to budget constraints. Engine 25 has the highest workload of all the engines in central Riverside County with over 4,000 calls per year; an average of 11 calls per day. A state Type 3 engine co-located at Station 25 does pick up some of the calls (1,000 per year). Closing Station 78 has had an impact on service delivery and is affecting workloads, appreciably. With demand continuing to increase, San Jacinto will have to consider reopening Station 78 at some point.

Recommendation 12: Review the deployment of two engines at the above seven stations. At the same time develop a policy guideline for locating multiple units of the same type at stations. Where stations have two engines, evaluate the situation annually using the adopted guidelines.

Aerial Ladder Trucks – Eight aerial ladder trucks are deployed throughout the county. Two are quints, specialized ladder trucks that combine the advantages of an engine and ladder truck, since they can perform both functions. Many policymakers view aerial ladder trucks as expensive because the aerial ladder is not often used, even at a structure fire. Ladder trucks do have a purpose however, even when the hydraulic ladder is not used. They carry tools that allow firefighters to extricate people at MVAs and other rescue scenarios where specialized tools are needed. Ladder trucks in Riverside County are staffed with four personnel, not three as are the engines.

Ladder trucks in Riverside County are located within the following contract cities:

Table 8: RCFD Ladder Truck Deployment

Station	Contract City	Quint	Cost-Sharing	Staffing
2	Moreno Valley	No	MVY/County	4
17	Jurupa Valley	No	None	4
33	Palm Desert	No	Cove Communities	4
73	Temecula	No	None	4
76	Menifee	No	MEN/County	4
86	Indio	No	Indio – 50% Coachella – 12.5% County – 25% La Quinta – 12.5%	4
90	Perris	Yes	PER/County	4
97	Lake Elsinore	Yes	LEL/County	4

With the exception of Indio, most of the ladder trucks are viewed by contract cities as a local resource, paid for by the city. Decisions about where ladder trucks are located and who pays for them should be viewed more from a county-wide perspective or at least regionally in much the same way hazmat services are now. Under current policy ladder trucks do not respond outside of their designated response area very often, but they are needed and sometimes used

throughout the entire county. The cost of a new ladder truck is about $1.5M with a new quint priced at $1.2M, or more. And staffing alone is more than $1.5M per year.

Recommendation 13: Modify the cost formula for ladder trucks such that all communities pay a portion of the total cost for ladder trucks. This could be done on a county-wide basis to divide the cost amongst all of the contract cities and the county, or on a regional basis with the communities in the Coachella Valley (Central County) and West County apportioned for the ladder truck service in their region.

Cross-Staffing Opportunity **–** Six of the eight ladder trucks are co-located with engines and the engines have the highest demand. To increase the capacity in the areas where ladder trucks are stationed it is possible to add a medic squad and cross-staff the medic squad with two responders from the truck. As the data shows, there are few structure fires and the highest demand is for medical services. The concept of cross-staffing smaller response vehicles with the ladder truck crew is being used successfully in Portland, OR, and elsewhere.

Recommendation 14: Consider adding a medic squad to each station having a ladder truck and cross-staff the unit. The cost savings from the reduction of ladder truck maintenance — not having to go on medic calls - will be significant, not to mention the costs of replacement due to overuse responding on medical calls.

Special Operations – RCFD is an all service/hazards emergency response organization. Its specialized equipment and training are excellent. The County is fortunate to have excellent capabilities for handling special emergencies such as industrial accidents, hazardous material releases, and structural collapses. RCFD personnel take great pride in being prepared to handle these types of emergencies, which fortunately do not occur very often. Even so, RCFD must be prepared – and mostly they are.

These are the most frequent special operations events handled by the RCFD.

- Hazardous materials incidents such as, the unauthorized release of gas, corrosives, acids,
- Structural collapse and confined space rescue
- Trench and confined-space rescue
- Vehicle and machinery rescue
- High-angle rope rescue
- Remote Area Rescue

Hazardous Material Incident Response **–** Hazmat-trained responders can respond from most RCFD stations. The primary units with responders trained at the Hazmat Technician level are located at two stations: Station 81in Eastern Riverside County (Coachella planning area) near I-10 and Station 34 located in the Lakes planning area near SR-79. Staffing for the primary (large) hazmat unit is three personnel and two on the smaller, hazmat squad-type vehicle.

The responses for the hazmat units and hazmat squads are not high. The training hours to maintain personnel skills are significant and the time spent on calls are greater than for fire units. These add significantly to the total workloads for hazmat personnel. Even a small hazmat spill can take several hours to mitigate, thus workloads are greater for hazmat units than are other units where most calls are handled within minutes.

Table 9: Hazmat Responses and Workload

Unit	Calls	Hours	Hours Per Call
Hazmat 34	181	223	.81
Hazmat Squad 34	224	187	.83
Hazmat 81	129	134	1.0
Hazmat Squad 81	449	226	.5
Total	**983**	**770**	**.78**

The deployment of two hazmat units to cover Riverside's 7,200 square miles is appropriate as response times would be excessively long if only one unit were deployed.

Urban Search and Water/Marine Rescue Services – RCFD has six Urban Search and Rescue Units (USAR) strategically located throughout the county. USAR vehicles with trailers are located at Station 2 (Moreno Valley), Station 17 (Jurupa Valley), Station 33 (Rancho Mirage), Station 45 (Blythe), Station 73 (Temecula), and Station 76 (Menifee).

USAR is one of the most important specialized functions provided for by RCFD. USAR services are not often needed but are critical during major disasters such as an earthquake. Much of the county is directly over the San Andreas Fault, which runs north to south through central Riverside County. USAR resources are paid for by the state and county with additional support from federal grants. When deployed under federal orders, the county is reimbursed for the personnel costs and any expended equipment.

RCFD also maintains two small boats for water-rescue incidents. These are located at Station 46 near Blythe (SR-94) at the Arizona boarder and at Station 85 in Lake Elsinore. To improve the availability of water rescue and provide a faster response a preferred craft is probably a trailered Zodiac equipped with a small motor.

Recommendation 15: Add several Zodiac water rescue crafts and strategically locate them based on historical experience with flooding. Train the crews at these stations in swift-water rescue tactics.

Special Operations Command – The one special operations area where RCFD falls short is in area command oversight. As mentioned earlier, at one time RCFD had a chief officer responsible for coordinating these activities but the position was eliminated. To get the best results when a special emergency situation occurs, it is the contingency planning and preparation that makes the difference. A major responsibility for the chief of special operations is to develop

the plans and policies for all of the special services, and then coordinate these services with other agencies, such as emergency management, utility companies, highways, police and other agencies. In our opinion this is a major deficiency in an otherwise excellent system of specialized capabilities provided by RCFD.

Recommendation 16: Reinstitute the position of chief, special operations. It is preferable that the position be at least a division chief.

Air Attack Base **–** One of the most important services provided by RCFD is the air attack from its Ryan Air Base (RAAB) in Hemet. It is from RAAB that RCFD provides the capabilities to provide fire suppressant to wildland fires by aircraft and rescue by helicopter. RAAB is an important CAL FIRE asset as the central facility for air operations to its southern region. A review of air operations was not part of this study and is mentioned only because it is an important aspect of the special services provided by RCFD.

Effective Response Force (ERF) – ERF is a concept used by fire professionals to determine the number of personnel needed on various incident types to successfully (and safely) mitigate the situation. ERF is based on the minimum number of personnel needed based on the incident type. A positive for RCFD is its excellent dispatch policy and event type codes and standard response plan used to determine the number of units to be dispatched on various call types. RCFD has 24 classified emergency categories. The most serious incidents are those where life hazards are most commonly involved – structure fires.

Guidelines for the number of personnel to respond to structure fires have been published by the National Fire Protection Association (NFPA). *NFPA 1710, Standard for the Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, is the standard most used to evaluate services, including staffing. NFPA has also published guidelines on the minimum number of personnel to respond on structure fires based on the level of risk posed by the hazard classification of a structure.

The highest risks are those such as a multi-story structure with hazardous processes. A moderate risk would be a non-sprinkled multiple family apartment building, while single-family residential structure is considered low risk. Overwhelmingly, the structures in Riverside County fall in the low risk category. Guidelines published by the NFPA have been analyzed by the National Institute of Science and Technology (NIST), and are considered appropriate. NFPA 1710 and those based on risk are similar; the exception being that NFPA 1710 includes a time element while the general guidelines do not.

NFPA 1710 – Structure Fire Response Guidelines

- First alarm response of equipment and personnel to arrive on-scene within 8 minutes after receipt of the call.
- Minimum of 15 personnel, including the incident commander (typically a battalion chief)

NFPA Handbook – Structure Fire Response Guidelines

- High-Hazard Occupancy – 26 personnel
- Medium-Hazard Occupancy – 17 personnel
- Low-Hazard Occupancy – 13 personnel

A structure fire reported in Riverside receives an initial response of four engines and one battalion chief, when the incident occurs in a suburban area of the County. Based on the current staffing model this provides 13 responders. For areas within contract cities, which are more densely populated, a ladder truck is also dispatched. As medic units are staffed by firefighters having ALS qualifications, if the incident is reported in a contract city with medic transport units, one is also dispatched. The enhanced level of response to contract cities provides 16 to 18 responders, depending on the location. If, upon arrival of the first units (or multiple calls to the dispatch center) a serious fire is confirmed, policy is to dispatch two additional engines, which provides an additional six responders.

Regardless of the incidents location, RCFD is able to meet the recommended guidelines for the complement of personnel sent to the incident according to those published by the NFPA. In some rural areas however, RCFD cannot meet the 8-minute arrival time for the first alarm assignment of personnel. That it takes longer for 13 personnel to arrive at a reported structure fire in rural areas should be considered acceptable.

While the RCF D has developed good policies regarding dispatch it does not yet analyze the effectiveness of responses to various incident types. For example, how often are the units dispatched to certain call types actually used at the scene. In previous TriData studies it has often been determined that some event types may have too many units dispatched. Dispatching fewer units on some calls means that more units will be available to handle other calls. There is also a need to analyze in greater detail the effective response force of units and personnel as to the time it takes for them to actually arrive at the scene, especially to structure fires.

Recommendation 17: Maintain the current level of response to structure fires.

Recommendation 18: Establish a policy to track the response travel times to all calls involving structure fires. Analyze the results at least quarterly and then use the analysis to determine any changes to unit locations or ERF that may be required, going forward.

Wildland/Urban Interface Protection – The largest Unit in CAL FIRE's system RCFD is one of the most experienced organizations when it comes to wildland fire operations. While the response is excellent, more needs to be done by the county in the way of wildland/ urban/ interface prevention, in particular a focus on the defensible space and building construction ordinances. Improvements in these areas are known to decrease losses when fires occur. At the state level, CAL FIRE has a division dedicated to improving defensible space regulations; however the County has not made sufficient headway in implementing the codes to improve

defensible and urban/ interface prevention. RCFD should not wait for CAL FIRE to address this issue and should begin work to strengthen its ordinances.

Recommendation 19: Develop an urban/wildland ordinance and assertively work with the County and contract cities to obtain approval. In parallel, deliver a comprehensive public education program about the realities of wildland/urban interface fires and the need for defensible space and improved build location and construction within these areas previously mapped by CAL FIRE.

Emergency Medical Services

Emergency medical services (EMS) throughout the County are provided at the advanced life support (ALS) level. Riverside County protocol is to provide least one paramedic on every fire response unit. Four communities provide EMS transport with American Medical Response (AMR) being the transport provider for the rest of the county. AMR has a network of 12 primary and 15 sub-franchise transport zones. County and RCFD officials are satisfied with AMR's services. A review of AMR and its services were not part of this study. In 2015, RCFD handled just over 113,000 patients. Of these, 93 percent of the calls were dispatched as Basic Support Level (BLS) calls.

Medic Squads – In addition its engines and ladders, RCFD also has six medic squads deployed throughout the County. Medic squads, which are staffed by two personnel, are intended to provide ALS services to areas where engines or ladders have longer response times. The concept of medic squads is excellent. Medic squads are located at the following stations:

Station	City or Planning Area	Responses, 2015
18	City of Jurupa Valley	1475
27	City of Eastvale	2407
28	Lakes Planning Area	349
29	Anza Planning Area	673
40	Coachella Planning Are	910
79	City of Coachella (no longer staffed)	2167

The average travel time for medical resources to arrive at the scene in Riverside County is excellent (4:26). When the 80th percentile metric is applied, travel times are still very good (5:51). In fact these times are better than the travel times to reported fires; 5:34 and 7:52, respectively.

RCFD units are dispatched using Automatic Vehicle Locator (AVL) technology. AVL locates the closest available unit for the call and recommends to the dispatcher that the unit be dispatched, based on pre-loaded dispatch criterion (Standard Response Plan). A benefit of AVL is that once unis are on the street and moving about, as they often are for inspections, training, and other reasons, the unit capable of arriving fastest is selected by the computer-aided dispatch system (CAD). With AVL the location of the station, while important much of the time, is not as critical. AVL is particularly useful when it comes to the system management of medic squads.

AVL is also good during high-demand periods because units are naturally moved to busier areas with the increase in call volumes.

While travel times are good there is a future problem with workloads in some of the busiest stations. There is also a question of whether Medic Squad 28 in the Lake planning area would be better situated if re-located to busier area. Station 28, which also has an engine, only responded to 292 calls (2015). The engine could easily handle the additional calls, if the medic squad were relocated.

With the expected increase in call volume due to population increases over the next five years, and beyond, RCFD needs to make plans now to add additional medic squads to the system. Medic squads are excellent resources that are easily moved in the system and they are significantly less costly than engines and ladder trucks.

Earlier in this section it was recommended to consider adding medic squads to the stations with ladder trucks. These are some of the busiest stations in the most densely populated areas of the county. A medic squad at these eight stations could be added for only the cost of the unit, as they already have four-person staffing. Other stations where demand is already very high and expected to increase are Stations 6, 7, 37, 65, 71, and 101. All of these are single-engine stations and would benefit by having a medic squad.

Recommendation 20: In addition to adding medic squads to stations with ladder trucks, add medic squads to the Stations 6, 7, 37, 65, 71, and 101.

Medic Units – Nine transport medic units are deployed by RCFD. These units are also staffed by paramedics and provided to the cities desiring EMS transport. Medic units provided by RCFD are:

- Indian Wells (1) – Station 55
- Palm Desert (4) – Stations 33, 67, 71, 55
- Indio (3) – Stations 80, 86, 88
- Rancho Mirage (1) – Station 69

Medic 71 in Palm Desert is the busiest of the units (3,300 calls in 2015), followed by Medic 86 (Indio) at just under 3,000 calls. Medic units are specifically requested by each city and provided to them under contract. Therefore, we do not make any recommendations concerning their location as part of this study.

RCFD does not increase its capacity to handle more calls by adding medic squads during busy periods, typically weekdays, as some departments do. Under the present MOU, the 72-hour workweek for CAL FIRE Schedule A employees does not allow a different schedule. Having the ability to add units such as by having more medic squads during the busiest periods is something RCFD should consider.

Providing additional units such as by peak-load staffing has been discussed but not acted on, presumably because of the difficulty in getting a different shift schedule (40 hours) approved by labor. One possibility mentioned is to reinstitute Schedule C employees within the county's system and then use these staff additional medic squads during busy periods. Peak-load medic squads would also be a good idea when large events occur, or situations where additional units may be needed.

Recommendation 21: In addition to adding medic squads to stations with ladder trucks, consider the possibility of adding peak-load medic squads such as by reinstituting the Schedule C employee program under the County.

Improving Regional Cooperation to Contain Costs

The current model of a county-wide service by the state with contract cities as part of the system has worked quite well. The state benefits by having a large fire organization to support its wildland fire mission, while the county and cities get exceptional service at a competitive price. If nothing were done the system is likely to continue working well. Improvement is possible however, such as by increasing the partnership between the cities and county on a regional basis. As it is cities are left too much on their own to decide on the level of service they believe is needed. A better approach is to design the system using a regional model with the county and contract cities paying their share of the cost in that region. In that way political boundaries are less important making it easier to apportion costs for the entire region. The cost of building the new fire stations and hiring more personnel that will be needed as the county's population increases will continue to increase. A regional cost-sharing approach is the best way to keep costs manageable.

A weakness in the current system is that all of the fire stations located within the contract agency jurisdictional areas are owned by them. Understandably, the contract cities are concerned about costs and focus on the services they pay for. They want to know how many times 'their units' go into the county or to another city on calls.

RCFD provides services to all unincorporated areas and to contract agencies as specified by them. Cities determine the number of fire stations, trucks, specialized and medic units, which they want. If the current model is continued, it can be expected that the system will become less efficient. The population in some areas of the county (and cities) will grow faster than others and it is important that services be analyzed for the benefit of the whole, not individual parts.

For Riverside County and its contract cities a reasonable approach is to divide the county into three areas and share the cost of services in these areas by the county and cities in that particular area. This can be done by using the planning areas developed for this study (or similar format) and use these as the basis for regional cost-sharing. Contract cities in central and West County provide the majority of services with the county proving services in the unincorporated, less populated areas. East County, which is the Joshua Tree and Blythe planning areas, all of the stations are located in unincorporated areas and thus paid for by the county.

Following is one possibility to divide the county and contract cites under a regional cost-sharing plan:

- West
  - County Planning Areas: Cajalco, Plateau, Lakes, Foothill
  - Cities: Banning Jurupa Valley, Beaumont, Calimesa, Eastvale, Lake Elsinore, Menifee, Moreno Valley, Norco, Perris, San Jacinto, Temecula, Wildomar
- Central
  - Planning Areas: Anza, Mountain, Coachella
  - Cities: Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Rancho Mirage
- East
  - Planning Areas: Joshua Tree, Blythe (All paid by the county)

Recommendation 22: Develop a regional approach for providing services and develop the cost-sharing formula based on a regional approach. Chapter VII. Contract Fee Analysis, discusses the fee schedule and costs paid by the county and cities, and those under other options, including the one discussed here.

Other Findings

During the review process of this study the project team became aware of a number of items that, while not specially related to deployment, can and do impact the quality of service over time.

Performance Evaluations – Under policy, performance evaluations are required for every employee on a regular basis. However, they are not currently being conducted on employees in most instances. Reportedly, some battalion and division chiefs are doing them but, as a whole, the department is not following the requirement they be done.

Capital Planning Coordination – More interaction with city managers/ officials by RCFD division and battalion chiefs is needed. Improvement is needed between the state, county, and contract cities on fire stations and services. A prime example is the city of Perris, which constructed its new fire stations only 1/16 of a mile from the RCFD headquarters station.

Policies and Procedures – Policies and procedures are not up-to-date and the RCFD appears to operate more day-to-day than from coherent and consistent policies. Under reorganization in 2015, RCFD did create a division responsible for strategic planning. This is the logical section to make sure policies are updated regularly, though staffing will likely be needed to make it happen on a consistent basis.

Pre-Incident Planning – This is one of the most important functions for any fire department. It is not a strong area for RCFD, even though it has some of the best excellent computer and technical capabilities. Important to pre-planning is to document information about each site, such as access, hazards, risks, on-site extinguishment systems and resources, hazardous materials locations and building construction. The second portion of pre-planning is to develop Operation Plans that guide initial action by first responders and the IC. RCFD has the equipment and most of the staff to improve this area, needed now is to follow through and make it happen.

Employee Background Checks – As a matter of state policy, CAL FIRE does not require a thorough background check for new firefighters. Firefighters expected to interact with the public on a personal basis such as being in their homes are expected to have clean backgrounds with no previous criminal history. The state of California appears resistive to requiring background checks for firefighters based on the CAL FIRE Wildland mission, but should consider background checks for all other emergency response missions. This should be a concern to the county and contract cities, and they should encourage the state to change its policy, at least for Riverside which, as primarily a municipal department, is very different from other CAL FIRE units.

False Automatic Alarms – Dispatch protocols require two engines be dispatched to an unknown fire and alarm sounding (false alarm) incidents. The dispatch of two fire engine companies to an automatic alarm is not an efficient use of resources. Historic evidence shows that few of these incidents are emergencies. For Riverside County, the number of automatic alarms has averaged about 9,000 per year between 2011 and 2014. Efforts should be made to reduce the number of false automatic alarms.

RCFD Facility Review

RCFD has very good facilities generally. Station personnel take exceptional pride in their stations and the equipment in them. During our many visits to fire stations, we observed personnel conducting maintenance at many locations, particularly on the apparatus. We do not see this everywhere. As facilities go, RCFD facilities are in much better condition than in most communities. The RCFD is to be commended for the attention they give to the stations and equipment. Likewise, the county and cities are to be commended for providing the necessary budget to keep things in great shape.

A recent change by RCFD was to add a facilities manager, who is excellent and well-qualified. The manager has developed an useful data base of information regarding each station. It is one of the best examples of a facilities data base that we have seen. Data collected includes information about the date of construction and remodeling, if any, and other information on all of the facility systems, to include the expected life span. It goes so far as to catalogue the purchase date of kitchen appliances and other important modifications such as new roofs, HVAC, and their expected date of replacement. The planning data base also includes expected costs to

replace facility components, and the required budget. However, data is only available for county-owned structures and not for city or state-owned facilities.

Recommendation 23: Expand the facilities data base to include those owned by the state and contract cities. Review the information with them annually as part of the capital planning and budget process.

Over the past nine years RCFD has constructed 25 new facilities. There are plans for other new stations in the coming years as well. However, there is no formal capital improvement financial plan for new facilities. Contract cities make their own decisions on when fire stations are to be replaced (or remodeled) with marginal input from RCFD leadership. Problematic is that decisions on stations construction, to include location, are not always coordinated between the county, cities, and state. In the past few years Perris added a brand new facility just under a half-mile from the RCFD headquarters, which is state-owned. Building new facilities is expensive and the RCFD can do a better job of coordinating its capital improvement plan with the cities, state, and county all having input.

Recommendation 24: Improve the capital facilities planning process by assigning the responsibility to the RCFD strategic planning section.

In the following section we review the stations relative to their particular age, with the idea in mind that older stations, when they are considered for replacement or updating, could then be considered for relocation, if needed. The study did not include a site inspection of each facility. Information as to the current condition of fire stations, and any outstanding issues were provided by the RCFD.

As it pertains to this study, the information in this section was useful as we considered whether existing stations might be relocated as part of a comprehensive plan. For example, a station location change might be warranted, but if a station is relatively new and not ready for replacement, it is not likely that it makes sense to do so. The section is organized using the planning areas discussed earlier in this report, starting with the contract cities and then the unincorporated planning areas.

Contract Cities

Of the 92 stations in the RCFD system, 54 (59 percent) are located within the boundaries of the 21 contract cities.

Banning – One station (89) is located in Banning.

Station:	89
Address:	172 North Murray Street
Constructed:	1955
Condition:	Poor
Units:	Engine - Type 1
On-Duty Personnel:	3

Beaumont – Station 20 and 66 are in Beaumont.

Station:	20
Address:	1550 E. 6th Street
Constructed:	1954
Condition:	Poor
Units:	Dozer - Type 2 Dozer Tender Engine - Type 1 Engine - Type 3 Engine - Type 3
On-Duty Personnel:	11

Station:	66
Address:	628 Maple Street
Constructed:	1971
Condition:	Fair
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Calimesa – Only one station is in Calimesa.

Station:	21
Address:	906 Park Avenue
Constructed:	1957
Condition:	Poor
Units:	Engine - Type 1
On-Duty Personnel:	3

Coachella – The city of Coachella has one station (79).

Station:	79
Address:	1377 6th Street
Constructed:	1975
Condition:	Fair
Units:	Engine - Type 1 Medic Squad Water Tender
On-Duty Personnel:	4

Desert Hot Springs – Stations 36 and 37 are in the city of Desert Hot Springs.

Station:	36
Address:	11535 Karen Avenue
Constructed:	2010
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	37
Address:	65958 Pierson Boulevard
Constructed:	1993
Condition:	Fair
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3
NOTE:	The study recommends Station 37 be relocated south of Hacienda Avenue along Mountain View Road.

Eastvale – Station 27 is the only station in Eastvale.

Station:	27
Address:	7067 Hamner Avenue
Constructed:	2013
Condition:	Excellent
Units:	Engine - Type 1 Medic Squad
On-Duty Personnel:	5

Indian Wells – Fire station 55 is the only station in Indian Wells.

Station:	55
Address:	44900 El Dorado Drive
Constructed:	1979
Condition:	Fair
Units:	Engine - Type 1 Medic Unit Medic Unit
On-Duty Personnel:	7

Indio – The city of Indio has four stations (80, 86, 87, 88).

Station:	80
Address:	81-025 Avenue 40
Constructed:	2007
Condition:	Good
Units:	Engine - Type 1 Medic Unit
On-Duty Personnel:	5

Station:	86
Address:	46-990 Jackson Street
Constructed:	1975
Condition:	Fair
Units:	Engine - Type 1 Aerial Truck Medic Unit
On-Duty Personnel:	9

Station:	87
Address:	42900 Golf Center Parkway
Constructed:	2008
Condition:	Excellent
Units:	Engine - Type 1 Water Tender
On-Duty Personnel:	3

Station:	88
Address:	46-621 Madison Street
Constructed:	1975
Condition:	Fair
Units:	Engine - Type 1 Medic Unit
On-Duty Personnel:	5

Jurupa Valley – Stations 16, 17, 18, and 38 are located in Jurupa Valley. Station 38 is the Rubidoux Community Service District (RCSD), a special services district within the Jurupa Valley. Though located in the city, the RCSD station is owned and maintained by the District.

Station:	16
Address:	9270 Limonite Avenue
Constructed:	1949
Condition:	Poor
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	17
Address:	10400 San Sevaine Way
Constructed:	1990
Condition:	Fair
Units:	Engine - Type 1 Squad Aerial Truck Urban Search & Rescue Vehicle
On-Duty Personnel:	7

Station:	18
Address:	7545 Mission Boulevard
Constructed:	1945
Condition:	Poor
Units:	Engine - Type 3 Engine - Type 1 Medic Squad
On-Duty Personnel:	8

Station:	38 (RCSD)
Address:	5721 Mission Boulevard
Constructed:	2006
Condition:	Excellent
Units:	Breathing Support Engine - Type 1
On-Duty Personnel:	3

Lake Elsinore – Stations 10, 85, 94, and 97 are located in Lake Elsinore.

Station:	10
Address:	410 W. Graham Avenue
Constructed:	1959
Condition:	Poor
Units:	Engine - Type 1 Engine - Type 3 Engine - Type 3
On-Duty Personnel:	9

Station:	85
Address:	29405 Grand Avenue
Constructed:	2002
Condition:	Good
Units:	Rescue Boat Engine - Type 1
On-Duty Personnel:	3

Station:	94
Address:	22770 Railroad Canyon Road
Constructed:	2006
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	97
Address:	41725 Rosetta Canyon Drive
Constructed:	2009
Condition:	Excellent
Units:	Quint Aerial Truck Squad
On-Duty Personnel:	4

La Quinta – La Quinta has three stations (32, 70, and 93).

Station:	32
Address:	78-111 Avenue 52
Constructed:	2010
Condition:	Excellent
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Station:	70
Address:	54001 Madison Street
Constructed:	1985
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	93
Address:	44-555 Adams Street
Constructed:	2004
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Menifee – The city of Menifee has four stations (5, 7, 68, and 76).

Station:	5
Address:	28971 Goetz Road
Constructed:	1954
Condition:	Poor
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	7
Address:	27860 Bradley Road
Constructed:	1972
Condition:	Poor
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Station:	68
Address:	26020 Wickard Road
Constructed:	1989
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	76
Address:	29950 Menifee Road
Constructed:	1999
Condition:	Good
Units:	Engine - Type 1 Squad Aerial Truck Urban Search & Rescue Vehicle
On-Duty Personnel:	7

Moreno Valley – The city has seven fire stations, the most of any contract city served by RCFD. Moreno Valley is also 1st with almost 17,000 calls per year. Stations 2, 6, 48, 58, 65, 91, and 99 are located in Moreno Valley.

Station:	2
Address:	24935 Hemlock
Constructed:	2003
Condition:	Good
Units:	Engine - Type 1 Aerial Truck Urban Search & Rescue Vehicle
On-Duty Personnel:	7

Station:	6
Address:	22250 Eucalyptus Avenue
Constructed:	1995
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	48
Address:	10511 Village Road
Constructed:	1987/ 2015
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	58
Address:	28040 Eucalyptus Avenue
Constructed:	2008
Condition:	Good
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Station:	65
Address:	15111 Indian Avenue
Constructed:	1986
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	91
Address:	16110 Lasselle Street
Constructed:	2003
Condition:	Excellent
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Station:	99
Address:	13400 Morrison Street
Constructed:	2012
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Norco – The city of Norco has three fire stations. Though located in the city, Station 14 is owned and operated by the state.

Station:	14
Address:	1511 Hamner Avenue
Constructed:	1947
Condition:	Fair
Units:	Engine - Type 3
On-Duty Personnel:	3

Station:	47
Address:	3902 Hillside Avenue
Constructed:	2004
Condition:	Good
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	57
Address:	3367 Corydon Avenue
Constructed:	1977
Condition:	Good
Units:	Engine - Type 1 Animal Rescue Unit
On-Duty Personnel:	3

Palm Desert – The city of Palm Desert has three fire stations (33, 67, and 71).

Station:	33
Address:	44400 Town Center Way
Constructed:	1980
Condition:	Fair
Units:	Engine - Type 1 Medic Unit Aerial Truck Urban Search & Rescue Vehicle
On-Duty Personnel:	9

Station:	67
Address:	73200 Mesa View Drive
Constructed:	1981
Condition:	Good
Units:	Engine - Type 1 Medic Unit
On-Duty Personnel:	5

Station:	71
Address:	73995 Country Club Drive
Constructed:	1985
Condition:	Fair
Units:	Breathing Support Engine - Type 1 Medic Unit
On-Duty Personnel:	5

Perris – Fire stations 1, 90, and 101 are located in Perris. Station 1 is operated by the State.

Station:	1
Address:	210 West San Jacinto Avenue
Constructed:	1936
Condition:	Poor
Units:	Dozer - Type 2 Dozer - Type 2 Dozer Tender Dozer Tender Engine - Type 3 Engine - Type 3 Water Tender
On-Duty Personnel:	11

Station:	90
Address:	333 Placentia Avenue
Constructed:	2006
Condition:	Good
Units:	Breathing Support Quint Aerial Truck Squad
On-Duty Personnel:	4

Station:	101
Address:	105 S. F Street
Constructed:	2014
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Rancho Mirage – Fire station 50 and 69 are located in Rancho Mirage.

Station:	50
Address:	70801 Highway 111
Constructed:	1976
Condition:	Fair
Units:	Engine - Type 1 Medic Unit
On-Duty Personnel:	3

Station:	69
Address:	71751 Gerald Ford Drive
Constructed:	1992
Condition:	Good
Units:	Engine - Type 1 Medic Unit
On-Duty Personnel:	5

San Jacinto – San Jacinto has only one fire station (25).

Station:	25
Address:	132 South San Jacinto
Constructed:	1940
Condition:	Fair
Units:	Engine - Type 1 Engine - Type 3 Squad
On-Duty Personnel:	6

Note: San Jacinto did have two stations but one station (78) was closed due to budget constraints.

Temecula – Fire stations 12, 73, 84, 92, and 95 are located in Temecula. Station 95, which was constructed in 2006, is currently unoccupied. Station 12 is owed and maintained by the by the state, though a city engine is also located there.

Station:	12
Address:	28330 Mercedes Street
Constructed:	1950
Condition:	Fair
Units:	Engine - Type 1 Engine - Type 3 Engine - Type 3
On-Duty Personnel:	10

Station:	73	No Photograph Available
Address:	Unknown	
Constructed:	1990/2015	
Condition:	Excellent	
Units:	Engine - Type 1 Squad Aerial Truck Urban Search & Rescue Vehicle	
On-Duty Personnel:	8	

Station:	84	
Address:	30650 Pauba Road	
Constructed:	1997	
Condition:	Good	
Units:	Engine - Type 1 Medic Squad	
On-Duty Personnel:	4	

Station:	92	
Address:	32211 Wolf Creek Drive	
Constructed:	2007	
Condition:	Good	
Units:	Breathing Support Engine - Type 1 Squad	
On-Duty Personnel:	4	

Station:	95	No Photograph Available
Address:	32131 Calle Chapos	
Constructed:	2006	
Condition:	Excellent	
Units:	No units	
On-Duty Personnel:	0 – Station is not in use	
Note:	Recommendation is to open this station.	

Wildomar – Fire station 61 is the only station in Wildomar.

Station:	61
Address:	32637 Gruwell Street
Constructed:	1979
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Unincorporated Planning Areas

Of the 91 fire station in the RCFD, 37 are located in unincorporated areas. Several are owned and operated by the state or special districts. The state and county also share a few facilities.

Anza – Fire stations 29, 30, and 77 are located within this planning area.

Station:	29
Address:	56560 Hwy 371
Constructed:	1969
Condition:	Fair
Units:	Engine - Type 2 Engine - Type 3 Medic Squad
On-Duty Personnel:	5

Station:	30
Address:	70080 Hwy 74
Constructed:	1974
Condition:	Good
Units:	Engine - Type 2 Squad Water Tender
On-Duty Personnel:	3

Station:	77
Address:	49937 Commanche Ct.
Constructed:	2003
Condition:	Good
Units:	Engine - Type 2
On-Duty Personnel:	3

Blythe – Fire stations 43, 44, 45, and 46 are located within this planning area. Station 46 is used only for storage while Station 43, which is located in the city of Blythe, serves the adjacent County areas.

Station:	43
Address:	140 West Barnard Street
Constructed:	1951
Condition:	Poor
Units:	Engine - Type 1 Water Tender- Rescue Boat
On-Duty Personnel:	3
Note:	Recommendation is to close this station and consolidate personnel at FS45.

Station:	44
Address:	13987 Main Street
Constructed:	2007
Condition:	Good
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	45
Address:	17280 W. Hobson Way
Constructed:	1975
Condition:	Poor
Units:	Breathing Support Engine - Type 1 Urban Search & Rescue Vehicle
On-Duty Personnel:	3

Station:	46
Address:	SR 95 North – P.O. Box
Constructed:	Unknown
Condition:	Poor
Units:	None
On-Duty Personnel:	Not staffed

Cajalco – The Cajalco planning are has seven fire stations (4, 8, 9, 13, 59, 64, and 82). This planning area has is one of the highest in terms of demand.

Station:	4
Address:	16453 El Sobrante Road
Constructed:	2011
Condition:	Excellent
Units:	Engine - Type 3 Engine - Type 1
On-Duty Personnel:	3

Station:	8
Address:	16533 Trisha Way
Constructed:	2004
Condition:	Good
Units:	Engine - Type 1 Squad Water Tender
On-Duty Personnel:	3

Station:	9
Address:	21565 Steel Peak Road
Constructed:	1979
Condition:	Fair
Units:	Engine - Type 1 Water Tender
On-Duty Personnel:	3

Station:	13
Address:	3777 Neece Street
Constructed:	2005
Condition:	Good
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Station:	59
Address:	21510 Pinewood Street
Constructed:	2006
Condition:	Good
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	64
Address:	25310 Campbell Ranch Road
Constructed:	2006
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	82
Address:	17452 Lake Pointe Drive
Constructed:	1993
Condition:	Good
Units:	Engine - Type 1
On-Duty Personnel:	3

Coachella Valley – Six fire stations are located in the Coachella Valley planning area (35, 39, 40, 41, 56, and 81). The Coachella planning area covers the unincorporated area east of the incorporated cities of Desert Hot Springs, Palm Desert, Coachella, and La Quinta.

Station:	35
Address:	31920 Robert Road
Constructed:	2009
Condition:	Excellent
Units:	Engine - Type 1 Breathing Support
On-Duty Personnel:	4

Station:	39
Address:	86-911 Avenue 58
Constructed:	2006
Condition:	Excellent
Units:	Engine - Type 3 Engine - Type 1 Water Tender
On-Duty Personnel:	3

Station:	40
Address:	91-350 Avenue 66
Constructed:	2012
Condition:	Excellent
Units:	Engine - Type 3 Engine - Type 1 Medic Squad
On-Duty Personnel:	5

Station:	41
Address:	99065 Corvina Road
Constructed:	1964
Condition:	Poor
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	56
Address:	44900 El Dorado Drive
Constructed:	2006
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	81
Address:	37-955 Washington Street
Constructed:	1998
Condition:	Good
Units:	Engine - Type 1 Hazmat Unit Hazmat Squad
On-Duty Personnel:	5

Foothill – Fire stations 3, 19, and 54 are located within this planning area.

Station:	3
Address:	30515 10th Street
Constructed:	2007
Condition:	Good
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	19
Address:	469 Center Street
Constructed:	1996
Condition:	Fair
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	54
Address:	25730 Sultanas Road
Constructed:	1984
Condition:	Fair
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Lakes – This planning area has six fire stations (26, 28, 34, 72, 83, and 96).

Station:	26
Address:	25954 Stanford Street
Constructed:	1987
Condition:	Poor
Units:	Breathing Support Engine - Type 1 Water Tender
On-Duty Personnel:	3

Station:	28
Address:	35655 Sage Road
Constructed:	2001
Condition:	Fair
Units:	Engine - Type 2 Engine - Type 3 Medic Squad Water Tender
On-Duty Personnel:	8

Station:	34
Address:	32655 Haddock Street
Constructed:	1999
Condition:	Good
Units:	Engine - Type 1 Hazmat Unit Hazmat Squad
On-Duty Personnel:	5

Station:	72
Address:	25175 Fairview Avenue
Constructed:	1988
Condition:	Fair
Units:	Engine - Type 1 Squad
On-Duty Personnel:	3

Station:	83
Address:	37500 Sky Canyon Drive
Constructed:	1994
Condition:	Fair
Units:	Engine - Type 1 Water Tender
On-Duty Personnel:	3

Station:	96
Address:	37700 Glen Oaks Road
Constructed:	2012
Condition:	Excellent
Units:	Engine - Type 1
On-Duty Personnel:	3

Mountain – Fire stations 22, 23, 24, 53, and 63 are located within this planning area. Idyllwild is a special district and the station is owned by the District.

Station:	22
Address:	10055 Avenida Mira Villa
Constructed:	1954
Condition:	Poor
Units:	Engine - Type 1 Water Tender
On-Duty Personnel:	3
Note:	The study recommends Station 22 be relocated to a site near Cherry Valley Boulevard.

Station:	23
Address:	24919 Marion Ridge Road
Constructed:	1969
Condition:	Poor
Units:	Engine - Type 1 Engine - Type 3 Squad
On-Duty Personnel:	6

Station:	24
Address:	50382 Irene Street
Constructed:	2008
Condition:	Good
Units:	Engine - Type 1
On-Duty Personnel:	3

Station:	53
Address:	59200 Morris Ranch Road
Constructed:	1979/ 2012
Condition:	Good
Units:	Engine - Type 1 Engine - Type 3 Water Tender
On-Duty Personnel:	6

Station:	63
Address:	49575 Orchard Road
Constructed:	1995
Condition:	Fair
Units:	Engine - Type 3 Engine - Type 2 Squad
On-Duty Personnel:	3

Plateau – Fire stations 11, 51, and 75 are located within this planning area.

Station:	11
Address:	33020 Maiden Lane
Constructed:	2001
Condition:	Good
Units:	Engine - Type 1 Engine - Type 2
On-Duty Personnel:	3

Station:	51
Address:	32353 Ortega Highway
Constructed:	2003
Condition:	Poor
Units:	Engine - Type 2
On-Duty Personnel:	3

Station:	75
Address:	38900 Clinton Keith Road
Constructed:	1990
Condition:	Fair
Units:	Engine - Type 3 Engine - Type 1
On-Duty Personnel:	3

Joshua Tree – Only one fire station (49) is in this planning area.

Station:	49
Address:	43880 Lake Tamarisk
Constructed:	1970
Condition:	Poor
Units:	Engine - Type 1 Water Tender
On-Duty Personnel:	4

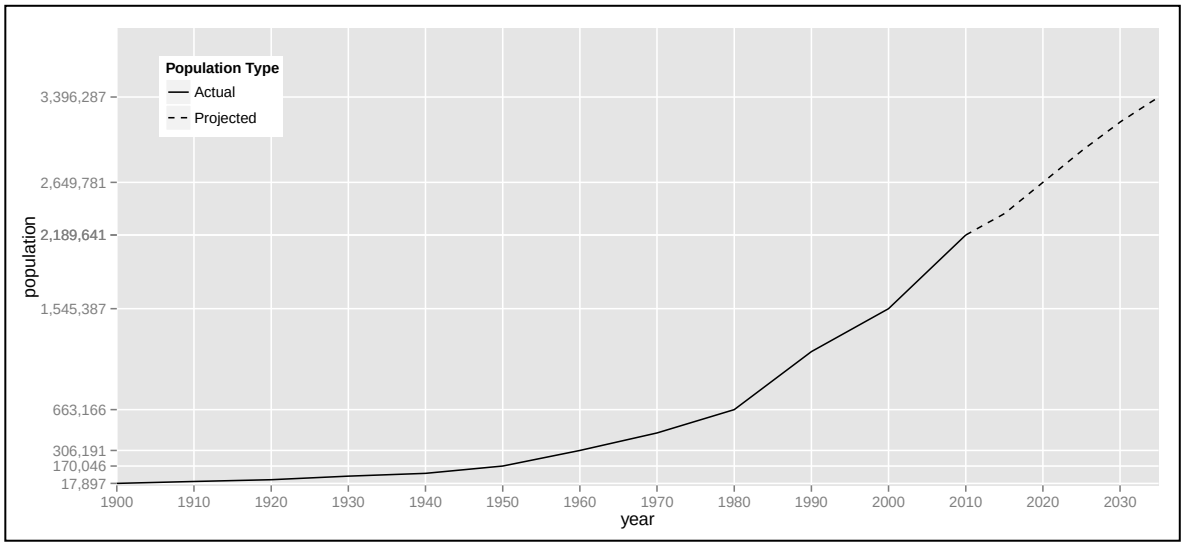
CHAPTER IV. POPULATION GROWTH AND RISK ASSESSMENT

This chapter reviews the County's past trend in population and the expected population growth, and the historical experience of demand in the 29 planning areas. Population is a key factor in determining the potential demand for emergency medical services. Fire experience, in particular structure fires, injuries and fatalities, are affected more by socio-economic factors, age of structures, and building codes.

Riverside County Population Growth and Development

The population of Riverside County has steadily increased since about 1950, with an uptick in the rate of population growth starting in 1980 as seen in Figure 20. Between 1950 and 2010, the population grew enormously, by over two million. Steady growth is expected to continue through at least 2035. The current population of 2.19M is projected to increase to 3.4M by 2035. Much of the demand for EMS services is driven by population and the projected increase will impact the workload of RCFD units, some of which already have very high workloads. If even half of this projected increase occurs, RCFD needs to start planning for it now, especially in considering where stations should be built.

Figure 20: Actual and Projected Population of Riverside County, 1900-2035



The current population density is shown in Figure 21 through Figure 23. Riverside County has a wide range of population densities, ranging from large swathes of low density in "outlying" areas, to high density urban areas, mostly in the western and central parts of the county. Areas with the highest population density can expect to have the highest emergency-service demand. These areas are shown in red on the maps.

Figure 21: Population Density (West)

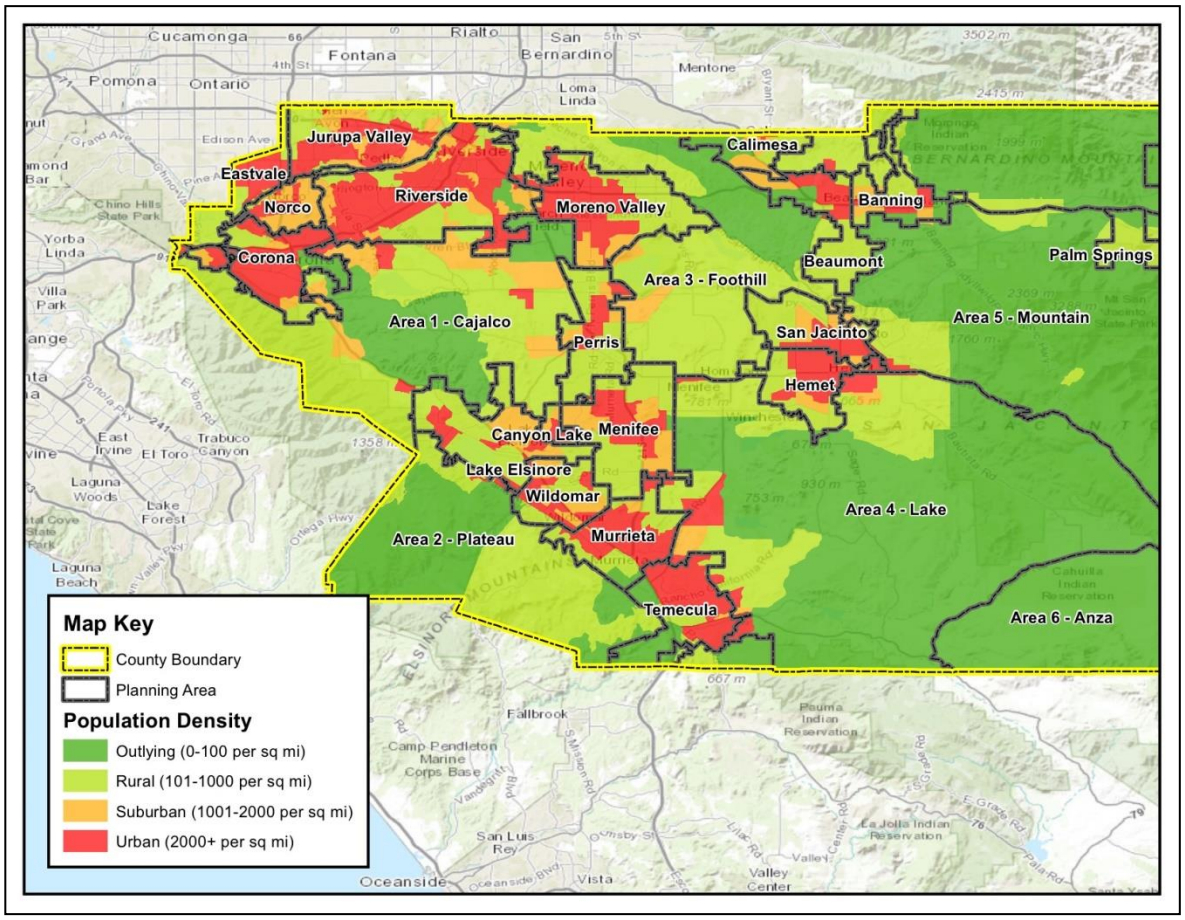


Figure 22: Population Density (Central)

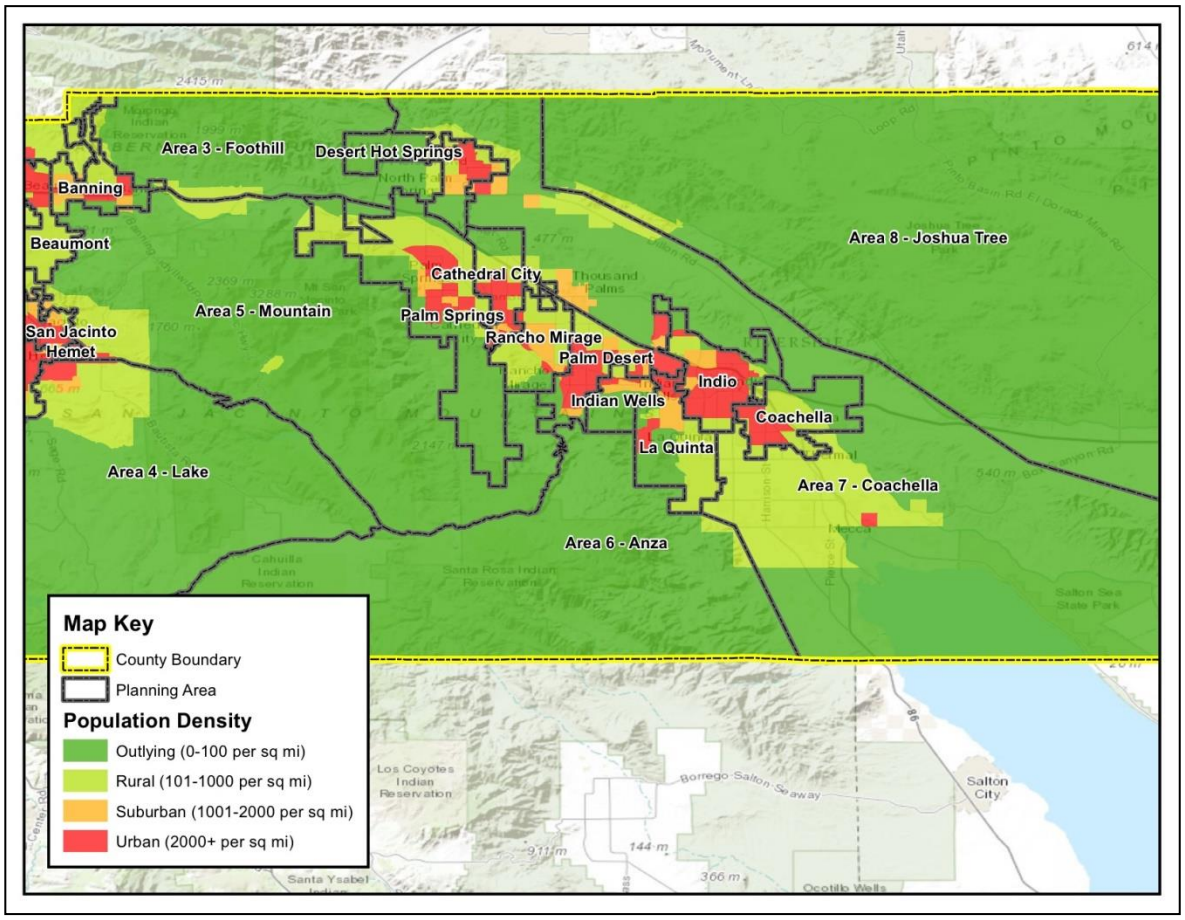
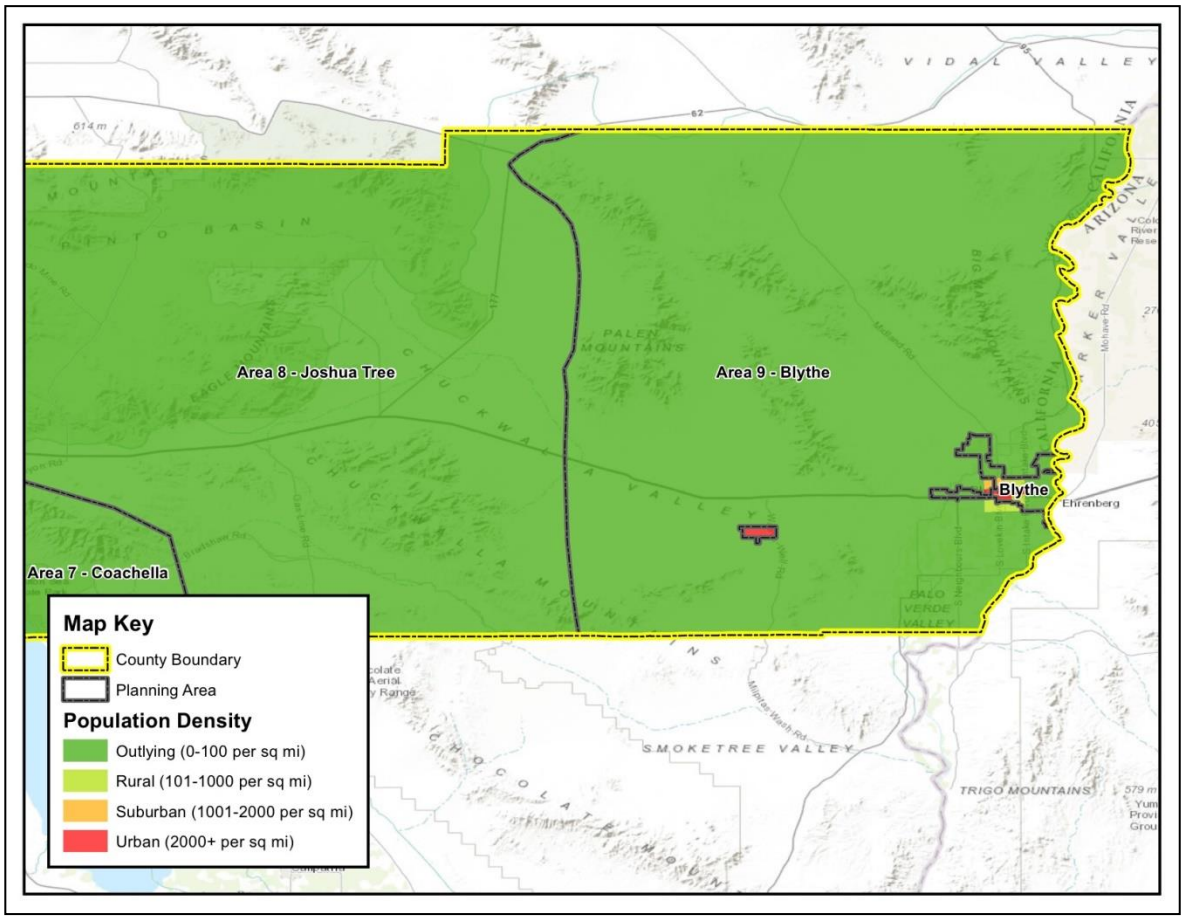


Figure 23: Population Density (East)



The population growth is not expected to occur uniformly throughout the county, but rather more intensely in certain cities and areas of the county. The Southern California Association of Governments (SCAG) puts out population growth estimates by city. Table 10 shows their estimate for municipalities within Riverside County. Although all localities and the unincorporated portions of Riverside are expected to see population increases, Coachella, Calimesa, Beaumont, Lake Elsinore, and Desert Hot Springs are likely to experience the greatest growth. Canyon Lake, Corona, Eastvale, and Banning are expected to see the lowest population growth.

Changes in local government policy such as economic development could impact the expected changes in population. Communities with population increases of 50 percent or more over the next 20 years are highlighted, as they have the potential for the most impact on RCFD operations.

Table 10: Projected Population Increases within Riverside County

City Name	2012 Population	2035 Population	Increase
Banning	30,111	34,798	15.6%
Beaumont	39,368	78,767	100.1%
Blythe	20,024	24,150	20.6%
Calimesa	8,058	23,907	196.7%
Canyon Lake	10,744	11,178	4.0%
Cathedral City	52,224	65,692	25.8%
Coachella	42,406	124,875	194.5%
Corona	155,995	170,547	9.3%
Desert Hot Springs	27,774	53,066	91.1%
Eastvale	56,511	63,433	12.2%
Indian Wells	5,066	6,969	37.6%
Indio	78,766	118,113	50.0%
Jurupa Valley	96,996	112,938	16.4%
La Quinta	38,298	47,045	22.8%
Lake Elsinore	54,148	103,243	90.7%
Menifee	81,563	115,927	42.1%
Moreno Valley	197,610	255,939	29.5%
Murrieta	105,568	129,141	22.3%
Norco	26,875	31,777	18.2%
Palm Desert	49,786	60,226	21.0%
Palm Springs	45,564	56,214	23.4%
Perris	70,675	112,444	59.1%
Rancho Mirage	17,599	24,158	37.3%
San Jacinto	45,072	73,262	62.5%
Temecula	104,143	136,067	30.7%
Wildomar	32,997	53,696	62.7%
Unincorporated	359,504	461,036	28.2%

Notably, six of the nine high-growth areas (shaded) are located in west Riverside County, areas that already have the highest level of demand.

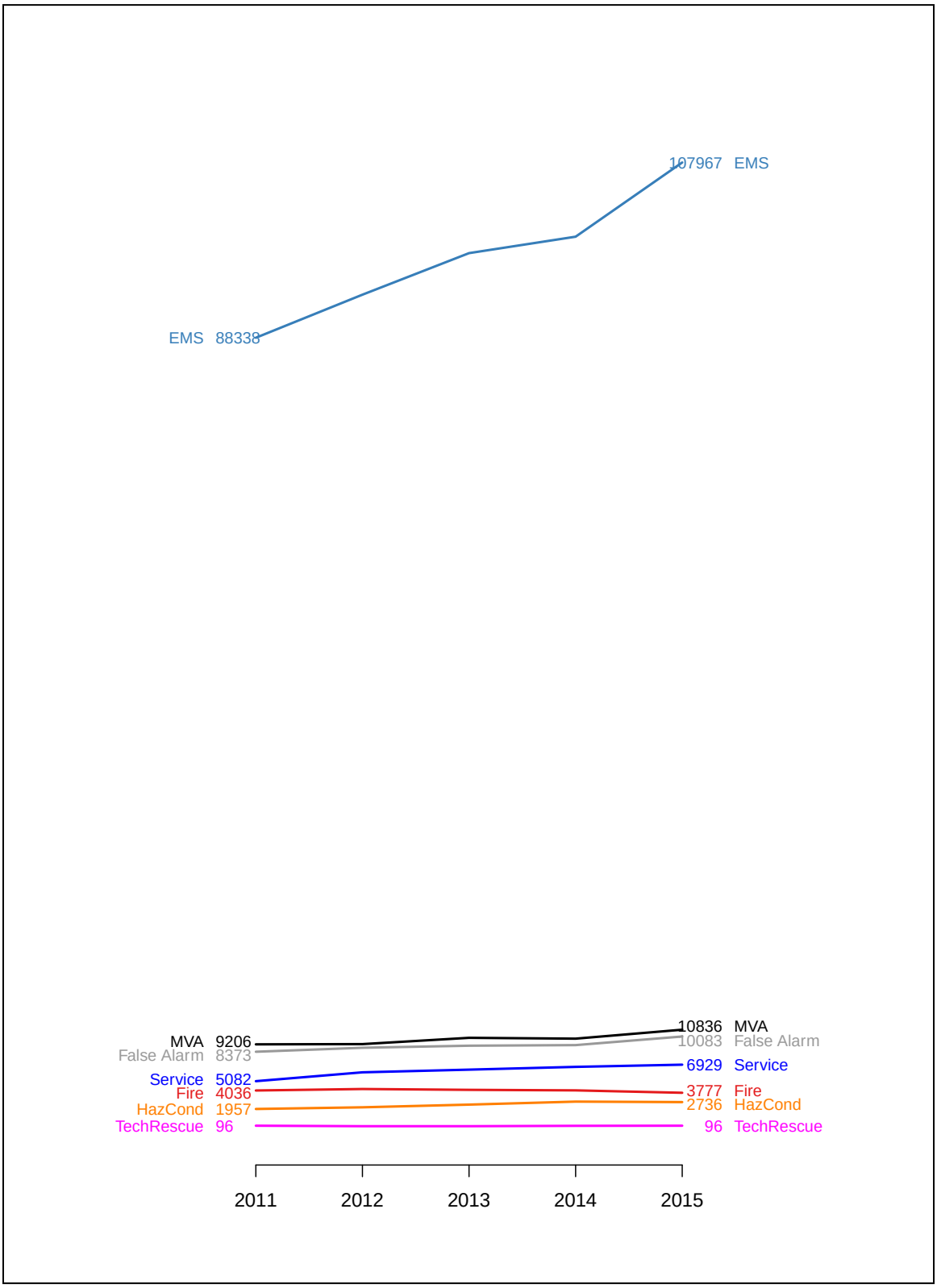
Demand for Fire Department Services

Demand is defined as the number of calls to the fire department for emergency and nonemergency services. This section reviews trends in demand for the different incident types, compares emergency-service demand by planning area, and maps out fire and EMS hotspots. It concludes by forecasting the total number of calls (or incidents) through 2025.

Trends by Incident Type – Figure 24 shows the incident trends from 2011 to 2015. Riverside County, like most departments around the country, responds to far more emergency medical service (EMS) calls than for other incident types. EMS calls account for about 75 percent of calls. Riverside County EMS calls have increased significantly over the last five years, from 88,338 to 107,967 (over 20 percent increase), while the population also increased by about 20 percent.

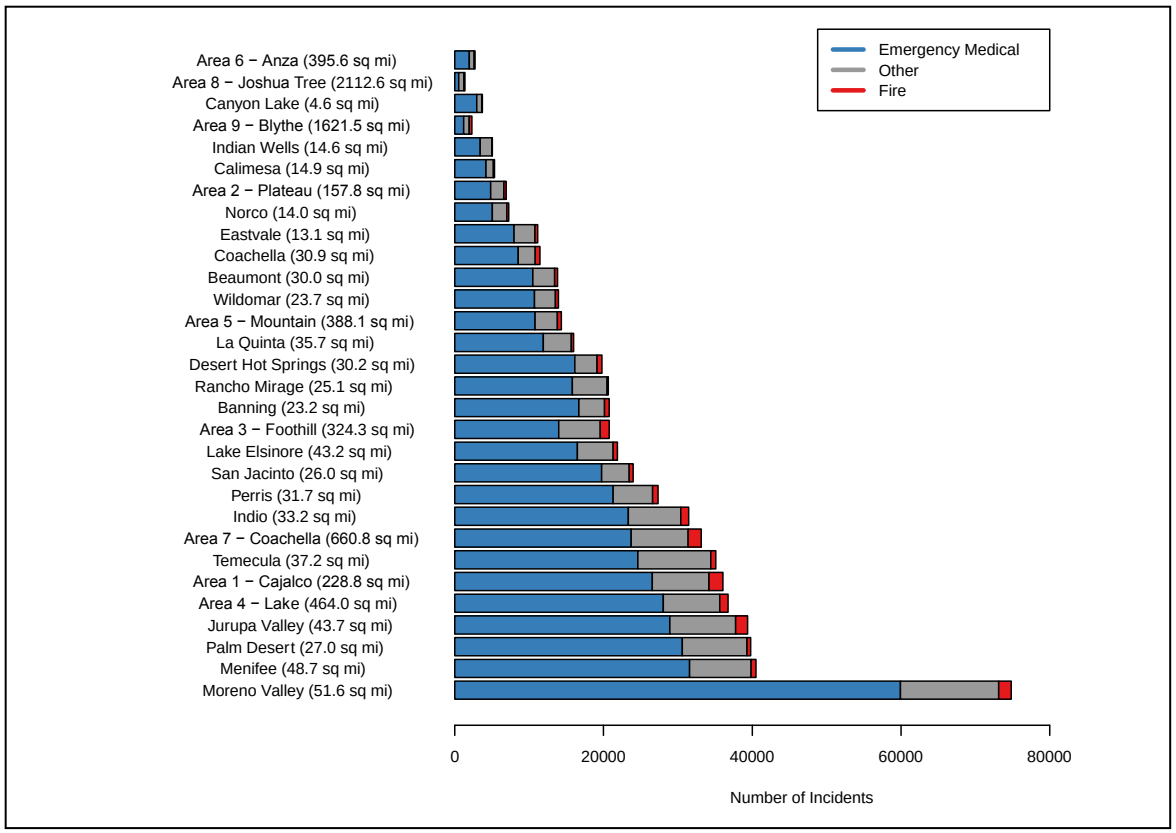
Over that same period, fires *decreased* six percent, technical rescue incidents remained steady, and other incident types also increased about 20 percent.

Figure 24: Trends by Incident-Type, FY2011-2015



Demand By Planning Area – Figure 25 shows the breakdown of incident types by planning areas. EMS incidents are responsible for the majority of emergency-service demand in all of the planning areas. The busiest planning areas are Moreno Valley, Menifee, Palm Desert, and Jurupa Valley, with Moreno Valley having almost twice as much demand as the next busiest planning areas. These busiest planning areas have some of the highest population densities in the County. Unincorporated areas of Anza, Blythe, and Joshua Tree had the lowest number of calls of the nine unincorporated areas, while the city of Canyon Lake had the least number of calls among the 21 cities.

Figure 25: Emergency Incident Profile by Planning Area, FY2011-2015



Geographic Information System (GIS) Mapping of Fire and EMS Demand – An efficient way of looking at demand is to map out fire and EMS incident densities using GIS software, which pinpoints high-demand areas ("hotspots"). Figure 26 through Figure 28 show fire incident density, and Figure 29 through Figure 31 show EMS incident densities.

Figure 26: Fire Incident Density (West)

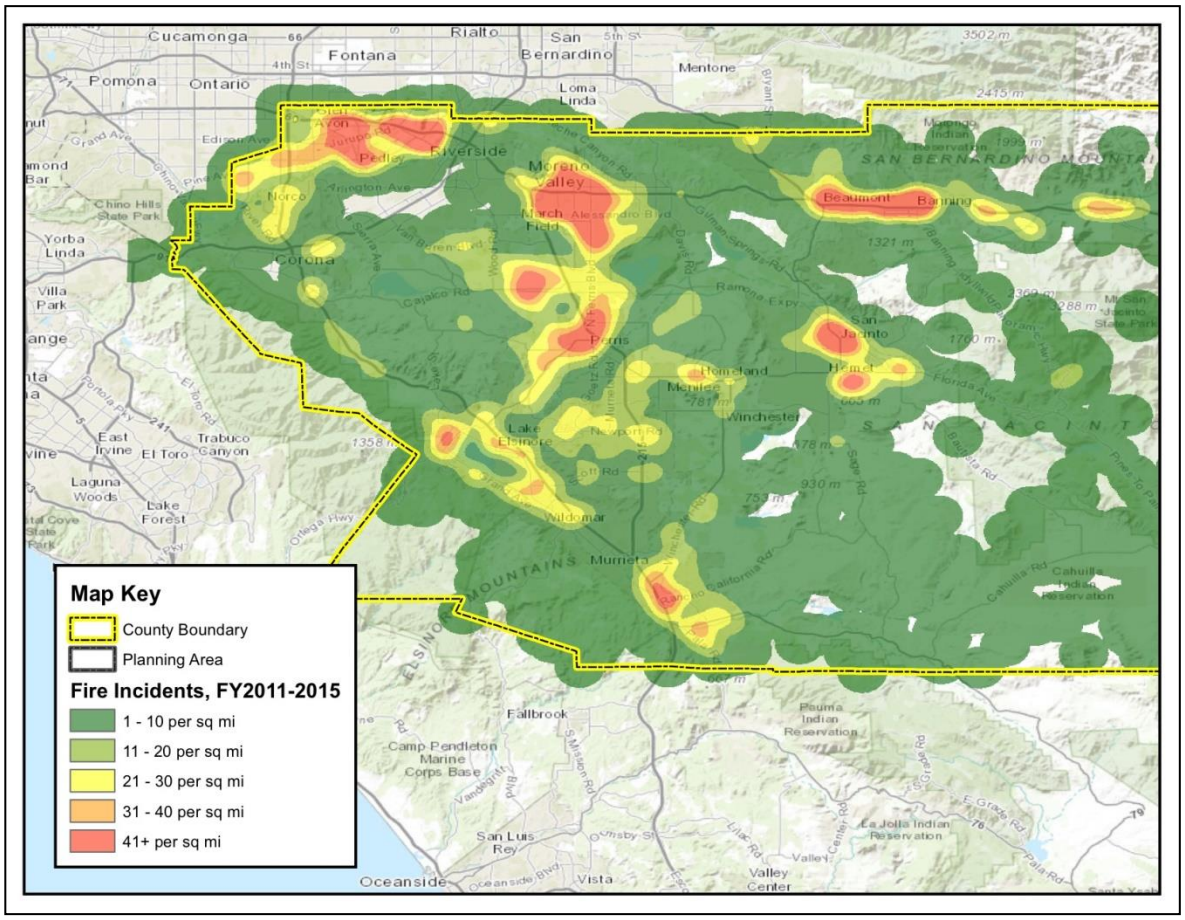


Figure 27: Fire Incident Density (Central)

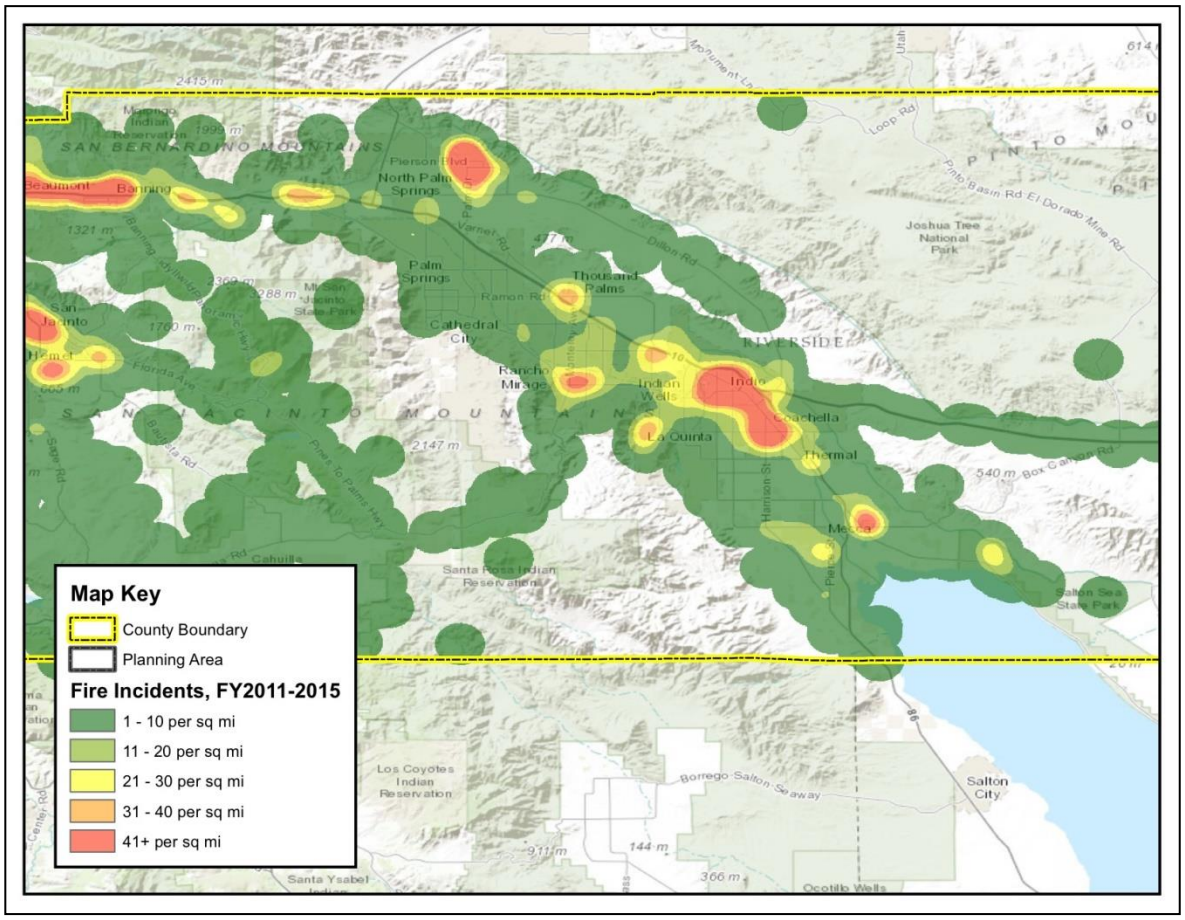
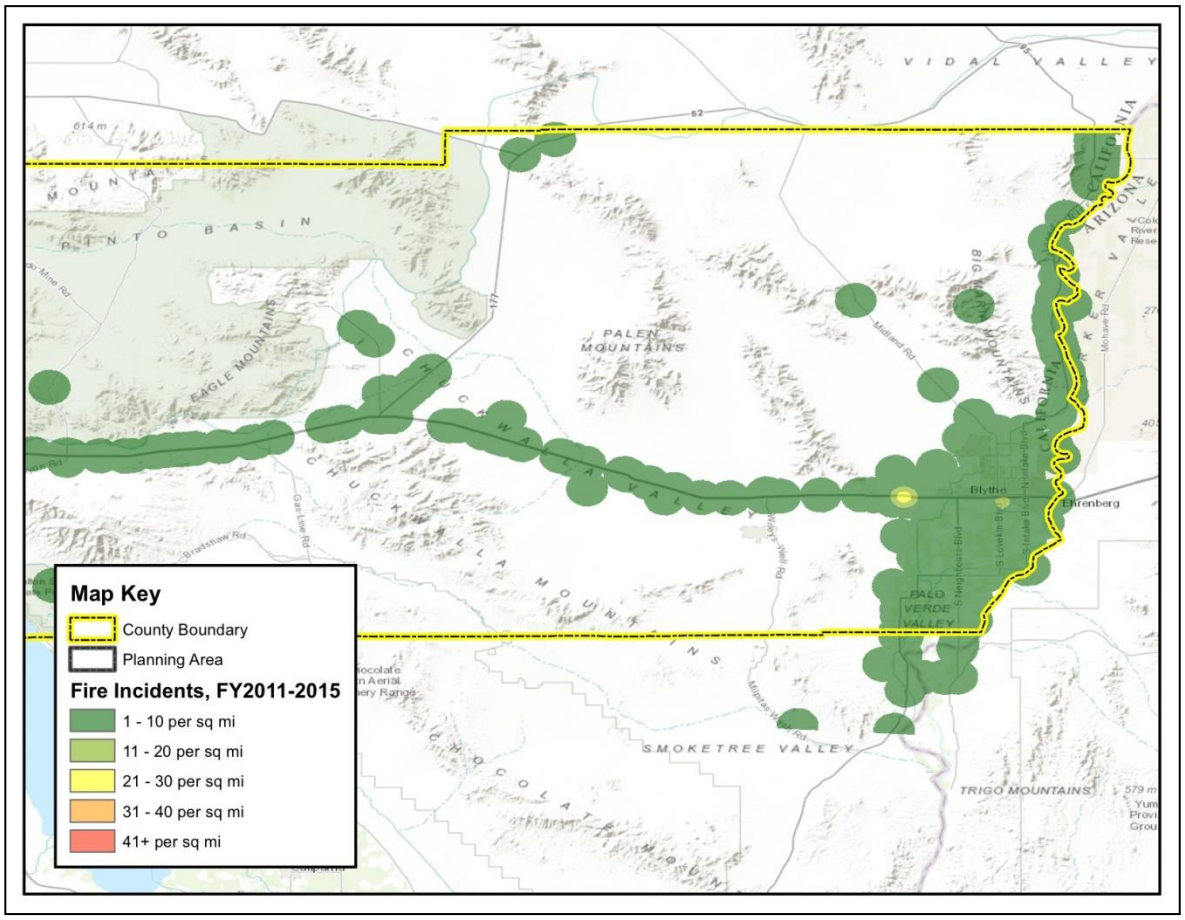


Figure 28: Fire Incident Density (East)



The fire incident density map includes all incidents classified as fires in the computer aided dispatch (CAD) data provided by the county. This includes structure fires, vehicle fires, and outside fires. The map shows that fire demand generally follows the patterns of population density shown earlier.

Figure 29: EMS Incident Density (West)

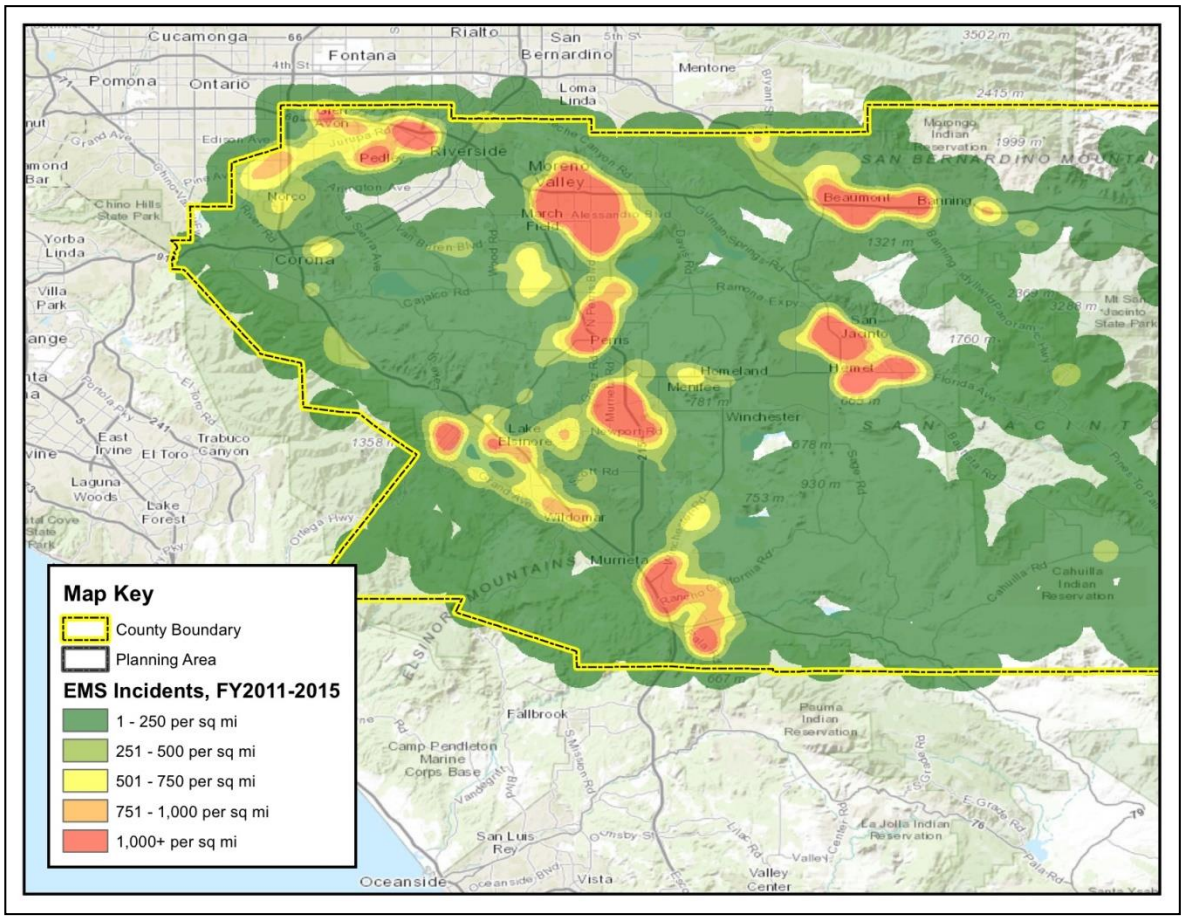


Figure 30: EMS Incident Density (Central)

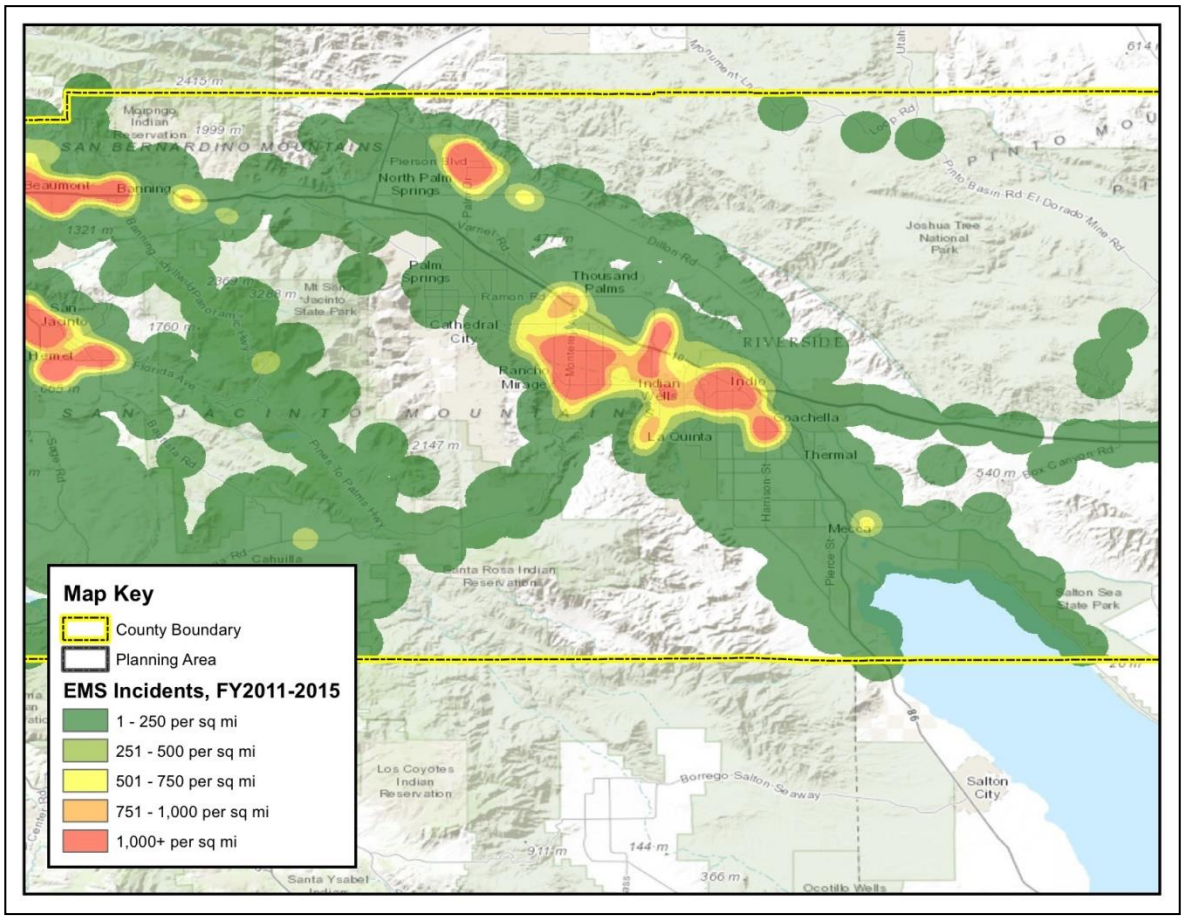
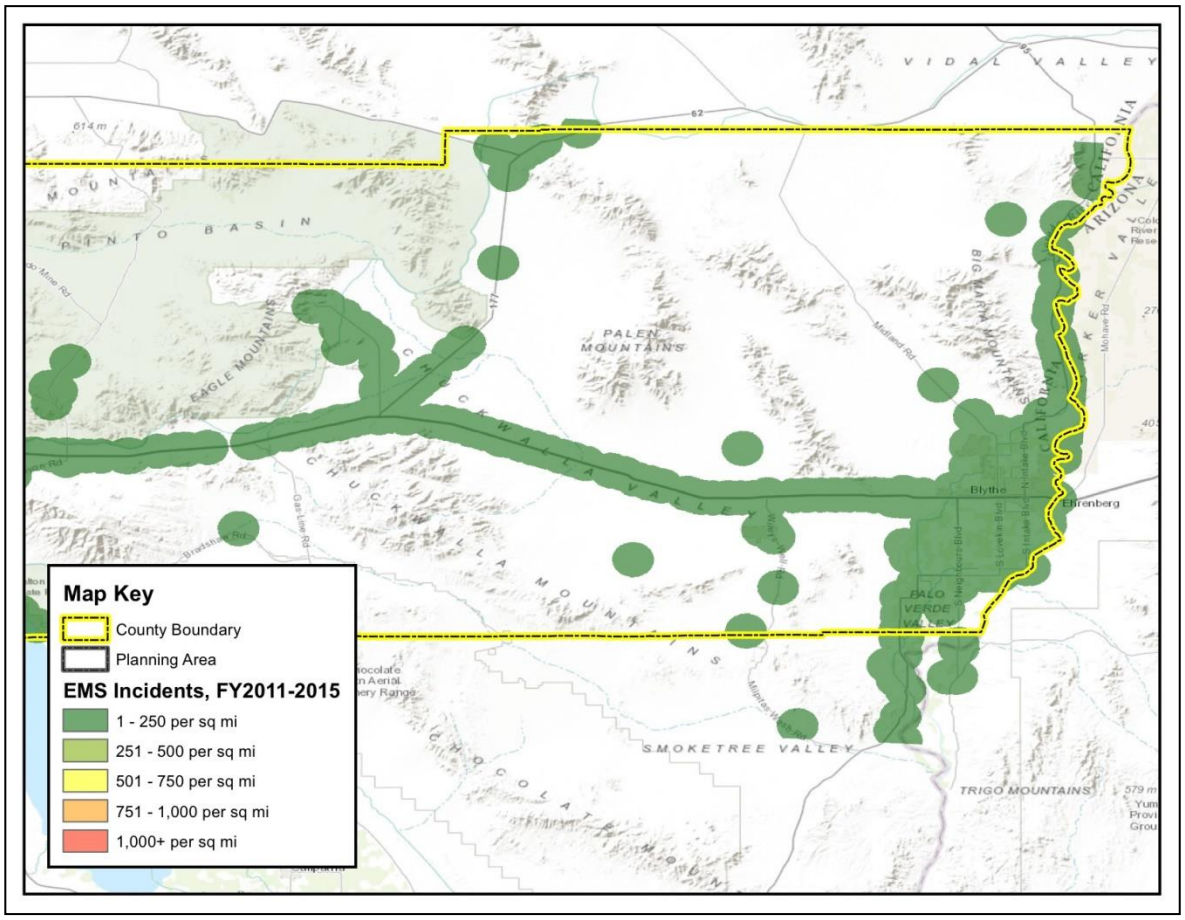


Figure 31: EMS Incident Density (East)



EMS incident density (Figure 29 through Figure 31) shows a similar hotspot pattern to that of fire density. Both EMS and fire calls tend to be driven by population. An old but true fire department adage is that the three leading causes of fires are men, women and children. Population density is a good predictor of not only fires, but all emergency incident types—where there are people, there are emergencies. Despite some differences in the pattern of fire and EMS incident density, both generally follow the residential population density shown earlier.

Demand Projections

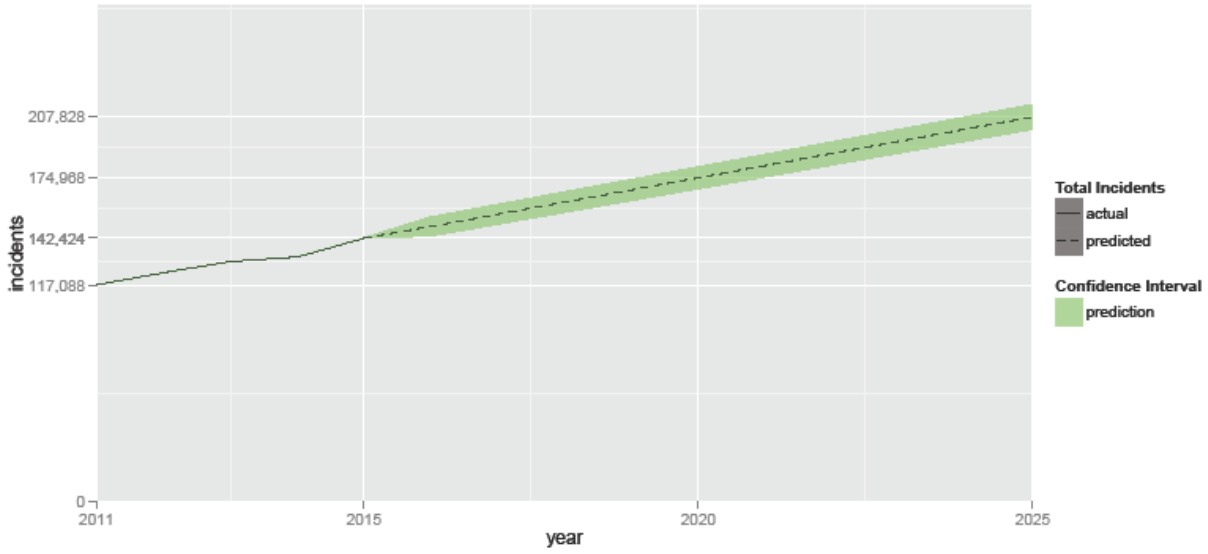
Using statistical software, a multilinear regression[8] procedure was used to investigate how both time[9] and population affect the total number of incidents to which the fire department responds. A regression model was used to predict future demand for fire services.

[8] Regression analysis is a method of studying the relationships among variables by plotting them on a graph.
[9] Time reflects changes in inclination to use emergency services and factors other than population.

Over the past five years, the total number of incidents has increased by 22 percent (from 117,088 to 142,424) and the statistical regression projected that this trend would continue. Because of the continued population growth going forward, this level of emergency service growth makes sense.

In Figure 32, the solid black line shows the actual emergency incident totals from 2011 to 2015. The dashed line shows the estimated emergency-incident projection going forward to 2025. The shaded green area around our projected incident totals shows what is called the "confidence interval," meaning how certain we are that the incident total will fall within a specific range. The confidence interval shown is 95 percent; that is, there is a 95 percent probability that demand will fall within that envelope if there are no radical changes in growth policy. The green area is narrower in the near future because we can predict the number of incidents more accurately in the near future.

Figure 32: Total Emergency Incident Projections through 2025



The methodology used for projecting future demand is provided in Appendix B, Total Incident Forecasting Method.

Jurisdiction-Wide Fire Losses – One of the best indicators of future fire risk is historical fire-loss data. Table 11 shows total fires, dollar loss (defined as both property and contents), and deaths over the last nine years. The data includes structure fires, vehicle fires, and outside fires. On average, those areas of Riverside County protected by RCFD have about 3,800 fires and seven fire deaths per year. Other than the heavy loss years of 2007 and 2008, annual dollar loss ranged from $15.2 million dollars.

Table 11: Total Fire Loss, 2007-2015

	Total Fires	Dollar Loss	Deaths
2007	4756	$644,443,123	8
2008	4097	$156,790,423	9
2009	3532	$56,441,157	6
2010	3286	$28,138,369	7
2011	3563	$43,757,299	8
2012	3773	$54,551,720	4
2013	3829	$74,138,605	7
2014	3634	$93,383,072	6
2015	3674	$74,594,565	7
(average)	3794	$136,248,704	7

Table 12 compares Riverside County's fire-loss data to regional and national averages. Riverside County had significantly fewer fires and fire deaths than the national and regional averages. However, because of high dollar losses in 2007 and 2008, the average fire loss was higher than national, regional, and communities of similar size comparisons.

Table 12: Per Capita Fire Loss and Comparison Statistics, 2007-2015

	Total Fires	Dollar Loss	Civilian Deaths
	(per thousand capita)	(per capita)	(per million capita)
United States	4.4	$40.80	9.8
Region: West	3.1	$30.90	5.7
Population: 500,000 to 999,999	3.7	$29.30	8.1
Riverside County, California : 2007	2.2	$294.31	3.7
Riverside County, California : 2008	1.9	$71.61	4.1
Riverside County, California : 2009	1.6	$25.78	2.7
Riverside County, California : 2010	1.5	$12.85	3.2
Riverside County, California : 2011	1.6	$19.98	3.7
Riverside County, California : 2012	1.7	$24.91	1.8
Riverside County, California : 2013	1.7	$33.86	3.2
Riverside County, California : 2014	1.7	$42.65	2.7
Riverside County, California : 2015	1.7	$34.07	3.2
Riverside County, California : (average)	1.7	$62.22	3.1

When the high dollar loss of 2007 is eliminated as an outlier, Riverside County's average dollar loss by fire is less than that nationally, and only slightly higher than the western region.[10] Fire-related deaths in Riverside County are 31 percent of that experienced nationally and 46 percent lower than the western region. These are important statistics that show the effectiveness of the fire prevention and code enforcement programs of RCFD, the state and county.

[10] Further review of the dollar loss in 2007 was unable to determine what contributed to the high loss figures.

CHAPTER V. RESPONSE TIME, WORKLOAD, AND RELIABILITY ANALYSIS

In this chapter station and unit performance are reviewed. The project analyzed response-time performance (both countywide and by planning areas), current unit workloads, and the relationship between unit availability and response-time performance. These factors were considered for the station location and unit deployment changes recommended in this study. Appendix C, D, and E describe the methodology used in this analysis.

Response Time Analysis

Response time is the most common performance measurement used by the fire service because it is understood by citizens, easy to compute, and useful in the evaluation of end results. Rapid response is also an aspect of service quality that citizens care about. There have been a few attempts to measure the incremental value of a one-minute faster response time for fires and EMS calls, but there is no definitive study of the incremental benefit. Faster is better, but it is unclear how much better in terms of dollars or lives saved. Nevertheless, response time is often used as a surrogate for true measures of outcome.

Measurement Methods – Response time while seemingly simple on the surface actually is a complex concept that can be examined in several different ways. Response-time performance data can be represented on a distribution graph to show the extent to which a fire department is meeting established goals. This can be done at varying levels of detail to show performance across periods of time, or by day of the week, hour of the day, in different areas of a jurisdiction, and so on.

The fire service historically has used the average (mean) response time, as a key performance measure. While useful, it can be misleading. A small number of very fast responses (e.g., a unit comes upon a car accident and immediately begins attending to the victims, such that the travel time is recorded as zero) can mask many unacceptably long responses. Also, data on the start or end time may be entered incorrectly for some calls, such as record two hours instead of two minutes, skewing the averages.

A better reflection of response time than the average is the percentile/threshold times (the percent of calls on which the fire department responds within the established response-time goal.). Fire departments are increasingly adopting threshold/percentile times for analyzing response times, mostly due to use of this measure in the National Fire Protection Association and CPSE standards. This is a significantly better single-number indicator of response-time performance because it shows whether almost the vast majority of responses fall below a specified time, which eliminates the issue of a few calls skewing the data.

Despite being better than averages, percentile/threshold times are not perfect indicators. They still rely on a single number to describe a complex situation. They still can mask some long response times. The most accurate approach is to view the entire response-time distribution, but that is hard to describe, so the percentiles and averages are often quoted.

Applicable Response-time Standards – A common standard used to evaluate career fire department response times is NFPA 1710. Rather than provide a single standard for the total response time, NFPA 1710, which is intended for urban areas, provides standards for response-time segments:

- Call-processing time under 60 seconds
- Turnout time under 60 seconds for EMS responses
- Turnout time under 80 seconds for fire responses
- Travel time under four minutes

Call-processing and turnout goals are challenging but reasonable for RCFD. The travel-time goal is challenging for urban areas and not realistic for many non-urban areas.

Recommendation 25: RCFD should use as goals the above NFPA standards for call-processing and turnout times.

In cities where neighborhoods have similar characteristics of population density, demographics, building construction type and age, and so on, we recommend using a single response-time goal for each individual neighborhood / planning areas. Riverside County is a patchwork of diverse areas, some very urban, others rural, and many in between. The wide variety of characteristics and population densities, often within the same first-due area for a particular station, can make it difficult to set response-time goals. Even so, because population and density drive most of the demand for service, especially EMS in Riverside County, it makes sense to use response-time goals based on population-density, with better response times expected in the more populated areas and longer response times in less densely populated areas.

Besides NFPA 1710 are other standards for more rural areas: **NFPA 1720** is applied to mostly volunteer fire departments. Although the RCFD is not a volunteer department, this standard takes into account areas of different population density and is appropriate for the wide variety of population densities that the RCFD protects.

The Center for Public Safety Excellence (CPSE), ***Standards of Cover Manual*** also includes performance metrics based on population density. The CPSE system is a little different from the NFPA standards in that it provides two performance metrics: a benchmark and a baseline. The benchmark is the goal and the baseline is the minimally acceptable performance. The benchmark times for metropolitan and urban areas are the same as the NFPA 1710 standard. Additional time is allowed for suburban and rural areas.

A comparison of the NFPA and CPSE standards is shown in Table 13. Some conversions had to be made to make the times comparable between the standards. For example, the NFPA 1720 times are specified as a combined turnout and travel time, while NFPA 1710 gives separate times for turnout and travel. Although statistically not entirely accurate, we added the NFPA 1710 turnout and travel times to make them comparable to the 1720 standard.

Table 13: Comparison of Response Time Standards

Population Density	NFPA Term	CPSE Term	NFPA 1710	NFPA 1720	CPSE Baseline	CPSE Benchmark
3000+	Urban	Metropolitan	6:20	10:00	7:32	6:20
2000-3000	Urban	Urban	6:20	10:00	7:32	6:20
1000-2000	Urban	Suburban	6:20	10:00	8:50	7:20
500-1000	Suburban	Rural	6:20	11:00	14:20	12:20
0-500	Rural	Rural	6:20	15:00	14:20	12:20

In the following section, we recommend both response time goals and compliance levels, using a combination of the NFPA 1710, NFPA 1720, and CPSE standards/methodologies. We used something close to NFPA 1710 for the urban areas, and something closer to NFPA 1720 and the CPSE recommendations for the suburban, rural, and outlying areas.

Although we based the recommended response time goals on the standards where applicable, the final component in setting response-time goals for RCFD is taking into account what is realistic for the jurisdiction to achieve. Setting a goal that is not achievable in the foreseeable future is not much better than having no goal.

With respect to the urban response time goal, it should be noted that very few fire departments in metropolitan areas meet the NFPA 1710 travel-time standard. In fact, most are several minutes above the standard, calling into question whether the standard is realistic for most departments. It may be more helpful to think of NFPA 1710 as a desirable gold standard. It would be difficult for Riverside County to meet this standard in all areas of the county given the varying conditions, but the standard might be thought of as an eventual goal for areas of the county that are predominantly urban.

Ultimately each department has to decide for itself what performance standard it wants to try to meet. The response time goals and compliance levels that we recommend in the following section are still challenging, given the RCFD's current response times.

Recommended Response Time Goals and Compliance Levels – Using slightly different population densities than currently used by the Riverside County Fire Department, we recommend the following response time goals for urban (2,000+ people per square mile), suburban (1001-2000 people per square mile), rural (101-1000 people per square mile), and outlying areas (0-100 people per square mile).

Table 14: Recommended Goals by Service-Area Designation

Population Density	Travel Time	Total Response Time (EMS/Fire)
Urban	4:30	6:30/6:50
Suburban	5:30	7:30/7:50
Rural	8:30	10:30/10:50
Outlying	12:30	14:30/14:50

After setting response-time goals, the next step is to determine the acceptable compliance levels. NFPA 1710 and the CPSE Standards of Cover manual both recommend meeting time goals 90 percent of the time. NFPA 1720 recommends 90 percent compliance for urban areas and 80 percent for suburban and rural areas. None of the standards provides explicit reasons for these specific compliance percentages, which are the percent of calls meeting the stated goal.

The 90th percentile compliance often falls on the far right side of a response-time distribution graph, indicating low compliance with response-time goals and a strong influence of data errors and other suspiciously long times. From other studies, it has been determined that a compliance standard of 80 percent better reflects the threshold under which most of the responses fall.

Although it is possible to design a system with 90 percent compliance for all areas of a community, it is typically not cost-effective. Urban areas close to several fire stations should have high compliance, but it does not always make sense to dictate such high compliance for suburban or rural areas. NFPA 1710 acknowledges that it would not make sense to apply the same goal times to rural areas. NFPA 1720 also shows that even the standard makers understand that as population density decreases, it makes sense to decrease the compliance level. NFPA 1720 sets the compliance for suburban and rural areas set at 80 percent.

The value of good call-processing times and the ability to track those times extremely accurately, a compliance goal of 90 percent for call processing is used. For all other response time segments, 80 percent compliance goals were established.

For the travel-time analysis, the analysis is segmented into incident types and geographic areas (which most departments do not do). Having 90 percent compliance in each of these subdivided areas would result in higher than 90 percent compliance countywide. Departments that do not have rigorous data-quality controls will typically have more calls with incorrectly long response times; an 80 percent compliance standard leaves room for some erroneous data.

Our analysis of RCFD response times included only incidents dispatched as an emergency. Eliminated from the analysis were non-emergency service calls. We included only frontline pumping and aerial apparatus for fire incidents and only first-response-capable units for EMS calls. These criteria were applied to keep the analysis in line with the NFPA 1710 standard. For all time segments, we analyzed one year of data. Although we evaluate response times using

the compliance percentages discussed above, for each analysis we show average times, 80 percent compliance times, and 90 percent compliance times to give a more complete picture of the response-time distribution.

Call-Processing or Alarm-Handling Time – According to NFPA 1710, alarm-handling time is "the time interval from the receipt of the alarm at the primary public safety answering point (PSAP) until the beginning of the transmittal of the response information via voice or electronic means to emergency response facilities (ERFs) or the emergency response units (ERUs) in the field."

NFPA 1710 (4.1.2.3.3) specifies that "the fire department shall establish a performance objective of having an alarm processing time of not more than 60 seconds for at least 90 percent of the alarms and not more than 90 seconds for at least 99 percent of the alarms, as specified by NFPA 1221."

Figure 33 and Table 15 show the 2015 call-processing times for the Riverside County Fire Rescue Department by time of day and incident type. The 90th-percentile call-processing time was 3:17 (three minutes, 17 seconds) for fire and special operations incidents and 2:20 for EMS incidents. **The overall call-processing time is more than a minute over the standard for EMS and more than two minutes over the standard for fire and special operations incidents.** With the time being more than double that of the standard, there are likely significant dispatch time issues that need to be addressed. The red line in Figure 33 shows that when there are peaks in call volume at the communications center, there is a slight increase in call-processing time, but call-processing time is unacceptably long even at the lowest call volume times. Therefore, call volume peaks are not the main factor in slow call processing.

It is financially prudent to address long call-processing times before long drive times, because improving dispatch-center technology and staffing is much less expensive than adding additional units and stations. Our recommendation is for the RCFD to keep a close eye on call-processing time and establish a firm policy that the dispatch center must meet the NFPA 1221 specifications.

Figure 33: Call-Processing Time by Hour of the Day, FY2015

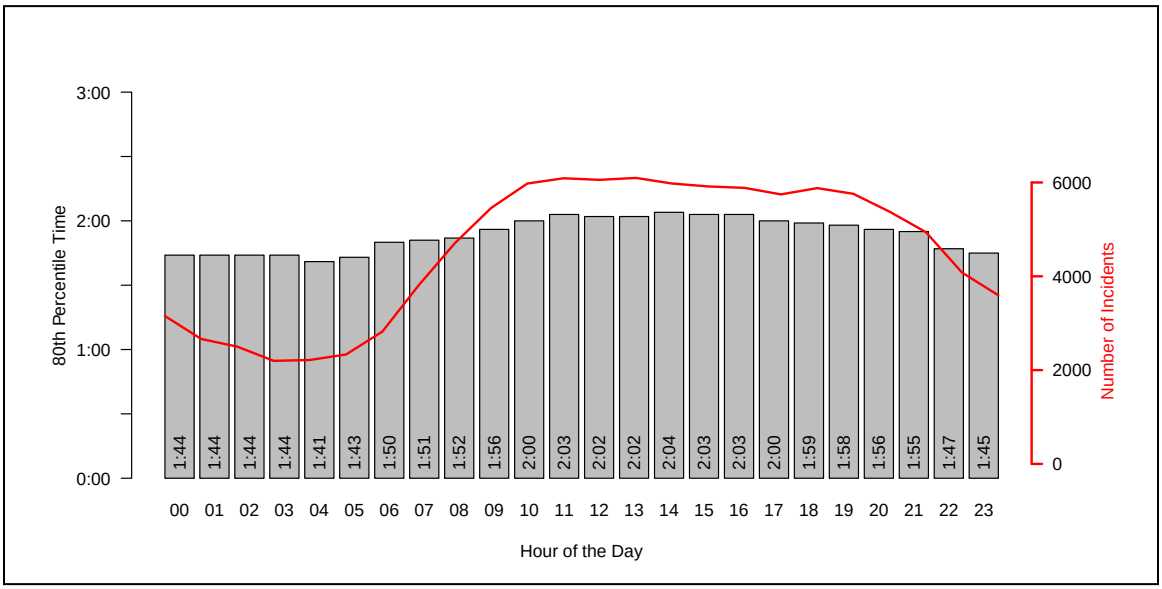


Table 15: Call-Processing Time by Incident Type, FY2015

	Average	80th Percentile	90th Percentile
Emergency Medical Service	1:27	1:53	2:20
Fire & Special Operations	2:01	2:46	3:17
(all)	1:29	1:56	2:25

Turnout (or Reaction) Time – NFPA 1710 defines turnout time as "the time interval that begins when the emergency response facilities (ERFs) and emergency response units (ERUs) notification process begins by either an audible alarm or visual annunciation or both and ends at the beginning point of travel time." The standard specifies an "80 second turnout time for fire and special operations response and [a] 60 second turnout time for EMS response." For reasons discussed earlier, we evaluated the turnout time at the 80th percentile.

The analysis showed RCFD has poor turnout times. Fire turnout times are 3:16 and EMS turnout times are 2:26. These times are 116 seconds and 86 seconds above their respective standard. A time that is 20 to 40 seconds over is in line with what most other fire departments are achieving. The turnout times of more than 60 seconds over the standard is excessively long and needs to be addressed immediately. Because EMS turnouts do not require the donning of turnout gear, they should be faster than fire turnouts, and this is reflected in the data.

Figure 34 shows that turnout times are about 1.5 minutes faster between 9:00 AM and 7:00 PM than during the overnight hours. Daytime turnout times are okay; the main improvement is needed in the overnight at times. Slower nighttime turnouts are common in most fire departments. Firefighters often have to wake up, and sleeping quarters are often located in parts of the station farther away from the apparatus than where crews spend the daytime hours. Alerting is less effective at night than during daytime hours, when crews can listen to radio traffic, whereas at night they are dependent on bells or other alerting mechanisms. For future

station designs, it is recommended that the station layouts and alerting systems be designed to minimize distances from sleeping quarters to apparatus.

Figure 34: Turnout Time by Hour of the Day, FY2015

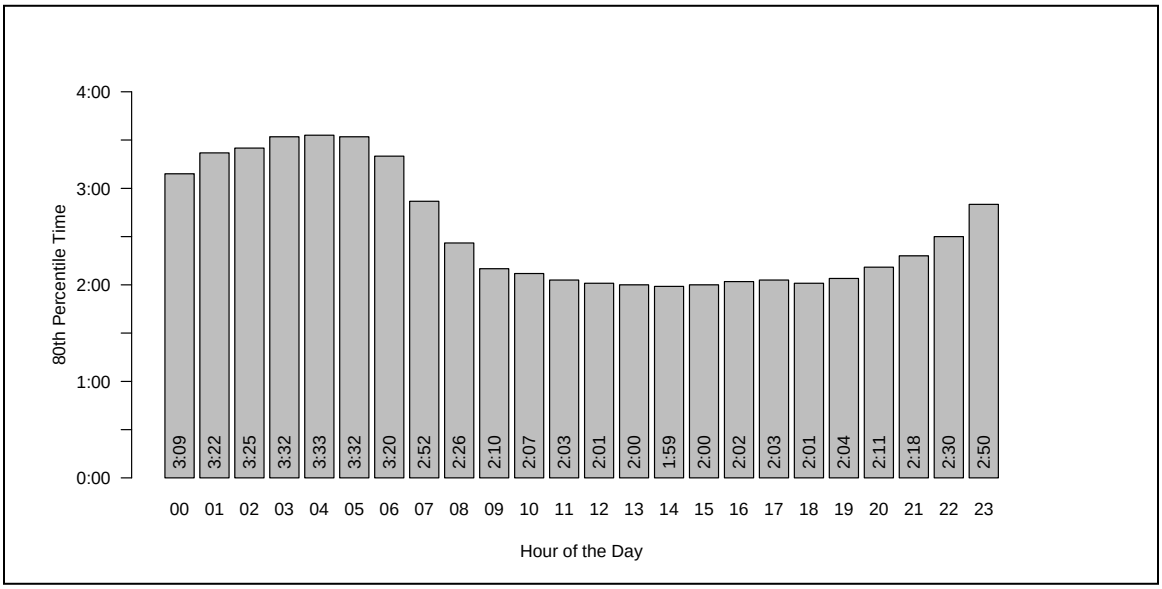


Table 16: Turnout Time by Incident Type, FY2015

	Average	80th Percentile	90th Percentile
Emergency Medical Service	1:42	2:26	2:56
Fire & Special Operations	2:22	3:16	3:55
(all)	1:47	2:33	3:04

Travel Time by Hour of the Day and Incident Type – Travel time is the time interval that begins when a unit is enroute to the emergency incident and ends when the unit arrives at the scene. Travel time is a function of geography, road conditions, traffic congestion, and the number and location of fire stations with respect to the location of incidents. It is also affected by whether the closest unit is not already busy on another call, or training.

The travel-time goals discussed earlier in the chapter are based on population density. To reiterate, the goal is for the first-arriving unit to have a travel time of 5:00 to urban areas, 6:00 to suburban areas, 8:30 to rural areas, and 12:30 to outlying areas for 80 percent of calls.

The analysis of the RCFD's travel times showed mixed results. Travel times for urban and suburban areas were 5:22 and 6:15 minutes respectively, both slower than the goal. However, rural and outlying times of 6:42 and 9:00 were both significantly faster than their respective goals. This suggests that the more highly populated areas are under-covered while the less populated areas are adequately covered. Much of the focus in our station-location recommendations, therefore, was on improving response times in the urban and suburban areas of the county.

Figure 35 shows travel time for the first-arriving unit by hour of the day and Table 17 shows the travel time by incident type. Travel time for the first-arriving unit is similar throughout the day—it does not appear that traffic has much impact.

In addition to reviewing countywide response-time performance, it is important to look at whether travel times for different areas of Riverside County are sufficient for the planning-area risk levels discussed in the previous chapter. Unlike call-processing time and turnout time, which can be addressed somewhat universally, travel time is better addressed area by area. The next section includes a breakdown of total response times and travel times by planning area.

Figure 35: Travel Time (First-Arriving Unit) by Hour of the Day, FY2015

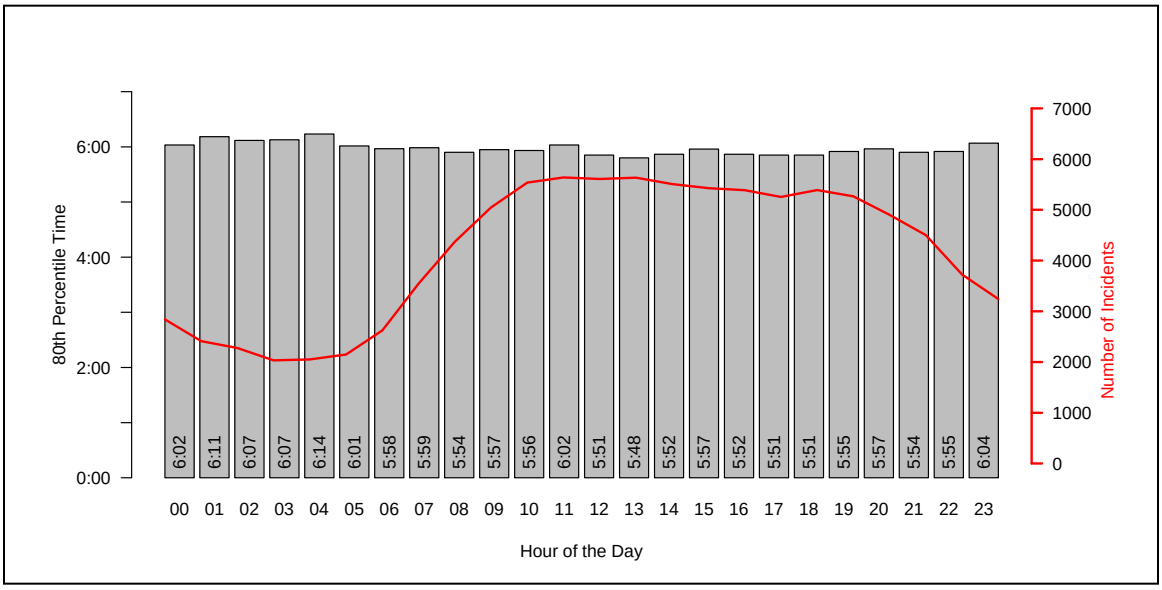


Table 17: Travel Time (First-Arriving Unit) by Incident Type, FY2015

	Average	80th Percentile	90th Percentile
Outlying	6:07	9:00	10:41
Urban	4:07	5:22	6:30
Suburban	4:46	6:15	7:34
Rural	5:01	6:42	8:08
(all)	4:29	5:57	7:21

Total Response Time – Total response or reflex time is the most important time because it combines all of the previously analyzed time segments and is one of the measures by which the public evaluates the effectiveness of fire and EMS service. The public just cares how fast a unit shows up, not whether dispatch or turnout or travel times individually were short or long.

The NFPA defines total response time to include three phases: "(1) Phase One—Alarm Handling Time, (2) Phase Two—Turnout Time and Travel Time, and (3) Phase Three—Initiating Action/Intervention Time. However, there is no data on the third phase, and so the analysis focused on the first two of these phases. "

Based on adding together the call-processing-time objective (1:00 for all call types), the turnout-time objective (1:00 for EMS incidents and 1:20 for fire and special-operations incidents), and the first-arriving-unit travel-time objectives for each of the different population density classifications, the following goals for overall response times were created:

- Urban 6:30 for EMS / 6:50 for fires
- Suburban 7:30 for EMS / 7:50 for fires
- Rural 10:30 for EMS / 10:50 for fires
- Outlying 14:30 for EMS / 14:30 for fires

The analysis of the RCFD's total response times against these goal times at the 80th percentile showed poor times for urban/suburban areas and good times for rural/outlying areas. Figure 36 shows the total response time for the first-arriving unit by hour of the day, and Table 18 and Table 19 show the total response time for the first-arriving unit for EMS incidents and fire incidents.

Figure 36: Total Response Time (First-Arriving Unit) by Hour of the Day, FY2015

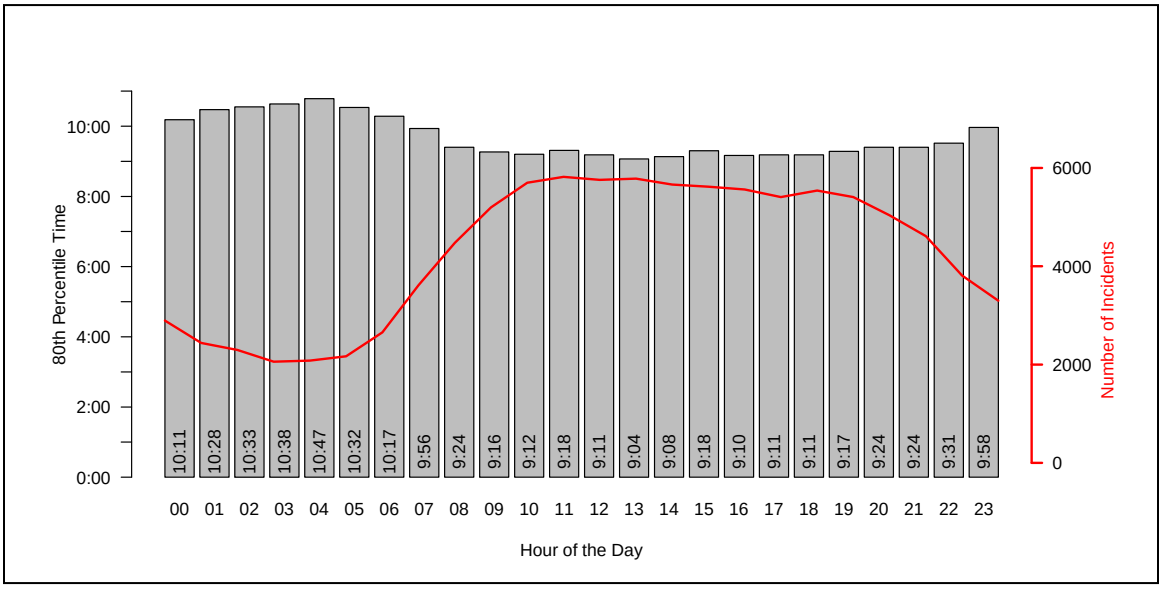


Table 18: Total Response Time (First-Arriving Unit) by Population Density for EMS Incidents, FY2015

	Average	80th Percentile	90th Percentile
Outlying	9:03	12:22	14:28
Urban	7:14	8:50	10:07
Suburban	7:56	9:44	11:05
Rural	8:09	10:09	11:46
(all)	7:37	9:24	10:55

Table 19: Total Response Time (First-Arriving Unit) by Population Density for Fire Incidents, FY2015

	Average	80th Percentile	90th Percentile
Outlying	13:37	19:12	22:31
Urban	9:15	11:28	13:53
Suburban	10:08	12:56	15:14
Rural	11:17	14:37	17:32
(all)	10:24	13:34	16:41

Table 20 shows the average, 80th-percentile, and 90th-percentile response times for each planning area. Total response times range from a low of 8:22 for Moreno Valley to a high of 13:13 for the Anza area. The overall 80th-percentile time was 9:35, with most planning areas having a total response time of 9-10 minutes.

Table 20: Response Time by Planning Area, FY2015

	Average	80th Percentile	90th Percentile
Area 1 - Cajalco	9:14	11:39	13:21
Area 2 - Plateau	8:45	11:52	15:13
Area 3 - Foothill	8:56	11:27	13:29
Area 4 - Lake	8:34	10:43	13:00
Area 5 - Mountain	7:21	9:44	12:06
Area 6 - Anza	8:24	13:13	15:10
Area 7 - Coachella	8:45	11:02	13:01
Area 8 - Joshua Tree	7:53	11:35	13:31
Area 9 - Blythe	10:00	13:10	15:21
Banning	7:35	9:18	10:34
Beaumont	7:12	9:14	10:44
Calimesa	8:24	10:54	12:43
Canyon Lake	7:36	8:48	10:04
Coachella	7:35	9:26	11:17
Desert Hot Springs	7:19	8:56	10:17
Eastvale	7:57	9:47	11:03
Indian Wells	7:09	8:43	9:49
Indio	6:56	8:25	9:34
Jurupa Valley	7:42	9:19	10:44
La Quinta	7:42	9:23	11:00
Lake Elsinore	7:40	9:23	10:51
Menifee	7:39	9:20	10:41
Moreno Valley	6:56	8:22	9:41
Norco	7:19	9:00	10:35
Palm Desert	7:14	8:48	9:54
Perris	7:40	9:23	10:38
Rancho Mirage	7:06	8:41	9:48
San Jacinto	7:31	9:16	10:48
Temecula	7:48	9:34	10:51
Wildomar	8:33	10:23	11:38
(all)	7:44	9:35	11:14

Workload

Besides response times, we analyzed the call types and workload for each RCFD unit. Unit workloads can affect response-times because as units become busier, they are more often unavailable to respond to calls where they would be first due. Generally, units in high-demand areas with closely spaced stations can get away with higher workloads because other stations can adequately cover their first-due areas. More suburban and rural areas, where fire station coverage areas do not overlap as much, are more susceptible to workload issues, especially during certain portions of the day.

Providing coverage 24 hours a day to all areas of a county requires a specific minimum number of stations and units. Those numbers only partially depend on the actual number of emergencies—full coverage is needed even when the number of emergencies drops, because the next emergency can be anywhere. If a station has fewer emergencies, it may appear that it is being underutilized, seen statistically as a low workload. This may lead officials to question its value. The solution might appear to be to reduce the number of units and increase the workload of each. However, this would result in significant loss of performance (units taking longer to travel longer distances, or being unavailable for concurrent emergencies) and increased risk to lives and property.

Even when stations are optimally positioned, emergencies occupy a small fraction of unit work time in most fire departments. A low workload does not indicate inefficient organization of resources—it is simply the nature of the fire service that it must always be ready to respond to emergencies anywhere, even if they are few in number. Additionally, fire crews engage in activities that are not included in workload statistics, including training, fire inspections, and other prevention efforts. Workload analysis is useful for detecting performance issues related to high workload and for making sure that crews are not overworked. A statistically low workload is not necessarily a cause for concern.

Table 21, Table 22, and Table 23 shows the number of calls (responses) for RCFD units in FY2015. Figure 37 through Figure 43 show the actual time (unit hours) spent on calls in the same one-year period. Unit types (engines, type-3 engines, aerials, medics, medic squads, and specialty) are grouped for the sake of comparison. Using hours instead of responses (as is shown in Table 21 through Table 23) is a more precise way of measuring workload because the time spent on calls can vary greatly. Table 24 through Table 31 break the analysis down for each unit type.

Table 21: Responses by Station and Unit Type (West), FY2015

	Engine	Engine-TYP3	Medic Squad	Truck	(all)
Station 01	–	1219	–	–	1219
Station 02	3486	–	–	1726	5212
Station 03	775	–	–	–	775
Station 04	925	–	–	–	925
Station 05	1104	–	–	–	1104
Station 06	3766	–	–	–	3766
Station 07	4605	–	–	–	4605
Station 08	980	–	–	–	980
Station 09	852	–	–	–	852
Station 10	1413	632	–	–	2045
Station 11	1205	–	–	–	1205
Station 12	2193	844	–	–	3037
Station 13	908	–	–	–	908
Station 14	–	692	–	–	692
Station 16	2527	–	–	–	2527
Station 17	2144	–	–	1036	3180
Station 18	650	815	1313	–	2778
Station 19	654	–	–	–	654
Station 27	1880	–	2218	–	4098
Station 38	2432	–	–	–	2432
Station 47	1214	–	–	–	1214
Station 48	1794	–	–	–	1794
Station 51	294	–	–	–	294
Station 54	1556	–	–	–	1556
Station 57	1234	–	–	–	1234
Station 58	1268	–	–	–	1268
Station 59	1947	–	–	–	1947
Station 60	590	–	–	–	590
Station 61	2050	–	–	–	2050
Station 64	1141	–	–	–	1141
Station 65	3633	–	–	–	3633
Station 68	1600	–	–	–	1600
Station 73	1932	–	–	952	2884
Station 75	1000	–	–	–	1000
Station 76	2628	–	–	1191	3819
Station 82	496	–	–	–	496
Station 83	1920	–	–	–	1920
Station 84	2360	–	–	–	2360
Station 85	1631	–	–	–	1631
Station 90	–	–	–	2363	2363
Station 91	2802	–	–	–	2802
Station 92	1757	–	–	–	1757
Station 94	1651	–	–	–	1651
Station 96	548	–	–	–	548
Station 97	–	–	–	1118	1118
Station 99	2048	–	–	–	2048
Station 101	3441	–	–	–	3441

Table 22: Responses by Station and Unit Type (Central), FY2015

	Engine	Engine-TYP3	Hazmat Squad	Medic Squad	(all)
Station 20	3346	1900	–	–	5246
Station 21	1225	–	–	–	1225
Station 22	1518	–	–	–	1518
Station 23	266	64	–	–	330
Station 24	1075	–	–	–	1075
Station 25	4449	970	–	–	5419
Station 26	2819	–	–	–	2819
Station 28	–	292	–	349	641
Station 29	–	385	–	673	1058
Station 30	164	–	–	–	164
Station 34	1110	–	243	–	1353
Station 53	220	191	–	–	411
Station 63	65	–	–	–	65
Station 66	2079	–	–	–	2079
Station 72	2481	–	–	–	2481
Station 77	454	–	–	–	454
Station 89	2250	–	–	–	2250

Table 23: Responses by Station and Unit Type (East), FY2015

	Engine	Hazmat Squad	Medic	Medic Squad	Truck	(all)
Station 32	1691	–	–	–	–	1691
Station 33	2595	–	2489	–	1306	6390
Station 35	1783	–	–	–	–	1783
Station 36	1285	–	–	–	–	1285
Station 37	4365	–	–	–	–	4365
Station 39	683	–	–	–	–	683
Station 40	672	–	–	861	–	1533
Station 41	326	–	–	–	–	326
Station 43	290	–	–	–	–	290
Station 44	182	–	–	–	–	182
Station 45	289	–	–	–	–	289
Station 49	288	–	–	–	–	288
Station 50	1305	–	–	–	–	1305
Station 55	2238	–	3054	–	–	5292
Station 56	1269	–	–	–	–	1269
Station 67	1091	–	1086	–	–	2177
Station 69	2455	–	2201	–	–	4656
Station 70	1109	–	–	–	–	1109
Station 71	4025	–	3338	–	–	7363
Station 79	1315	–	–	1943	–	3258
Station 80	1256	–	1179	–	–	2435
Station 81	2778	449	–	–	–	3227
Station 86	3016	–	2931	–	1547	7494
Station 87	1567	–	–	–	–	1567
Station 88	2389	–	2180	–	–	4569
Station 93	2488	–	–	–	–	2488

Figure 37: Engine Workload by Unit and Incident Type (West), FY2015

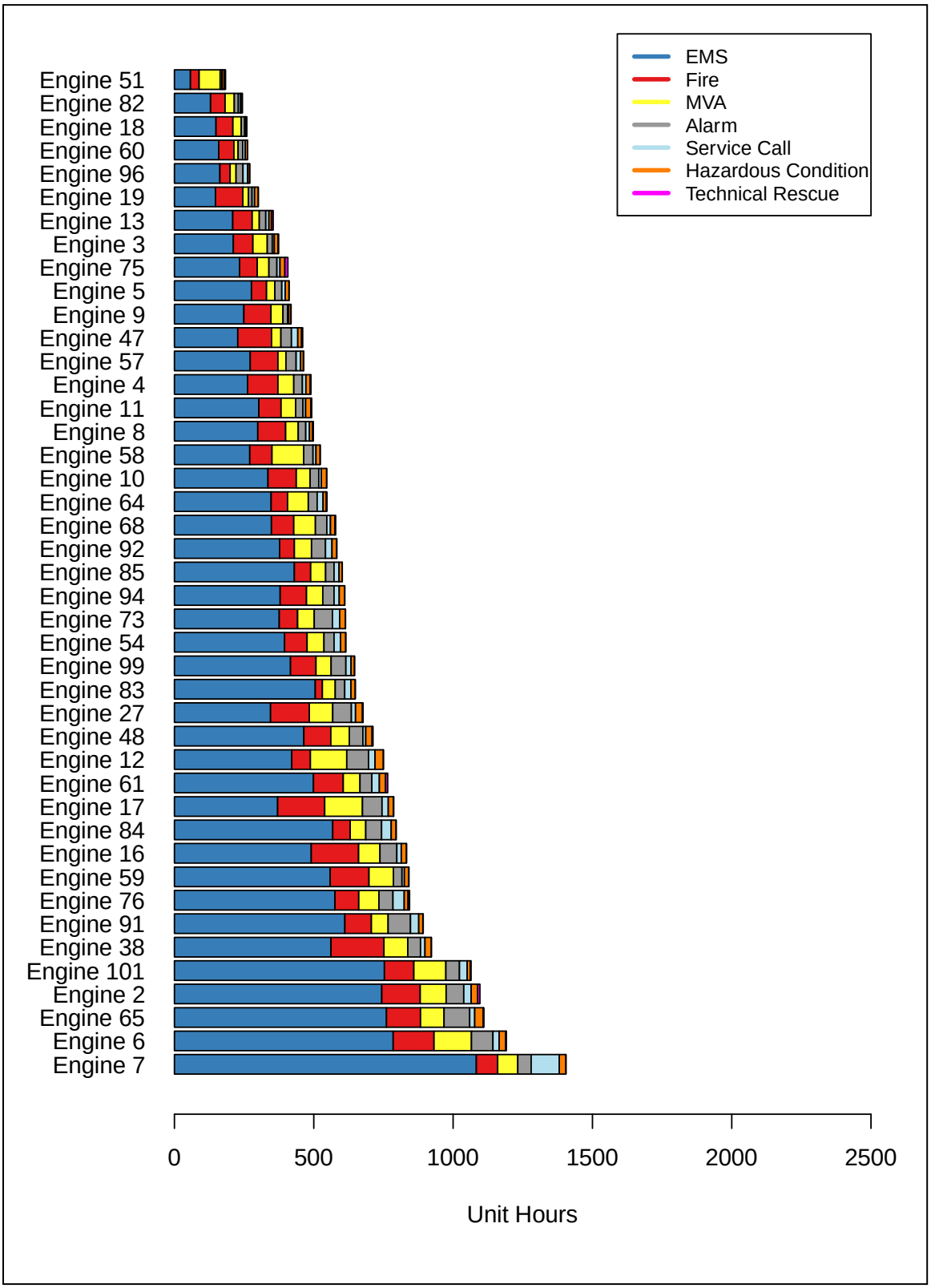


Figure 38: Engine Workload by Unit and Incident Type (Central), FY2015

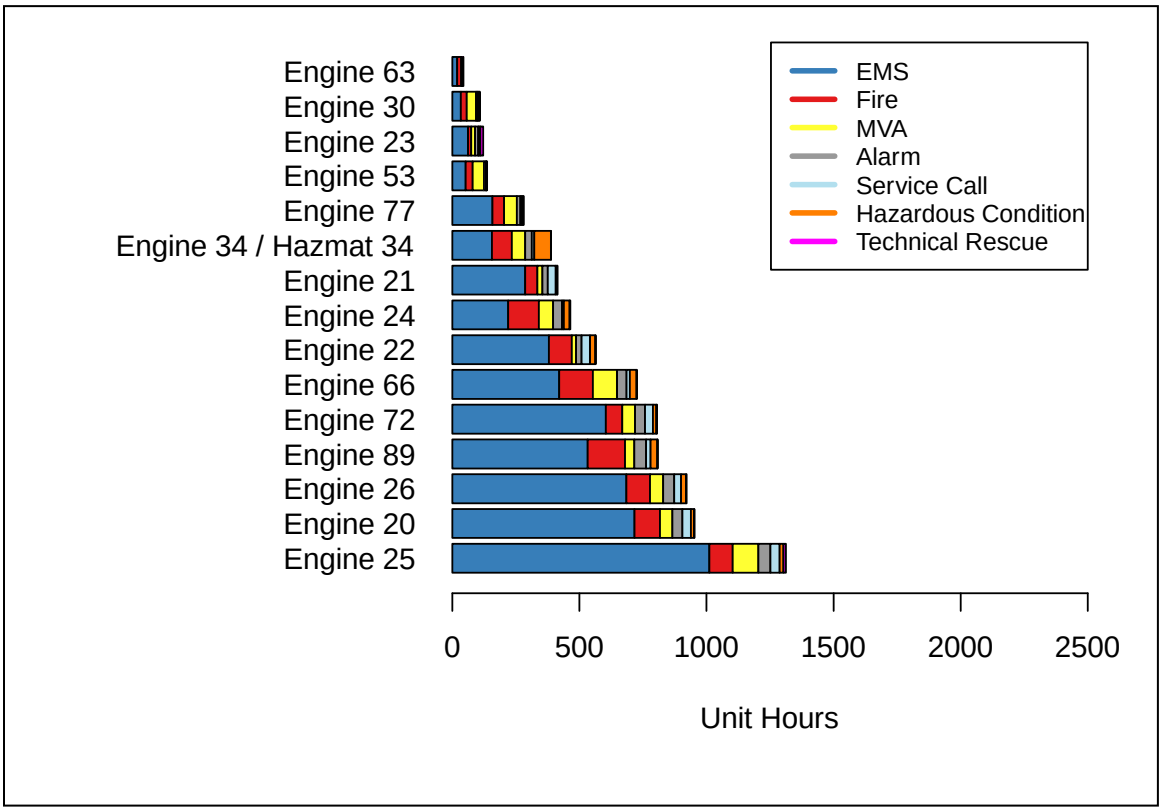


Figure 39: Engine Workload by Unit and Incident Type (East), FY2015

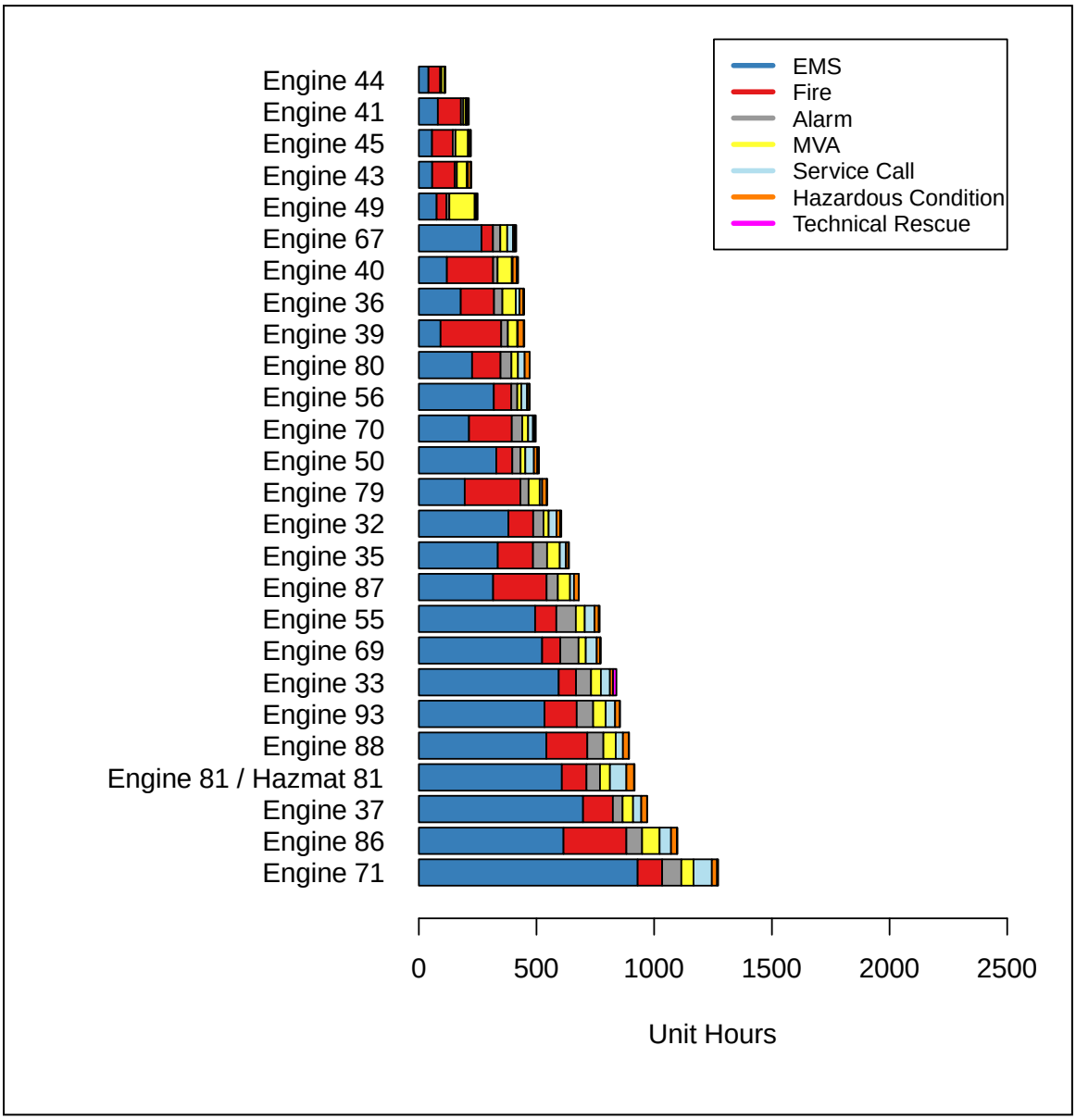


Figure 40: Type-3 Engine Workload by Unit and Incident Type, FY2015

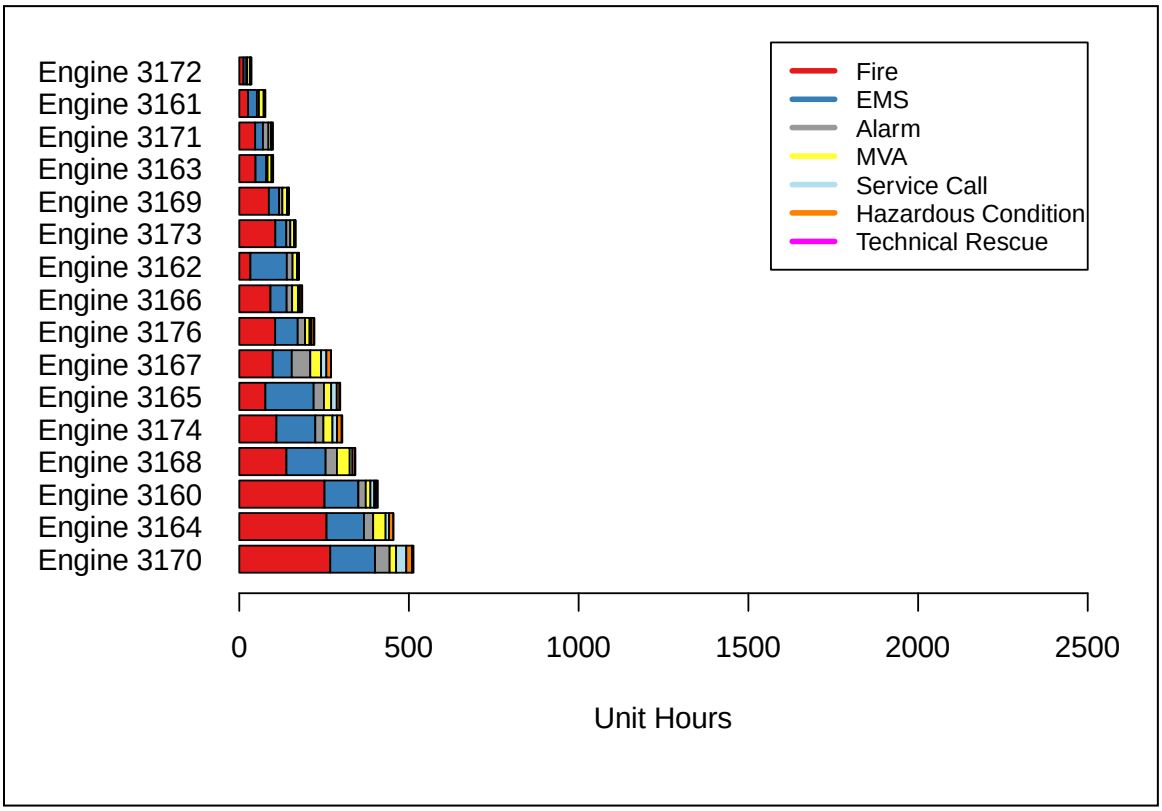


Figure 41: Aerial Workload by Unit and Incident Type, FY2015

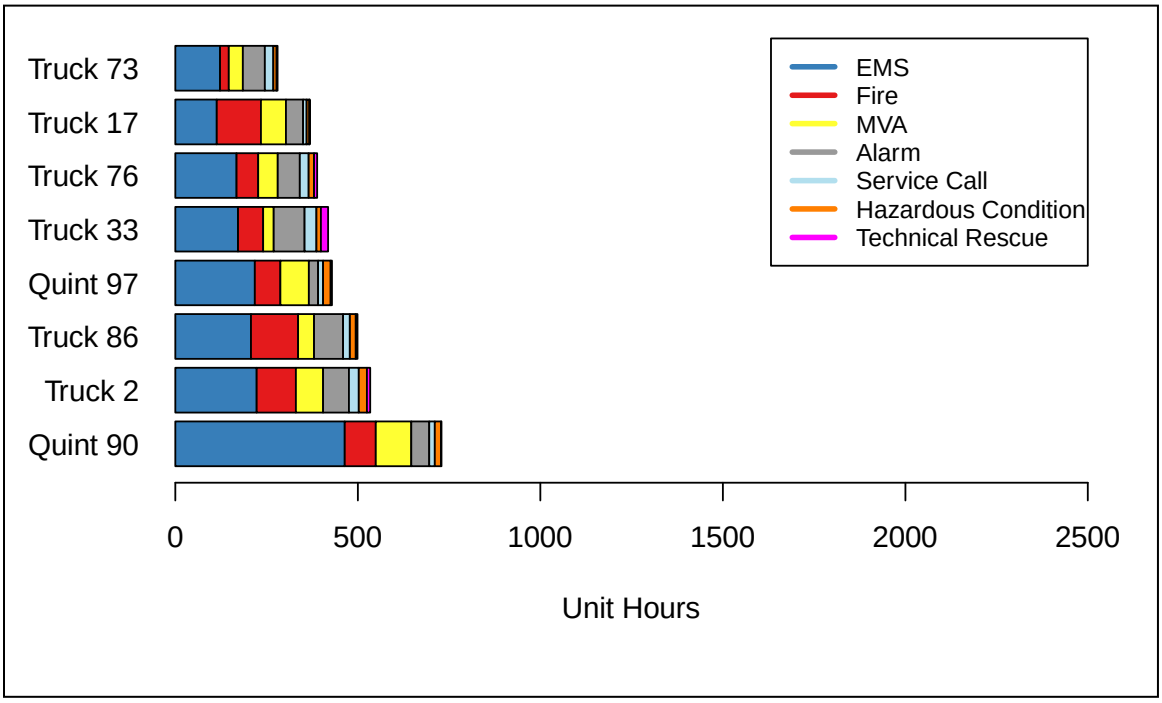


Figure 42: Specialty Workload by Unit and Incident Type, FY2015

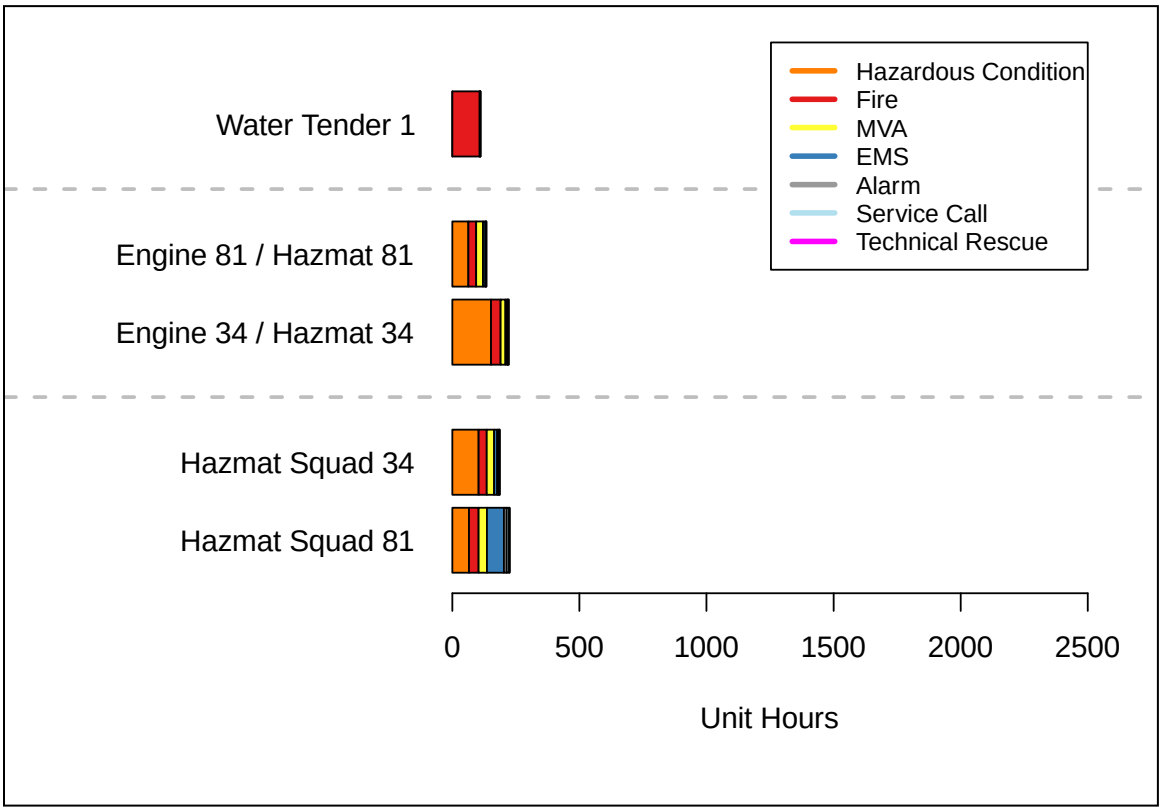
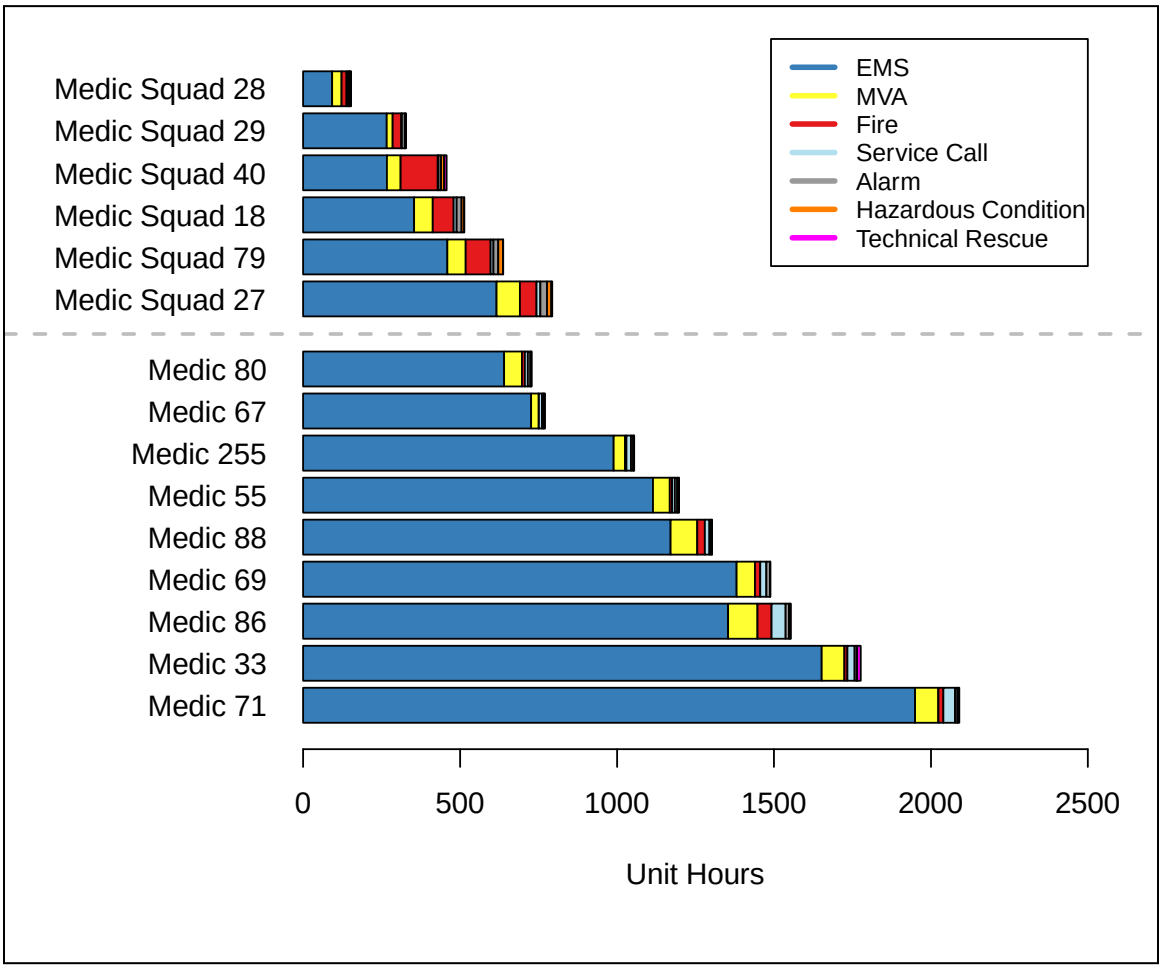


Figure 43: Medic Squad and Medic Tranports Workload by Unit and Incident Type, FY2015



In FY2015, medic units spent an average of 3.6 hours each day responding to 5.6 incidents (Table 24). Medic 71 and Medic 86 had the most responses (3,338 and 2,931 respectively) and Medic 67 had the fewest responses (1,086). The average time spent on each medical call was just under 40 minutes (0.65 hours). Medic 71 was the overall busiest unit, spending 23.8 percent of the time responding to emergencies. Medic 33 was second busiest, spending 20.3 percent of the day responding to emergencies.

Table 24: Medic Workloads by Unit, FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Medic 33	2489.00	6.82	1775.97	4.87	0.71	20.27
Medic 55	1579.00	4.33	1197.95	3.28	0.76	13.68
Medic 67	1086.00	2.98	770.33	2.11	0.71	8.79
Medic 69	2201.00	6.03	1488.26	4.08	0.68	16.99
Medic 71	3338.00	9.15	2090.09	5.73	0.63	23.86
Medic 80	1179.00	3.23	727.36	1.99	0.62	8.30
Medic 86	2931.00	8.03	1552.99	4.25	0.53	17.73
Medic 88	2180.00	5.97	1302.47	3.57	0.60	14.87
Medic 255	1475.00	4.04	1054.69	2.89	0.72	12.04
(average)	2050.89	5.62	1328.90	3.64	0.65	15.17

Medic squads spent an average of 1.3 unit hours each day responding to 3.3 incidents (Table 25). Medic Squad 27 and Medic Squad 79 had the most responses (2,218 and 1,943 respectively) and Medic Squad 28 had the fewest responses (230). The average time spent on each medical call was about 25 minutes (0.4 hours). Across the board the medic squads were not terribly busy with Medic Squad 27 being the busiest at just under 10 percent of its time responding to emergencies.

Table 25: Medic Squad Workloads by Unit, FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Medic Squad 18	1313.00	3.60	512.99	1.41	0.39	5.86
Medic Squad 27	2218.00	6.08	793.33	2.17	0.36	9.06
Medic Squad 28	230.00	0.63	152.74	0.42	0.66	1.74
Medic Squad 29	631.00	1.73	327.36	0.90	0.52	3.74
Medic Squad 40	861.00	2.36	457.23	1.25	0.53	5.22
Medic Squad 79	1943.00	5.32	637.43	1.75	0.33	7.28
(average)	1199.33	3.29	480.18	1.32	0.40	5.48

Aerial units include both ladder trucks and quints. RCFD aerial units (Table 26) averaged 1.3 unit hours responding to 3.9 incidents per day in fiscal year 2015. Quint 90 had the most responses (2,363) and Truck 73 had the fewest (952). The average time spent on each call for ladder trucks was about 20 minutes (0.32 hours). The aerial units were all busy less than 10 percent of the time with most being busy in the 4-5 percent range.

Table 26: Aerial Workloads by Unit, FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Quint 90	2363.00	6.47	728.93	2.00	0.31	8.32
Quint 97	1118.00	3.06	429.26	1.18	0.38	4.90
Truck 2	1726.00	4.73	533.84	1.46	0.31	6.09
Truck 17	1036.00	2.84	368.37	1.01	0.36	4.21
Truck 33	1306.00	3.58	418.45	1.15	0.32	4.78
Truck 73	952.00	2.61	280.24	0.77	0.29	3.20
Truck 76	1191.00	3.26	388.76	1.07	0.33	4.44
Truck 86	1547.00	4.24	498.94	1.37	0.32	5.70
(average)	1404.88	3.85	455.85	1.25	0.32	5.20

Because of the large number of engines, the workload statistics have been spread across three tables, Table 27 through Table 29. Overall, engines averaged 1.7 unit hours responding to 4.6 calls each day. Engine 7 had the most responses (4,605), followed closely by Engine 37 (4,365), Engine 25 (4,092) and Engine 71 (4,025). Engine 60 had the fewest responses (60). Other units with low number of responses include Engine 23 (241), Engine 30 (152), Engine 41 (326), Engine 43 (290), Engine 44 (182), Engine 45 (289), Engine 49 (288), Engine 51 (294), and Engine 53 (206). Among the engines, there is a large variance in the percentage of time they are busy on emergency calls, ranging from 0.5 percent (Engine 60) to 16.04 percent (Engine 7).

Table 27: Engine Workloads by Unit (West), FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Engine 2	3486.00	9.55	1095.96	3.00	0.31	12.51
Engine 3	775.00	2.12	373.78	1.02	0.48	4.27
Engine 4	925.00	2.53	489.66	1.34	0.53	5.59
Engine 5	1104.00	3.02	411.19	1.13	0.37	4.69
Engine 6	3766.00	10.32	1191.18	3.26	0.32	13.60
Engine 7	4605.00	12.62	1404.94	3.85	0.31	16.04
Engine 8	980.00	2.68	498.24	1.37	0.51	5.69
Engine 9	852.00	2.33	418.14	1.15	0.49	4.77
Engine 10	1413.00	3.87	546.30	1.50	0.39	6.24
Engine 11	1205.00	3.30	492.33	1.35	0.41	5.62
Engine 12	2193.00	6.01	749.81	2.05	0.34	8.56
Engine 13	908.00	2.49	354.45	0.97	0.39	4.05
Engine 16	2527.00	6.92	832.38	2.28	0.33	9.50
Engine 17	2144.00	5.87	786.66	2.16	0.37	8.98
Engine 18	650.00	1.78	259.19	0.71	0.40	2.96
Engine 19	654.00	1.79	300.79	0.82	0.46	3.43
Engine 27	1880.00	5.15	676.65	1.85	0.36	7.72
Engine 38	2432.00	6.66	921.89	2.53	0.38	10.52
Engine 47	1214.00	3.33	459.79	1.26	0.38	5.25
Engine 48	1794.00	4.92	712.36	1.95	0.40	8.13
Engine 51	294.00	0.81	183.22	0.50	0.62	2.09
Engine 54	1556.00	4.26	614.44	1.68	0.39	7.01
Engine 57	1234.00	3.38	463.70	1.27	0.38	5.29
Engine 58	1268.00	3.47	522.67	1.43	0.41	5.97
Engine 59	1947.00	5.33	841.72	2.31	0.43	9.61
Engine 60	590.00	1.62	261.87	0.72	0.44	2.99
Engine 61	2050.00	5.62	765.19	2.10	0.37	8.74
Engine 64	1141.00	3.13	546.69	1.50	0.48	6.24
Engine 65	3633.00	9.95	1109.32	3.04	0.31	12.66
Engine 68	1600.00	4.38	578.33	1.58	0.36	6.60
Engine 73	1932.00	5.29	613.53	1.68	0.32	7.00
Engine 75	1000.00	2.74	407.00	1.12	0.41	4.65
Engine 76	2628.00	7.20	843.59	2.31	0.32	9.63
Engine 82	496.00	1.36	242.89	0.67	0.49	2.77
Engine 83	1920.00	5.26	648.81	1.78	0.34	7.41
Engine 84	2360.00	6.47	795.56	2.18	0.34	9.08
Engine 85	1631.00	4.47	601.96	1.65	0.37	6.87
Engine 91	2802.00	7.68	892.56	2.45	0.32	10.19
Engine 92	1757.00	4.81	582.46	1.60	0.33	6.65
Engine 94	1651.00	4.52	610.88	1.67	0.37	6.97
Engine 96	548.00	1.50	269.90	0.74	0.49	3.08
Engine 99	2048.00	5.61	646.25	1.77	0.32	7.38
Engine 101	3441.00	9.43	1064.29	2.92	0.31	12.15
(average)	1744.98	4.78	629.83	1.73	0.36	7.19

Table 28: Engine Workloads by Unit (Central), FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Engine 20	2961.00	8.11	952.13	2.61	0.32	10.87
Engine 21	1184.00	3.24	413.31	1.13	0.35	4.72
Engine 22	1432.00	3.92	563.96	1.55	0.39	6.44
Engine 23	241.00	0.66	121.43	0.33	0.50	1.39
Engine 24	1013.00	2.78	464.09	1.27	0.46	5.30
Engine 25	4092.00	11.21	1312.70	3.60	0.32	14.99
Engine 26	2689.00	7.37	921.97	2.53	0.34	10.52
Engine 30	152.00	0.42	108.30	0.30	0.71	1.24
Engine 34 / Hazmat 34	850.00	2.33	388.70	1.06	0.46	4.44
Engine 53	206.00	0.56	136.83	0.37	0.66	1.56
Engine 63	60.00	0.16	44.19	0.12	0.74	0.50
Engine 66	1982.00	5.43	726.11	1.99	0.37	8.29
Engine 72	2369.00	6.49	805.36	2.21	0.34	9.19
Engine 77	428.00	1.17	281.31	0.77	0.66	3.21
Engine 89	2130.00	5.84	807.59	2.21	0.38	9.22
(average)	1452.60	3.98	536.53	1.47	0.37	6.12

Table 29: Engine Workloads by Unit (East), FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Engine 32	1691.00	4.63	605.26	1.66	0.36	6.91
Engine 33	2595.00	7.11	839.45	2.30	0.32	9.58
Engine 35	1783.00	4.88	638.35	1.75	0.36	7.29
Engine 36	1285.00	3.52	447.24	1.23	0.35	5.11
Engine 37	4365.00	11.96	970.22	2.66	0.22	11.08
Engine 39	683.00	1.87	448.41	1.23	0.66	5.12
Engine 40	672.00	1.84	422.11	1.16	0.63	4.82
Engine 41	326.00	0.89	212.51	0.58	0.65	2.43
Engine 43	290.00	0.79	223.13	0.61	0.77	2.55
Engine 44	182.00	0.50	112.88	0.31	0.62	1.29
Engine 45	289.00	0.79	221.41	0.61	0.77	2.53
Engine 49	288.00	0.79	248.76	0.68	0.86	2.84
Engine 50	1305.00	3.58	510.52	1.40	0.39	5.83
Engine 55	2238.00	6.13	768.08	2.10	0.34	8.77
Engine 56	1269.00	3.48	470.79	1.29	0.37	5.37
Engine 67	1091.00	2.99	414.25	1.13	0.38	4.73
Engine 69	2455.00	6.73	772.15	2.12	0.31	8.81
Engine 70	1109.00	3.04	497.36	1.36	0.45	5.68
Engine 71	4025.00	11.03	1271.39	3.48	0.32	14.51
Engine 79	1315.00	3.60	545.61	1.49	0.41	6.23
Engine 80	1256.00	3.44	470.67	1.29	0.37	5.37
Engine 81 / Hazmat 81	2649.00	7.26	916.82	2.51	0.35	10.47
Engine 86	3016.00	8.26	1098.70	3.01	0.36	12.54
Engine 87	1567.00	4.29	680.59	1.86	0.43	7.77
Engine 88	2389.00	6.55	893.60	2.45	0.37	10.20
Engine 93	2488.00	6.82	854.49	2.34	0.34	9.75
(average)	1639.27	4.49	598.26	1.64	0.36	6.83

The type-3 engines (Table 30) averaged 0.65 unit hours responding to 1.3 calls each day. Engines 3170 and 3165 had the most responses (984 and 834 respectively). Engine 3172 had the lowest number of responses (54). The average time spent on each call for type-3 engines was about 30 minutes (0.51 hours). All of the type-3 engines were busy less than 6 percent of the time.

Table 30: Type-3 Engine Workloads by Unit, FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Engine 3160	647.00	1.77	408.09	1.12	0.63	4.66
Engine 3161	168.00	0.46	76.82	0.21	0.46	0.88
Engine 3162	358.00	0.98	176.18	0.48	0.49	2.01
Engine 3163	120.00	0.33	99.74	0.27	0.83	1.14
Engine 3164	815.00	2.23	454.04	1.24	0.56	5.18
Engine 3165	834.00	2.28	297.60	0.82	0.36	3.40
Engine 3166	374.00	1.02	185.46	0.51	0.50	2.12
Engine 3167	615.00	1.68	270.54	0.74	0.44	3.09
Engine 3168	749.00	2.05	342.08	0.94	0.46	3.90
Engine 3169	134.00	0.37	146.81	0.40	1.10	1.68
Engine 3170	984.00	2.70	513.40	1.41	0.52	5.86
Engine 3171	229.00	0.63	98.97	0.27	0.43	1.13
Engine 3172	54.00	0.15	36.29	0.10	0.67	0.41
Engine 3173	258.00	0.71	166.12	0.46	0.64	1.90
Engine 3174	692.00	1.90	303.64	0.83	0.44	3.47
Engine 3176	470.00	1.29	221.67	0.61	0.47	2.53
(average)	468.81	1.28	237.34	0.65	0.51	2.71

Specialty units, including the hazmat squads and water tender (Table 31), averaged 0.48 unit hours responding to 0.7 calls each day. The average time spent on each call for specialty units was about 40 minutes (0.69 hours). All of the command units were busy less than 3 percent of the time.

Table 31: Specialty Workloads by Unit, FY2015

	Total Runs	Runs per Day	Total Unit Hours	Unit Hours per Day	Unit Hours per Run	Busy %
Hazmat Squad 34	224.00	0.62	187.39	0.51	0.84	2.14
Hazmat Squad 81	449.00	1.23	225.58	0.62	0.50	2.58
Water Tender 1	81.00	0.22	110.99	0.30	1.37	1.27
(average)	251.33	0.69	174.65	0.48	0.69	2.00

Unit Availability and Performance

In order to ensure effective emergency coverage, it is necessary to evaluate current performance reliability of fire stations, and to predict how performance might change from an increase in calls due to growth and development.

CPSE has devised a method of performance evaluation based on studying the interaction between *unit availability* (how often the intended closest unit is available to handle calls) and *performance* (how often the travel time is within the desired response time). This method is based on the observation that as the availability of the first-due unit declines due to system overload, response times increase because other than the first due units have to respond. At some point, the response times fall below an acceptable performance standard. By graphing those two factors we can assess current system performance and predict the point at which performance falls below a certain level (sometimes referred to as the *trigger point* as it triggers a review of station layout and other factors that impact performance), and evaluate possible changes to avoid overload in workload-sensitive stations.

Areas that have fewer units available or are farther from neighboring stations are more impacted than others by an increase in emergency calls. They have greater *workload sensitivity*–

– as the workload increases their ability to meet the demand decreases. Stations with more units or that are closer to other stations have lower workload sensitivity, as might be found in a downtown area. This close spacing of stations allows other units to provide effective response times even if an intended first-due unit is not available in the area. As a result, these stations are not as sensitive to high workload and low unit availability because other stations can handle their calls with relatively high performance.

The CPSE manual does not specifically address how to evaluate fire stations that are each meeting several different response-time criteria based on population density. In the typical execution of this analysis, it is necessary to set a response-time goal for each station or first-due area.

The performance vs. unit availability graphs in the next section for each battalion do not show any specific times, but rather the **percentage of incidents in which the time goal was achieved.** With this approach, it is possible to estimate whether each response met the response-time goal based on the population density response-time metric for the area where the incident occurred. In this way it is still possible to create a single performance line on the graph for each station or first-due area that can be compared to several other stations on the same graph. This single performance line takes into account the different population density areas that a station covers. Having this single performance line also means a single performance trigger point for each station (e.g., falling under the 80th-percentile compliance threshold). We recommend that a tentative 80th-percentile trigger be used to first prompt a closer look at the station-specific analysis.

As explained above, we have established a performance standard of 80 percent, meaning that units should travel to calls within the defined response-time goal for the appropriate population density classification 80 percent of the time.

Service Reliability by Battalion

As in most departments, fire stations in Riverside County are organized into battalions. For this study we analyzed the stations by battalion to determine which stations, if any, were critically low in reliability. That an area covered by a particular station is unable to meet a prescribed response-time goal can often be attributed to high workloads, not location.

When fire units are very busy their availability to handle a call in their area can be affected and another unit further away must be dispatched, which increases response time. An important analysis to determine whether the situation is affecting service levels is to review availability and compare it to the performance standards. In so doing it can be determined whether additional capacity may be needed.

The graphs and tables below analyze unit availability versus performance for each of the thirteen battalions. Of particular interest on a graph is a line falling below the 80 percent compliance standard for response time, indicating possible station-location issues. The reason for

concluding that there is a possible station location issue is even when only looking at the subset of incidents where a unit from the first-due station arrived first (representing the fastest possible travel time compared to out-of-area units), in many cases the performance goals were still met less than 80 percent of the time.

Based on the current travel-time performance level, the graphs below can be used to determine which stations have additional workload capacity (because response-time performance can be decreased without falling below 80 percent compliance), which stations need to minimize additional workload (because they are already close to the 80 percent goal), and which stations would benefit from reducing current workload levels (because it would bring their performance above 80 percent). Note however that although unit availability can be improved, in some cases even 100 percent unit availability—responding to all first-due calls-- would not bring performance up to 80 percent compliance because of station-location problems, or the size of the area protected.

Some of the graphs below show a strong correlation between a drop in unit availability and a drop in travel-time performance, indicating high workload sensitivity. To the extent possible, it is important to minimize the workload of units at these stations to keep them more available because their availability has a direct impact on travel-time performance.

Battalion 1 – Of the eight stations in Battalion 1, only two stations meet the 80 percent response-time standard. Eight stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 4, 8, 9, 59, and 90. Other than Stations 1, 3, and 101, all stations in this area have moderate workload sensitivity. Station 1 and 101 have the capacity for additional workload. The other stations (4, 8, 9, 59, and 90) would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 44: Unit Availability vs. Performance Analysis, Battalion 1, FY2015

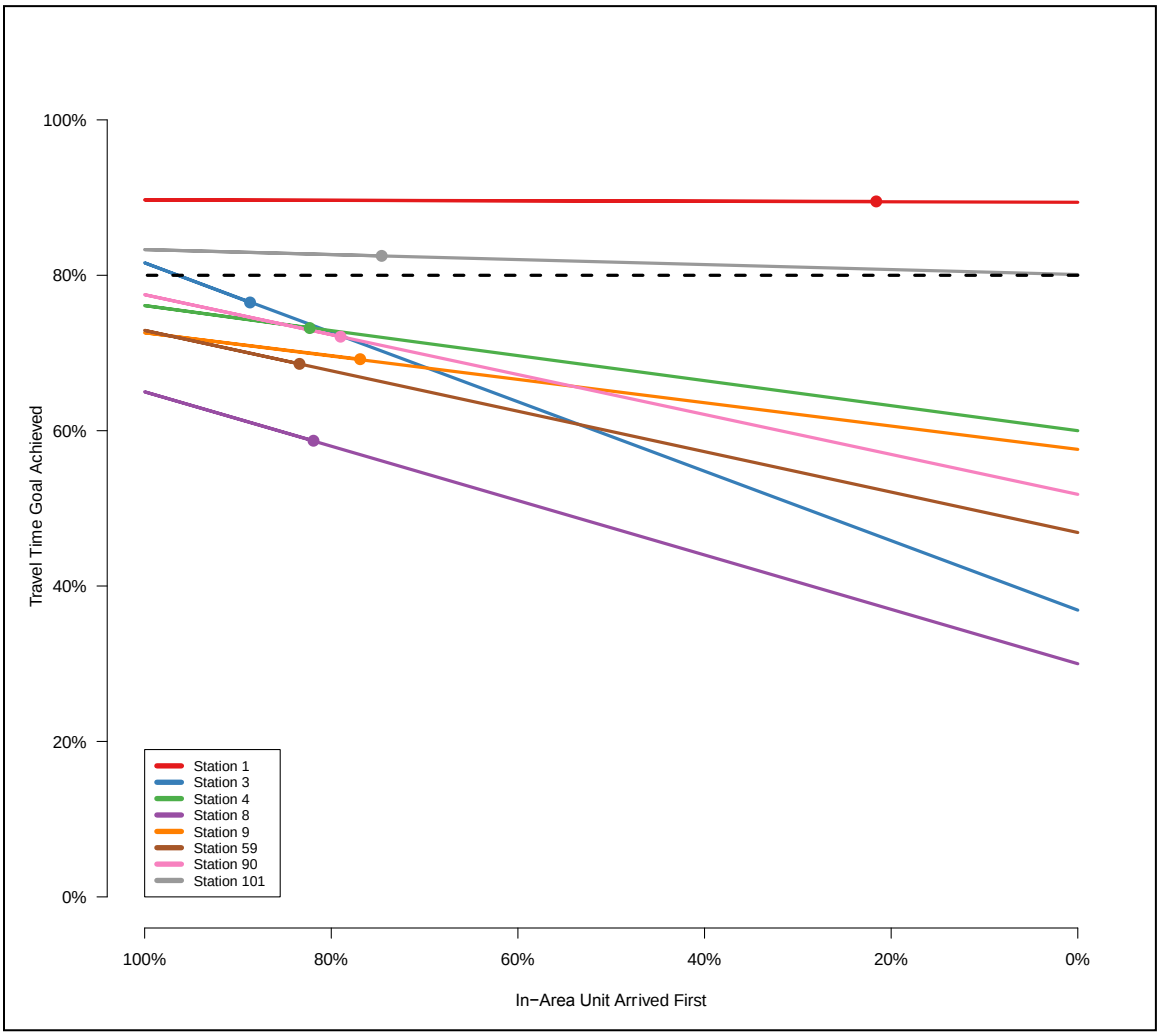


Table 32: Unit Availability vs. Performance Analysis, Battalion 1, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 1 (22% in-area units)	89.5 %	89.7 %	89.4 %
Station 3 (89% in-area units)	76.5 %	81.6 %	36.9 %
Station 4 (82% in-area units)	73.2 %	76.1 %	60.0 %
Station 8 (82% in-area units)	58.7 %	65.0 %	30.0 %
Station 9 (77% in-area units)	69.2 %	72.6 %	57.6 %
Station 59 (83% in-area units)	68.6 %	72.9 %	46.9 %
Station 90 (79% in-area units)	72.1 %	77.5 %	51.8 %
Station 101 (75% in-area units)	82.5 %	83.3 %	80.1 %

Battalion 2 – Of the seven stations in Battalion 2, only four stations meet the 80 percent response-time standard. Three stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 51, 61, and 94.

The majority of stations in this battalion have low workload sensitivity. Exceptions are Station 11 and 94 (high sensitivity) and Station 61 (moderate sensitivity). Stations 10, 85, and 97 have the capacity for additional workload, but it does not appear that a reduction in workload would bring any of the underperforming stations in this battalion up to the goal performance level. Stations 51, 61, and 94 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 45: Unit Availability vs. Performance Analysis, Battalion 2, FY2015

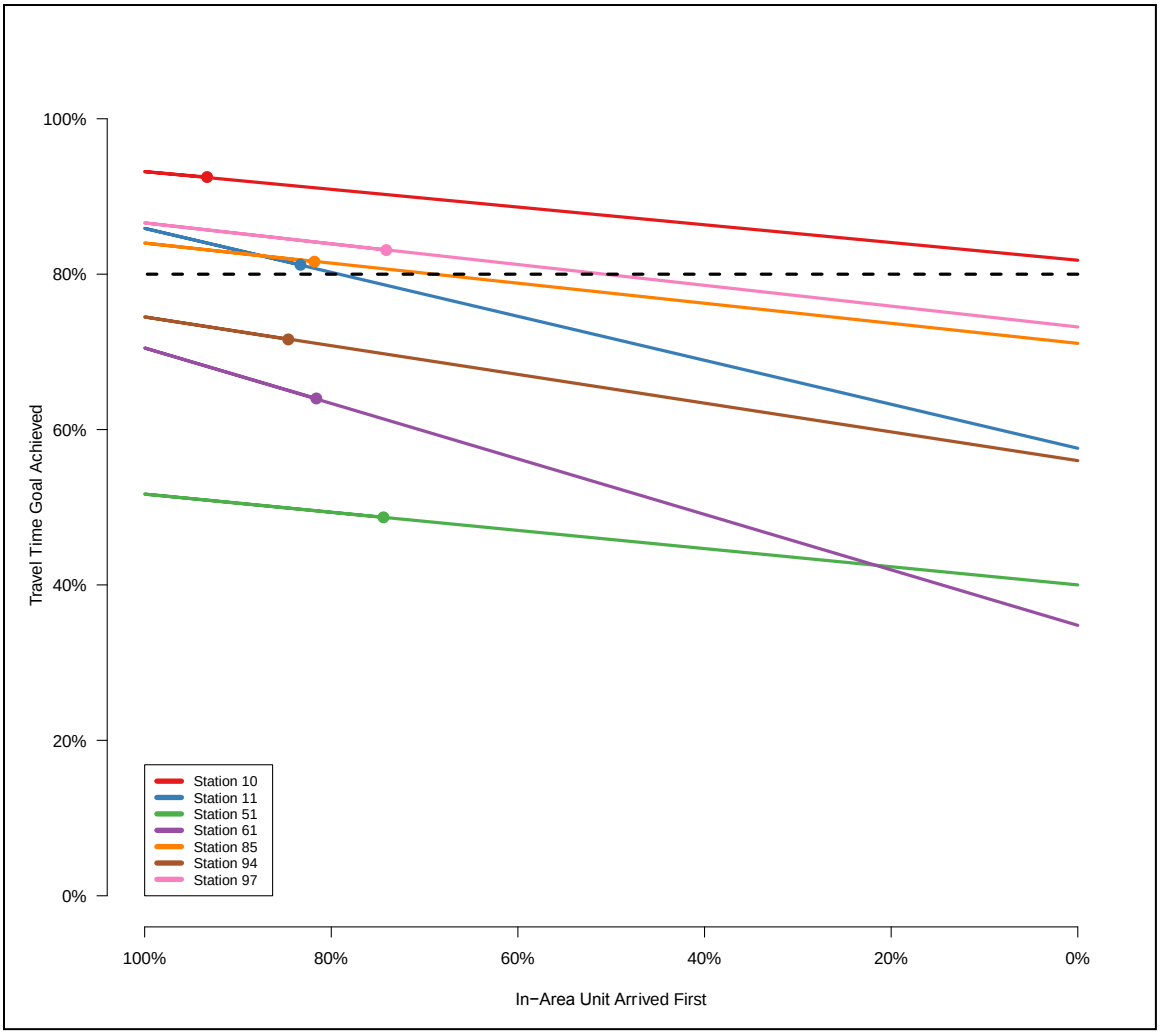


Table 33: Unit Availability vs. Performance Analysis, Battalion 2, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 10 (93% in-area units)	92.5 %	93.2 %	81.8 %
Station 11 (83% in-area units)	81.2 %	85.9 %	57.6 %
Station 51 (74% in-area units)	48.7 %	51.7 %	40.0 %
Station 61 (82% in-area units)	64.0 %	70.5 %	34.8 %
Station 85 (82% in-area units)	81.6 %	84.0 %	71.1 %
Station 94 (85% in-area units)	71.6 %	74.5 %	56.0 %
Station 97 (74% in-area units)	83.1 %	86.6 %	73.2 %

Battalion 3 – Of the seven stations in Battalion 3 only three stations meet the 80 percent response-time standard. Three stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 21, 22, and 63.

The majority of stations in this battalion have high workload sensitivity; exceptions are Station 20 (moderate sensitivity) and Station 22 and 66 (low sensitivity). Station 20 has the capacity for additional workload, while the workload for Stations 24 and 89 should be maintained at their current levels to keep performance in their respective areas at or near the 80 percent goal. It does not appear that a reduction in workload would bring any of the underperforming stations in this battalion up to the desired performance level. Stations 21, 22, and 63 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 46: Unit Availability vs. Performance Analysis, Battalion 3, FY2015

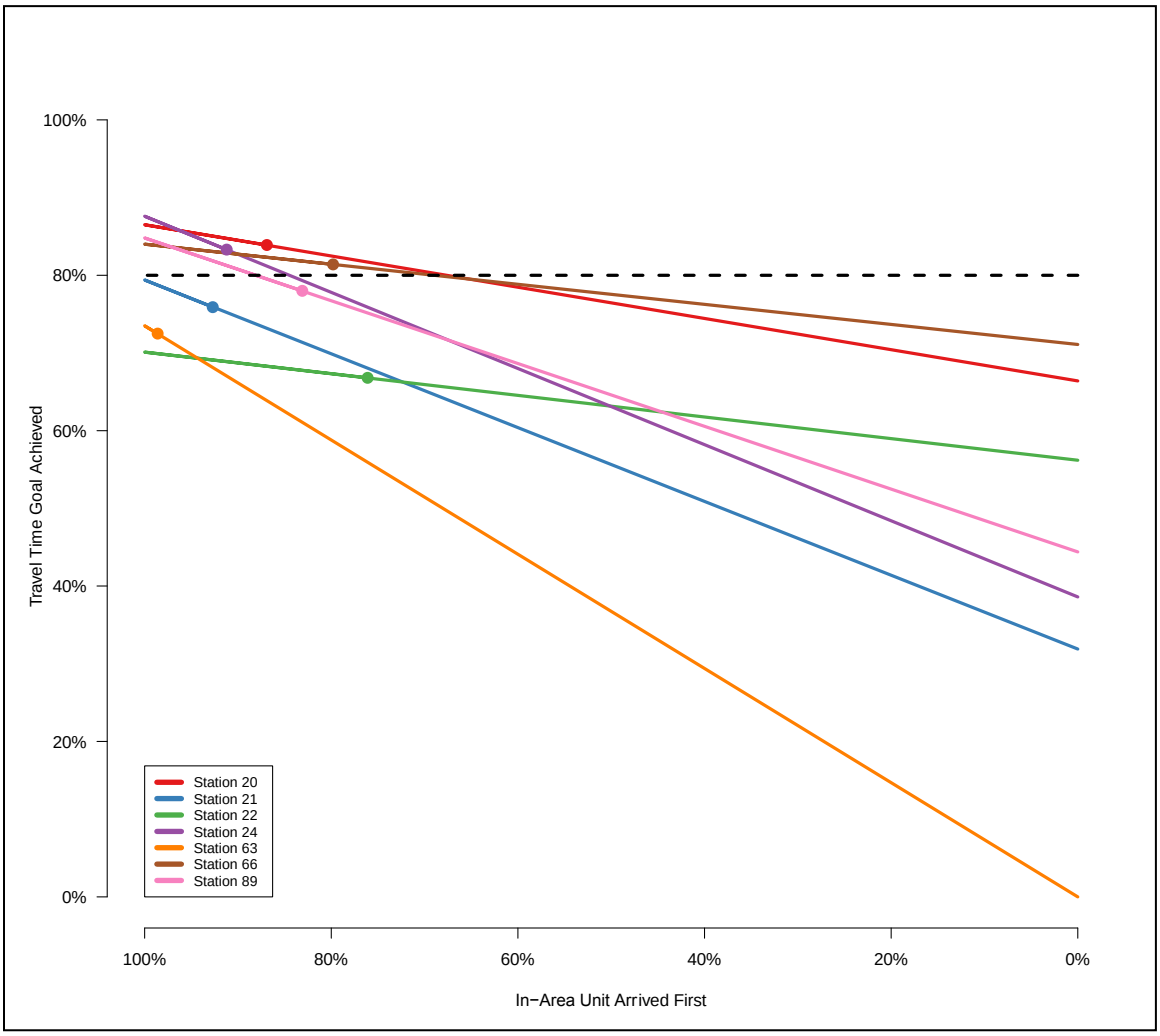


Table 34: Unit Availability vs. Performance Analysis, Battalion 3, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 20 (87% in-area units)	83.9 %	86.5 %	66.4 %
Station 21 (93% in-area units)	75.9 %	79.4 %	31.9 %
Station 22 (76% in-area units)	66.8 %	70.1 %	56.2 %
Station 24 (91% in-area units)	83.3 %	87.6 %	38.6 %
Station 63 (99% in-area units)	72.5 %	73.5 %	0.0 %
Station 66 (80% in-area units)	81.4 %	84.0 %	71.1 %
Station 89 (83% in-area units)	78.0 %	84.8 %	44.4 %

Battalion 4 – Of the six stations in Battalion 4, only one stations meet the 80 percent response-time standard. Three stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 13, 64, and 82.

Other than Station 82 (high sensitivity), all other stations in this area have moderate workload sensitivity. It does not appear that a reduction in workload would bring any of the underperforming stations in this battalion up to the desired performance level. Stations 13, 64, and 82 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 47: Unit Availability vs. Performance Analysis, Battalion 4, FY2015

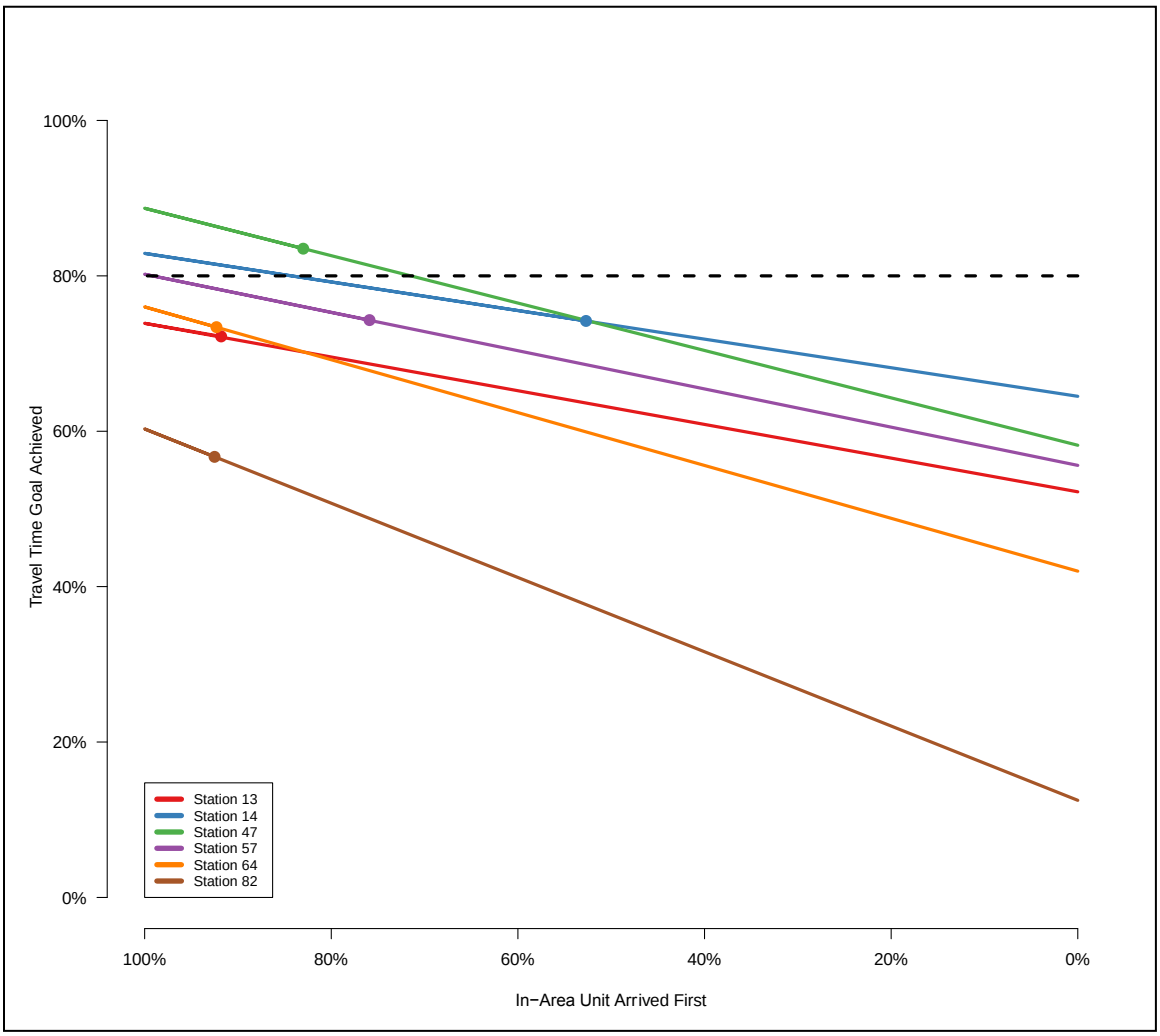


Table 35: Unit Availability vs. Performance Analysis, Battalion 4, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 13 (92% in-area units)	72.2 %	73.9 %	52.2 %
Station 14 (53% in-area units)	74.2 %	82.9 %	64.5 %
Station 47 (83% in-area units)	83.5 %	88.7 %	58.2 %
Station 57 (76% in-area units)	74.3 %	80.2 %	55.6 %
Station 64 (92% in-area units)	73.4 %	76.0 %	42.0 %
Station 82 (92% in-area units)	56.7 %	60.3 %	12.5 %

Battalion 5 – Of the five stations in Battalion 5, only two stations meet the 80 percent response-time standard. Three stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 25, 26, and 28.

The majority of stations in this battalion have low workload sensitivity; exceptions are Station 72 (moderate sensitivity) and Station 26 (high sensitivity). Station 34 and 72 have the capacity for additional workload, but it does not appear that a reduction in workload would bring any of the underperforming stations in this battalion up to the desired performance level. Stations 26 and 28 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent. Station 25 might just barely reach the performance level goal at 100 percent availability.

Figure 48: Unit Availability vs. Performance Analysis, Battalion 5, FY2015

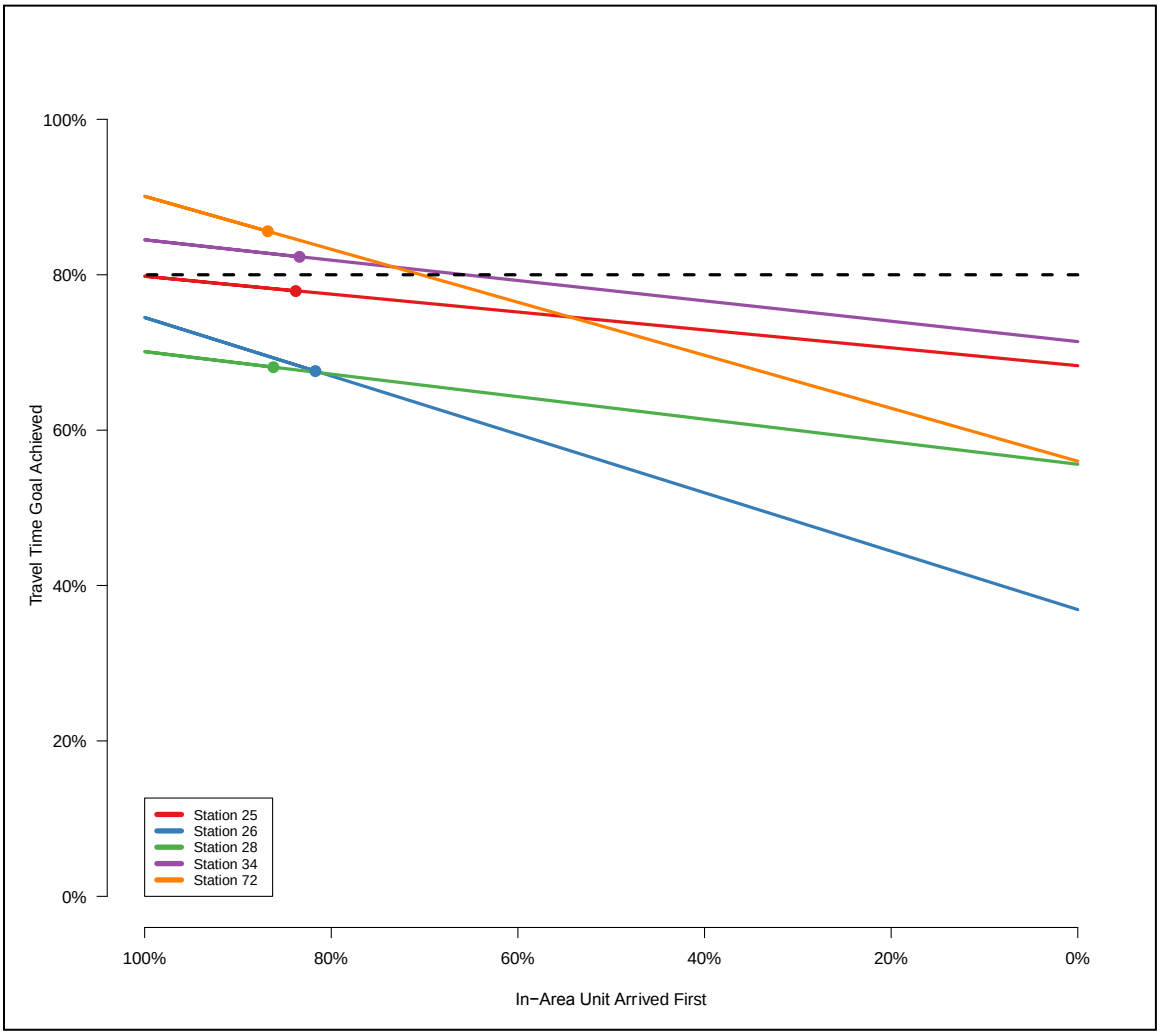


Table 36: Unit Availability vs. Performance Analysis, Battalion 5, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 25 (84% in-area units)	77.9 %	79.8 %	68.3 %
Station 26 (82% in-area units)	67.6 %	74.5 %	36.9 %
Station 28 (86% in-area units)	68.1 %	70.1 %	55.6 %
Station 34 (83% in-area units)	82.3 %	84.5 %	71.4 %
Station 72 (87% in-area units)	85.6 %	90.1 %	56.0 %

Battalion 6 – Of the seven stations in Battalion 6, only three stations meet the 80 percent response-time standard. Three stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 39, 40, and 93.

The majority of stations in this battalion have moderate workload sensitivity; exceptions are Station 39 and 93 (low sensitivity) and Station 32 (high sensitivity). Station 41 has the capacity for additional workload, but it does not appear that a reduction in workload would bring any of the underperforming stations in this battalion up to the desired performance level. Stations 39, 40, and 93 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 49: Unit Availability vs. Performance Analysis, Battalion 6, FY2015

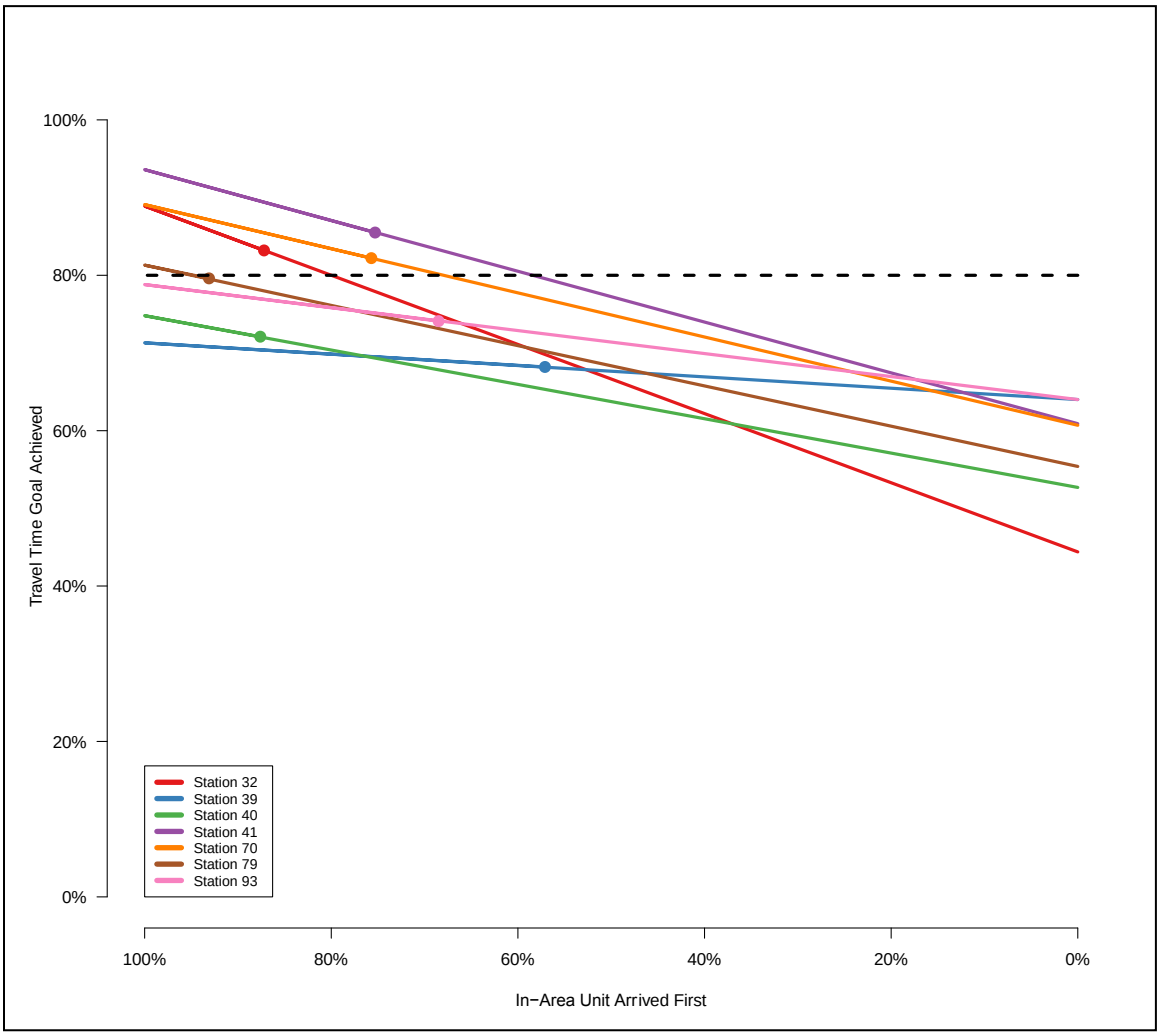


Table 37: Unit Availability vs. Performance Analysis, Battalion 6, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 32 (87% in-area units)	83.2 %	88.9 %	44.4 %
Station 39 (57% in-area units)	68.2 %	71.3 %	64.0 %
Station 40 (88% in-area units)	72.1 %	74.8 %	52.7 %
Station 41 (75% in-area units)	85.5 %	93.6 %	60.9 %
Station 70 (76% in-area units)	82.2 %	89.1 %	60.7 %
Station 79 (93% in-area units)	79.6 %	81.3 %	55.4 %
Station 93 (68% in-area units)	74.1 %	78.8 %	64.0 %

Battalion 7 – Of the four stations in Battalion 7, only three stations meet the 80 percent response-time standard. Stations 80 and 88 have moderate workload sensitivity, while Stations 86 and 87 have low workload sensitivity. Stations 80, 86, and 88 have capacity for additional workload. Station 87 is underperforming, but without drastically reducing workload for this station to keep availability high, it does not appear capable of achieving an 80th percentile level of response time performance.

Figure 50: Unit Availability vs. Performance Analysis, Battalion 7, FY2015

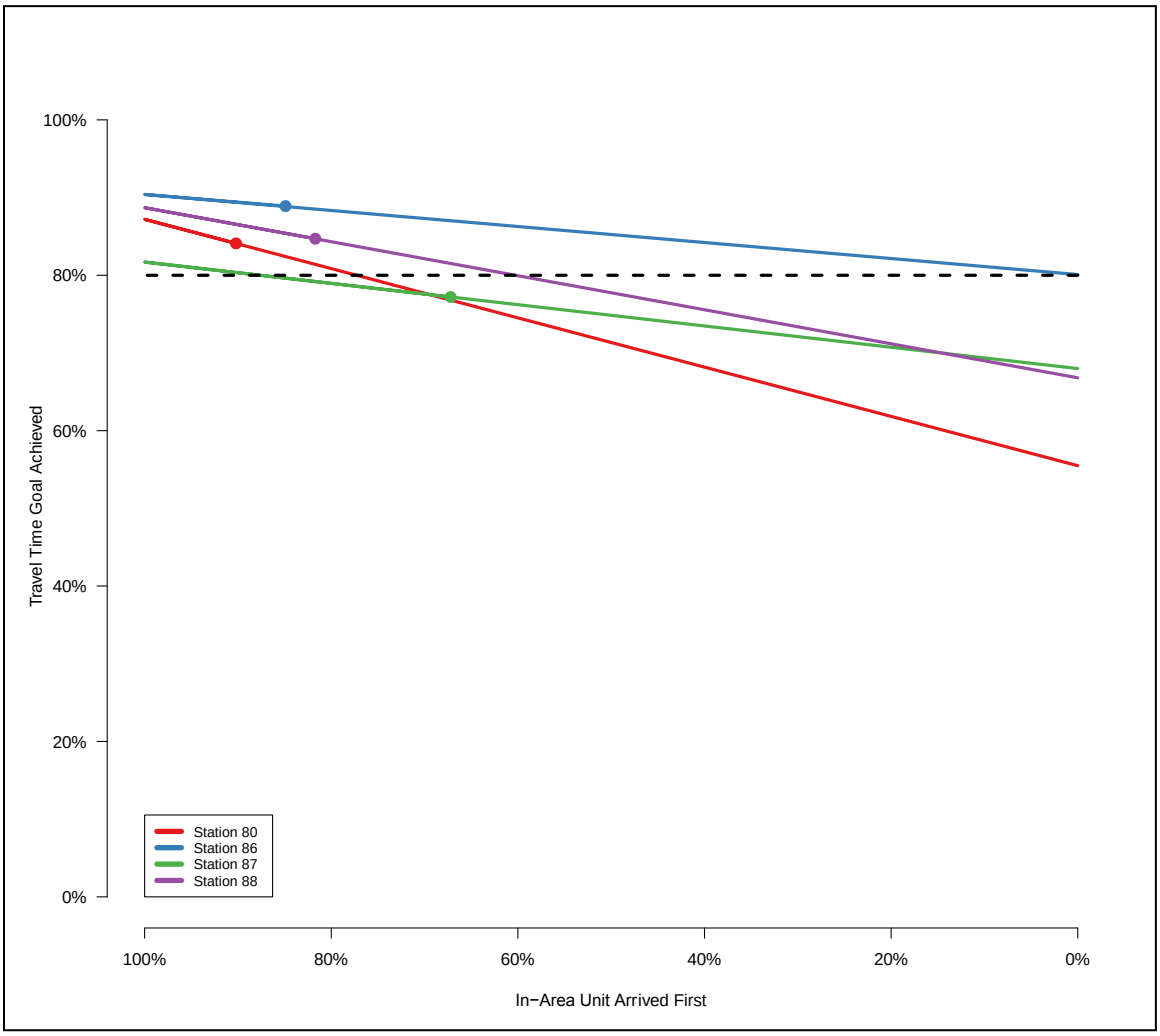


Table 38: Unit Availability vs. Performance Analysis, Battalion 7, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 80 (90% in-area units)	84.1 %	87.2 %	55.5 %
Station 86 (85% in-area units)	88.9 %	90.4 %	80.1 %
Station 87 (67% in-area units)	77.2 %	81.7 %	68.0 %
Station 88 (82% in-area units)	84.7 %	88.7 %	66.8 %

Battalion 8 – Of the five stations in Battalion 8, only one stations meet the 80 percent response-time standard. Three stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 45, 46, and 49.

Other than Stations 43 and 46 (high sensitivity), all other stations in this area have moderate workload sensitivity. Station 44 has the capacity for additional workload. It does not appear that a reduction in workload would easily bring any of the underperforming stations in this battalion up to the desired performance level. Stations 45, 46, and 49 would see increased

performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

There is likely some kind of data problem affecting Station 46, which is showing an availability rate of only 8.2 percent.

Figure 51: Unit Availability vs. Performance Analysis, Battalion 8, FY2015

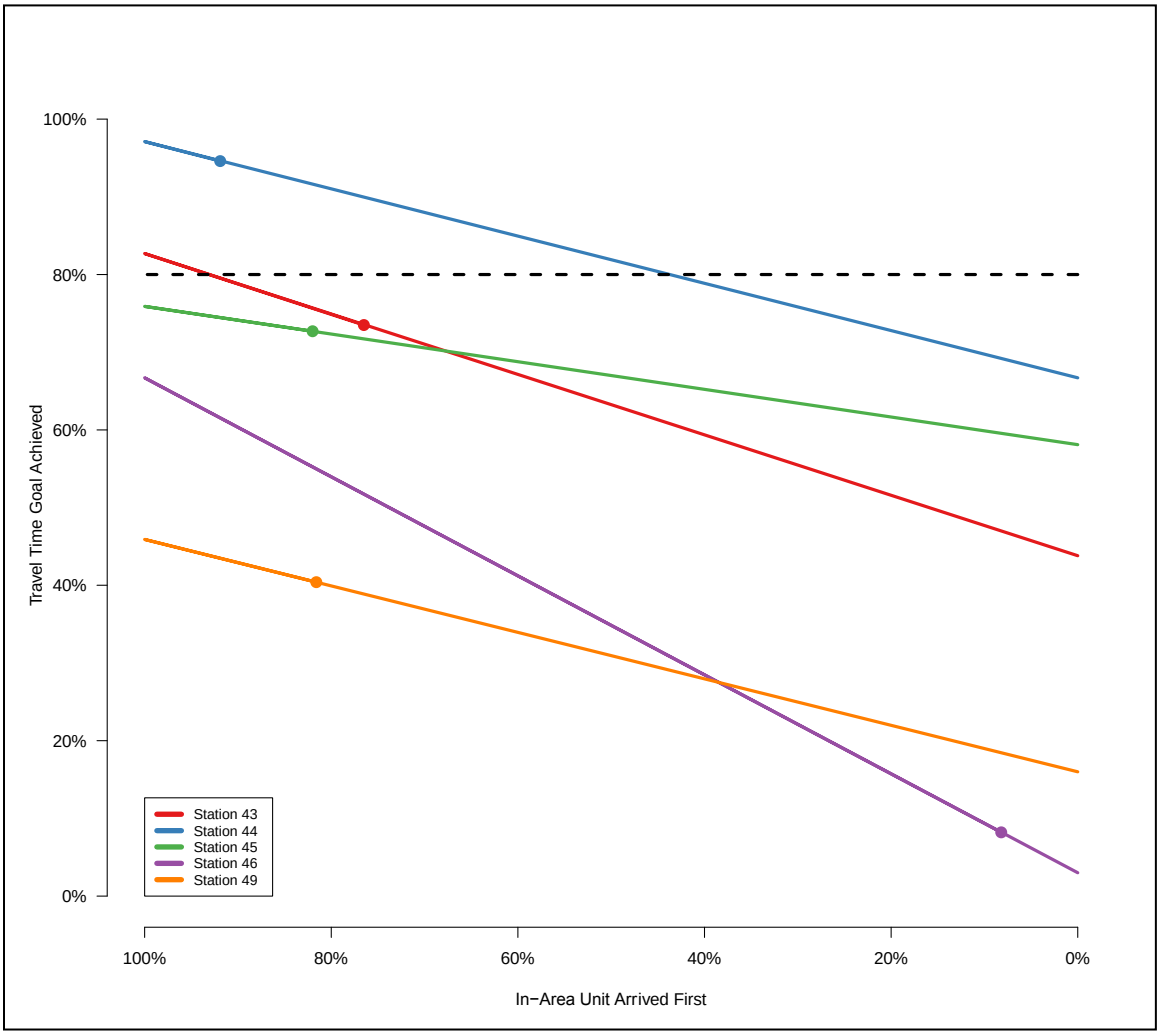


Table 39: Unit Availability vs. Performance Analysis, Battalion 8, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 43 (76% in-area units)	73.5 %	82.7 %	43.8 %
Station 44 (92% in-area units)	94.6 %	97.1 %	66.7 %
Station 45 (82% in-area units)	72.7 %	75.9 %	58.1 %
Station 46 (8% in-area units)	8.2 %	66.7 %	3.0 %
Station 49 (82% in-area units)	40.4 %	45.9 %	16.0 %

Battalion 9 – Of the seven stations in Battalion 9, six stations are meeting the 80 percent response-time standard. The majority of stations in this battalion have moderate workload sensitivity; exceptions are Station 99 (low sensitivity) and Station 48 (high sensitivity). Stations 58, 91, and 99 all have the capacity for additional workload. The workload for Station 48 must be maintained at its current levels to keep performance in its area above the 80 percent goal. It does not appear that a reduction in workload would easily bring Station 8 up to the desired performance level.

Figure 52: Unit Availability vs. Performance Analysis, Battalion 9, FY2015

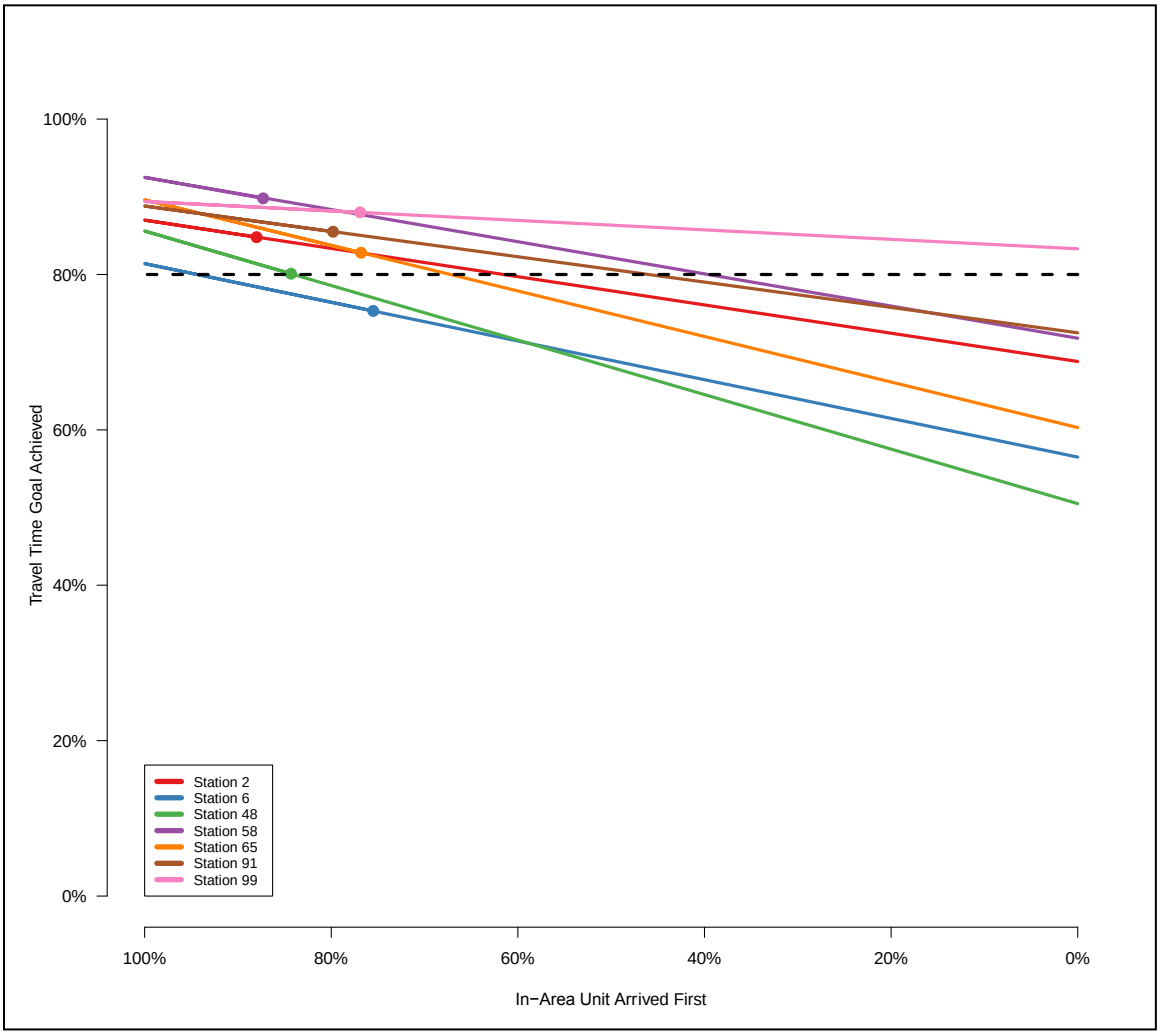


Table 40: Unit Availability vs. Performance Analysis, Battalion 9, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 2 (88% in-area units)	84.8 %	87.0 %	68.8 %
Station 6 (76% in-area units)	75.3 %	81.4 %	56.5 %
Station 48 (84% in-area units)	80.1 %	85.6 %	50.5 %
Station 58 (87% in-area units)	89.8 %	92.5 %	71.8 %
Station 65 (77% in-area units)	82.8 %	89.6 %	60.3 %
Station 91 (80% in-area units)	85.5 %	88.8 %	72.5 %
Station 99 (77% in-area units)	88.0 %	89.4 %	83.3 %

Battalion 10 – Of the five stations in Battalion 10, only two stations are meeting the 80 percent response-time standard, although another two are very close. Station 81 has a depressed performance line indicating a potential station location problem or response time goals that are set too high for its area. Other than Stations 35 and 36 (low sensitivity), all other stations in this area have moderate workload sensitivity. Station 35 has significant capacity for additional workload. The workload for Stations 36, 37, and 56 have to be maintained at their current levels to keep performance in their respective areas above the 80 percent goal. Stations 81 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 53: Unit Availability vs. Performance Analysis, Battalion 10, FY2015

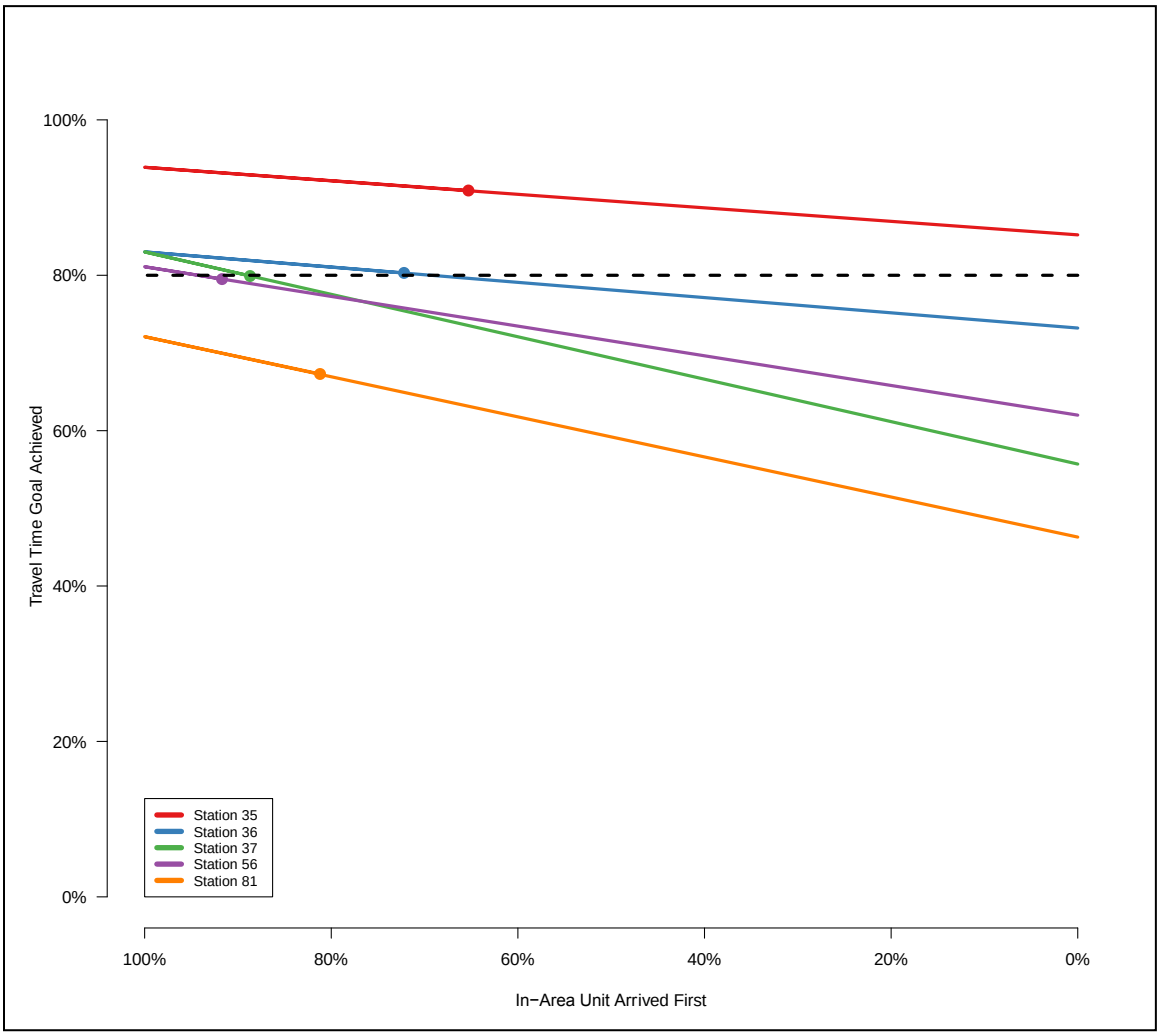


Table 41: Unit Availability vs. Performance Analysis, Battalion 10, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 35 (65% in-area units)	90.9 %	93.9 %	85.2 %
Station 36 (72% in-area units)	80.3 %	83.0 %	73.2 %
Station 37 (89% in-area units)	79.9 %	83.0 %	55.7 %
Station 56 (92% in-area units)	79.5 %	81.1 %	62.0 %
Station 81 (81% in-area units)	67.3 %	72.1 %	46.3 %

Battalion 11 – Of the five stations in Battalion 11, only two stations meet the 80 percent response-time standard with a third being just under. Station 77 has a depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected. Stations 23 and 30 appears to have an inverse relationship between unit availability and travel time performance: as unit availability decreases the travel time performance actually increases. This is contrary to the typical relationship and indicates either incorrectly drawn first-due boundaries or errors in the data.

Figure 54: Unit Availability vs. Performance Analysis, Battalion 11, FY2015

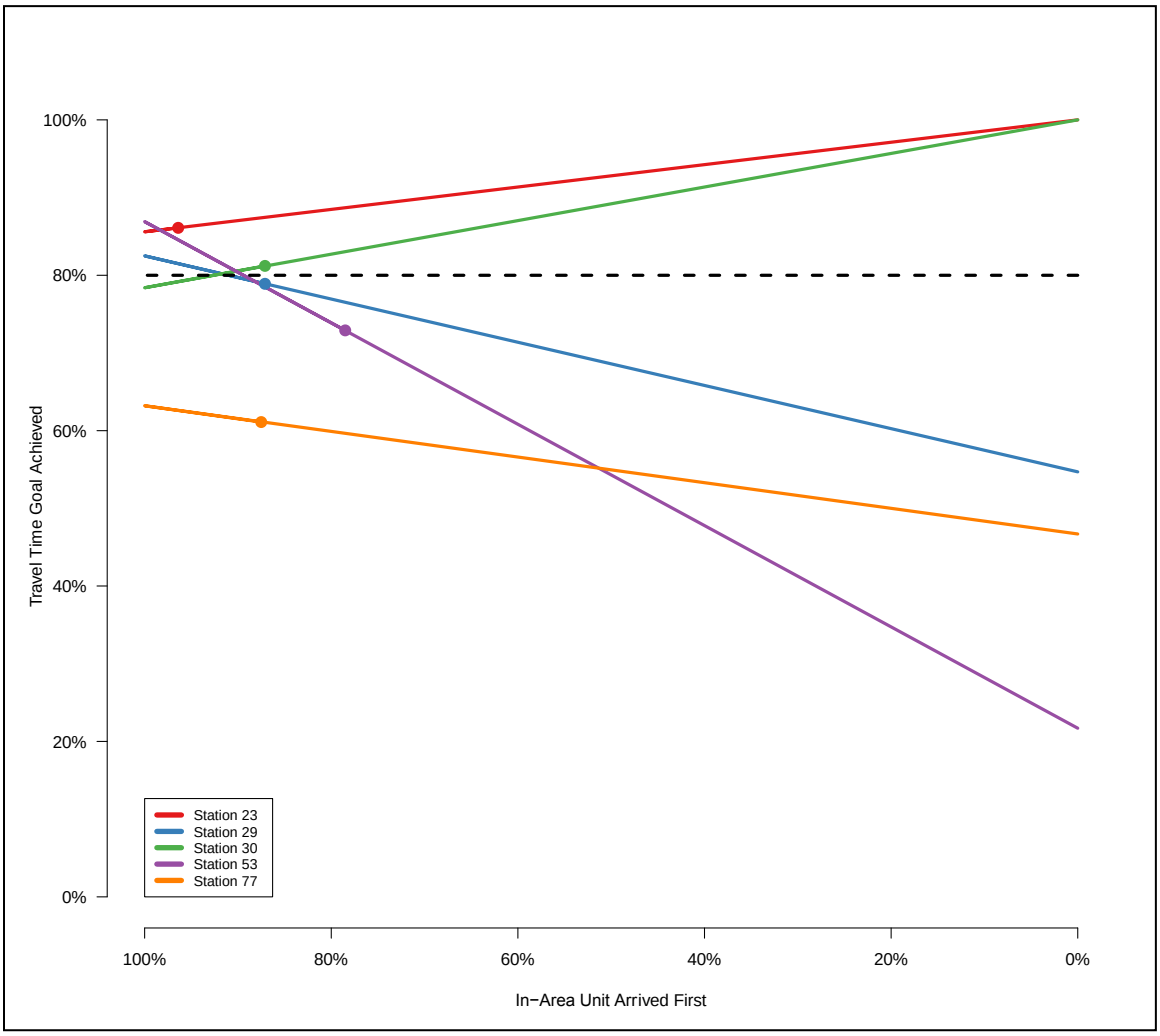


Table 42: Unit Availability vs. Performance Analysis, Battalion 11, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 23 (96% in-area units)	86.1 %	85.6 %	100.0 %
Station 29 (87% in-area units)	78.9 %	82.5 %	54.7 %
Station 30 (87% in-area units)	81.2 %	78.4 %	100.0 %
Station 53 (78% in-area units)	72.9 %	86.9 %	21.7 %
Station 77 (88% in-area units)	61.1 %	63.2 %	46.7 %

Battalion 12 – All six stations in this battalion are meeting the 80 percent response-time standard. The majority of stations in this battalion have moderate workload sensitivity; exceptions are Station 69 (low sensitivity) and Station 67 (high sensitivity). Stations 33, 55, and 69 have significant capacity for additional workload.

Figure 55: Unit Availability vs. Performance Analysis, Battalion 12, FY2015

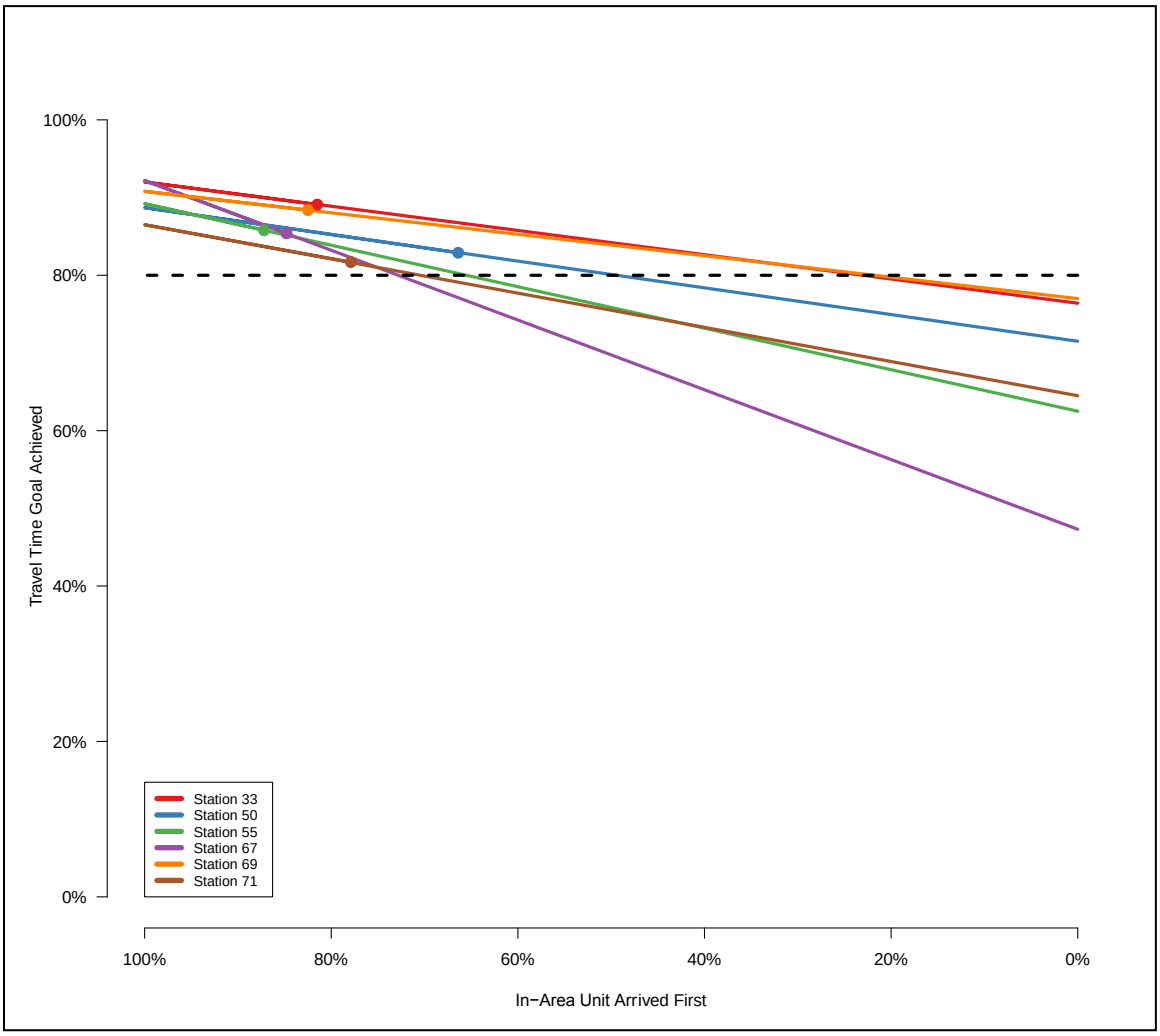


Table 43: Unit Availability vs. Performance Analysis, Battalion 12, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 33 (82% in-area units)	89.1 %	92.0 %	76.4 %
Station 50 (66% in-area units)	82.9 %	88.7 %	71.5 %
Station 55 (87% in-area units)	85.8 %	89.2 %	62.5 %
Station 67 (85% in-area units)	85.4 %	92.2 %	47.3 %
Station 69 (82% in-area units)	88.4 %	90.8 %	77.0 %
Station 71 (78% in-area units)	81.7 %	86.5 %	64.5 %

Battalion 13 – Of the five stations in Battalion 13, only two stations meet the 80 percent response-time standard. Two stations have depressed performance lines indicating a potential station location problem or response time goals that are set too high for the area being protected: 68 and 76. The majority of stations in this battalion have low workload sensitivity; exceptions are Station 7 (high sensitivity) and Station 54 (moderate sensitivity). Both Station 5 and Station 7 have the capacity for additional workload. Other than Station 7, it does not appear that a

reduction in workload would easily bring any of the underperforming stations in this battalion up to the desired performance level. Stations 68 and 76 would see increased performance as unit availability increases, but even 100 percent unit availability would not bring performance up to 80 percent.

Figure 56: Unit Availability vs. Performance Analysis, Battalion 13, FY2015

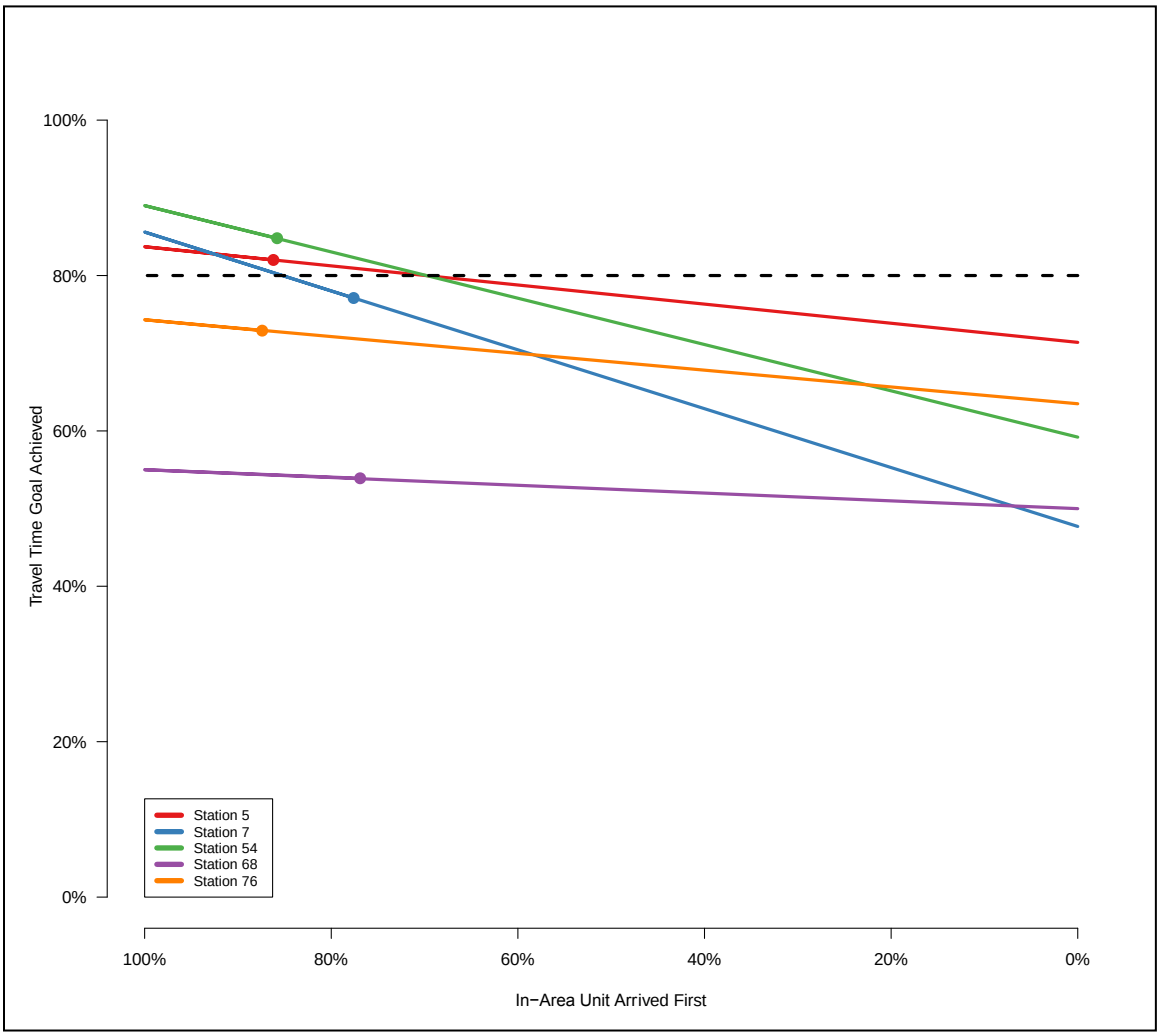


Table 44: Unit Availability vs. Performance Analysis, Battalion 13, FY2015

	All Units	In-Area Units Only	Out-of-Area Units Only
Station 5 (86% in-area units)	82.0 %	83.7 %	71.4 %
Station 7 (78% in-area units)	77.1 %	85.6 %	47.7 %
Station 54 (86% in-area units)	84.8 %	89.0 %	59.2 %
Station 68 (77% in-area units)	53.9 %	55.0 %	50.0 %
Station 76 (87% in-area units)	72.9 %	74.3 %	63.5 %

Using the CPSE recommended reliability and sensitivity analysis is not the 'end-all' for determining the need for additional stations or units. It is important to consider this type of analysis along with the workload of units and stations, as well as a GIS travel-time analysis, all of which were included in this study. Going forward, RCFD should continue to analyze its services by planning area to determine potential problem areas.

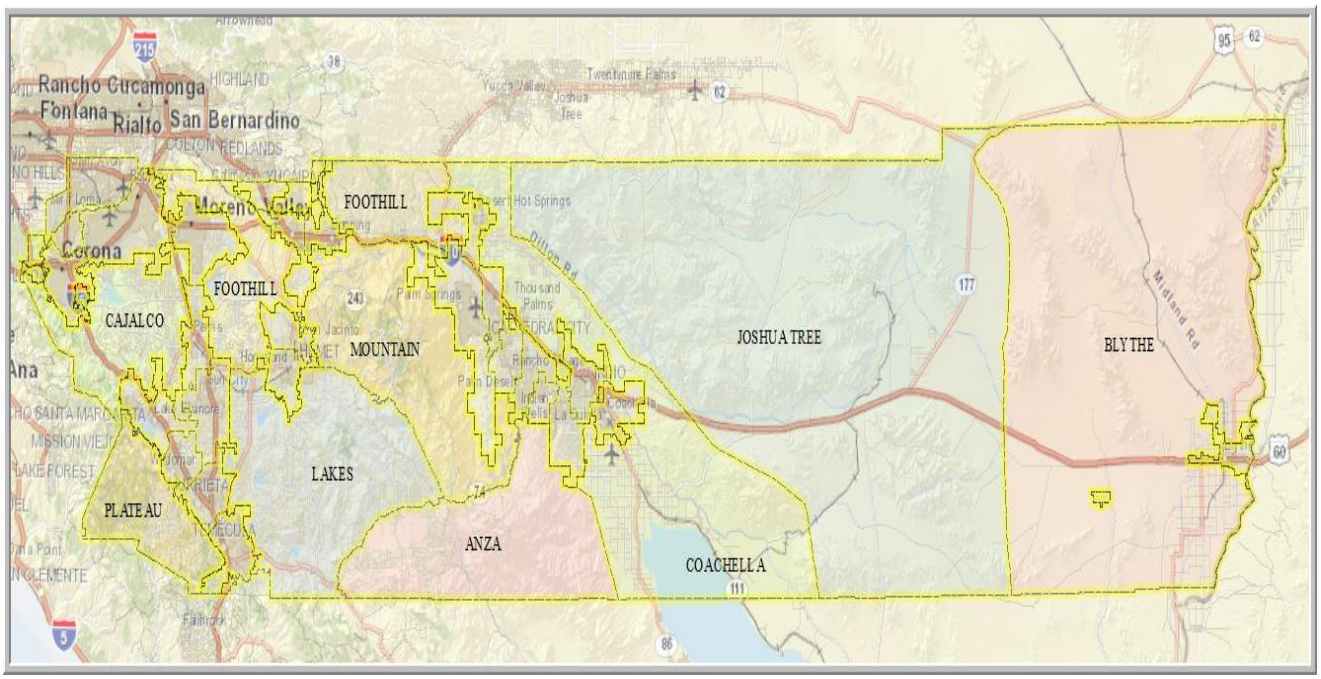
Recommendation 26: RCFD should continue to refine its performance goals and CPSE performance versus unit availability analysis and trigger points for determining the need for a new station or unit.

CHAPTER VI. STATION LOCATION ANALYSIS

This chapter presents the station location analysis and recommendations. The analysis was conducted using ArcGIS, a commercially available software program. Response travel time and coverage for the entire set of stations in Riverside County was analyzed to determine the gaps and overlaps in coverage, using the travel-time standards used by the RCFD: 4, 8, and 15 minutes. This section presents the recommendations for new stations, relocation of existing stations, or possible consolidations, if any.

For consistency, the analysis in this section uses the planning area format discussed in Chapter II. Development and Review of Planning Areas. This section includes only the maps for those areas where fire station changes are recommended. The full set of GIS maps analyzed for this study are included in Appendix F, Station Location GIS Analysis Maps

Figure 57: Riverside County Planning Areas



The focus of this analysis was to determine the most critical needs now, and those expected based on future development. Also considered were the age and condition of current stations (those needing replacement can be considered for relocation), and the possibility to improve coverage by increasing regional mutual aid, including from incorporated areas to the unincorporated areas.

This study determined that the most significant issue for RCFD is not coverage overlap from multiple stations, but rather coverage gaps for large areas that presently are uncovered within desired response times by even a single station. High-growth areas are particularly

vulnerable as the travel times from some stations are very long in areas where development is already occurring.

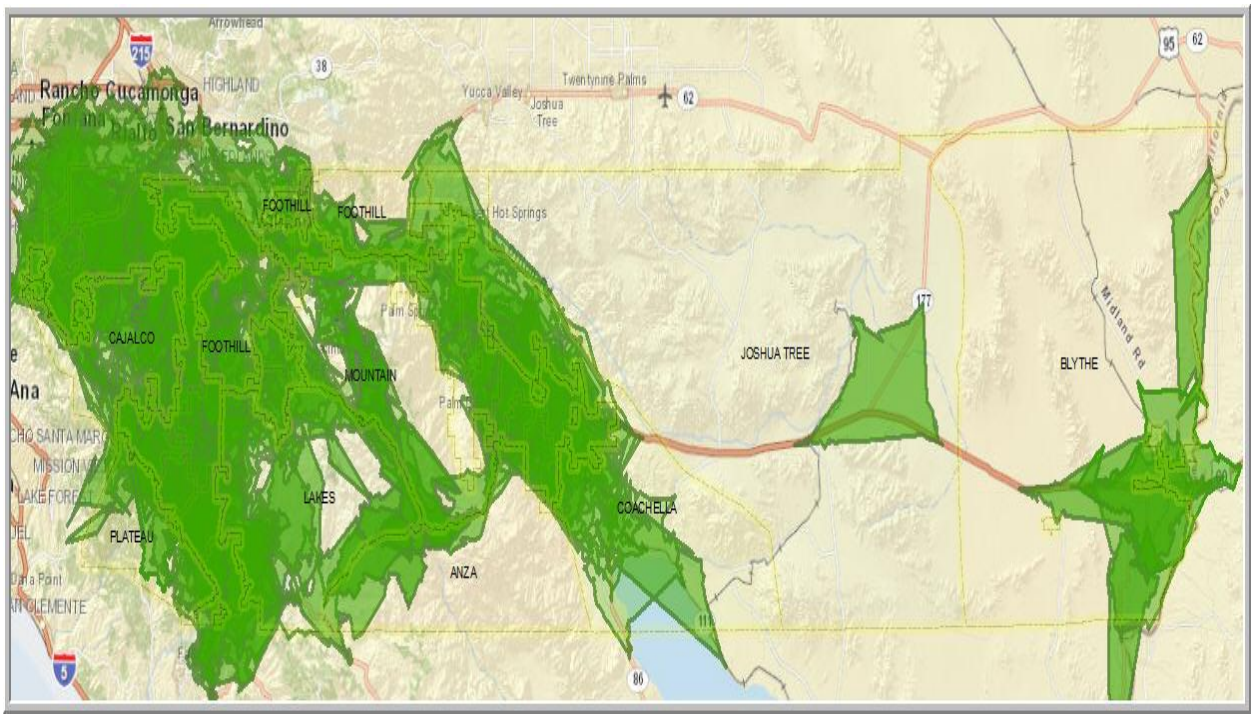
To economize space, and focus the reader on the most important issues, this section includes only the discussion, GIS maps and recommendations for those areas where changes are needed. The entire set of GIS maps and findings for all 29 planning areas is provided in the Appendix.

Response Travel Time and Coverage

Travel time is the time interval that begins when a unit is enroute to an emergency incident and ends when the unit arrives at the scene. Travel time is a function of geography, road conditions, traffic congestion, and the number and location of fire stations with respect to the location of incidents. To reiterate, RCFD developed travel-time goals for the first unit to arrive are urban (4 minutes), rural (8 minutes), and outlying (15 minutes).

Figure 58 shows in green the area of the County reachable within 15 minutes.

Figure 58: Riverside County 15-minute Travel Time Coverage[11]

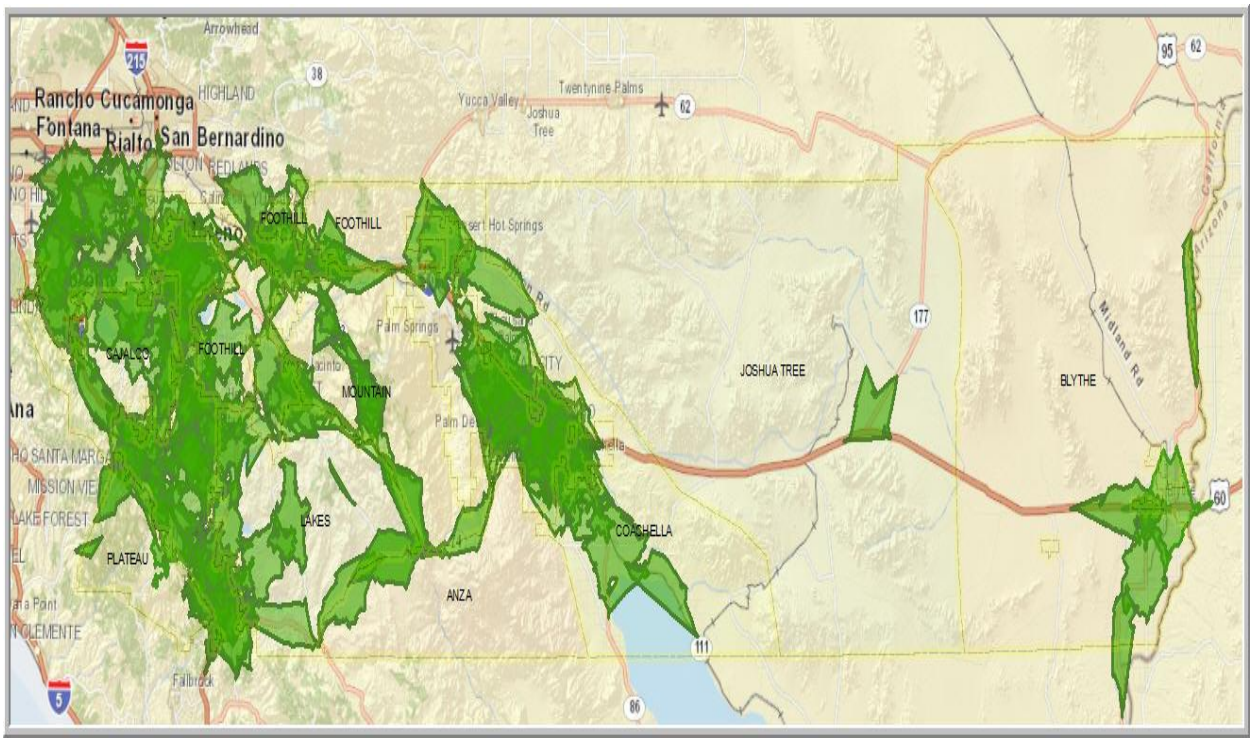


As the map above shows, almost the entire area of the County can be reached within 15 minutes. The most critical travel times to meet are four and eight minutes, as these are the criteria for the most populated areas where services are needed most.

[11] Darker shades of green reflect duplicate coverage from multiple stations. Duplicate is appropriate when demand is high so that more than one station can reach a particular area.

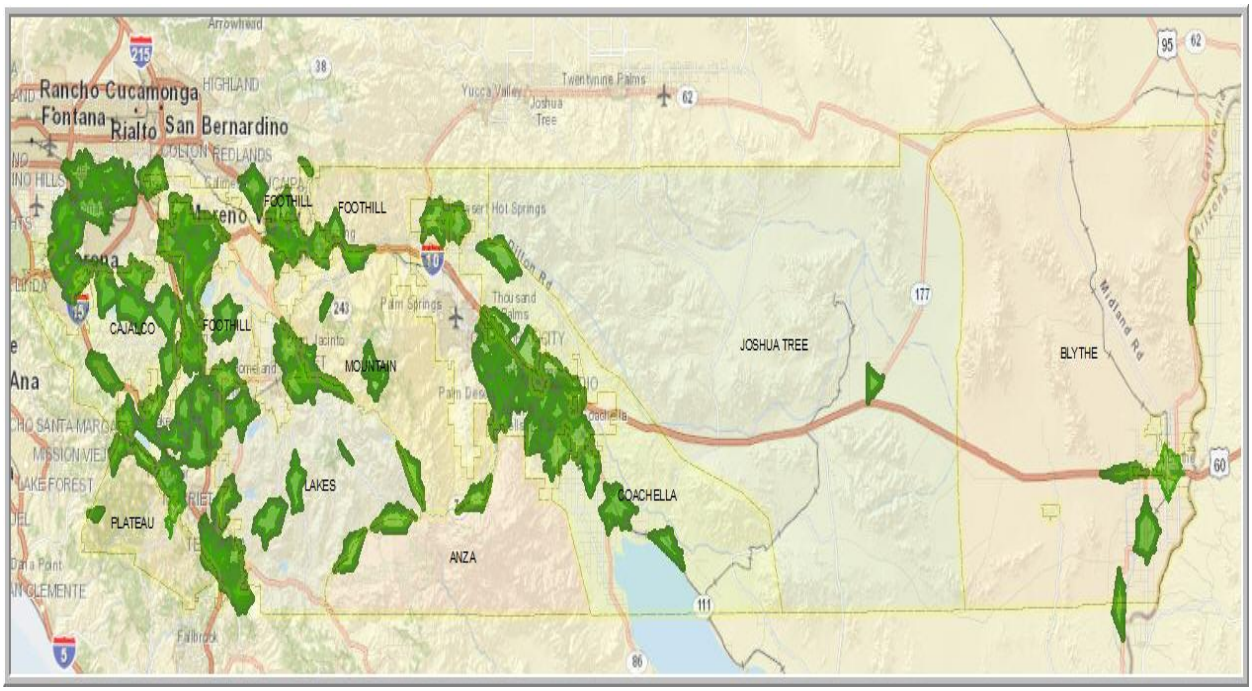
When an eight minute travel time standard is used, gaps in coverage are found in many populated areas of the County, primarily in the unincorporated areas. These coverage gaps become even more significant when there is little or no overlap in coverage from stations, because response travel times become even longer when the first-due fire station is unavailable because they are on a call, out for training, or the station is vacant for some other reason. The coverage of contract cities within eight minutes is very good. Fire stations in the contract cities can reach large parts of the county within eight minutes and county units can provide overlapping coverage to the contract cities. This level of redundancy in coverage is good. Figure 59 shows the area that is nominally covered within eight minutes when units are in their stations.

Figure 59: Riverside County 8-minute Travel Time Coverage



Adding stations in strategic locations will provide improved response times to some areas, and provide the necessary overlap in the areas with a higher demand for service. Additional stations or moving existing stations will also cover gaps in first response four minute coverage in the urban areas. Figure 60 shows Riverside County's area with four minute coverage.

Figure 60: Riverside County 4-minute Travel Time Coverage

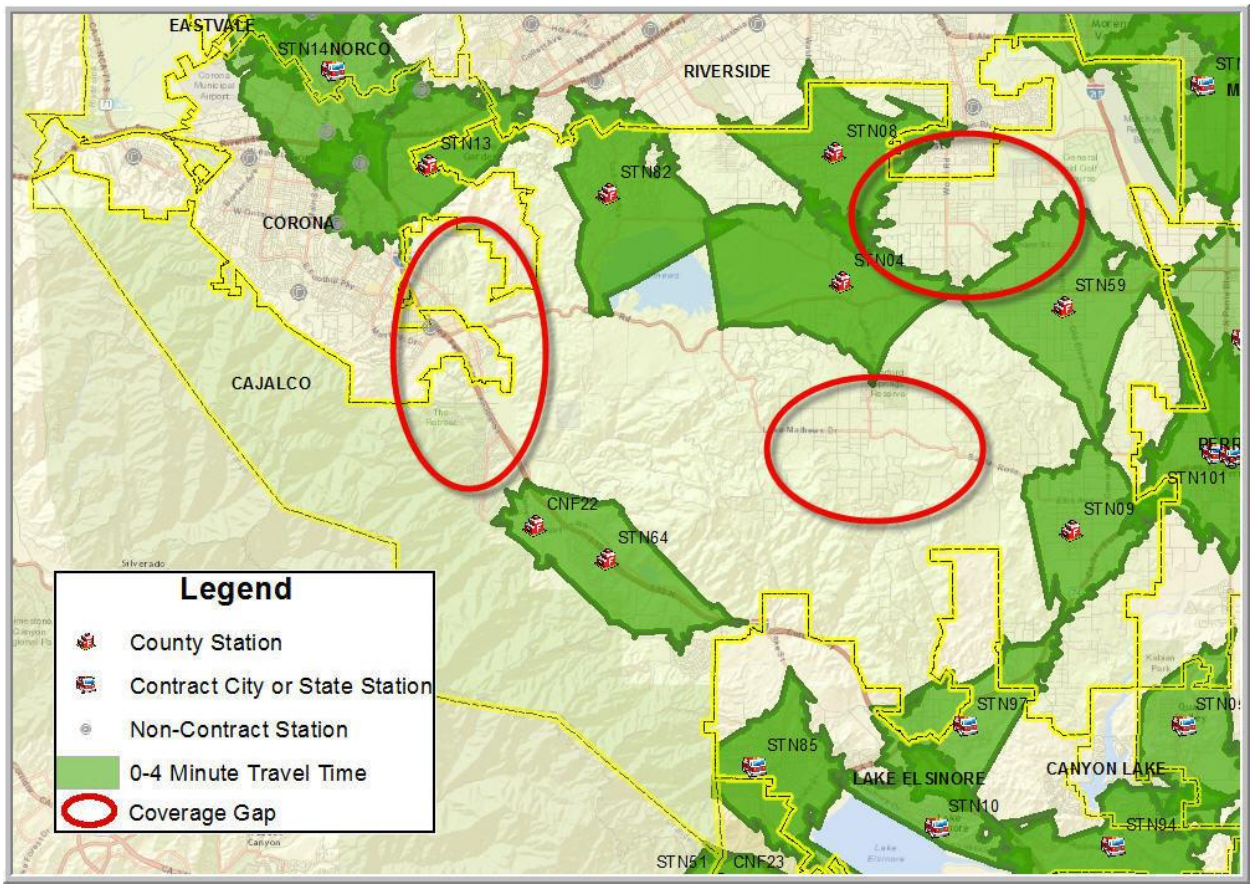


The primary focus of this analysis was to determine the most critical needs now, and then those expected to become critical based on anticipated development. Also considered were older stations and the condition of current stations (those needing replacement can be considered for relocation), and the possibility to improve coverage by increasing the use of mutual aid, including from cities that are not currently under contract. The planning areas with the most critical coverage needs are addressed in this section.

Cajalco

The Cajalco unincorporated area generally has good eight minute coverage overall, but there are some four and eight minute gaps in areas with considerable population, and continued projected growth. Figure 61 shows encircled the three most important coverage gaps.

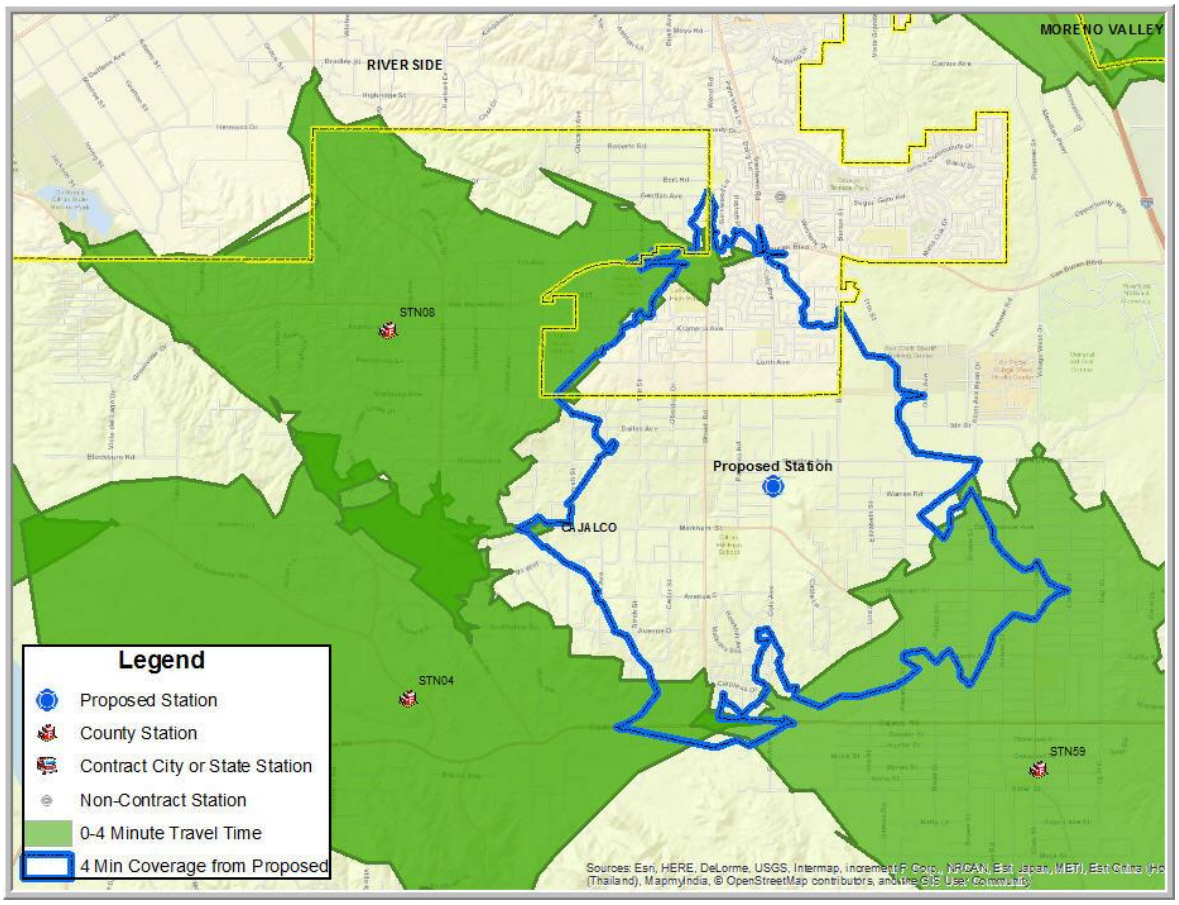
Figure 61: Cajalco Planning Area Service Gaps



The area northeast of Station 4 and Station 59, which borders the City of Riverside, altogether lacks four minute coverage. The second gap area is south of Station 4 and west of Station 9. The third area is along the Interstate 15 corridor south of Station 13 and north of Station 64.

Construct a New Station in the North Cajalco Area –A new station is needed in the northeast Cajalco region in order to maintain the first response goal in the area. Adding a station here would almost perfectly cover the 4-minute coverage gap, and provide additional coverage overlap to the area. This location also could reach within the City of Riverside should there be an opportunity for mutual aid. The map in Figure 62 shows this area with a proposed station location, and its 4-minute travel time coverage.

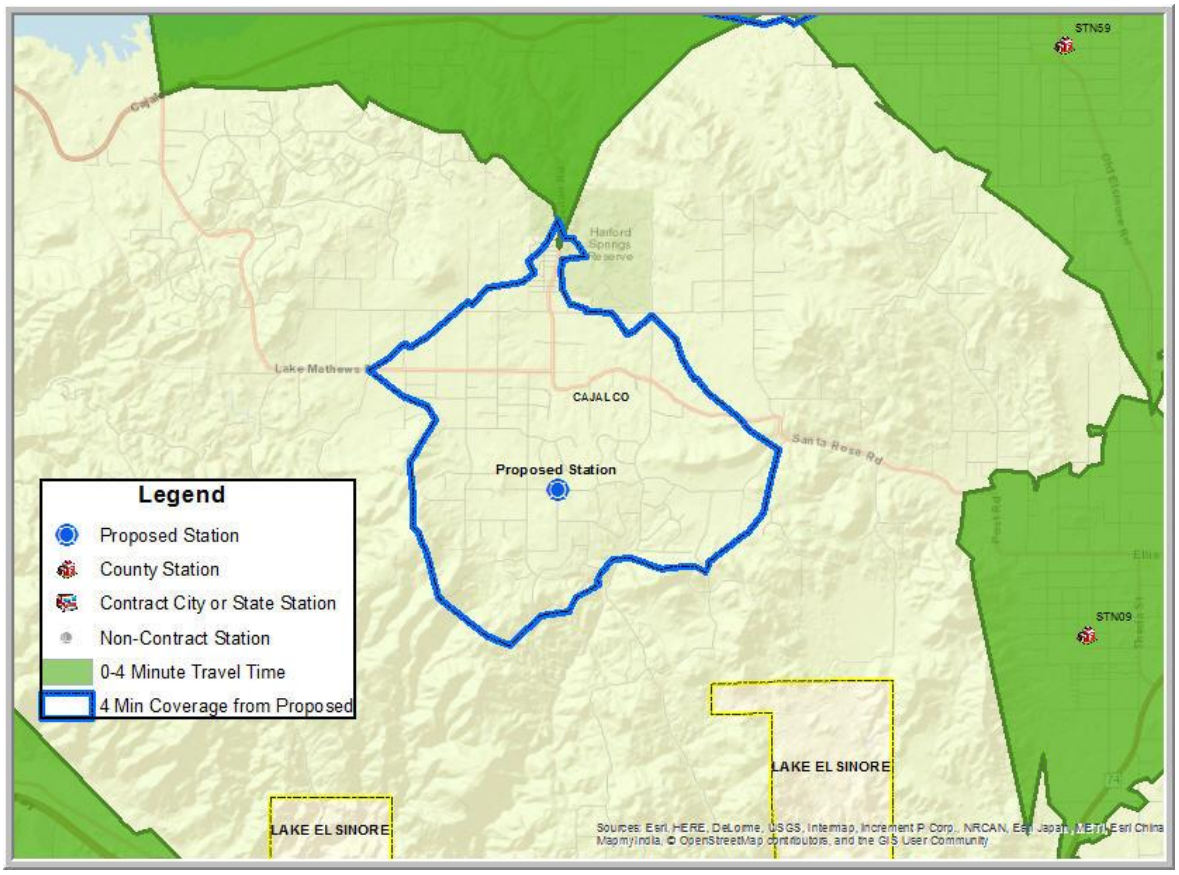
Figure 62: Cajalco Planning Area (North Proposed Station)



Recommendation 27: Construct a new station in the Northern Cajalco area north of Station 59 and Station 4, and southeast of Station 8. The possibility of automatic aid with the City of Riverside should also be considered.

Construct a New Station in the Southern Cajalco Area –The urban area south of the Harford Springs Reserve, along Lake Mathews and Santa Rosa Roads is not getting coverage within four minutes. A station here would close that 4-minute first response gap and provide needed overlap coverage in the area. The map in Figure 63 shows this area and proposed coverage with the added station.

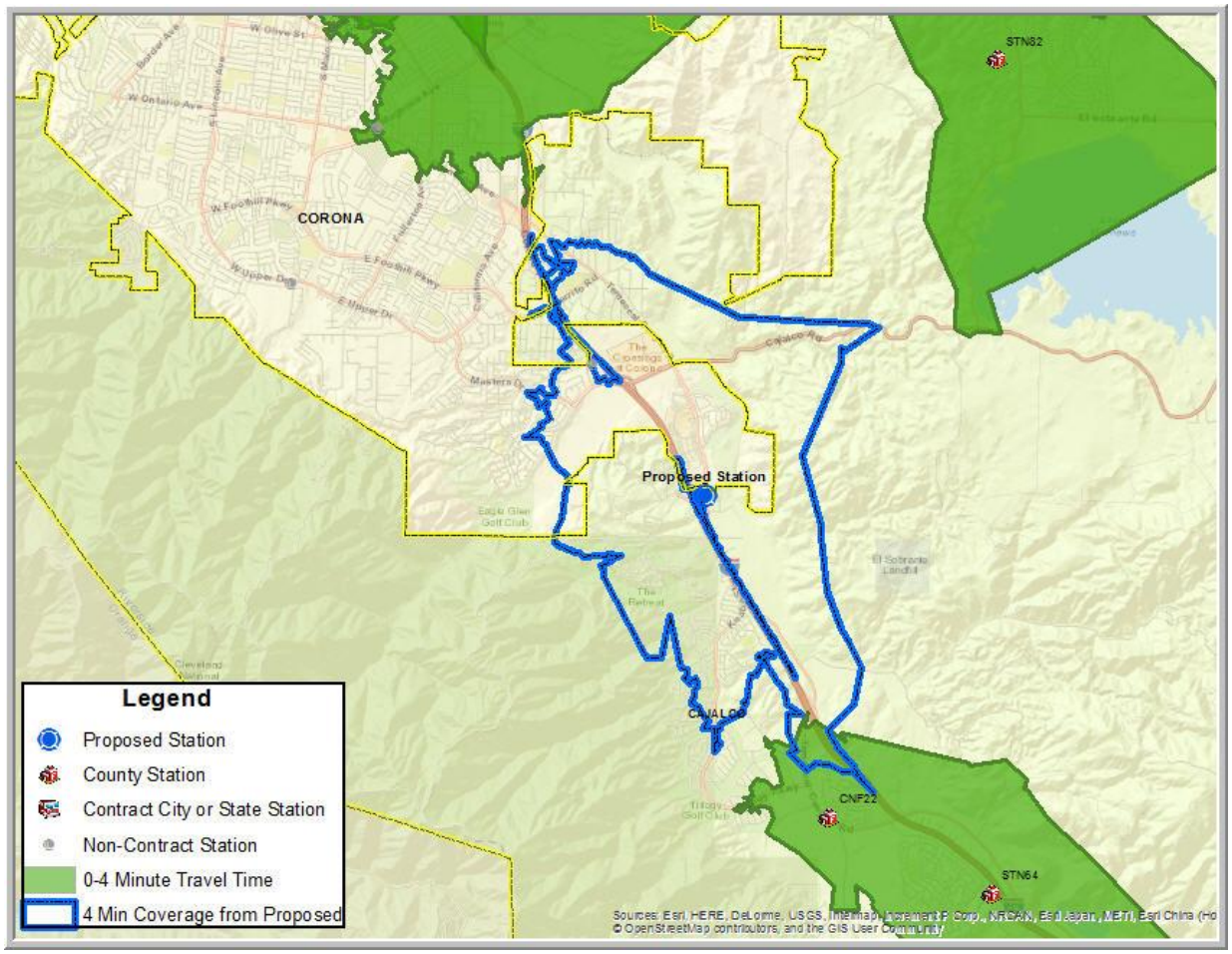
Figure 63: Cajalco Planning Area (South Proposed Station)



Recommendation 28: Construct a new station south of Lake Mathews and Santa Rosa Roads, north of Lake Elsinore.

Consider a New Station in the Western Cajalco Area, or Automatic Aid with Corona – The third coverage gap is in the southern region of Cajalco, south of Corona. State Station 22 is nearby, north of Station 64, but does not provide EMS or structural fire support; it responds only to wildland fires. The uncovered area runs along Interstate 15 and Temescal Canyon Road. Adding a station here would provide 4-minute coverage to both sections of the uncovered area, as shown in Figure 64. Corona is not currently a contract city, but does have a station between these two uncovered areas. Having an automatic mutual aid agreement for first response with Corona could be an alternative to building a new station, and would provide the 4-minute coverage to most of the uncovered area.

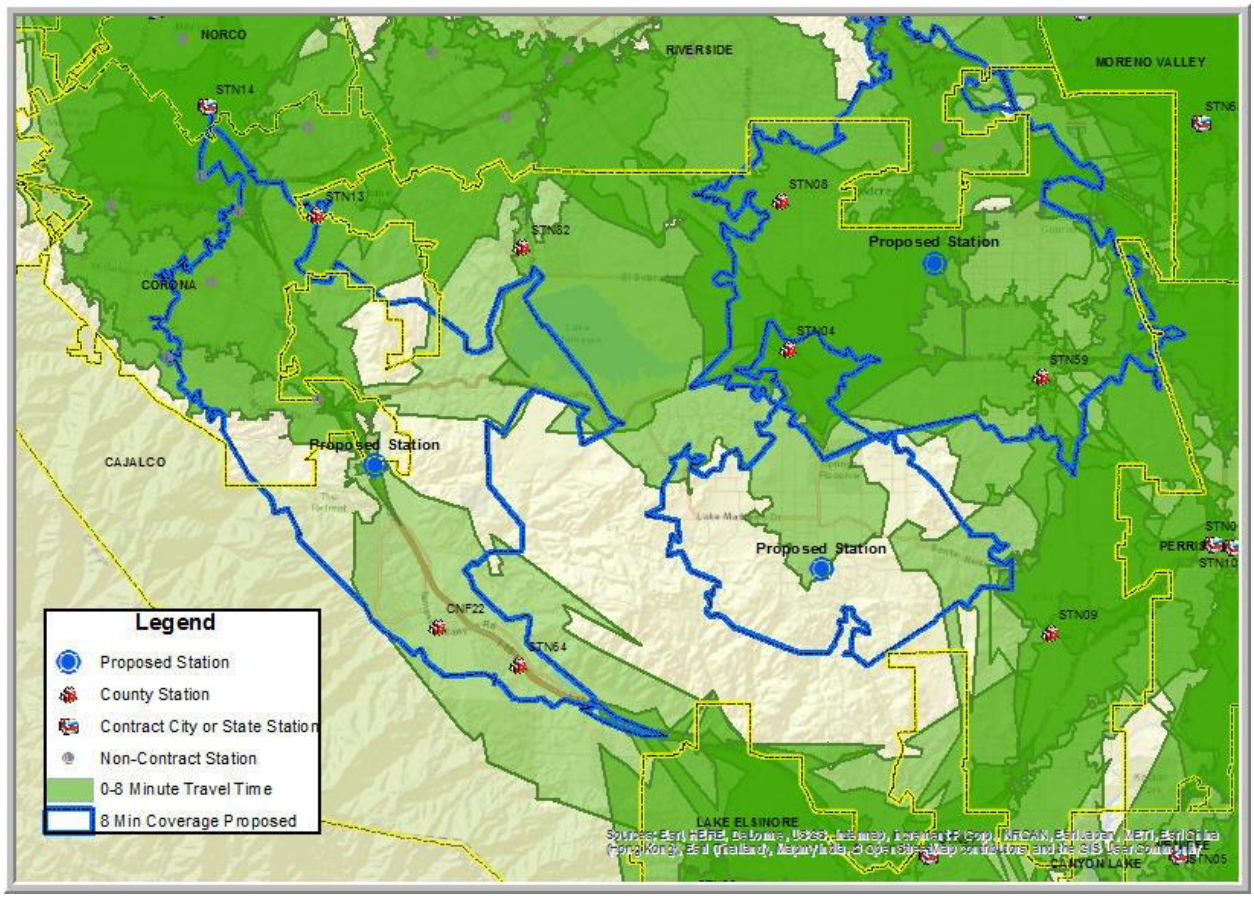
Figure 64: Cajalco Planning Area (West Proposed Station)



Recommendation 29: Construct a new station in the Western portion of the Cajalco area north of Station 64 along the Temascal Canyon Rd area. Or as an alternative, consider an automatic mutual aid agreement with Corona to provide initial response to the area for coverage.

By adding these three recommended stations, initial coverage would be improved where there are currently 4-minute gaps in service within the Cajalco planning area. Eight-minute coverage from these proposed stations will also increase to areas not previously covered, and would provide some needed overlap with Station 64 in the south, as shown in Figure 65.

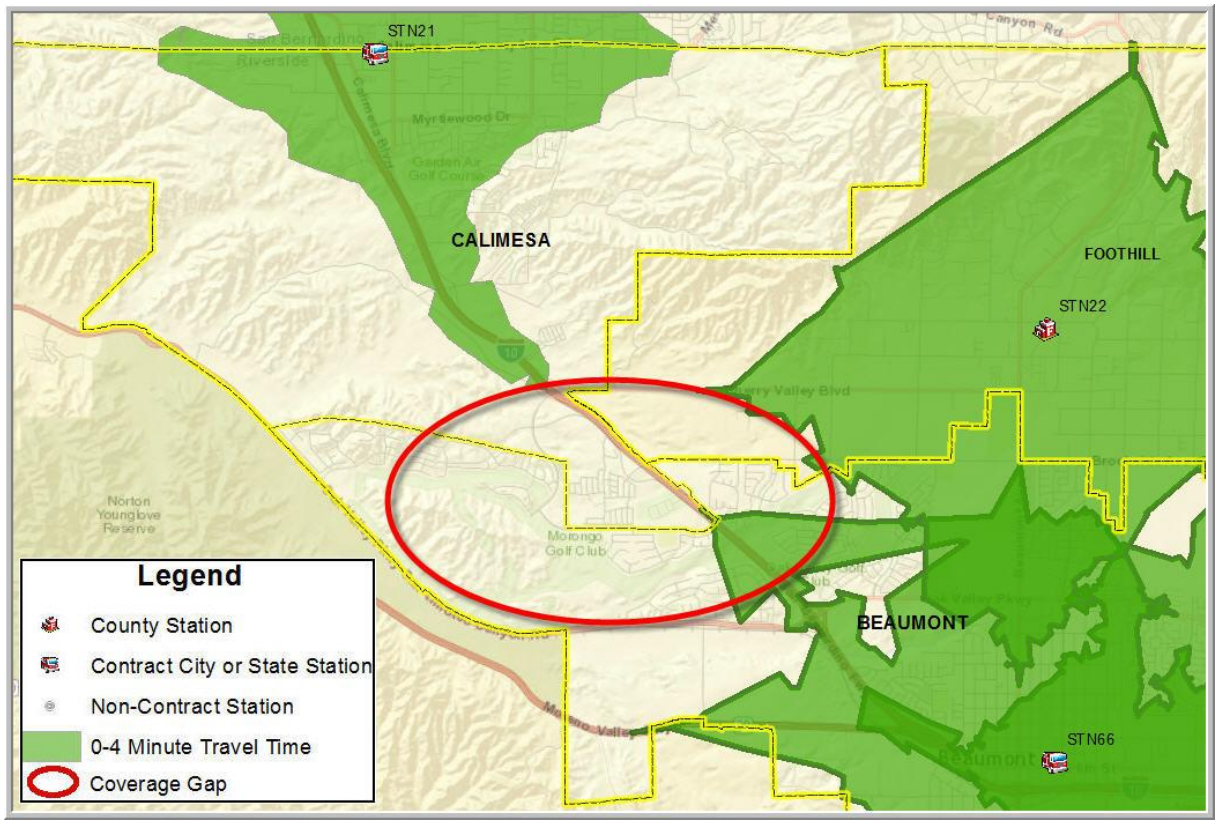
Figure 65: 8-minute Coverage From the Three Proposed Stations



Foothill

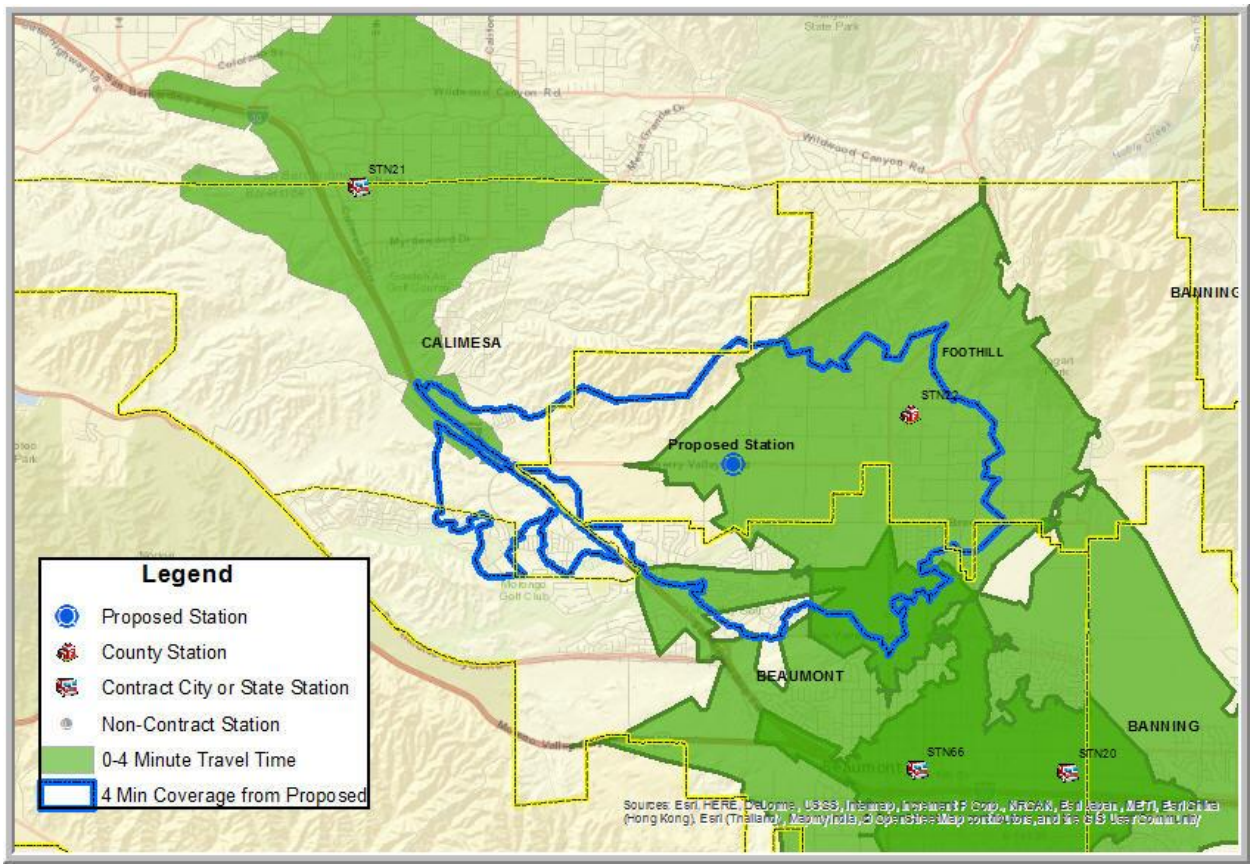
The second planning area requiring attention is the Foothill area. It is split into three sub-areas. Of most concern is the north central section east of Calimesa and north of Beaumont. Figure 66 shows the coverage gap area in red. There is not much development in the northern portion of the Foothill area. Most of the development, population and calls for service are south and west of the current station. Beaumont and Calimesa are currently contract cities, but cannot reach this area which borders on the three jurisdictions. Station 21 in Calimesa is on the city's border and if relocated could improve coverage while still adequately covering the city.

Figure 66: Foothill Area Coverage Gap



Relocate Station 22 in the Northern Foothill Area – The uncovered area encompasses parts of the three jurisdictions. The populated areas are south and west of Station 22. If Station 22 were to be moved west along Cherry Valley Boulevard, it would provide first due response to this uncovered area. The new Station 22 will still provide good coverage to the populated area to the east, and the 4-minute additional overlap as shown on the map in Figure 67.

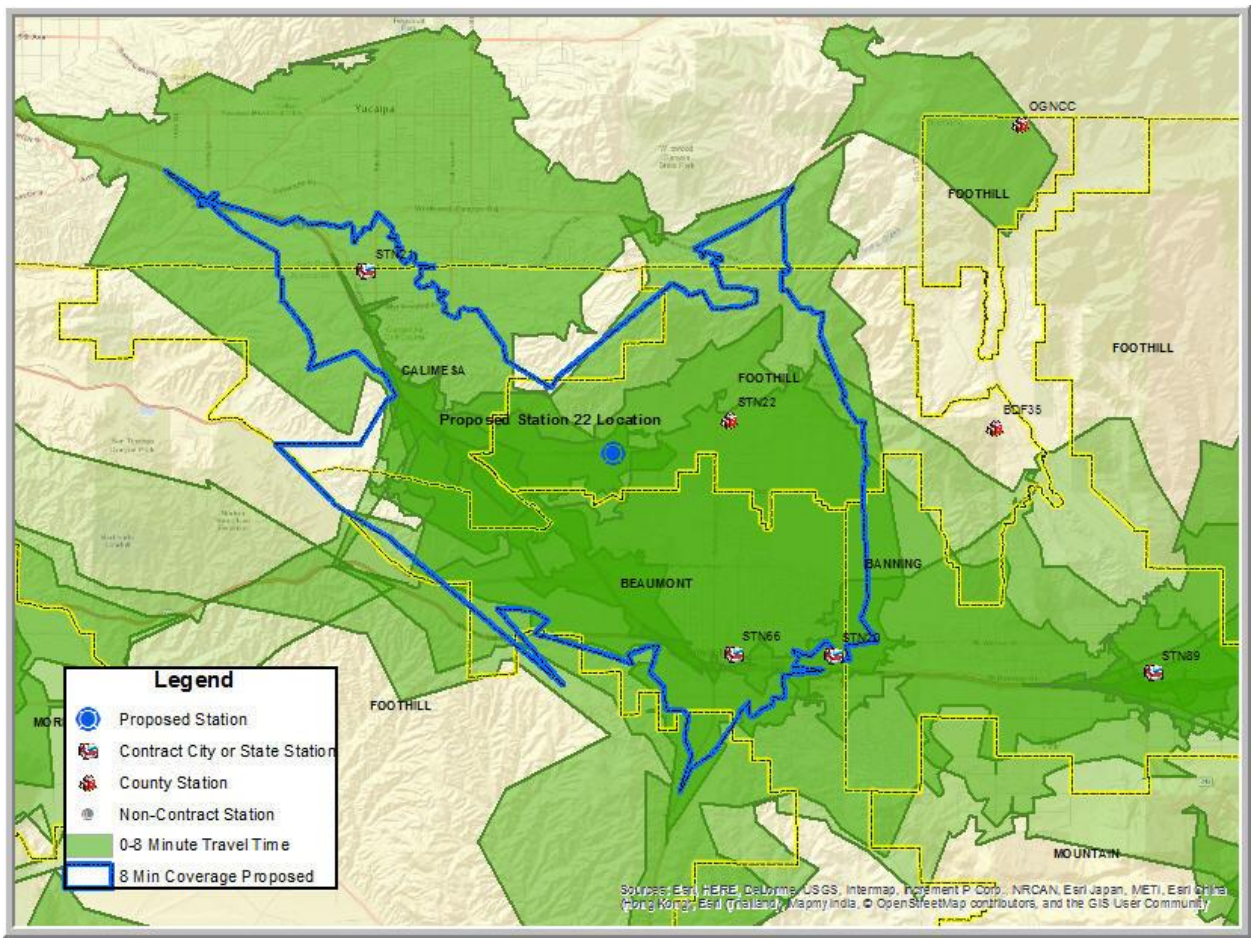
Figure 67: Proposed Station 22 Relocation



Recommendation 30: Relocate Station 22 to the west along Cherry Valley Boulevard to fill the 4-minute response gap in the northern Foothill area. At the same time, consider relocating Station 21 southward near Singleton Road and I-10.

With Station 22 relocated to the west, most of the area could be reached with an initial response of a 4-minute travel time. The map in Figure 68 shows that the entire area would be covered in eight minutes, and would provide a good level of overlap throughout the area.

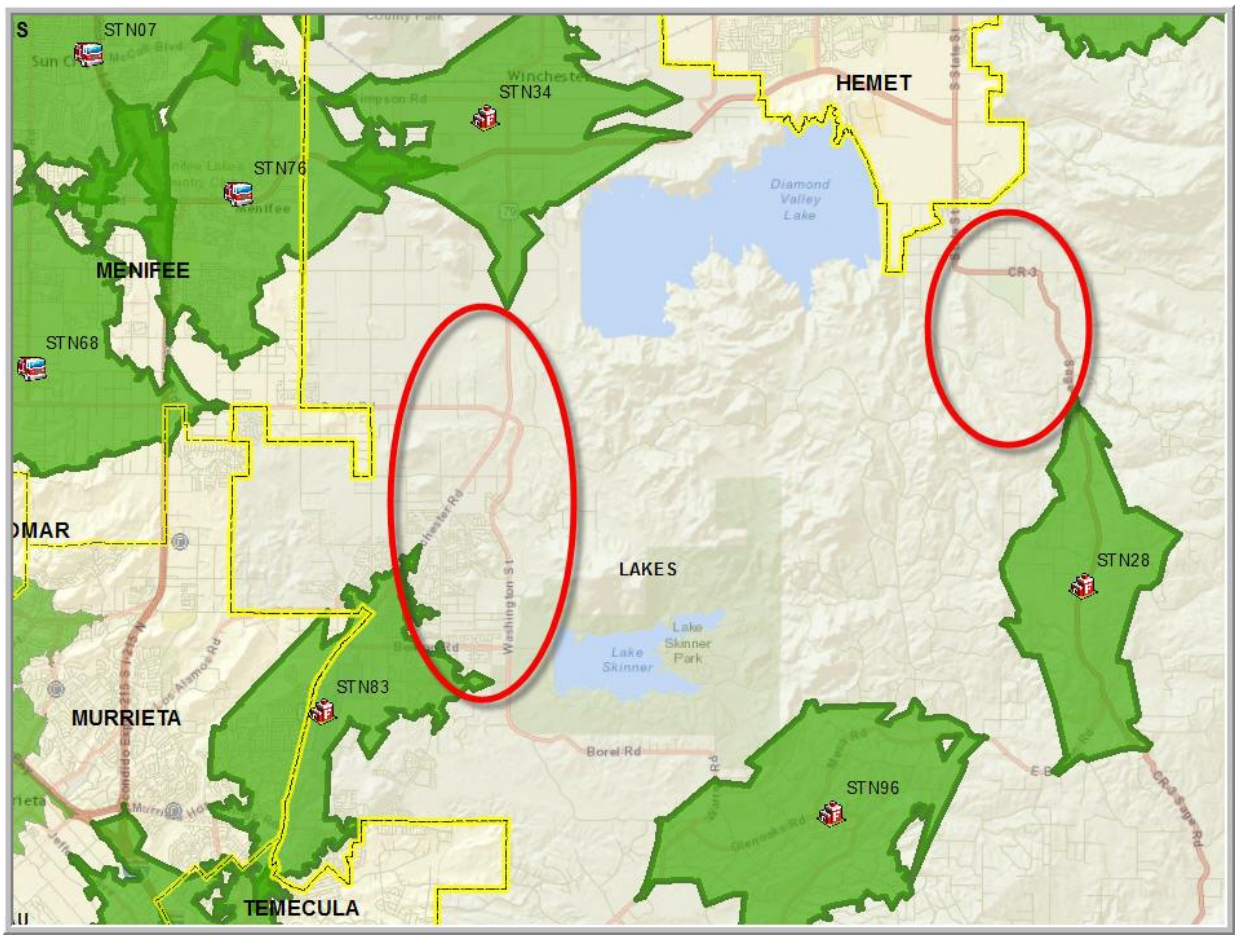
Figure 68: Proposed Station 22 Relocation 8-minute Coverage



Lakes

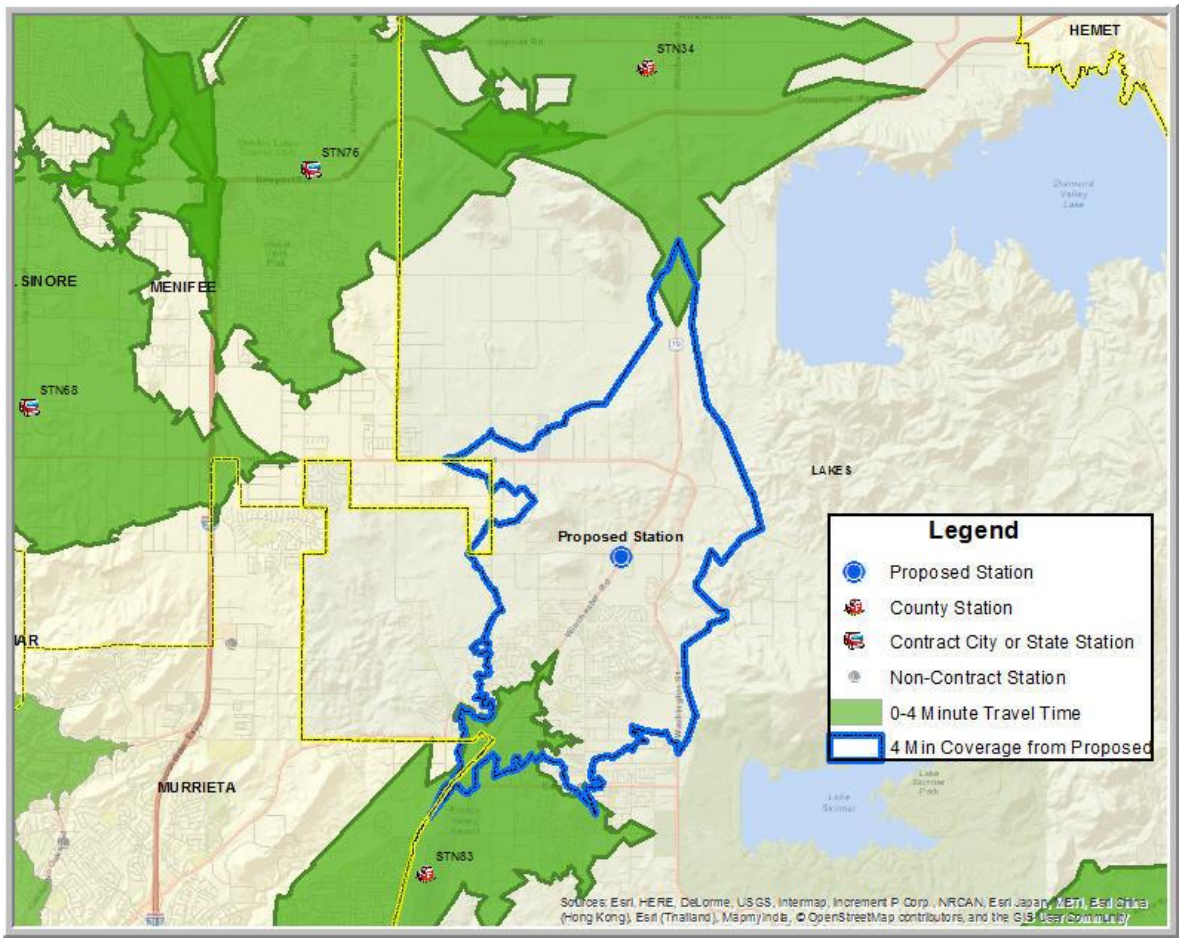
One of the highest priorities for eliminating coverage gaps is in the western Lakes planning area. Significant development has already taken place here and future development is expected to take place in the areas along Winchester Road and Washington Street. There is already a 4-minute coverage gap in that area, and also in the central area. Figure 69 show these two coverage gaps.

Figure 69: Lakes Area Coverage Gaps



Construct a Station in the Western Lakes Area –This area is just east of Menifee which is a contract city. Winchester Road runs down the center of this uncovered area. Station 83 is about four miles south of the area, and cannot reach it in four minutes. Station 34 is 5.5 miles to the north. With no current 4-minute coverage and projected development planned for the area, this should be one of the first places to add a new station.

Figure 70: Lakes Proposed Station (West Location)

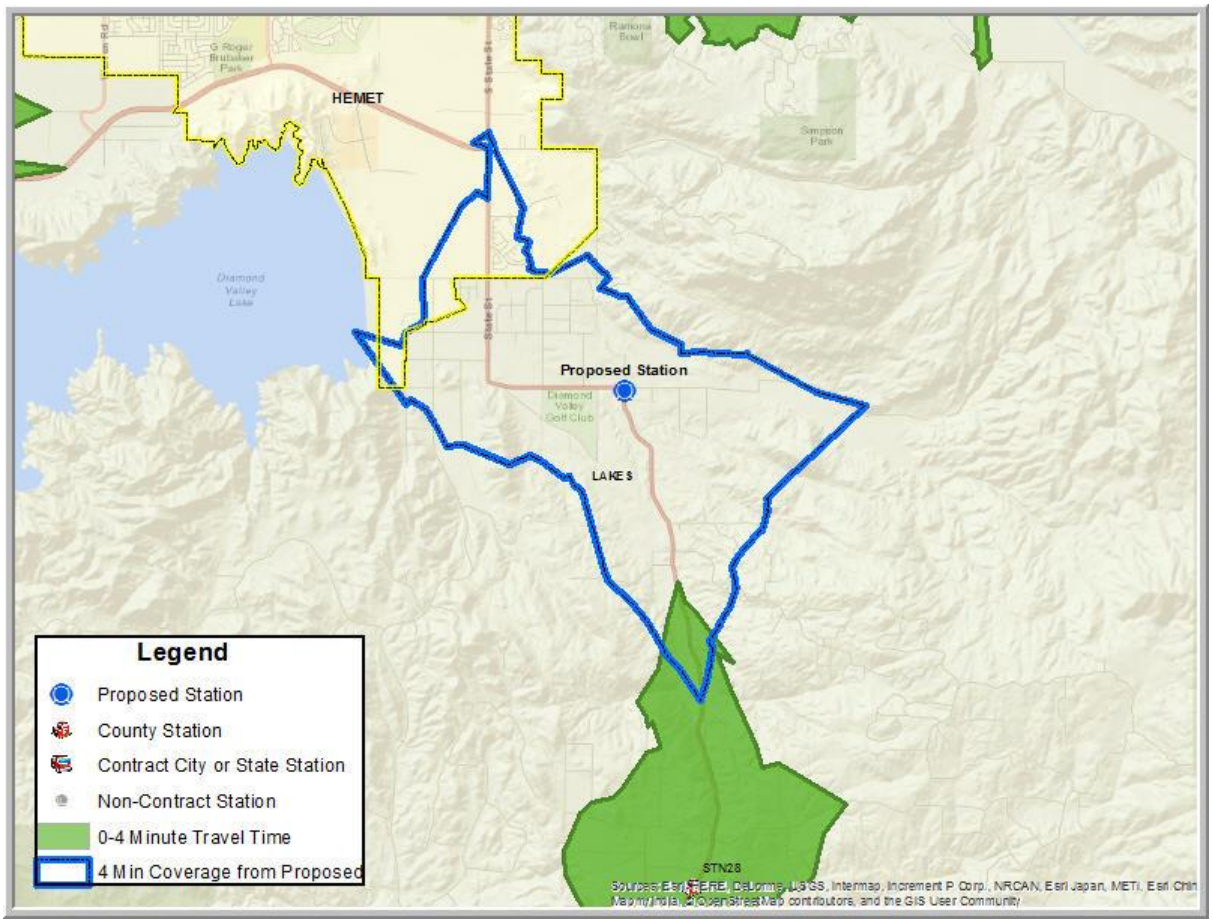


Menifee is a contract city but units from neither of their stations nor Riverside stations can reach the uncovered area in four minutes. Figure 70 show that a proposed station here would close the coverage gap and be in position to respond to additional calls in future developed areas.

Recommendation 31: Construct a new station in the Western portion of the Lakes planning area along Winchester Road, south of Scott Road.

Construct a Station in the Central Lakes Area –The area south of Hemet along Sage Road also contains a 4-minute gap in coverage. Hemet, a non-contract city, is the nearest city to this area and their closest station is about six miles away. The station can reach this area under eight minutes, if automatic aid were in place. For even better coverage, a new county station would cover the travel-time gap, plus provide redundancy for Station 28's area. Depending on its location, a new county station could also provide some coverage to southern Hemet.

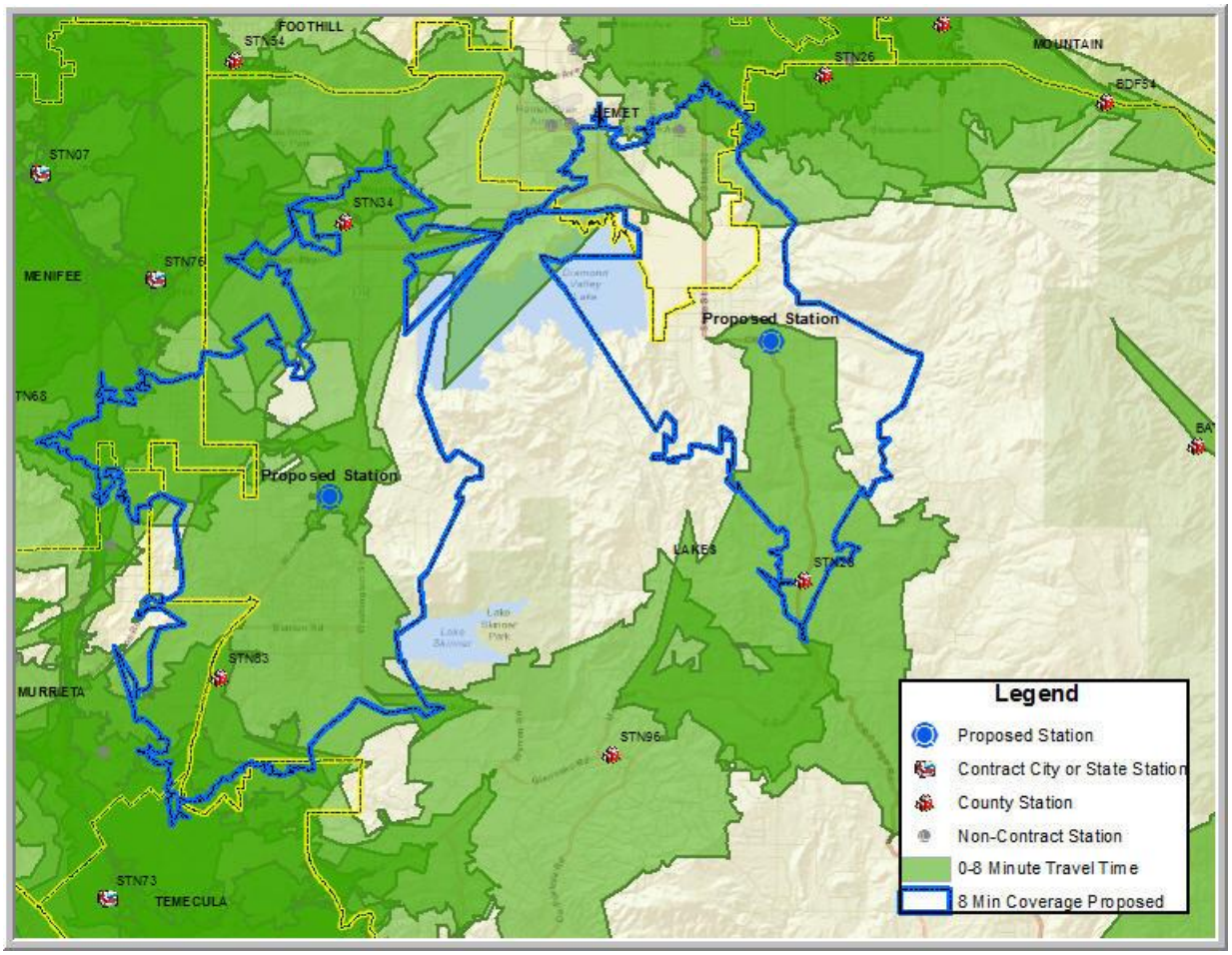
Figure 71: Lakes Proposed Station (Central Location)



Recommendation 32: Construct a new station in the central portion of the Lakes planning area along Sage Road, north of Station 28. Consider also an automatic-aid agreement with Hemet, especially short term until a new station id constructed.

With the addition of these two stations in the Lakes planning area, the 4-minute coverage gaps would be eliminated. There would also be a big improvement in overlap coverage throughout this region. These additions would also impact the areas around Stations 26, 28 and 83 to improve 8-minute coverage. Figure 72 show the coverage improvements that would be made by these two recommended stations.

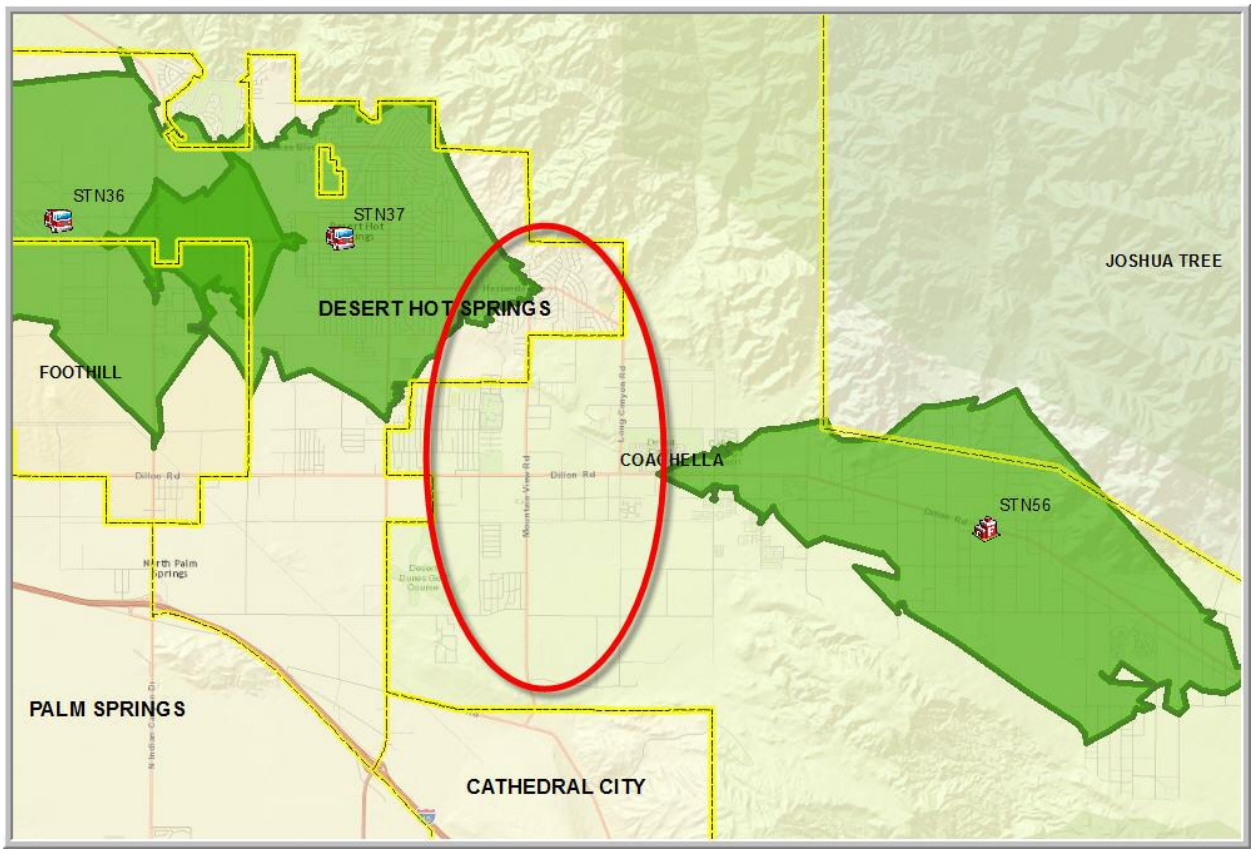
Figure 72: Lakes 8-minute Coverage with Proposed Stations



Coachella Valley

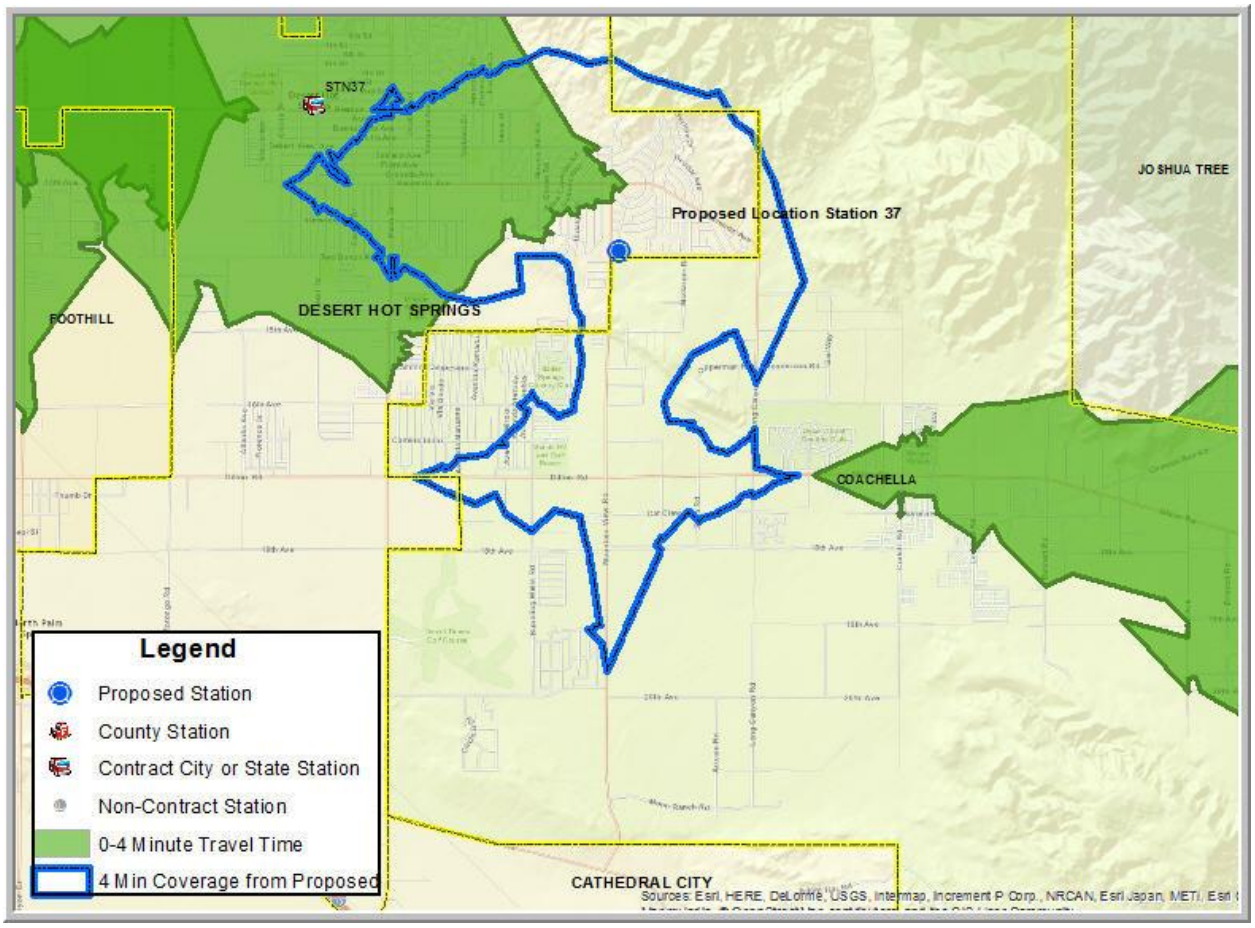
The Coachella planning area spans the center of Riverside County from north to south. Two areas have coverage gaps. The first and most critical area is in the north, east of Desert Hot Springs and northwest of Station 56. Figure 73 show the location.

Figure 73: Coachella Coverage Gap Area (North)



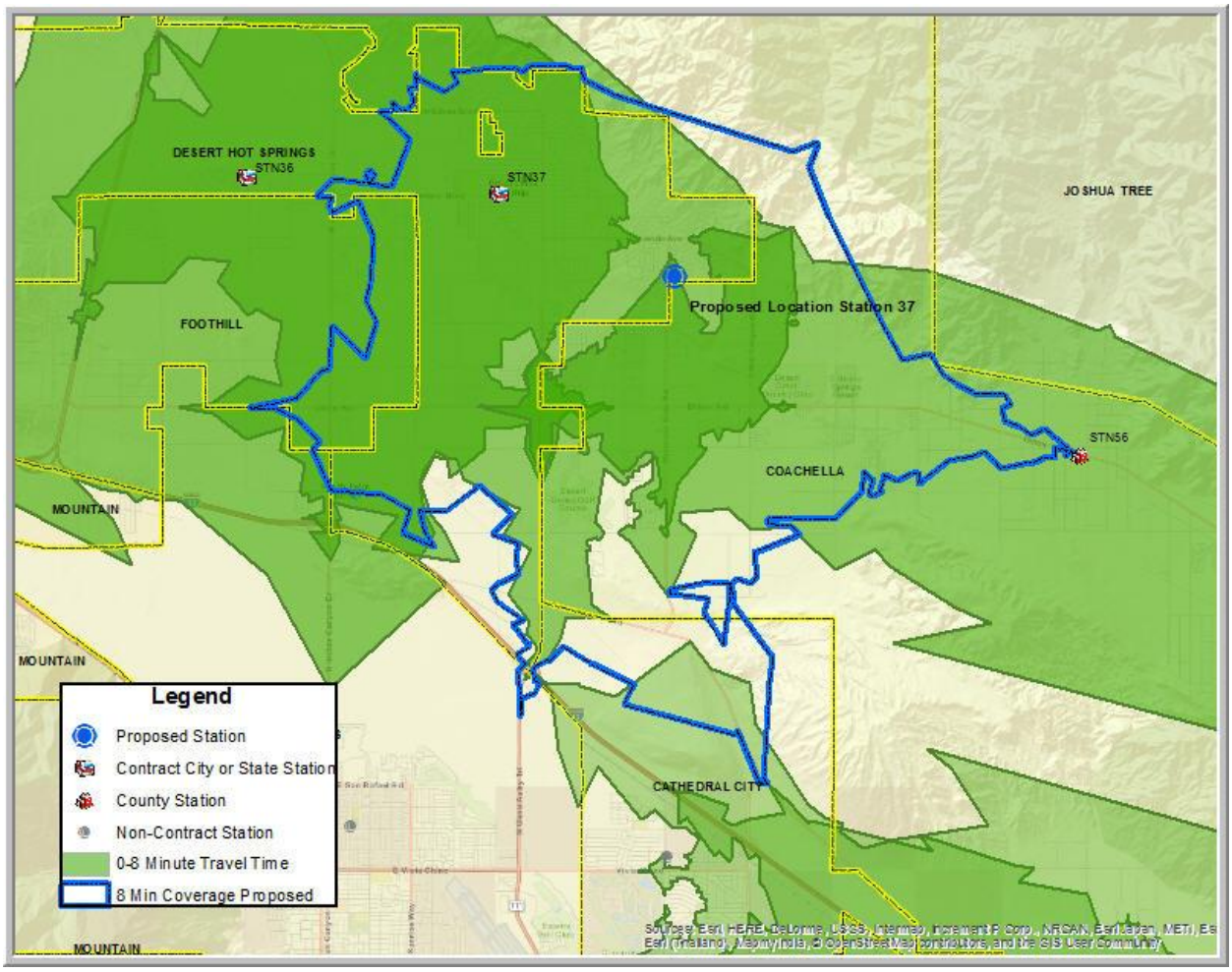
Relocate Station 37 or Construct a new Station in the north Coachella Area – There is a high demand for service in this area, especially EMS calls. Desert Hot Springs is a contract city and has two fire stations, Station 36 and Station 37. Station 37 would be able to reach this area if it was further south and east. Riverside County Station 56 cannot reach the area within a 4-minute travel time. By moving Station 37 east, the area would be covered. Figure 74 shows the extent of coverage if the station was moved.

Figure 74: Coachella Station 37 Relocation (North Area)



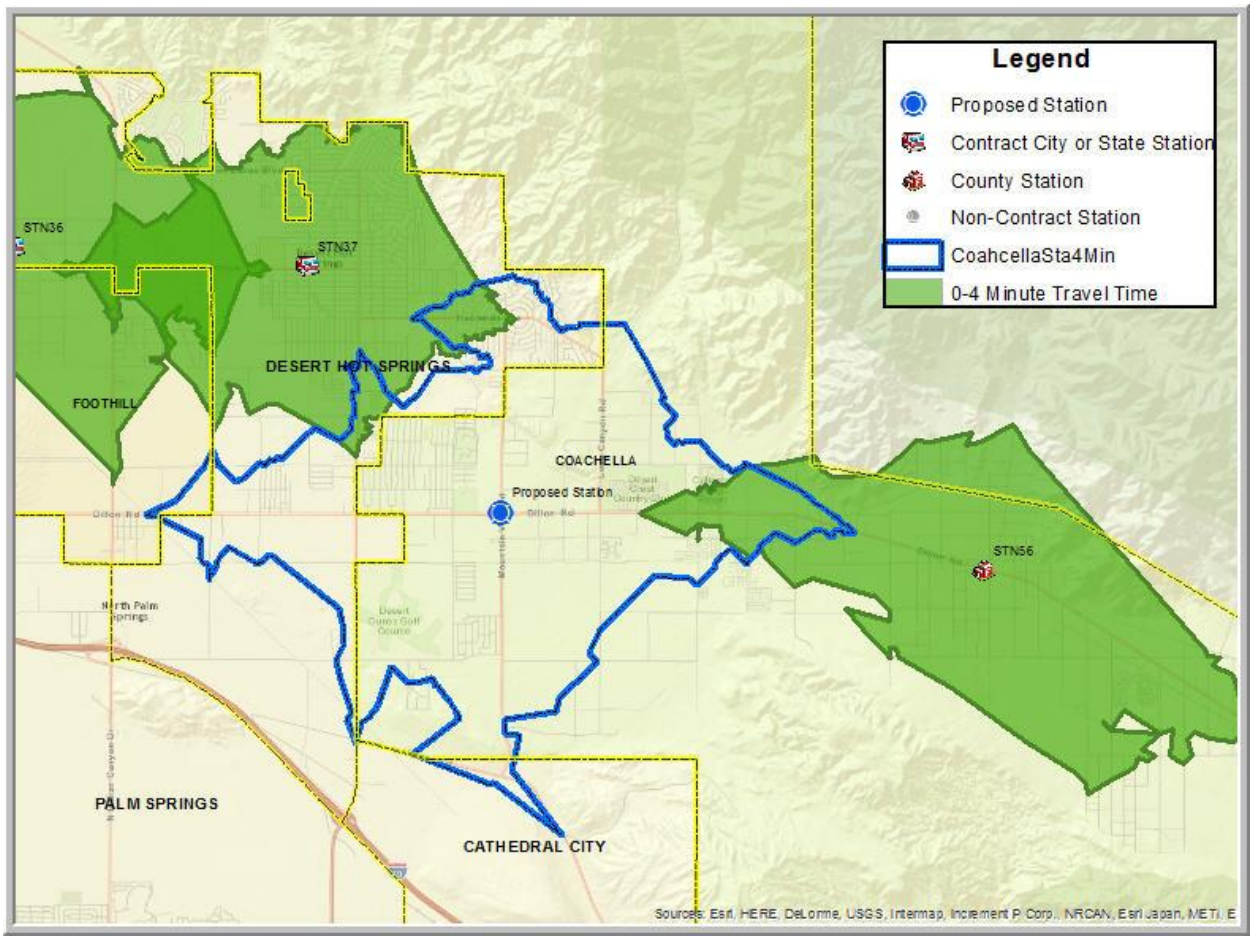
Most of the uncovered area would then be covered in eight minutes, while still providing good coverage east of Station 37. There is currently 4-minute overlap with Station 36 which would allow Station 37 to move east and still have good coverage. Figure 75 show that all of the uncovered area would be covered within eight minutes, and provide additional overlap with Station 56 to the south.

Figure 75: Coachella 8-minute Coverage with Relocated Station 37



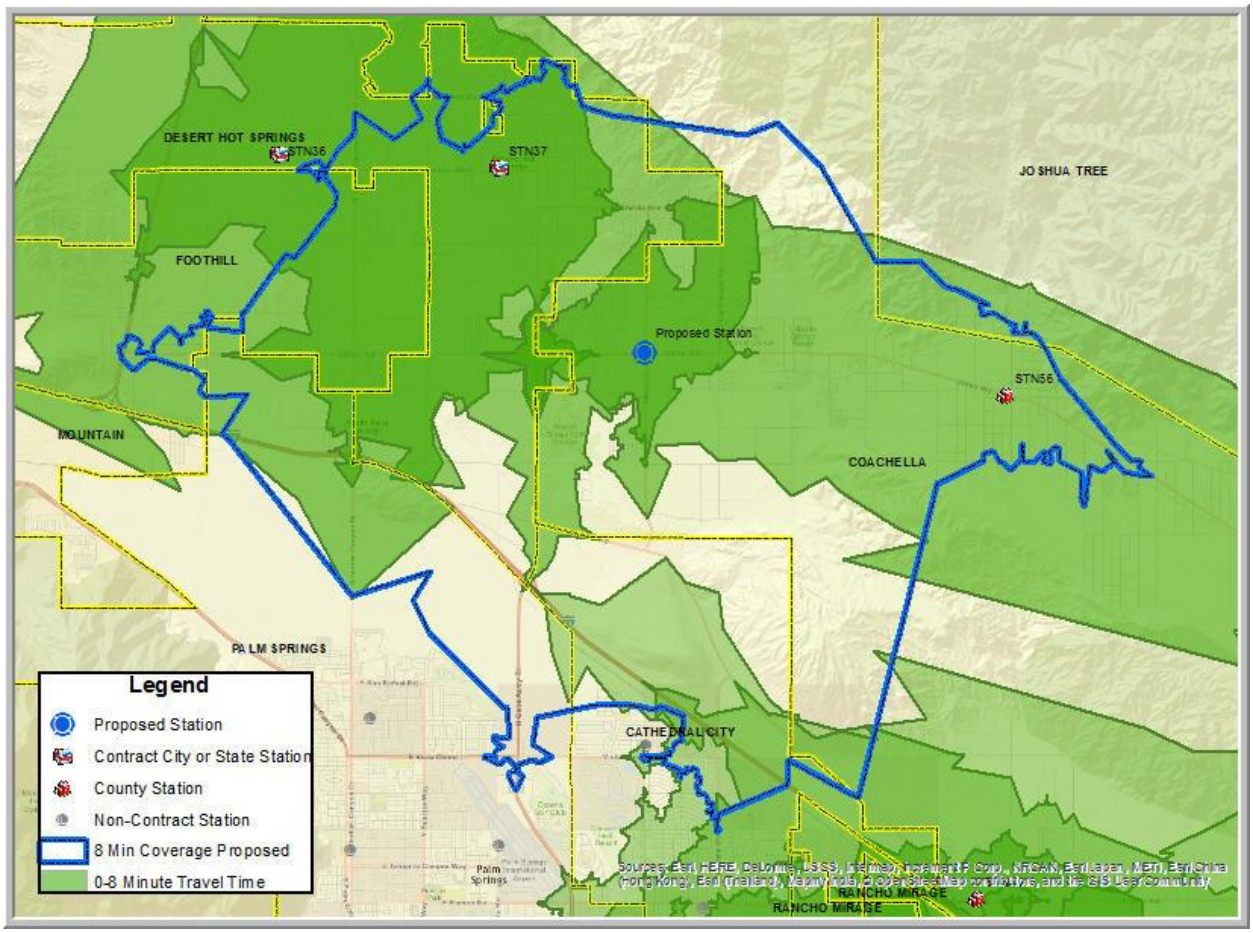
An alternative to moving Station 37 is to build a new station near the intersection of Mountain View and Dillon Roads. It would cover all of the currently uncovered area, and provide additional 4-minute coverage south of Desert Hot Springs and north of Cathedral City. The new station would also provide additional 4-minute coverage in Desert Hot Springs south of Station 37. Figure 76 shows the improved coverage of the new station.

Figure 76: Coachella Alternate Proposed Station (North Area)



The map in Figure 77 shows the expanded 8-minute coverage of adding the new station, which alone almost covers all of Desert Hot Springs. Very good 8-minute overlap would be provided in the northern Coachella area with the addition of this new station.

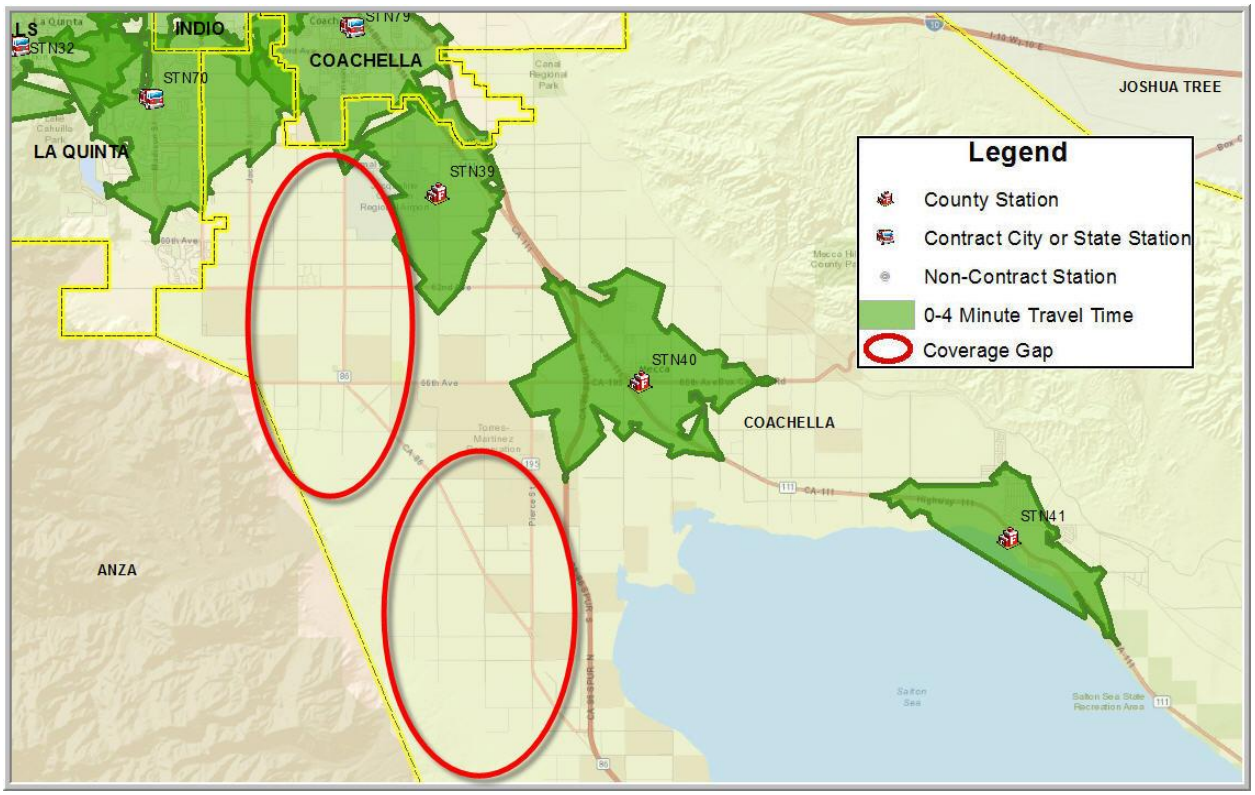
Figure 77: Coachella 8-minute Coverage with Alternate Proposed Station (North Area)



Recommendation 33: Relocate Station 37 south of Hacienda Avenue along Mountain View Road near the Desert Hot Springs border. Or construct a new station in the northern section of the Coachella planning area near the intersection of Mountain View and Dillon Roads.

The second area that contains coverage gaps is in the southern portion of the Coachella unincorporated planning area. There is a vast area south of the City of Coachella, and east of La Quinta that is currently not covered. Most of the area is zoned agriculture, but its future development is expected to be significant. As it is now, much of the area cannot be covered even under the 8-minute travel time goal. Figure 78 show the areas in the south that contain coverage gaps.

Figure 78: Coachella Coverage Gaps (South Area)



Construct a new station in the southern Coachella Area–Station 39 and Station 40 are the nearest stations to this area, but cannot reach it within a 4-minute travel time. Adding a station here would provide improved initial coverage to the area. Figure 79 show the 4-minute coverage of one station. Figure 80 show the 4-minute coverage of two stations which would cover the extended portion of the area to the southern border. The need to construct these stations will depend on the development that takes place and increase in demand in the area.

Figure 79: Coachella First Proposed Stations (South Area)

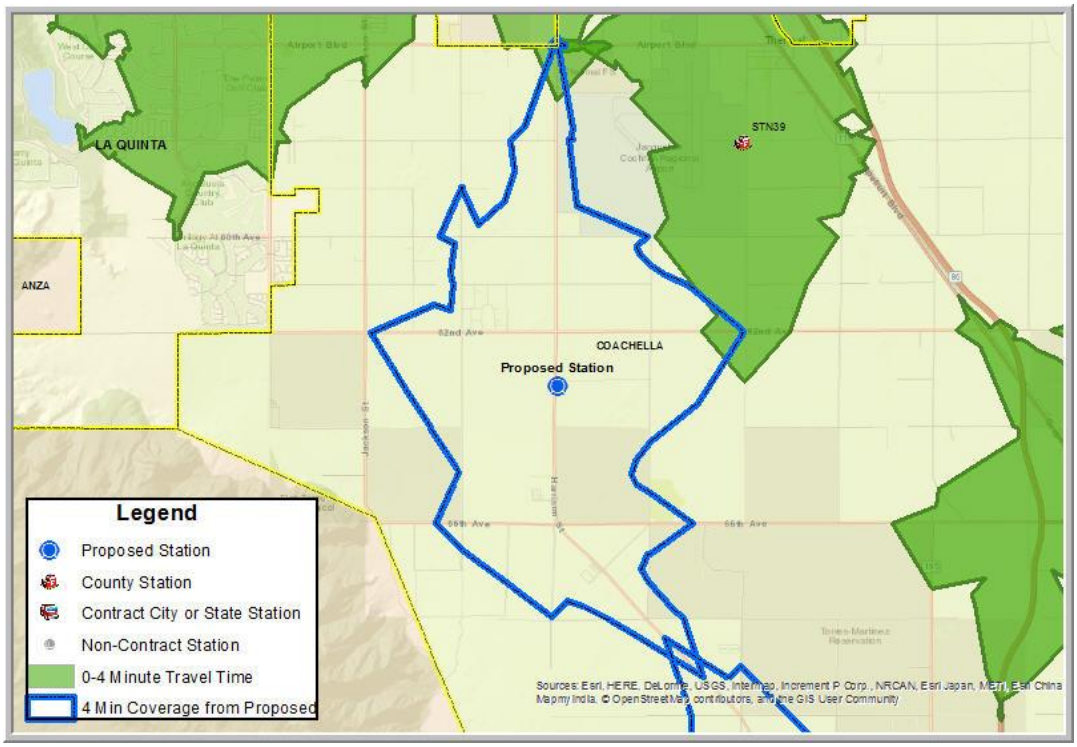
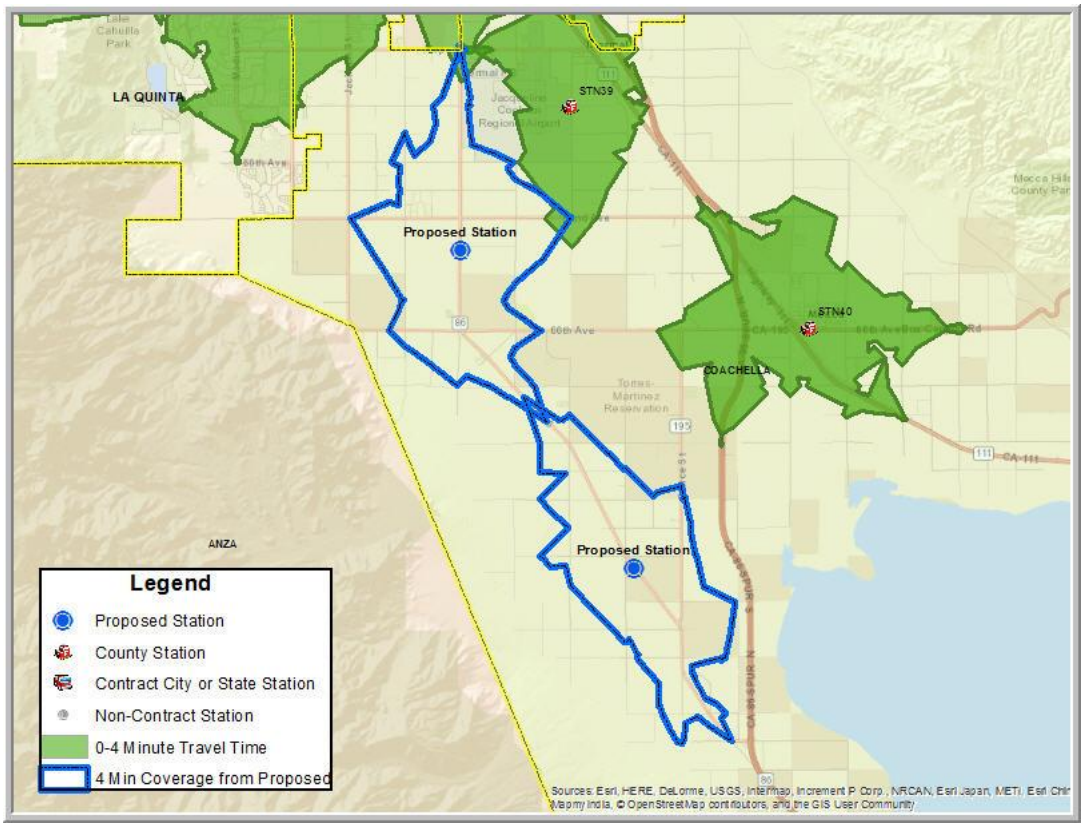


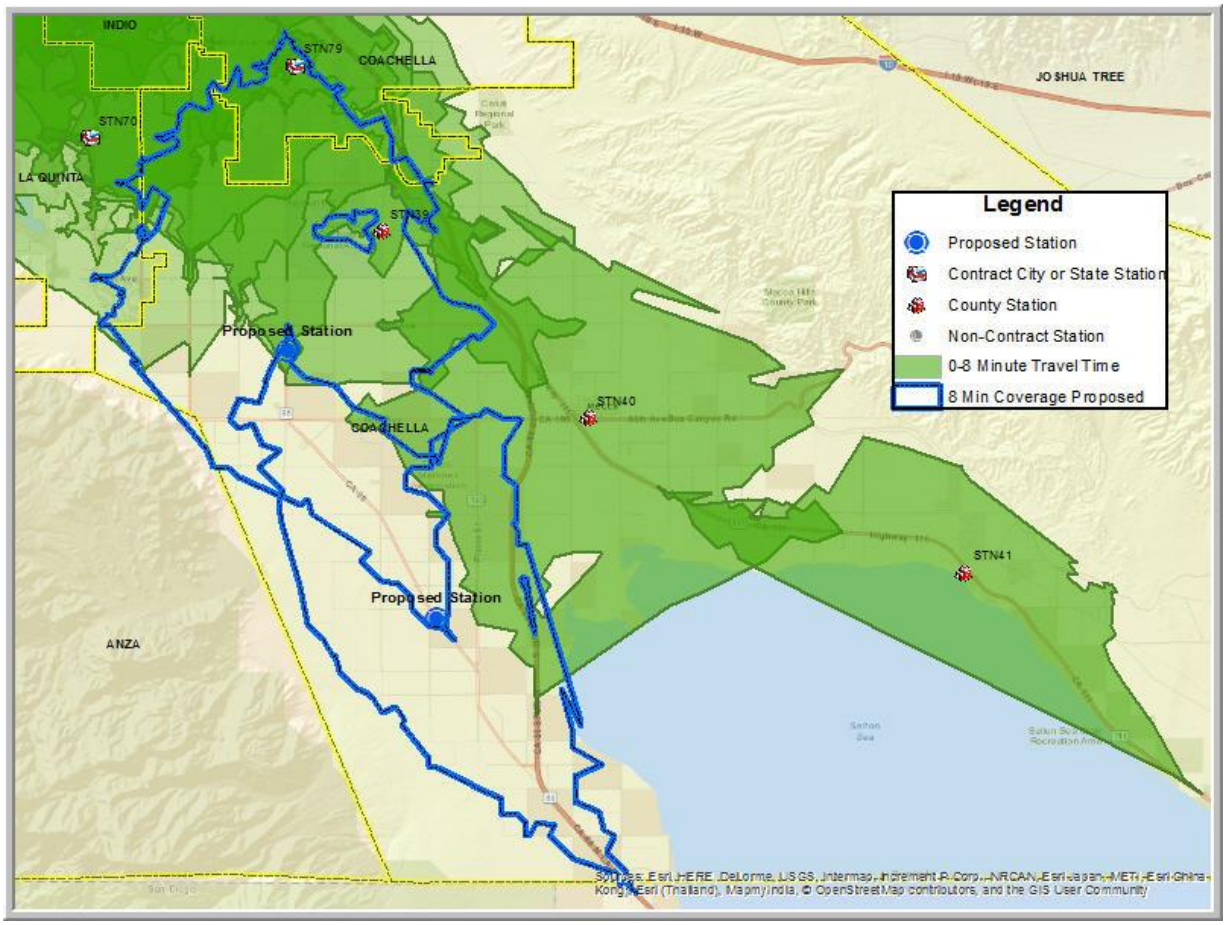
Figure 80: Coachella Second Proposed Stations (South Area)



Recommendation 34: Build a Station along Harrison Street, south of 62nd Avenue. In 5 to 10 years build the second station along Harrison Road, north of the intersection of Pierce Street.

The map in Figure 81 shows the 8-minute coverage of the two stations. Most of the area to the southern border would be covered in eight minutes. The addition of the new stations would also create additional overlap coverage with existing stations, as well as add new overlap in the south.

Figure 81: Coachella 8-minute Coverage with Proposed Stations (South Area)

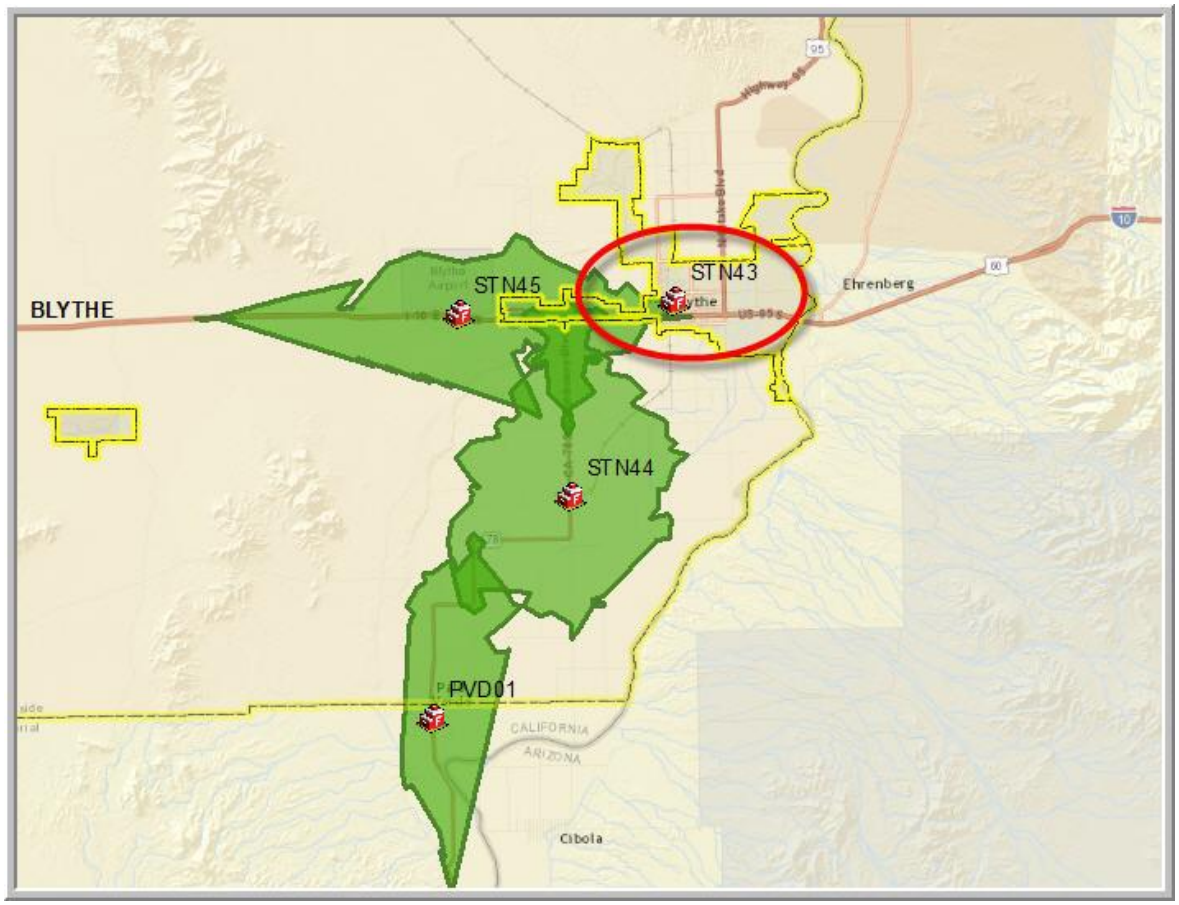


Blythe

The unincorporated Blythe planning area is located in the far east of Riverside County. The County has two stations in close proximity in the area which has a low call volume (Station 43 and Station 45). Station 43 is located in the City of Blythe. Blythe is not currently a contract city.

Close Station 43 and Consolidate with Station 45 – Station 43 is located in the City of Blythe where Riverside County does not provide service. Assets from Station 43 can be redistributed to Station 45 and the station closed. Figure 82 shows the 8-minute coverage from the existing stations in Blythe with Station 43 closed circled in red.

Figure 82: Blythe 8-minute Coverage with Proposed Station 43 Closed



Recommendation 35: Close Station 43 and consolidate with Station 45.

Temecula

Temecula is one of the contract cities located in the southwest Riverside County. Three fire stations, 12, 73, and 84 are all located within two miles of each other. A fourth station, (Station 95), was constructed by a developer but is not presently being used. One of the three active stations (12) is a state-owned and staffed facility that also has city units co-located.

Relocate Resources from Station 12 to Station 95 – Station 12 along with Stations 73 and 84 provide an over saturation of four minute coverage, while the northern area of Temecula is not covered within four minutes. A more efficient deployment would be to move the city units from Station 12 to Station 95, which would not only improve coverage to northern Temecula, but also improve coverage to the developing unincorporated area outside of Temecula, south of Lake Skinner. Figure 83 shows the 4-minute coverage of Stations 12, 73 and 84 along with Station 95 coverage area.

Figure 83: 4-minute Coverage with Proposed Station 95

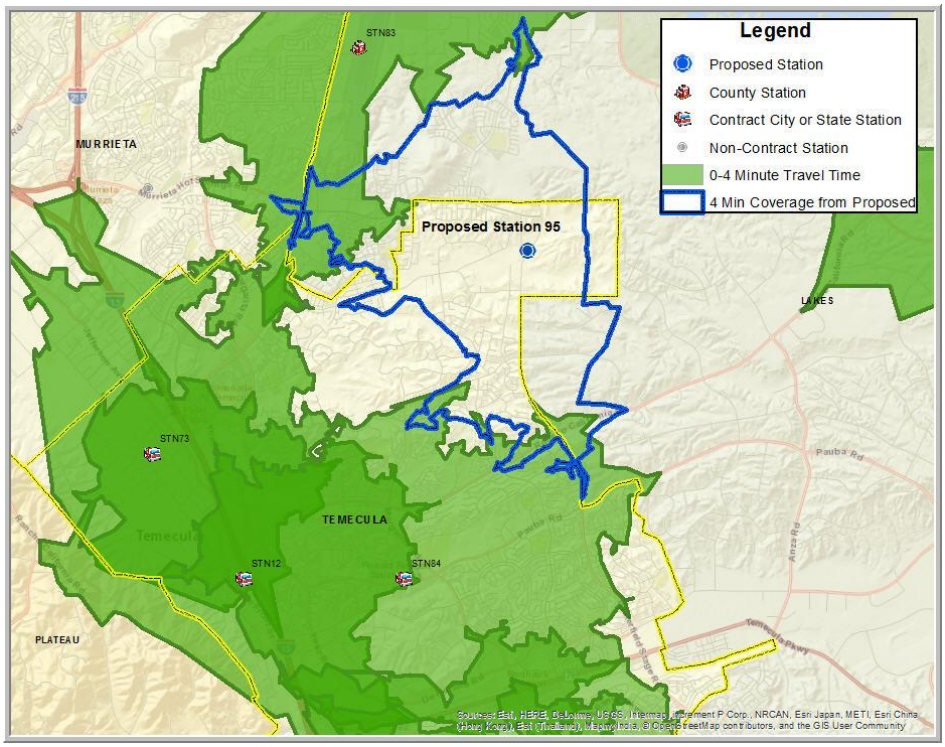
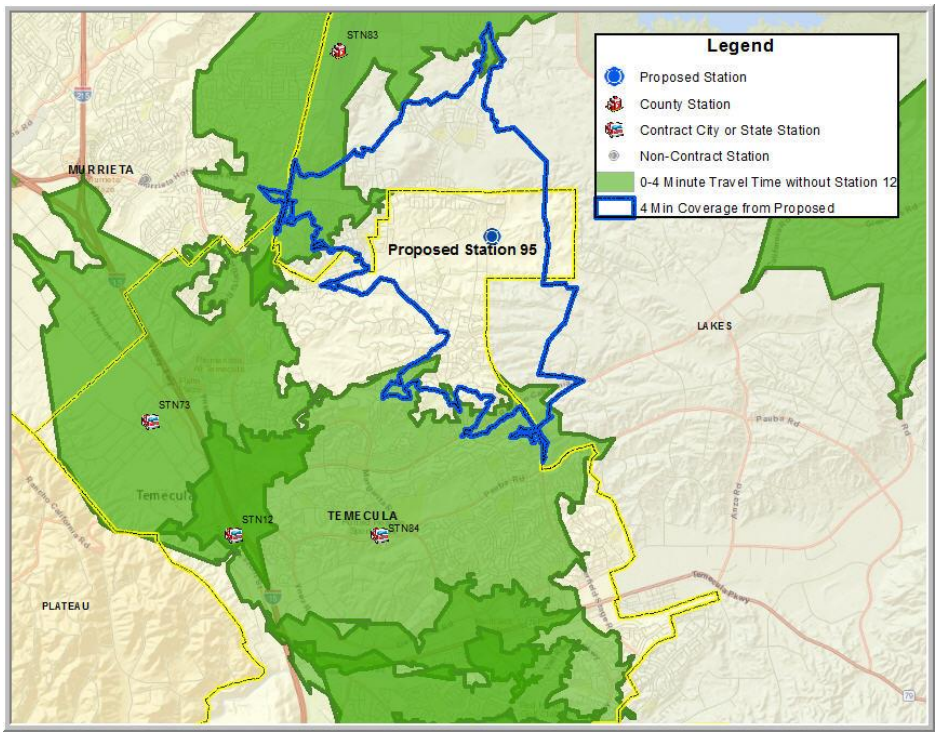


Figure 84 shows this area covered by just Stations 73 and 84 in four minutes. Looking at the map one can see that the area is covered with overlap between the two stations. The area to the north would be covered in four minutes as well by Station 95.

Figure 84: 4-minute Coverage without Station 12 Units

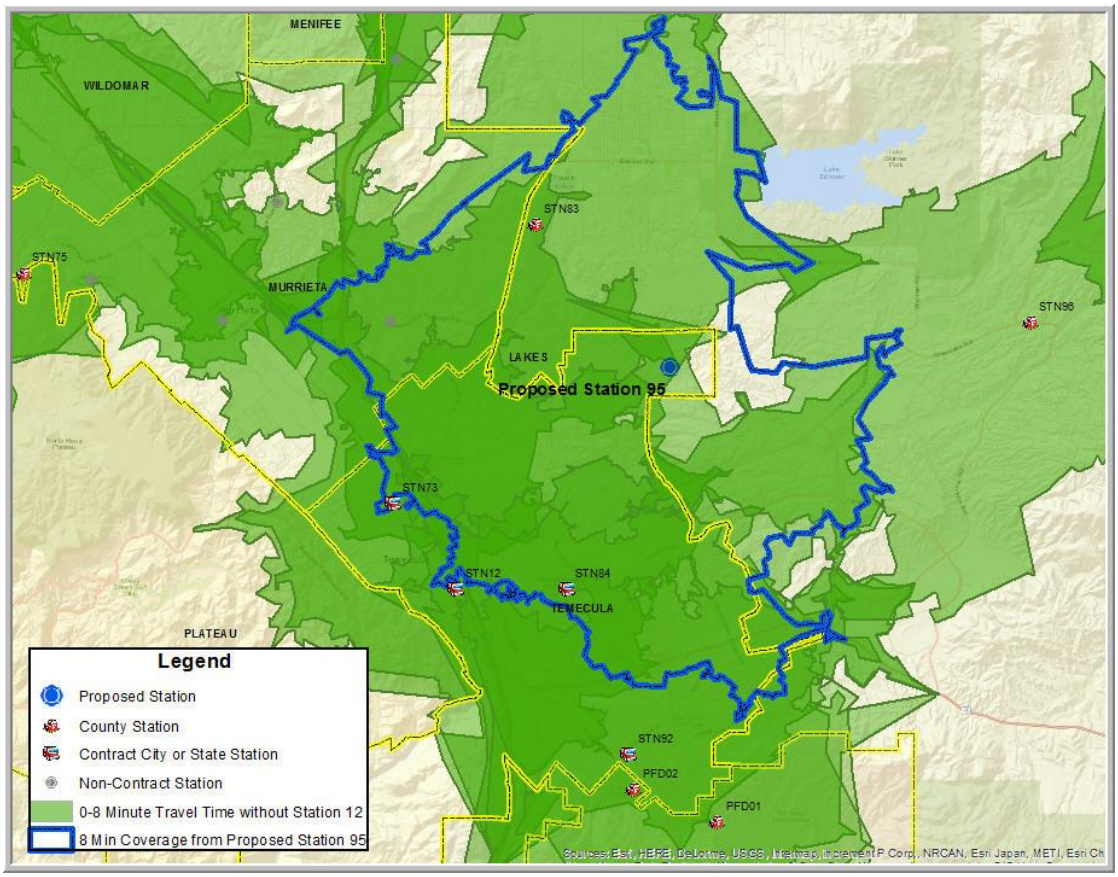


The state engine at Station 12 and the next closest engine at Station 84 can provide excellent coverage for central Temecula. By moving the County's Type 1 engine at Station 12 to Station 95 service to northeast Temecula and parts of the county are improved. There is also a coverage gap west of Temecula in the Plateau/DE Luz area, which could be improved by moving Station 75, which has overlapping coverage with Station 61. Demand is low in Plateau/ DE Luz but the risks are higher, primarily because of the topography and large properties. The priority is to move the engine from Station 12 to Station 95 and then review the results and determine whether Station 75 should be relocated.

Recommendation 36: Activate Station 95 and relocate the city-owned units from Station 12 to Station 95.

The map in Figure 85 shows the 8-minute coverage without Station 12 and added coverage from Station 95. All of Temecula would be covered in eight minutes with considerable overlap throughout most of the area. The 8-minute coverage from Station 95 would also add new 8-minute overlap to the Lakes area to the east of Station 83 which currently does not exist.

Figure 85: 8-minute Coverage without Station 12 Units



Summary of Station Changes

Eleven fire station changes are recommended by this study: seven new stations, two station relocations, opening a station already constructed but unused, and closing one station. The majority of changes are to cover unincorporated planning areas where demand is already high and where increases are expected with new development and population growth.

Cajalco Planning Area (three new stations)

- North of Station 59 and Station 4, and southeast of Station 8
- South of Lake Mathews and Santa Rosa Roads, north of Lake Elsinore
- North of Station 64 along the Temescal Canyon Road area

Foothill Planning Area (one station relocation)

- Move Station 22 west near Cherry Valley Boulevard

Lakes Planning Area (two new stations)

- Western Lakes along Winchester Road south of Scott Road
- Central Lakes along Sage Road, north of Station 28 (also consider an automatic-aid agreement with Hemet)

Coachella Valley Planning Area (one station relocation and two new stations)

- Relocate Station 37 south of Hacienda Avenue along Mountain View Road near the Desert Hot Springs border (alternative is to add a new station in the northern section of the Coachella planning area near Mountain View and Dillon Roads)
- New station along Harrison Street, south of 62nd Avenue
- New station (5 to 10 years) along Harrison Road, north of the intersection of Pierce Street

Blythe Planning Area

- Close Station 43(and consolidate personnel at Station 45)

City of Temecula

- Open Station 95 and relocate units from Station 12 to 95

CHAPTER VII. CONTRACT FEE ANALYSIS

As discussed in the previous chapters, the RCFD provides fire and EMS services to 21 cities, the County's unincorporated areas, and one community service district. RCFD also provides contracted dispatch services for the County, the contract cities, three additional tribal organizations, and a fire protection district.

Each jurisdiction negotiates with RCFD about the staffing and services it receives. As part of the contracts, a cost sharing methodology is used to determine the amount each jurisdiction should pay the County for the services provided. Although RCFD tries to plan and operate as if it were one regional system, each jurisdiction including the County determines the level of service and station staffing it can afford. The RCFD must plan and operate within the context of all the different constraints and parameters established by the contract cities and the County.

The cost allocation analysis in this chapter:

- Identifies historical administrative and support costs and staffing trends,
- Reviews the current cost allocation methodologies, and
- Suggests alternative cost allocation and funding formulas.

Background

The RCFD's 2009 Strategic Plan noted that contracts were confusing and out of date and that there was a lack of transparency about costs and cost containment measures. With its goal to maintain a strong relationship with its partners, the RCFD identified strategies to engage its partners in modifying the basic contract, making costs transparent, and obtaining feedback about services, costs, contracts and other issues.

The County contracts with CAL FIRE to provide the uniformed fire personnel. The County provides services to many cities, special districts, and tribal organizations, and operates as part of the CAL FIRE system. There are two separate budgets for County services and contract city services. Given all this complexity, the funding and expenditures are not easily identifiable, and it is difficult to determine how the RCFD's resources and system are financed.

The County, the contract cities, and CAL FIRE (i.e. the State of California) combine resources to provide staff and equipment for the County and its contract cities as well as for CAL FIRE's needs during the wildfire season. State funded resources are part of the system, and the County and the cities are not charged for certain staffing or services that are state funded. For example, CAL FIRE funds several Battalion Chiefs, provides air support when necessary, and sends engine companies to support city and County operations.

CAL FIRE's costs associated with the RCFD are shown only as a total and are not specifically identified in the County's budgeting system. Consequently, many costs used in our analysis are based on estimates provided by RCFD staff and documents.

The County currently has two separate budgets, one for County (27002) support and services and one for all contract cities' (27004) costs. The County budget has all of the direct costs for County stations plus all of the administrative and support costs related to RCFD. The County unit spent a total of $120 million in FY 14/15 and budgeted $125.8 million for FY 15/16. The contract city fund includes all direct costs for city stations and totaled $80.2 million in FY 14/15 and $83.7 million for FY 15/16.

Cost Allocation Methodologies

For each contract, the County annually prepares an Exhibit A that details the estimated allocated and direct costs; each city is also billed the actual cost for its operational staff in addition to any direct costs that can be specifically identified to it. Several cities pay for additional services besides just an engine company or medic rescue squad, such as for ladder truck staffing and medic transport units.

To determine how to charge the contract cities for personnel, administrative, and support costs, RCFD currently uses 12 different cost allocation schedules. The contract city stations and the County are charged for the following support service programs based on specific allocation factors:

> Administrative Costs, the Volunteer Program, Medic/EMS Administrative Support, Battalion Chief Support, ECC/Dispatch Services, Fleet Support Services, Communications & Information Technology, Facility Maintenance Support, and Hazmat Support.

Administrative Costs – Administration charges are calculated from total administration personnel (Administration, Finance, IT, Communications, GIS, ECC, Fleet, Health & Safety, Prevention (investigations, etc.), EMS, Training, and Hazmat) and operating costs, and then divided by the total number of positions in the County. Each city is then charged this per-position cost based on their number of uniformed FTE's.

Volunteer Program – The volunteer program allocation takes the support staff salaries and operating costs of the volunteer reserve program and divides it evenly across the 21 jurisdictions and the County. The County pays the share for the stations in unincorporated areas and Jurupa Valley.

Medic/EMS Administrative Support – The medic/EMS program includes the costs for Medic employees, operating costs, and the purchasing of new replacement monitors and defibrillators. The costs are allocated based on full time equivalent Medic positions (FTE's) per city. The costs for replacement monitors are allocated based on the number that each city possesses.

Battalion Chief Support – Battalion Chief Support divides the salary for the batt chiefs by the number of stations that do not have their own Battalion Chief. Each City is charged this fee multiplied by the number of stations for which they require Battalion Chief Support.

ECC/Dispatch Services – The Emergency Command Center costs include the staff salaries for State and County personnel assigned to the ECC and the costs for upgrading and maintaining the CAD system. The costs are allocated by 75 percent for call volume, 25 percent for stations, and then divided by the total number of calls and stations, respectively. Each jurisdiction is charged these two costs multiplied by their own number of stations and calls.

Fleet Support – Fleet Support costs comprise the personnel salaries and operating costs (general preventative costs and minor repairs and equipment replacement). This does not include capital costs that further the life of the equipment, which are treated as a direct charge to the jurisdiction that owns the apparatus. The Fleet Support costs are then allocated based on the number of assigned suppression equipment to each station.

Communications and Info Technology – The Communication and Information Technology support includes the costs of the staff and operating costs. The costs are allocated based 75 percent on call volume, 25 percent on stations, and then charged to the cities according to their number of calls and stations, respectively.

Facility Maintenance Support – The Facility Maintenance charges only the cities whose stations contact maintenance personnel for general maintenance. The costs include personnel salaries and operating costs, and allocated based on 25 percent station and 75 percent assigned uniform personnel. Each city is charged for its portion of the staff costs and utilization costs.

Hazmat Support – The Hazmat Support Schedule includes Hazmat Team staff salaries, benefits, and operating costs. A vehicle replacement amount is built into the allocation to allow for future vehicle replacements. The allocation is based on 75 percent hazmat calls and 25 percent on the number of stations. The vehicle replacement component is allocated by jurisdiction.

Fire Engine Use Agreement – The Fire Engine Use Agreement allows a jurisdiction to transfer the responsibility for a fire engine to RCFD. The jurisdiction pays RCFD for the use of an engine, and RCFD assures the jurisdiction that it will always have an engine available.

Station Personnel – Station Personnel costs include the estimated staff salaries and benefits costs for all the station personnel. The costs are based on the top step salary and benefits cost for the different positions multiplied by the number of staff in the different positions.

Fire Marshal – The Fire Marshal costs are based on the specific staff salaries, benefits, and operating costs associated with positions providing service to a particular city.

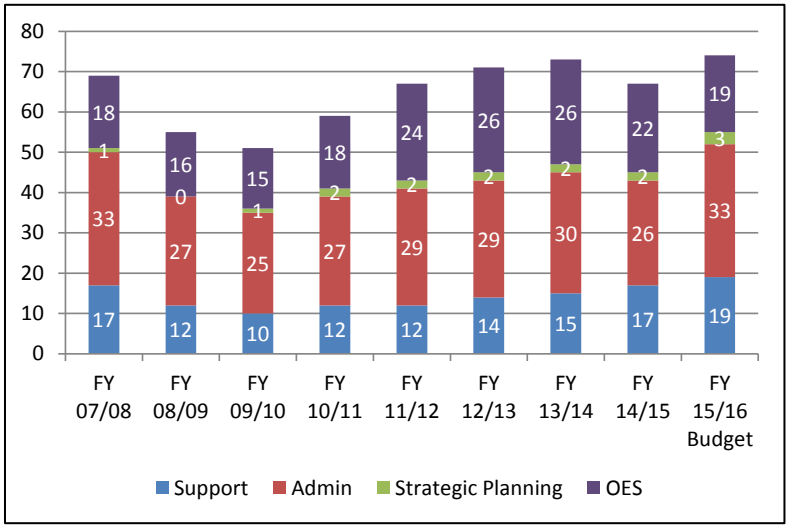
Table 45 shows the cost allocation cost pools, the FY 14/15 amounts, and the allocation factors currently used to distribute the costs to the various contract cities.

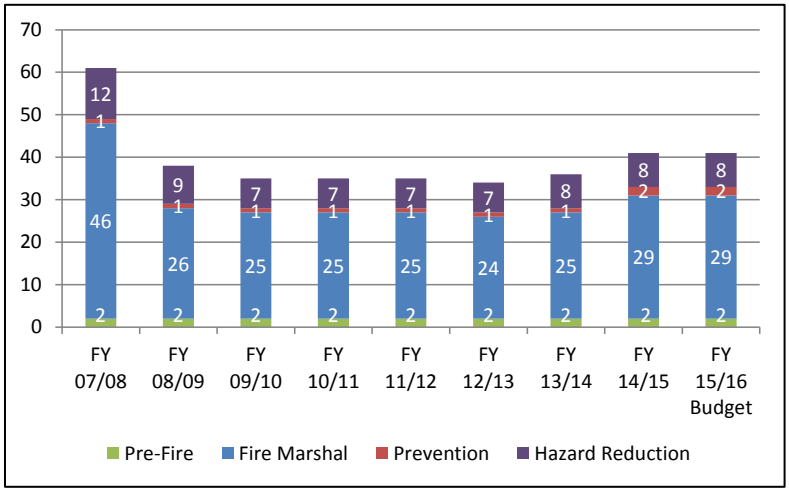
Table 45: FY 14/15 Cost Allocation Schedule

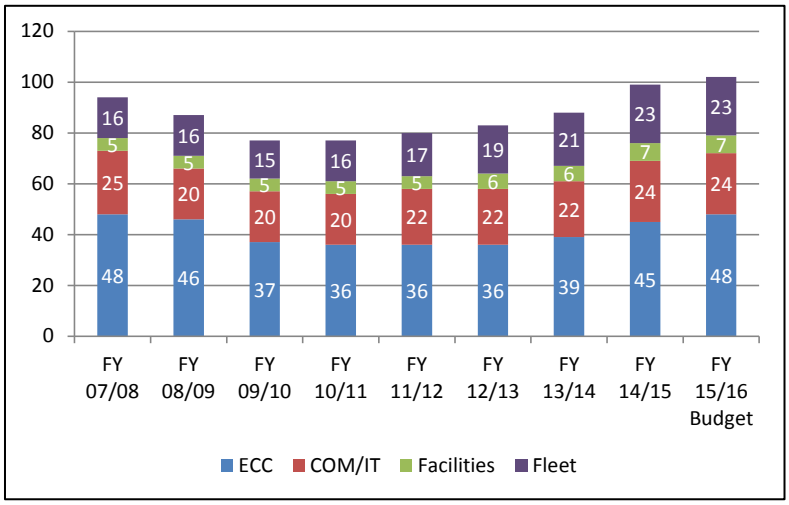
Cost Pool	FY 14/15 Budgeted Amount	Allocation Factor
Administrative Costs	$7,924,765	Number of uniformed fire staff FTEs
Volunteer Program	$139,012	Number of jurisdictions, except County portion is a percentage of stations (approx. 45% of total costs)
Medic/EMS Administrative Support	$1,334,587	Medic FTE's, number of monitors
Battalion Chief Support	$1,405,362	Stations without Battalion Chiefs by number of stations
ECC/Dispatch Services	$3,252,181	75% call volume, 25% Number of stations
Fleet Support Services	$2,446,631	Suppression equipment per station; with the County funding 25% of all support equipment in addition to first roll.
Communications & Info Technology	$4,908,738	75% call volume, 25% number of stations
Facility Maintenance Support	$78,351	75% uniformed station staff, 25% number of stations
Hazmat Support	$379,895	75% Hazmat calls, 25% number of stations; with County funding 50% of personnel costs off the top.
Fire Engine Use Agreement	$974,400	1/20 of replacement cost ($23,200) per engine
Station Personnel	$83,657,748	Salary and benefit costs per personnel direct costs
Fire Marshal's Office	$556,371	Direct costs per city or district

As shown in Table 45, after several staff reductions in 2007, 2008, and 2009, total administrative staffing has been increasing since 2010. Almost all divisions now have about the same number of positions as they did pre-recession, except Fleet which added seven more positions, a 40 percent increase, and Fire Marshal. which has seventeen fewer positions. The historical staffing trends for these divisions are shown in different groupings in Figure 86.

Figure 86: Historical Administrative and Support Staffing







Overall, the allocation factors generally are related to the use of the resources and services provided, and that approach appears to be reasonable. Two areas where the RCFD might consider changing factors are in fleet maintenance and the volunteer program. For fleet maintenance, the allocated costs are currently based on the suppression equipment at each station, so all jurisdictions pay a fixed fee for each piece of equipment. Although this method spreads the costs equally on a per piece basis, there is always equipment that might need more or less maintenance depending on its use and age. Another alternative is to budget based on actual maintenance costs per equipment, using the maintenance history. However, to use this alternative, RCFD must maintain information on the actual maintenance costs for each piece of equipment. RCFD currently says that it does not have the capability to provide this information, but there are many software programs infuse by the fire service that can capture this information,

For the volunteer program, every jurisdiction pays an equal share of the program's cost. However, not all the jurisdictions use volunteers to the same extent. Table 46 shows the number of volunteer shifts for FY14/15 and the revised allocated costs based on the use of volunteers. The cities with the largest increases include Moreno Valley, Norco, Rancho Mirage, and the jurisdictions with the largest decreases are the County, Perris, and Indian Wells.

Table 46: FY 14/15 Volunteer Assignments and Change in Allocations by Jurisdiction

City	Number of Volunteer Shifts	%	Current	Allocated by Percentage	Difference
Banning	3	0.2%	$ 6,781	$ 431	$ (6,350)
Beaumont	89	4.9%	$ 6,781	$ 12,789	$ 6,008
Calimesa	44	2.4%	$ 6,781	$ 6,323	$ (458)
Canyon Lake	1	0.1%	$ 6,781	$ 144	$ (6,637)
Coachella	93	5.1%	$ 6,781	$ 13,364	$ 6,583
Desert Hot Springs	76	4.2%	$ 6,781	$ 10,921	$ 4,140
Eastvale	56	3.1%	$ 6,781	$ 8,047	$ 1,266
Indian Wells	0	0.0%	$ 6,781	$ -	$ (6,781)
Indio	53	2.9%	$ 6,781	$ 7,616	$ 835
La Quinta	72	3.9%	$ 6,781	$ 10,346	$ 3,565
Lake Elsinore	10	0.5%	$ 6,781	$ 1,437	$ (5,344)
Menifee	47	2.6%	$ 6,781	$ 6,754	$ (27)
Moreno Valley	159	8.7%	$ 6,781	$ 22,847	$ 16,066
Norco	111	6.1%	$ 6,781	$ 15,950	$ 9,169
Palm Desert	2	0.1%	$ 6,781	$ 287	$ (6,494)
Perris	0	0.0%	$ 6,781	$ -	$ (6,781)
Rancho Mirage	117	6.4%	$ 6,781	$ 16,812	$ 10,031
Rubidoux	100	5.5%	$ 6,781	$ 14,369	$ 7,588
San Jacinto	8	0.4%	$ 6,781	$ 1,150	$ (5,631)
Temecula	10	0.5%	$ 6,781	$ 1,437	$ (5,344)
Wildomar	4	0.2%	$ 6,781	$ 575	$ (6,206)
County	766	41.9%	$ 120,560	$ 110,070	$ (10,490)
State	9	0.5%	$ -	$ 1,293	$ 1,293
Total	**1830**	**100.0%**	**$ 262,961**	**$ 262,961**	

CAL FIRE charges the County an indirect rate loaded on the costs charged to RCFD to recover the administrative and overhead costs for the CAL FIRE staff provided to the County. This issue was mentioned during discussions with the RCFD staff. At the same time, RCFD should be charging CAL FIRE the County's overhead rate plus any RCFD overhead associated with any services provided by County funded staff for CAL FIRE stations, dispatch, staff, equipment, apparatus, and volunteers, etc. The County should already have a Countywide cost allocation plan that it prepares as part of its social service programs that are funded by the State of California and the federal government.

Recommendation 37: If fleet maintenance has the ability to identify maintenance costs for each piece of equipment, consider using the historical costs, as appropriate, to allocate costs and fleet staff resources. RCFD could still charge a set amount for general maintenance, such as oil changes and other preventive maintenance, and could also charge an amount for specific maintenance issues based on planned or historical maintenance costs that are not considered capital repairs.

Recommendation 38: Consider changing the allocation factor for the volunteer program based on the previous year's volunteer assignments. This change will more closely align the cost of the volunteer program with the jurisdictions that use volunteers. The potential changes in cost allocations are relatively small compared to the total costs that the jurisdictions are paying for their entire fire and EMS services, but the allocations would be more closely related to the use of the program.

Recommendation 39: Consider charging the County's and RCFD's overhead rate on services provided to CAL FIRE. This will reimburse the County for its County administrative and overhead costs as well as the departmental costs associated with providing services to CAL FIRE such as fleet maintenance and dispatch.

Funding Formula Alternatives

As previously mentioned, each city determines what it can afford and what services it wants RCFD to provide. The contract Exhibit A's reflect the station staffing and equipment configurations, additional services provided, and the administrative and support cost allocations.

Although each city determines what it can afford, RCFD must also plan and work with the cities to ensure that the overall regional system can meet its standards of cover, while having a funding mechanism that is fair and equitable to all RCFD partners. The advantage of belonging to a regional organization such as RCFD is that smaller jurisdictions with a limited number of stations have more resources available to help fight fires, have automatic back-up to support concurrent calls and incidents, and can share resources such as ladder trucks and hazardous material units rather than separately purchasing and staffing their own apparatus.

To understand how the RCFD operations work as a regional network, a number of analyses were performed to identify where a jurisdiction's resources were dispatched. For each unit at a station, the responses within and outside of its jurisdiction were identified. Based on the data, 78 percent of the overall responses occurred within a unit's own jurisdictional boundaries, while about 22 percent of the total responses occurred outside of a station's city limits or County zone.

The cities and county zones have different proportions of their responses within and outside of their jurisdictions and station areas. Most cities and county zones with stations near cities receive assistance from units from another city or county zone, but there are two cities (Moreno Valley and Jurupa Valley/Rubidoux) and one county zone (Zone 9 Blythe) that generally respond to their incidents only with their own station resources. Although the cities and the County pay separately for their units, most jurisdictions benefit from the added support provided by a larger regional network of stations and units. In addition, the 16 CAL FIRE engines also provide a benefit to the RCFD system because they also respond to city and County incidents.

Table 47 shows the responses by city and County zone. The data did not separate Jurupa Valley from Rubidoux, and the Jurupa Valley numbers represent both jurisdictions. In addition, the medic transport ambulance responses were excluded from the responses because they are a specialized service serving only specific communities and are paid for as an added service. Mutual aid responses for non-RCFD jurisdictions and State funded units were also not included in the response numbers.

Table 47: Response Analysis by Jurisdiction[12]

City / Zone	In City / Zone Responses	Out of City / Zone Responses	Total	% In City / Zone Responses	% Out of City / Zone Responses	Responses into City/Zone from Others	% of Responses into City/Zone from Others
Banning	3,829	1,262	**5,091**	75%	25%	370	9%
Beaumont	1,516	465	**1,981**	77%	23%	1,531	50%
Calimesa	1,018	166	**1,184**	86%	14%	248	20%
Canyon Lake	432	158	**590**	73%	27%	459	52%
Coachella	2,708	550	**3,258**	83%	17%	1,073	28%
Desert Hot Springs	3,701	636	**4,337**	85%	15%	1,295	26%
Eastvale	3,118	978	**4,096**	76%	24%	882	22%
Indian Wells	818	1,420	**2,238**	37%	63%	482	37%
Indio	7,391	2,372	**9,763**	76%	24%	1,089	13%
Jurupa Valley	9,419	656	**10,075**	93%	7%	994	10%
La Quinta	3,450	1,828	**5,278**	65%	35%	890	21%
Lake Elsinore	4,128	1,683	**5,811**	71%	29%	760	16%
Menifee	9,444	1,634	**11,078**	85%	15%	945	9%
Moreno Valley	18,931	1,542	**20,473**	92%	8%	293	2%
Norco	1,913	515	**2,428**	79%	21%	577	23%
Palm Desert	6,699	2,313	**9,012**	74%	26%	3,092	32%
Perris	4,980	903	**5,883**	85%	15%	1,027	17%
Rancho Mirage	2,836	911	**3,747**	76%	24%	2,215	44%
San Jacinto	3,491	576	**4,067**	86%	14%	771	18%
Temecula	7,551	1,495	**9,046**	83%	17%	358	5%
Wildomar	1,752	293	**2,045**	86%	14%	1,696	49%
Zone 1 - Cajalco	6,509	705	**7,214**	90%	10%	1,663	20%
Zone 2 - Plateau	1,136	1,341	**2,477**	46%	54%	592	34%
Zone 3 - Foothill	2,524	3,141	**5,665**	45%	55%	2,278	47%
Zone 4 - Lake	5,305	1,536	**6,841**	78%	22%	3,925	43%
Zone 5 - Mountain	1,882	1,986	**3,868**	49%	51%	880	32%
Zone 6 - Anza	507	272	**779**	65%	35%	284	36%
Zone 7 - Coachella	6,382	2,716	**9,098**	70%	30%	3,251	34%
Zone 8 - Joshua Tree	231	54	**285**	81%	19%	168	42%
Zone 9 - Blythe	682	41	**723**	94%	6%	60	8%
Total	**124,283**	**34,148**	**158,431**	**78%**	**22%**	**34,148**	**22%**

By recognizing that the system is a regional system and that units respond to areas outside of their jurisdictional boundaries, several different Countywide and regional funding formulas were developed. The alternatives also recognize that the County and cities have funded additional services beyond just the basic engine company and medic squad and that they should pay for these additional services separately.

[12] Does not include the medic transport unit responses or mutual aid responses to non-RCFD jurisdictions

Three types of funding formula alternatives were developed:

- A Countywide model,
- A RCFD divisional regional model, and
- A more localized regional model that breaks the divisional model into more local groups.

The Countywide model makes no distinctions among the different areas within the County and how they support each other as a regional system. The Countywide costs for two scenarios are allocated using three factors: assessed property value, population, and number of incidents. The divisional and localized regional models use a more common area approach that reflects the individual regional costs except for each jurisdiction's added services. For these two regional alternatives each jurisdiction pays 75 percent of its base Exhibit A costs and shares 25 percent of its costs in a regional pool. The ladder truck costs are added to each regional cost pool to be shared by the jurisdictions in each region. The regional cost pool is then allocated based on either each jurisdiction's share of total responses or its share of responses that are provided to it by other jurisdictions. Specific population and assessed values for these regional models were not available.

Any number of variations of the alternatives and the different scenarios could be developed, but the nine scenarios selected illustrate a wide range of choices and concepts. As part of the alternatives, some key assumptions and data were used to develop the alternatives and scenarios. The assumptions and data include the following:

- The basic engine and medic squads are based on the Exhibit A cost data.
- County station costs were based on the following:
  - Labor costs were based on number of employees at each station and the top step salary and benefits costs used in the Exhibit A's.
  - Administrative and support costs are based on the County portion of each allocation from the FY 14/15 cost allocation tables and are allocated proportionate to the number of FTE's at each County station.
- County only costs such as hazard reduction and County fire marshal costs were not included as part of the County costs. These costs would be similar to what the cities have as "added services."
- Jurupa Valley is currently included as part of the County stations based on a separate agreement with the County concerning its incorporation and how services are paid for by the City and County. It is estimated that the cost of service for FY 14/15 was $7,518,567.
- Rubidoux's share of responses was based on Station 38's proportionate share of the total Jurupa Valley area responses.

- The base costs used in the analyses are based on the Exhibit A's and cost estimates for the County stations. It should be noted that the total Exhibit A actual costs and the estimated County station costs do not reconcile to the actual FY 14/15 budget financial reports for the County and contract city budget units. **Error! Not a valid bookmark self-reference.** shows the costs used in the analyses.

Table 48: FY 14/15 Exhibit A and Estimated County Expenditures

Cities	Exhibit A Cost FY 14/15*
Banning	$ 2,444,148
Beaumont	$ 2,053,936
Calimesa	$ 1,052,754
Canyon Lake	$ 1,346,388
Coachella	$ 2,942,901
Desert Hot Springs	$ 1,846,651
Eastvale	$ 2,732,175
Indian Wells	$ 2,435,972
Indio	$ 11,077,609
La Quinta	$ 4,855,957
Lake Elsinore	$ 6,705,260
Menifee	$ 7,945,198
Moreno Valley	$ 13,923,038
Norco	$ 3,391,619
Palm Desert	$ 10,725,723
Perris	$ 3,697,068
Rancho Mirage	$ 4,530,975
Rubidoux	$ 1,714,028
San Jacinto	$ 2,855,651
Temecula	$ 11,324,607
Wildomar	$ 2,052,574
Subtotal	**$ 101,654,230**
County	$ 78,781,917
Jurupa Valley	$ 7,518,567
Total	**$ 187,954,714**

* Does not include Fire Tax credits for those cities where the County manages their fire tax revenue.

- Individual agreements for additional services were removed from the total cost and are included as an addition to a jurisdiction's base and regional share. These services include Fire Engine Use Agreements, Facility Maintenance Support, and medic transport units. Ladder trucks are considered regional resources and are included as part of the regional costs rather than as a separate additional service for those

jurisdictions that pay for truck services. Table 49 shows what costs were considered additional costs and what truck costs were identified.

Table 49: List of Additional Services and Truck Costs

City	Additional Services		Truck Costs
Banning			
Beaumont			
Calimesa	$23,200	Fire Engine Use Agreement	
Canyon Lake	$23,200	Fire Engine Use Agreement	
Coachella	$11,725	Facility Maintenance Support	$177,476
Desert Hot Springs	$23,200	Fire Engine Use Agreement	
Eastvale	$34,925	Fire Engine Use Agreement, Facility Maintenance Support	
Indian Wells	$654,969	Fire Engine Use Agreement, Medic Unit	
Indio	$1,917,742	Fire Engine Use Agreement, Medic Unit	$709,906
Jurupa Valley			
La Quinta	$69,600	Fire Engine Use Agreement	$177,476
Lake Elsinore	$69,600	Fire Engine Use Agreement	
Menifee	$130,571	Fire Engine Use Agreement, Facility Maintenance Support	$937,690
Moreno Valley	$162,400	Fire Engine Use Agreement	$1,621,561
Norco	$46,400	Fire Engine Use Agreement	
Palm Desert	$3,485,689	Fire Engine Use Agreement, Medic Unit	$2,105,653
Perris	$46,400	Fire Engine Use Agreement	
Rancho Mirage	$982,325	Fire Engine Use Agreement, Medic Unit	
Rubidoux	$33,394	Facility Maintenance Support	
San Jacinto	$23,200	Fire Engine Use Agreement	
Temecula	$116,000	Fire Engine Use Agreement	$1,895,147
Wildomar	$32,116	Fire Engine Use Agreement, Facility Maintenance Support	
County			$1,292,643
Total	**$7,886,656**		**$8,917,552**

- County stations and units that have few responses (e.g. average less than 1-2 responses per day) and/or have low regional responses outside of their County zone (e.g. less than 15 percent) are considered as separate County costs in some alternatives. Stations in County Zones 8 and 9 (Joshua Tree and Blythe) are considered separately in some scenarios as well as County Stations 4, 8, 30, 40, 41, 51, 62, 63, 64, 77, 82, and 96. The costs for these "remote" County stations are considered as added services for the County.

Countywide Alternatives – The Countywide alternatives allocate all the costs except for each jurisdiction's added services based on three different scenarios. The factors for allocating the costs in the first two scenarios are assessed value, population, and incidents. Using these factors assumes that the costs should be based on the value of the property protected, the number of potential people served, and the demand for the services. Table 50 and Table 51 show the three factors and each jurisdiction's share of the total.

Table 50: FY 2015 Assessed Valuation, Population, and Incidents by Jurisdiction

Jurisdiction	Assessed Valuation*	Population**	FY 2015 Incidents
Banning	$ 1,785,933,418	30,177	4,433
Beaumont	$ 3,307,358,809	39,787	2,991
Calimesa	$ 641,984,946	8,096	1,279
Canyon Lake	$ 1,503,178,143	10,771	813
Coachella	$ 1,450,179,396	42,795	2,563
Desert Hot Springs	$ 1,312,589,237	27,835	4,351
Eastvale	$ 7,540,237,137	57,266	2,573
Indian Wells	$ 5,022,721,410	5,083	1,097
Indio	$ 6,669,820,971	81,415	7,082
Jurupa Valley	$ 7,288,714,025	97,272	6,115
La Quinta	$ 11,369,346,292	38,412	3,659
Lake Elsinore	$ 4,494,905,138	55,444	4,728
Menifee	$ 6,955,584,418	82,314	9,083
Moreno Valley	$ 12,064,572,488	198,183	16,740
Norco	$ 2,718,316,617	26,632	2,263
Palm Desert	$ 13,019,128,167	49,962	8,584
Perris	$ 4,340,968,086	70,983	6,074
Rancho Mirage	$ 7,612,116,760	17,643	4,326
Rubidoux	$ 1,455,622,752	32,900	2,602
San Jacinto	$ 2,317,300,013	45,229	5,394
Temecula	$ 13,256,854,677	104,907	7,476
Wildomar	$ 2,581,361,672	33,182	2,990
County	$ 33,379,080,831	358,924	33,842
Total	**$ 152,087,875,403**	**1,515,212**	**141,058**

*Source: Riverside County Assessor, Assessed Value for Cities 2014/2015
**Source: County of Riverside Fiscal Year 2014/15 Recommended Budget

Table 51: Percent of Total Factor

Jurisdiction	Assessed Valuation	Population	Incidents
Banning	1%	2%	3%
Beaumont	2%	3%	2%
Calimesa	0%	1%	1%
Canyon Lake	1%	1%	1%
Coachella	1%	3%	2%
Desert Hot Springs	1%	2%	3%
Eastvale	5%	4%	2%
Indian Wells	3%	0%	1%
Indio	4%	5%	5%
Jurupa Valley	5%	6%	4%
La Quinta	7%	3%	3%
Lake Elsinore	3%	4%	3%
Menifee	5%	5%	6%
Moreno Valley	8%	13%	12%
Norco	2%	2%	2%
Palm Desert	9%	3%	6%
Perris	3%	5%	4%
Rancho Mirage	5%	1%	3%
Rubidoux	1%	2%	2%
San Jacinto	2%	3%	4%
Temecula	9%	7%	5%
Wildomar	2%	2%	2%
County	22%	24%	24%
Total	**100%**	**100%**	**100%**

There are several advantages and disadvantages to using the above three factor approach in Scenarios A1 and A2:

Advantages: The overall advantages for using the three factor approach are that it is simple and easy to implement and calculate and that data are readily available.

Disadvantages: There are, however, several disadvantages to this approach, and these disadvantages might present major barriers to implementing a Countywide approach using these three factors.

- They do not take into account the ability to pay or regional differences among the jurisdictions.
- There is a significant shift in funding between the cities and the County because the County only represents 22 percent to 24 percent of the three factors, and consequently, cities are allocated about 75 percent of all costs.
- Because several County stations provide little support to the regional concept and are in isolated areas that serve mostly County residents, there is a potential inequity in how these stations are funded. Because of the three factors, the cities fund 75 percent of these "remote" County stations. If no adjustments are made for these stations, the shift in funding is $35.2 million. Even when these County stations are considered as added County services, the shift in funding is still high at $11.8 million.

Scenario A1 is a Countywide funding formula that takes the total expenditures minus the costs of the added city services and equally allocates the costs based on assessed value, population, and incidents. A city's share of the costs is equal to its Countywide allocation plus any added contract services.

Scenario A2 is a Countywide funding formula but recognizes that several County areas are really not part of the regional system and the County should pay for these stations separately as added services. The formula takes the total expenditures minus the cost of added services and the cost of low use and non-regional County stations and allocates the costs based equally on assessed value, population, and incidents like Alternative A1. Each city's costs equal its Countywide share plus its added services, and the County costs represent its Countywide share plus the low use and non-regional County station costs.

Scenario A3 is a Countywide funding formula that takes the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and the cost of the County's low use and non-regional stations. Each jurisdiction pays 75 percent of its remaining Exhibit A costs. The other 25 percent of its costs are pooled as regional costs which are then allocated based on the number of incidents. Each jurisdiction then pays its 75 percent of its base costs, plus its allocated regional share, plus its added services.

Table 52 shows a summary of the different scenarios, a jurisdiction's costs and the difference from what it actually cost in FY 14/15.

Table 52: Summary of Countywide Scenarios

Scenarios		Scenario A1		Scenario A2		Scenario A3	
Cities	FY 14/15 Exhibit A's	Cost	Difference	Cost	Difference	Cost	Difference
Banning	$2,444,148	$3,786,566	$1,342,419	$3,099,347	$655,199	$3,590,064	$1,145,916
Beaumont	$2,053,936	$4,154,097	$2,100,161	$3,400,175	$1,346,239	$2,725,890	$671,954
Calimesa	$1,052,754	$1,141,512	$88,758	$938,551	($114,203)	$1,296,478	$243,724
Canyon Lake	$1,346,388	$1,389,063	$42,675	$1,141,174	($205,214)	$1,332,012	($14,377)
Coachella	$2,942,901	$3,369,907	$427,006	$2,760,435	($182,466)	$3,045,506	$102,605
Desert Hot Springs	$1,846,651	$3,495,290	$1,648,639	$2,865,145	$1,018,494	$3,109,442	$1,262,791
Eastvale	$2,732,175	$6,374,097	$3,641,922	$5,223,609	$2,491,434	$3,068,901	$336,726
Indian Wells	$2,435,972	$3,305,374	$869,401	$2,824,355	$388,383	$2,261,759	($174,213)
Indio	$11,077,609	$10,788,681	($288,928)	$9,178,705	($1,898,904)	$10,405,146	($672,463)
La Quinta	$4,855,957	$7,635,202	$2,779,245	$6,262,130	$1,406,174	$4,914,681	$58,724
Lake Elsinore	$6,705,260	$6,051,723	($653,537)	$4,966,035	($1,739,225)	$6,902,817	$197,557
Menifee	$7,945,198	$10,001,362	$2,056,164	$8,209,925	$264,727	$8,621,120	$675,922
Moreno Valley	$13,923,038	$19,897,648	$5,974,610	$16,315,922	$2,392,885	$15,455,366	$1,532,328
Norco	$3,391,619	$3,137,136	($254,483)	$2,576,202	($815,417)	$3,440,620	$49,002
Palm Desert	$10,725,723	$14,255,600	$3,529,877	$12,300,982	$1,575,260	$9,340,779	($1,384,944)
Perris	$3,697,068	$7,156,070	$3,459,001	$5,865,745	$2,168,676	$5,180,140	$1,483,072
Rancho Mirage	$4,530,975	$6,526,196	$1,995,221	$5,520,046	$989,071	$5,112,777	$581,802
Rubidoux	$1,714,028	$3,018,345	$1,304,317	$2,476,610	$762,582	$2,316,785	$602,757
San Jacinto	$2,855,651	$5,024,658	$2,169,007	$4,116,949	$1,261,299	$4,279,569	$1,423,919
Temecula	$11,324,607	$12,684,816	$1,360,208	$10,403,717	($920,890)	$9,561,309	($1,763,298)
Wildomar	$2,052,574	$3,637,621	$1,585,047	$2,983,262	$930,688	$2,724,472	$671,898
Jurupa Valley	$7,518,567	$9,331,864	$1,813,297	$7,638,236	$119,669	$8,062,514	$543,947
County	$78,781,917	$41,791,888	($36,990,029)	$66,887,457	($11,894,461)	$71,206,566	($7,575,351)
City Share	**$101,654,230**	**$136,830,962**	**$35,176,732**	**$113,429,022**	**$11,774,792**	**$108,685,634**	**$7,031,404**
County Share	**$86,300,484**	**$51,123,752**	**($35,176,732)**	**$74,525,692**	**($11,774,792)**	**$79,269,080**	**($7,031,404)**
Total	**$187,954,714**	**$187,954,714**	**$ -**	**$187,954,714**	**$ -**	**$187,954,714**	**$ -**

Regional Division Alternatives – These regional system funding models are based on RCFD's current organizational regions (e.g. West, Central, and East divisions) that take the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and have the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based on their share of the number of responses within the division. Because the Joshua Tree and Blythe zones generally respond only in their areas, the station costs for those zones are included separately with the County as added services. A city's share is equal to 75 percent of its adjusted Exhibit A cost, plus its regional divisional cost share, plus the cost of any added services. To identify the responses associated with each division's jurisdictions, the response data was re-sorted, and Table 53 shows the responses within and outside of each city and County zone for each division as well as the responses from other jurisdictions into a city or County zone. The Joshua Tree and Blythe zones are shown separately from the East division because the stations generally respond only in their zones.

Table 53: Divisional Responses by Jurisdiction Within and Outside of Jurisdiction Boundaries[13]

	In City / Zone	Out of City, In Region	Out of Region	Total	% In City / Zone	% Out of City, In Region	% Out of Region	Responses into City/Zone from Others*
Coachella	2,708	545	5	**3,258**	83%	17%	0%	1,073
Desert Hot Springs	3,701	550	86	**4,337**	85%	13%	2%	1,295
Indian Wells	818	1,413	7	**2,238**	37%	63%	0%	482
Indio	7,391	2,311	61	**9,763**	76%	24%	1%	1,089
La Quinta	3,450	1,827	1	**5,278**	65%	35%	0%	890
Palm Desert	6,699	2,199	114	**9,012**	74%	24%	1%	3,092
Rancho Mirage	2,836	899	12	**3,747**	76%	24%	0%	2,215
County - Zone 7	6,382	2,452	264	**9,098**	70%	27%	3%	3,251
East Total	**33,985**	**12,196**	**550**	**46,731**	**73%**	**26%**	**1%**	**13,387**
Banning	3,829	1,041	221	**5,091**	75%	20%	4%	370
Beaumont	1,516	233	232	**1,981**	77%	12%	12%	1,531
Calimesa	1,018	142	24	**1,184**	86%	12%	2%	248
San Jacinto	3,491	418	158	**4,067**	86%	10%	4%	771
County - Zone 4, Zone 5, Zone 6	7,694	2,565	1,229	**11,488**	67%	22%	11%	5,089
Central Total	**17,548**	**4,399**	**1,864**	**23,811**	**74%**	**18%**	**8%**	**8,009**
Canyon Lake	432	155	3	**590**	73%	26%	1%	459
Eastvale	3,118	978	0	**4,096**	76%	24%	0%	882
Jurupa Valley	9,419	637	19	**10,075**	93%	6%	0%	994
Lake Elsinore	4,128	1,676	7	**5,811**	71%	29%	0%	760
Menifee	9,444	1,051	583	**11,078**	85%	9%	5%	945
Moreno Valley	18,931	1,433	109	**20,473**	92%	7%	1%	293
Norco	1,913	515	0	**2,428**	79%	21%	0%	577
Perris	4,980	875	28	**5,883**	85%	15%	0%	1,027
Temecula	7,551	233	1,262	**9,046**	83%	3%	14%	358
Wildomar	1,752	293	0	**2,045**	86%	14%	0%	1,696
County - Zone 1, Zone 2, Zone 3	10,169	2,708	2,479	**15,356**	66%	18%	16%	4,533
West Total	**71,837**	**10,554**	**4,490**	**86,881**	**83%**	**12%**	**5%**	**12,524**
Joshua Tree, Blythe	913	86	9	**1,008**	91%	9%	1%	228
Other Total	**913**	**86**	**9**	**1,008**	**91%**	**9%**	**1%**	**228**
Grand Total	**124,283**	**27,235**	**6,913**	**158,431**	**78%**	**17%**	**4%**	**34,148**

Advantages: The overall advantage of these regional division scenarios is that they account for the common regional areas as defined by RCFD's operational command structure compared to using the three factor Countywide approach, which makes no distinction among the different service areas. Other advantages include the following:

- The shift in funding between the cities and the County is substantially less than the Countywide approach, and in Scenario B3, the net change is only about $207,800.

Disadvantages: The are, however, still several disadvantages to this approach that involve funding shifts and ease of implementation.

- Although the shift from County to city funding is smaller than the Countywide scenarios, there are still large changes. Because the busiest stations are in the cities, Scenarios B1 and B2 shift about $6.1 million and $2 million in costs to the cities, respectively. Scenarios B3 and B4 shift costs from the cities to the County zones that

[13] Does not include the medic transport unit responses or mutual aid responses to non-RCFD jurisdictions

need assistance from other jurisdictions. In B4, the County increases its costs by $3.6 million, while the cities have a similar reduction in their overall costs.

- There are still some large shifts in costs among the cities in the different regions, and those cities may not be able to absorb the increase in costs. For example, Desert Hot Springs would pay almost twice as much (i.e. more than $1.3 million) under any scenario, while Palm Desert has decreases that range from $700,000 to $1.4 million.
- Scenarios B1 and B2 generally allocate the increased City costs on the cities with the most total responses regardless of whether they need responses from other jurisdictions. For example, Moreno Valley has increased costs in the B1 and B2 scenarios of $1.4 to $.8 million, but in Scenarios B3 and B4 the city reduces its costs by about $4.4 million in each scenario.
- Response data is needed to support the funding models, and the additional work to generate the data might not be cost beneficial for RCFD to do since the data was generated by this study. This could be mitigated if the response data is gathered every three to five years before a change in the factors is used.
- Any changes to the RCFD operational organizational structure might require restructuring the formula to mirror the structure. If the incident response priorities (i.e. "run cards") do not change, formula changes might not be needed because a change in organizational structure will not affect the operational response to an incident.
- If any new stations or annexations occur, changes might need to be made within the regional divisions.

The different scenarios include regional allocations based on total responses and on responses received from other jurisdictions as shown in Table 53. In addition, two scenarios also separate the remote low use and non-regional contributing stations as County added services in addition to the Joshua Tree and Blythe zone stations. Table 54 summarizes the results for the different scenarios.

Scenario B1 is a regional divisional funding formula that takes the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and has the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based on the number of incidents within the division. A jurisdiction's share of the costs is equal to its base Exhibit A costs plus its allocated regional divisional costs, plus any added services that it has contracted for. The cost for County stations in Joshua Tree and Blythe zones are added separately to the County's costs.

Scenario B2 is like Scenario B1 except that the low use and non-regional stations are included as separate County added services along with Joshua Tree and Blythe zone stations. The regional divisional funding formula then takes the current Exhibit A's and County stations'

costs minus the costs of each jurisdiction's added city services and has the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based on the number of responses within the division. A jurisdiction's share of the costs is equal to its base Exhibit A costs plus its allocated regional divisional costs, plus any added services that it has contracted for.

Scenario B3 is like Scenario B1 except that the regional allocation is based on the number of responses that come into a jurisdiction from other jurisdictions. The regional divisional funding formula then takes the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and has the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based on the number of responses within the division. A city's share of the costs is equal to its base Exhibit A costs, plus its allocated regional divisional costs, plus any added services that it has contracted for.

Scenario B4 is like Scenario B2 except that the regional allocation is based on the number of responses that come into a jurisdiction from other jurisdictions. The regional divisional funding formula then takes the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and has the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based on the number of responses from outside of the jurisdiction. A city's share of the costs is equal to its base Exhibit A costs, plus its allocated regional divisional costs, plus any added services that it has contracted for. The County separately bears the entire costs of the Joshua Tree and Blythe stations as well as the added costs for the low use and non-regional stations.

Table 54: Summary of Regional Division Scenarios

Scenarios		Scenario B1		Scenario B2		Scenario B3		Scenario B4	
Cities	FY 14/15 Exhibit A's	Cost	Difference	Cost	Difference	Cost	Difference	Cost	Difference
Banning	$2,444,148	$3,059,809	$615,661	$2,775,511	$331,363	$2,178,036	($266,112)	$2,098,097	($346,051)
Beaumont	$2,053,936	$2,430,604	$376,668	$2,224,303	$170,367	$2,967,697	$913,761	$2,636,920	$582,984
Calimesa	$1,052,754	$1,159,415	$106,661	$1,073,699	$20,945	$1,020,759	($31,995)	$967,177	($85,576)
Canyon Lake	$1,346,388	$1,312,617	($33,771)	$1,281,944	($64,444)	$2,060,607	$714,218	$1,954,171	$607,783
Coachella	$2,942,901	$3,432,688	$489,788	$3,325,297	$382,396	$3,438,617	$495,717	$3,330,772	$387,872
Desert Hot Springs	$1,846,651	$3,238,819	$1,392,168	$3,096,918	$1,250,267	$3,085,407	$1,238,756	$2,955,249	$1,108,598
Eastvale	$2,732,175	$3,408,618	$676,443	$3,270,918	$538,743	$4,068,345	$1,336,170	$3,863,822	$1,131,647
Indian Wells	$2,435,972	$2,309,361	($126,611)	$2,272,437	($163,535)	$2,459,876	$23,904	$2,411,431	($24,541)
Indio	$11,077,609	$10,744,916	($332,693)	$10,504,059	($573,550)	$9,028,229	($2,049,380)	$8,918,775	($2,158,834)
La Quinta	$4,855,957	$5,074,905	$218,948	$4,951,636	$95,679	$4,633,119	($222,838)	$4,543,666	($312,290)
Lake Elsinore	$6,705,260	$6,690,238	($15,022)	$6,521,969	($183,292)	$6,768,857	$63,597	$6,592,624	($112,636)
Menifee	$7,945,198	$8,552,137	$606,939	$8,194,494	$249,296	$7,184,652	($760,546)	$6,965,520	($979,678)
Moreno Valley	$13,923,038	$15,354,412	$1,431,375	$14,692,625	$769,587	$9,491,499	($4,431,538)	$9,423,557	($4,499,481)
Norco	$3,391,619	$3,389,995	($1,624)	$3,304,276	($87,342)	$3,864,674	$473,055	$3,730,876	$339,257
Palm Desert	$10,725,723	$9,571,717	($1,154,006)	$9,293,624	($1,432,099)	$9,998,635	($727,088)	$9,687,864	($1,037,859)
Perris	$3,697,068	$4,814,411	$1,117,343	$4,607,620	$910,551	$5,123,972	$1,426,904	$4,885,826	$1,188,757
Rancho Mirage	$4,530,975	$5,272,470	$741,496	$5,129,007	$598,032	$6,306,669	$1,775,695	$6,084,044	$1,553,069
Rubidoux	$1,714,028	$2,595,193	$881,165	$2,462,538	$748,511	$2,066,163	$352,135	$1,987,093	$273,065
San Jacinto	$2,855,651	$3,386,841	$531,190	$3,098,277	$242,626	$2,860,488	$4,837	$2,693,911	($161,740)
Temecula	$11,324,607	$9,286,355	($2,038,253)	$9,014,086	($2,310,521)	$7,417,899	($3,906,709)	$7,334,884	($3,989,724)
Wildomar	$2,052,574	$2,711,308	$658,734	$2,592,611	$540,037	$5,422,182	$3,369,608	$5,028,904	$2,976,330
Jurupa Valley	$7,518,567	$7,868,338	$349,771	$4,445,152	($3,073,415)	$7,133,905	($384,661)	$3,785,109	($3,733,458)
County	$78,781,917	$72,289,548	($6,492,370)	$79,821,714	$1,039,797	$79,374,427	$592,509	$86,074,422	$7,292,505
City Share	**$101,654,230**	**$107,796,829**	**$6,142,599**	**$103,687,848**	**$2,033,618**	**$101,446,383**	**($207,848)**	**$98,095,183**	**($3,559,047)**
County Share	**$86,300,484**	**$80,157,885**	**($6,142,599)**	**$84,266,866**	**($2,033,618)**	**$86,508,332**	**$207,848**	**$89,859,531**	**$3,559,047**
Total	**$187,954,714**	**$187,954,714**	**$ -**	**$187,954,714**	**$ -**	**$187,954,714**	**$ -**	**$187,954,714**	**$ -**

Regional Local Alternatives – These two regional local scenario funding models are based on smaller local groupings that are not as large as the RCFD divisions. For both of these scenarios, the County's Joshua Tree and Blythe stations as well as the added costs for the low use and non-regional stations are paid as County added services The funding formula is the same as the regional divisional scenarios but at a more localized level. A jurisdiction's share is equal to 75 percent of its adjusted Exhibit A cost, plus any added services that it has contracted for, plus its regional cost share within its group. Scenario C1 allocates the regional costs based on total responses within the local grouping and Scenario C2 allocates the regional costs based on the responses received from other jurisdictions.

Table 55 shows the different local groups and the responses within and outside of each city, County zone, and group as well as the responses from other jurisdictions into a city or County zone. The Joshua Tree and Blythe zones are shown separately from the East division because they generally respond only in their areas. Table 56 summarizes the results for each scenario.

Table 55: Responses by Jurisdiction Within and Outside of Jurisdiction Boundaries[14]

	In City/ In Zone	Out of City/Zone, In Group	Out of Group	Total	% In City/ In Zone	% Out of City/Zone, In Group	% Out of Group	Responses into City/Zone from Others*
Canyon Lake	432	81	77	**590**	73%	14%	13%	459
Lake Elsinore	4,128	1,082	601	**5,811**	71%	19%	10%	760
Menifee	9,444	574	1,060	**11,078**	85%	5%	10%	945
Temecula	7,551	224	1,271	**9,046**	83%	2%	14%	358
Wildomar	1,752	289	4	**2,045**	86%	14%	0%	1,696
County - Zone 2 Plateau, Zone 4 Lakes	6,441	1,804	1,073	**9,318**	69%	19%	12%	4,517
Group 1 Total	**29,748**	**4,054**	**4,086**	**37,888**	**79%**	**11%**	**11%**	**8,735**
Eastvale	3,118	963	15	**4,096**	76%	24%	0%	882
Jurupa Valley	9,419	479	177	**10,075**	93%	5%	2%	994
Norco	1,913	476	39	**2,428**	79%	20%	2%	577
Group 2 Total	**14,450**	**1,918**	**231**	**16,599**	**87%**	**12%**	**1%**	**2,453**
Moreno Valley	18,931	1,341	201	**20,473**	92%	7%	1%	293
Perris	4,980	654	249	**5,883**	85%	11%	4%	1,027
County - Zone 1 Cajalco, Zone 3 Foothill	9,033	514	3,332	**12,879**	70%	4%	26%	3,941
Group 3 Total	**32,944**	**2,509**	**3,782**	**39,235**	**84%**	**6%**	**10%**	**5,261**
Banning	3,829	1,041	221	**5,091**	75%	20%	4%	370
Beaumont	1,516	233	232	**1,981**	77%	12%	12%	1,531
Calimesa	1,018	142	24	**1,184**	86%	12%	2%	248
San Jacinto	3,491	418	158	**4,067**	86%	10%	4%	771
County - Zone 5 Mountain, Zone 6 Anza	2,389	1,743	515	**4,647**	51%	38%	11%	1,164
Group 4 Total	**12,243**	**3,577**	**1,150**	**16,970**	**72%**	**21%**	**7%**	**4,084**
Coachella	2,708	545	5	**3,258**	83%	17%	0%	1,073
Desert Hot Springs	3,701	550	86	**4,337**	85%	13%	2%	1,295
Indian Wells	818	1,417	3	**2,238**	37%	63%	0%	482
Indio	7,391	2,312	60	**9,763**	76%	24%	1%	1,089
La Quinta	3,450	1,827	1	**5,278**	65%	35%	0%	890
Palm Desert	6,699	2,250	63	**9,012**	74%	25%	1%	3,092
Rancho Mirage	2,836	901	10	**3,747**	76%	24%	0%	2,215
County - Zone 7 Coachella	6,382	2,459	257	**9,098**	70%	27%	3%	3,251
Group 5 Total	**33,985**	**12,261**	**485**	**46,731**	**73%**	**26%**	**1%**	**13,387**
County - Zone 8 Joshua Tree, Zone 9 Blythe	913	86	9	**1,008**	91%	9%	1%	228
Group 6 Total	**913**	**86**	**9**	**1,008**	**91%**	**9%**	**1%**	**228**
Grand Total	**124,283**	**24,405**	**9,743**	**158,431**	**78%**	**15%**	**6%**	**34,148**

Advantages: The overall advantage of these regional local scenarios is that they further break down the common regional areas as previously defined by RCFD's operational command structure. Other advantages include the following:

- Like the shift in funding between the cities and the County in the Regional Division Alternative, the shift in funding is substantially less than the Countywide approach.

Disadvantages: The are, however, still several disadvantages to this approach that involve funding shifts and ease of implementation.

- Although the funding shifts between the County to cities is smaller than the Countywide scenarios, there are still large changes. The scenarios reflect the difference in the total responses compared to the responses from others to a jurisdiction. Scenario C1 increases the cities' share by $1.6 million with a corresponding decrease in the County's share. In Scenario C2, the shift is the opposite because County stations have more of their incidents covered by city stations. The change results in a $6.3 million increase to the County.

[14] Does not include the medic transport unit responses or mutual aid responses to non-RCFD jurisdictions

- There are still some large shifts in costs among the cities in the different groups, and those cities may not be able to absorb the increase in costs. Like the previous example, Desert Hot Springs increase almost twice as much (i.e. Between $1-1.2 million) under either scenario, while Palm Desert has decreases that range from $1.1 and $1.5 million.
- The responses from other areas includes all responses from all areas and not just within the group. As a result, the regional local allocation of group costs represents the overall use of responses from everybody.
- Response data is needed to support the funding models, and the additional work to generate the data might not be cost beneficial for RCFD to do since the data was generated by this study. Again, this could be mitigated if the response data is gathered every three to five years before a change in the factors is used.
- If any new stations or annexations occur, changes might need to be made to the groups.

Scenario C1 is a local regional funding model that allocates the regional share based on total responses within the group. It takes the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and has the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based the share of responses within the local group. A jurisdiction's share of the costs is equal to its base Exhibit A costs plus its allocated regional divisional costs, plus any added services that it has contracted for. The cost for County stations in Joshua Tree and Blythe zones are added separately to the County's costs.

Scenario C2 is a local regional funding model that allocates the regional share based on total responses received. It takes the current Exhibit A's and County stations' costs minus the costs of each jurisdiction's added city services and has the jurisdictions pay 75 percent of their remaining Exhibit A costs. The other 25 percent of their costs are pooled as regional costs within the division and are then allocated based the share of responses received from other jurisdictions. A jurisdiction's share of the costs is equal to its base Exhibit A costs plus its allocated regional divisional costs, plus any added services that it has contracted for. The cost for County stations in Joshua Tree and Blythe zones are added separately to the County's costs.

Table 56: Summary of Regional Local Scenarios

Scenarios		Scenario C1		Scenario C2	
Cities	FY 14/15 Exhibit A's	Cost	Difference	Cost	Difference
Banning	$2,444,148	$2,691,924	$247,776	$2,135,646	($308,502)
Beaumont	$2,053,936	$2,163,649	$109,713	$2,792,291	$738,355
Calimesa	$1,052,754	$1,048,498	($4,256)	$992,345	($60,408)
Canyon Lake	$1,346,388	$1,344,489	($1,899)	$1,769,408	$423,019
Coachella	$2,942,901	$3,286,115	$343,214	$3,291,425	$348,524
Desert Hot Springs	$1,846,651	$3,045,145	$1,198,494	$2,907,761	$1,061,109
Eastvale	$2,732,175	$2,957,632	$225,457	$3,429,516	$697,341
Indian Wells	$2,435,972	$2,258,966	($177,007)	$2,393,756	($42,216)
Indio	$11,077,609	$10,416,182	($661,427)	$8,878,841	($2,198,768)
La Quinta	$4,855,957	$4,906,661	$50,704	$4,511,030	($344,927)
Lake Elsinore	$6,705,260	$6,865,089	$159,829	$6,286,698	($418,562)
Menifee	$7,945,198	$8,923,767	$978,569	$6,585,125	($1,360,073)
Moreno Valley	$13,923,038	$14,033,795	$110,757	$9,397,709	($4,525,328)
Norco	$3,391,619	$3,109,256	($282,363)	$3,446,755	$55,136
Palm Desert	$10,725,723	$9,192,161	($1,533,562)	$9,574,478	($1,151,245)
Perris	$3,697,068	$4,401,752	$704,684	$4,795,228	$1,098,160
Rancho Mirage	$4,530,975	$5,076,664	$545,690	$6,002,818	$1,471,843
Rubidoux	$1,714,028	$2,160,732	$446,704	$1,819,187	$105,159
San Jacinto	$2,855,651	$3,013,436	$157,786	$2,772,155	($83,496)
Temecula	$11,324,607	$9,569,271	($1,755,336)	$7,190,776	($4,133,831)
Wildomar	$2,052,574	$2,834,649	$782,075	$4,346,205	$2,293,631
Jurupa Valley	$7,518,567	$7,128,769	($389,798)	$6,660,931	($857,636)
County	$78,781,917	$77,526,114	($1,255,804)	$85,974,633	$7,192,716
City Share	**$101,654,230**	**$103,299,832**	**$1,645,602**	**$95,319,151**	**($6,335,080)**
County Share	**$86,300,484**	**$84,654,882**	**($1,645,602)**	**$92,635,564**	**$6,335,080**
Total	**$187,954,714**	**$187,954,714**	**$ -**	**$187,954,714**	**$ -**

Funding Formula Observations

Each formula has its advantages and disadvantages. In choosing the allocation framework that works best for RCFD and its partners, there are several policy issues and questions that might be considered.

- What is an appropriate shift in funding between the cities and the County if the current formula and process is changed?
- Among the cities, what can each city afford and are any potential changes fair and equitable given the services provided?
- Given some potentially large increases in costs for some cities, are other cities willing to help subsidize (i.e. reduce their savings) for those that cannot afford large increases in their costs?
- Are the regional alternatives preferable to the Countywide alternative model?

- Are there other variations or scenarios that should be considered and researched?

Highlights concerning the results for the alternatives and the scenarios show the following:

- The Countywide alternatives have the largest shift in costs from the County to the cities when using an equally weighted combination of assessed value, population and incidents. Cities represent slightly more than 75 percent of these factors, and as a result there are large shifts in costs to the cities even when certain remote County areas are assigned directly to the County for support.
- The lowest shifts in costs from the County to the cities occur in the regional alternatives where each jurisdiction pays 75 percent of its base Exhibit A costs with a 25 percent regional cost pool allocated either on total responses or responses provided by other jurisdictions. The Regional Division Scenario B3 (Divisional grouping allocated on responses received, with County added services only for Zones 8 & 9) has the smallest shift in costs at only $207,900, while Regional Local Scenario C1 (local grouping allocated on total responses, with County added services for Zones 8 & 9 plus remote County stations) has the second lowest shift from the County to the cities at $1.6 million.
- Regional Division Scenario B4 (Divisional grouping allocated on responses received, with County added services for Zones 8 & 9 plus remote County stations) and Regional Local Scenario C2 (local grouping allocated on responses received, with County added services for Zones 8 & 9 plus remote County stations) shift costs to the County from the cities at $3.6 million and $6.3 million, respectively.

As previously mentioned, the funding formula alternatives provide a different method for funding the costs of the services provided by the RCFD. Instead of each jurisdiction deciding what responding units they should pay for in their stations, the alternatives provide a more regional funding perspective that actually reflects how the services are being provided based on response data and what services a jurisdiction wants to add to supplement its additional service needs. Variations from the nine scenarios analyzed can also be developed depending on what the RCFD, the County, and cities determine are the answers to the key policy questions identified.

CHAPTER VIII. FIRE MARSHAL AND FLEET SERVICES

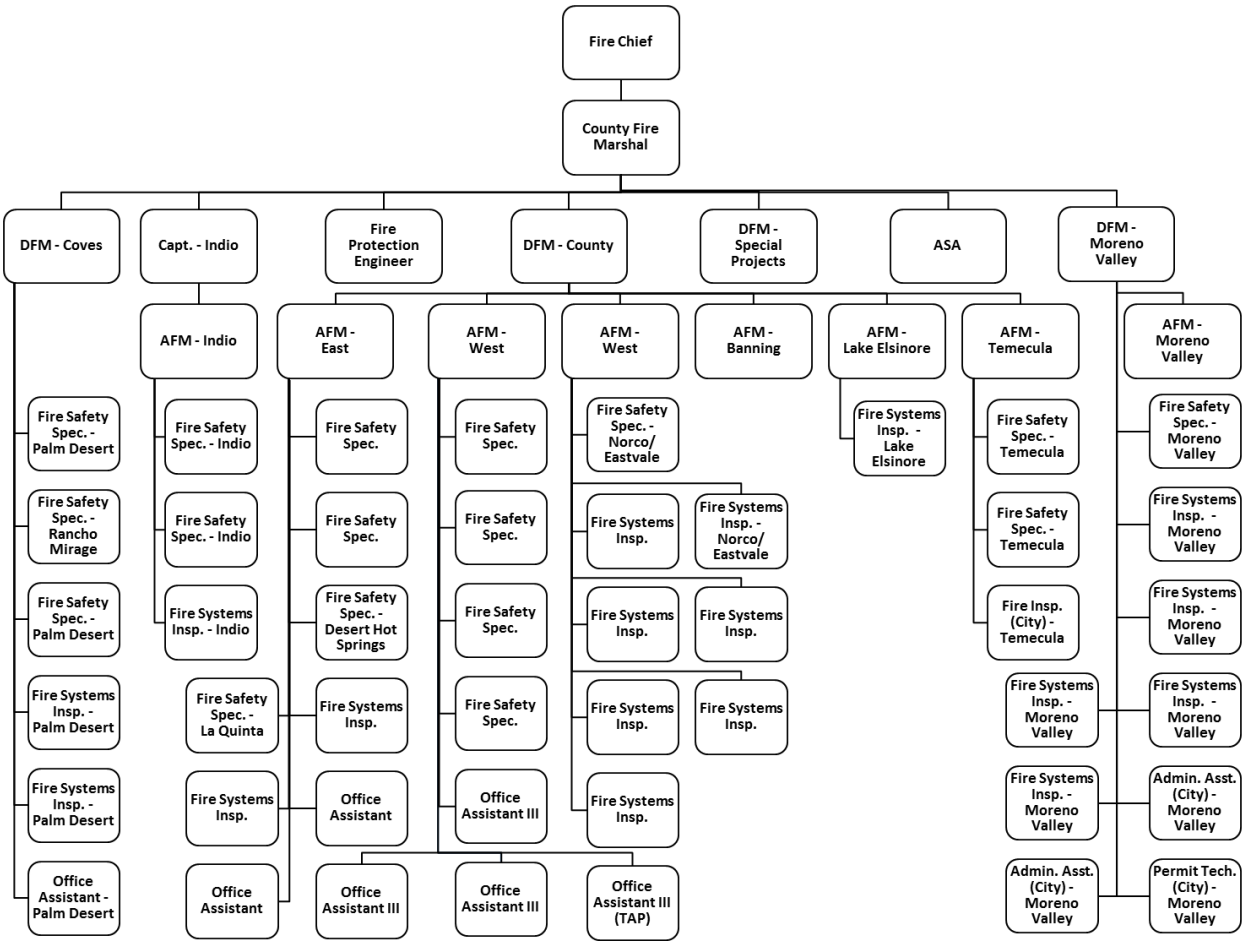
The scope of work for this study was primarily a standard of cover analysis—response and deployment of RCFD resources. Because of their importance in making sure services are delivered effectively, the functions of the fire marshal and fleet services were also reviewed—though in less detail. The most critical need is to improve the facilities for fleet services. A few vacancies in fire prevention also need to be filled so as to maintain the already strong code enforcement program.

Fire Enforcement Activities

The foundation of a good risk management program is to prevent fires before they occur and reduce the losses from those that do. Each person assigned to enforcement activities is likely to avert more losses than is any single firefighter and in some cases fire departments as a whole.

Office of the Fire Marshal – The Fire Marshal division of the Riverside County Fire Department (RCFD) is headed by the Fire Marshal who reports directly to the Fire Chief. The Fire Marshal (FM) heads up the Office of the Fire Marshal (OFM). There are four (4) Deputy Fire Marshals (DFM) (and one Captain serving as DFM in the city of Indio), and eight (8) Assistant Fire Marshals (AFM) who cover eight County regions. OFM falls under the auspices of Riverside County. The Figure 87 shows the organizational structure of the OFM:

Figure 87: Office of the Fire Marshal Organization Chart



The Mission Statement for the OFM is as follows:

> *The Office of the Fire Marshal is committed to provide professional fire and life safety engineering, permitting and inspection services for our citizens and emergency responders through exemplary customer service, leadership, education, analysis, innovation and partnership with the development and business community.*

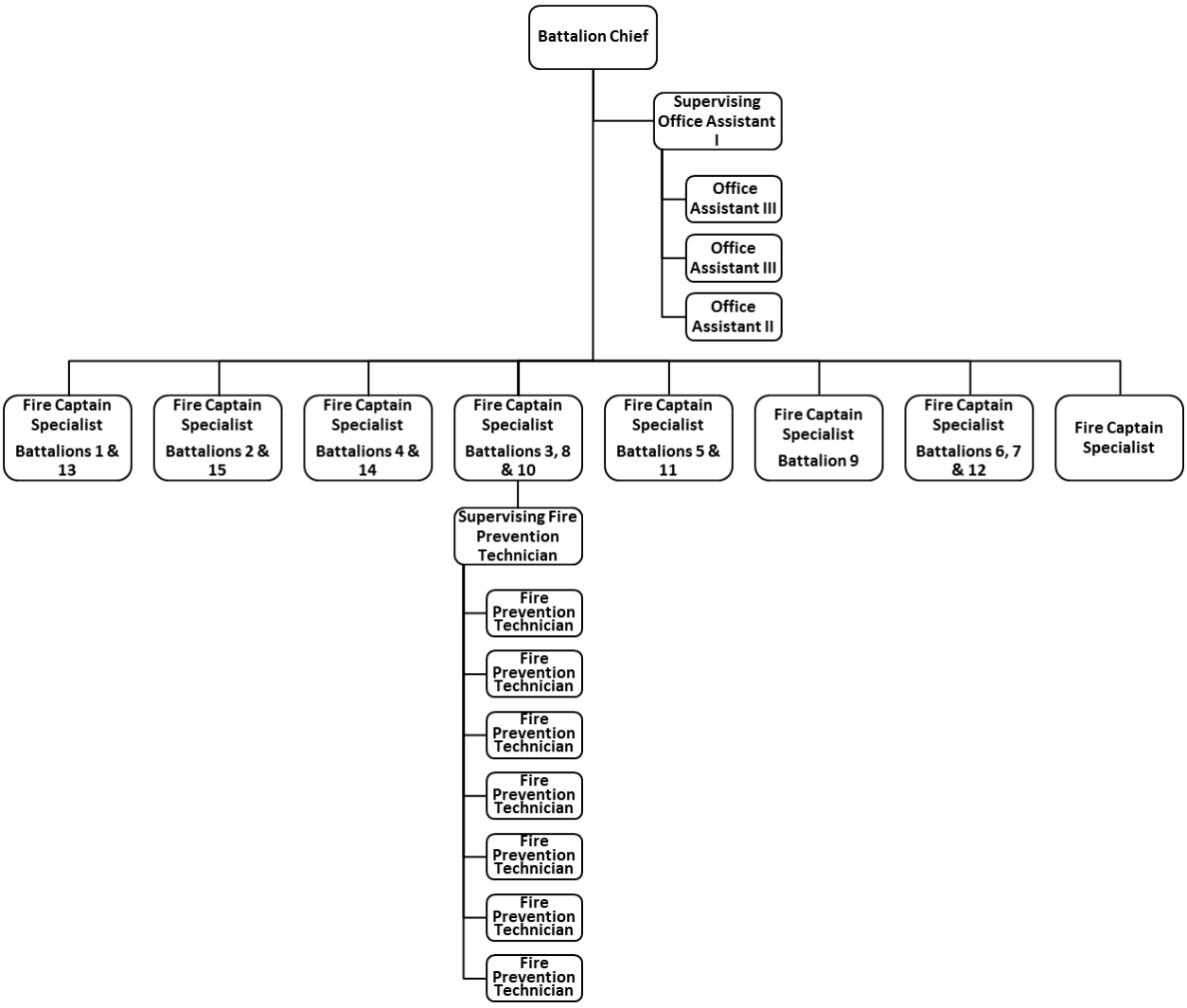
The statement sums up the responsibilities of the OFM and the main thrust of their overall mandate as an organization emphasizing the fire life safety code, permitting and life safety code inspections.

It is at this place organizationally where the fire prevention functions veer slightly from more traditional organizations. The Office of the Fire Marshal is structured somewhat differently than is typical in many other systems. It is in name and function organizationally separated from the Fire Prevention and Law Enforcement (FPLE) Division, which falls under CAL FIRE. The two divisions work closely together with OFM primarily focused on enforcement of the California Fire Code as part of its fire and life safety engineering, permitting and inspection

services. OFM is primarily focused on building code enforcement, building construction plan check, inspections and meeting state mandates, while FPLE is largely focused on fire investigations and fire prevention code, wildland fire prevention and hazard/ weed abatement inspections.

The OFM division is comprised for the most part by County employees and FPLE are State CAL FIRE employees. Unlike more traditional systems the Fire Marshal is a civilian position and the FM has no jurisdiction or management functions over fire investigations or public education. The OFM does have a RCFD/CAL FIRE captain in the group, but the FM only coordinates his duties and activities, he does not formally supervise that individual. That captain manages the team members at the City of Indio, and works with OFM coordinating vegetation abatement efforts by handling complaints, hazard abatement compliance, public education efforts in that area, violation issuance, wildland urban interface, etc. Figure 88 shows the organizational structure of FPLE:

Figure 88: Fire Prevention and Law Enforcement Organization Chart



Fire and life safety code enforcement also is bifurcated, with the OFM being responsible for much of that work. As shown above, a separate Battalion Chief oversees the FPLE. In simple terms OFM acts more in the capacity of a building codes division, whereas FPLE is the investigation, enforcement section.

According to the latest the organization chart on the county website dated May 15, 2015[15], OFM shows 62 FTE positions. The authorized positions are listed as follows:

- Fire Marshal (1)
- Deputy Fire Marshal (4)
- Fire Captain (1)
- Fire Protection Engineer (1)
- Assistant Fire Marshal (8) (1 vacancy)
- ASA (1)
- Fire Safety Specialist (17)
- Fire Systems Inspector (19)
- Administrative Assistant (2 – city of Moreno Valley employee)
- Office Assistant III (7)
- Permit Technician (1 - city of Moreno Valley employee)

Recommendation 40: Fill the Assistant Fire Marshal vacancy and bring the staffing level to the authorized level of 62 positions.

OFM contracts out a large portion of its employees to partnering cities to provide building code and California Fire Code enforcement to those jurisdictions throughout the County. When OFM County personnel are added to the Schedule A of the City Contract with RCFD, cities pay the full personnel costs for the time individuals are working for the contract city. All building plans—new construction as well as renovations and rehabilitation of existing buildings—are reviewed and approved under this section for structural fire and life safety codes. This section is also involved in preplanning meetings and is available for consultations with builders, engineers, and architects.

[15]http://www.rvcfire.org/stationsAndFunctions/AdminSppt/FireMarshal/Documents/Org%20Charts/OrgChart.pdf

The Current County Situation

It is important to note the environment in which the OFM and/or FPLE and the fire department overall have to function. As previously stated RCFD has a vast fire protection area to cover. It includes some 7,200 square miles and more than 1.3 million residents. There is a diverse abundance of various types of topography, terrains, suburban, rural and urban landscapes in this multi-faceted county that not only greatly affect fire protection but fire prevention and life safety codes as well.

Described by officials as a once "wide open underdeveloped county with vast tracks of open space, the County now is impacted by a development boom". Coupled with this development rush are vast land tracks of desert and wildlands that pose a significant wildland fire risk across the entirety of the county. The wildland fire risk exacerbated by the extremely devastating drought condition throughout the State of California and resultant lack of water that has especially hit Riverside County hard. Indeed, in acknowledgment of this problem RCFD in its 2014 Annual Report stated:

> *Riverside County Fire, in cooperation of the California Department of Forestry and Fire Protection (CAL FIRE) are cognizant of the ongoing drought issues and declining availability of water and its potential threat to communities and individual properties.* [16]

Because of this unprecedented double phenomenon of development and risk, the role of both divisions becomes eminently important.

Another important factor in the county fire prevention efforts and approach is the 22 cities in the county, which are serviced in some form by the OFM and FPLE. Because of the complexity and sheer size of the fire service, fire protection needs, enormity of the county, plethora of city governments and various partnerships with cities, continuity in coordinating codes and code enforcement service provision in a unilateral fashion has posed problems. Many of these issues have been mitigated by the advent of the adoption by the County and their Partnering Cities of the state-wide 2013 California Fire Code. Riverside County Ordinance 787.7 has added a greater continuity of standards and code adoption across the county that heretofore did not uniformly exist. Every three years California adopts a new state code, which Riverside County in turn adopts. The following section of the Ordinance comprehensively addresses seven of the critical areas of risk associated with the county:

> *D. Riverside County has an arid climate with annual rainfall varying from three (3) inches in Blythe to over thirty three (33) inches in Pine Cove. The County also experiences annual hot, dry Santa Ana Winds, which contribute to fires spreading quickly throughout the County.*

[16] Ibid

E. A variety of regions exist within Riverside County including deserts, mountains, brush covered wild lands, the Salton Sea and agricultural lands. Additionally, elevations within Riverside County range from three hundred (300) feet below sea level to mountains over ten thousand (10,000) feet. This variety in regions contributes to an increased emergency response time, which necessitates cooperation between local agencies.

F. Riverside County contains a large number of sensitive habitats for various species and vegetation, consists of large open space areas between major urban centers and includes landscapes varying from mountains and hills to valleys and deserts. These conditions impact building and structure location, which impedes emergency access and response.

G. Riverside County extends from Orange County to the State of Arizona and is mixed with congested urban areas, rural lands and wild lands, which increase Riverside County Fire Department response times to emergencies.

H .Two major earthquake faults, the San Andreas Fault and the San Jacinto Fault, bisect Riverside County and numerous minor faults exist throughout it. As a result, a substantial amount of property and persons located in Riverside County are likely to be impacted by earthquakes and will emergency response and rescue.

I. The topography within Riverside County extends from flat to twenty-five (25) percent slope for habitable land, which causes buildings and structures to be located in unique areas that impact emergency response and access.

J. In addition to earthquakes, a substantial amount of property and persons located in Riverside County are likely to be impacted by landslides, wind erosion, blown sand, flooding and wildfires because of the County's unique climatic, geological and topographical conditions. [17]

Because of these multiple risks both the OFM and FPLE have taken a highly commendable, aggressive and proactive approach to fire prevention in the County. The County's overall approach is laid out in 787.7.

Revenue shortages and the vastness of the county make it difficult to provide necessary staffing and deployment, the county adheres to strict fire prevention and building codes that should and do prevail. The RCFD Fire Chief also has very strong executive powers under 787.7 and 787.6, to close vast tracks of land deemed Hazardous Fire Areas. The Fire Chief has already exercised these powers and on June 3, 2015 closed those areas and restricted public access until

[17] http://www.rvcfire.org/stationsAndFunctions/AdminSppt/FireMarshal/Documents/Informational%20Bulletins/Ord_o_787_7.pdf

further notice. He has the further power to close additional areas based on conditions. Currently seven areas are closed:

- Avery Canyon (Gibbel Road east of State Street in Hemet)
- North Mountain and Indian Canyon (San Jacinto area)
- Whitewater Canyon (Cabazon, north of Palm Springs)
- Nuevo/Lakeview (east of Menifee Road and San Jacinto Avenue)
- Minto (Sage)
- Reinhardt Canyon (north of Highway 74 and California Avenue in Hemet)
- Ramona Bowl and Bautista Canyon (southeast Hemet)

Another excellent feature of Ordinance 787.7 is the requirement that all new construction greater than or equal to 3,600SF (or when the California Fire Code require a smaller area) must have automatic sprinkler systems. This is a major boon for all involved; citizens, firefighters and property owners. The requirement is comprehensive and includes all new construction including residential. This is a requirement that many communities have major problems in implementing so the fact that Riverside County was able to get this enacted is quite notable. The relevant section of the Ordinance states:

> *All new buildings and structures 3,600 square feet or greater shall have an approved automatic sprinkler system, regardless of occupancy classification. One and two-family dwellings shall have an automatic fire sprinkler system regardless of square footage in accordance with the California Residential Code. Fire sprinkler systems shall be installed in mobile homes, manufactured homes and multifamily manufactured homes…*[18]

Riverside County is to be highly commended for having this requirement in place. The only drawback is that it is not retroactive.

Sections and Responsibilities

Fire Marshal – The Fire Marshal is relatively new to the position, though he has 20 years of previous experience in other jurisdictions before coming to Riverside County. He has excellent training and background for all of the areas that encompass the OPM. He provides excellent leadership in his division and is highly respected by personnel. The Fire Marshal is responsible for managing the division, including the budget and personnel, and provides oversight for all OFM programs throughout the County. He coordinates with other divisions in the RCFD and represents the OFM on special interagency committees and groups. One major change that has occurred in his 2½ year tenure has been the consolidation and improvement of

[18] Ibid

consistency between the services OFM provides to Riverside County and partner cities. The entire team is to be commended for this effort.

Deputy Fire Marshal – There are several levels of Deputy Fire Marshal (DFM) duties and positions within the OFM organizational structure. The DFM position primarily oversees and coordinates sectors of the Riverside County OFM system, which spans several geographic areas of the county. There are four DFMs and one RCFD captain assigned to one region in the capacity of a DFM. DFMs essentially act as de facto fire marshals for the regions to which they are assigned. The County DFM position heads up six sectors, while the other four positions head up single sectors, which fall under their purview. The DFMs work with Division Chiefs who administratively are the head of the divisions. All of the DFMs oversee and coordinate the various Assistant Fire Marshals who in turn manage the districts and partnering cities they represent.

Assistant Fire Marshal – The Assistant Fire Marshal (AFM) position assists with adoption and enforcement of codes and ordinances and acts as the county's direct liaisons and middle managers with the partnering cities to which they are assigned. They also handle payroll, personnel evaluations, community events, inspection scheduling, and code enforcement duties. AFMs are on the frontline of dealing directly with the partnering cities and managing the inspectors and specialists in the field. Despite positive efforts and strides to provide consistency in interpretation and enforcement across the county, inconsistencies do still exist. It is part of AFMs responsibility to interpret these inconsistencies, communicate them to the communities they serve and the county OFM.

Recommendation 41: Efforts to create consistency throughout the County and partner cities in code enforcement, interpretation and direction should continue. Increased frequency of communication on this effort through formal, regularly scheduled communication channels with DFMs and AFMs should be established.

Fire Prevention and Law Enforcement Division – The FPLE Division enforces hazard reduction using a very effective enforcement tool embodied in Ordinances 787.7 and 695. Authorized positions within FPLE are:

- Battalion Chief (1)
- Captains/Investigators (8) 1 vacancy
- Office Staff (4) 1 vacancy
- Seasonal Inspectors (4) (April – November)
- Supervisor/Hazard Reduction (1)
- Inspectors (7) 1 vacancy

The seven Fire Captains assigned to investigations work 72-hour shifts over three days, and the Battalion Chief who oversees investigations and hazard reduction works a 72-hour shift over four days.

FPLE uses Public Resource Code 4291 to mitigate wildland urban interface. All the inspectors are NFPA-certified Inspector I's and Inspector II's. FPLE also acts as the fire investigation unit for the County and their investigators who are all at the rank of Captain are California certified peace officers with arrest powers.

There are three sections in Fire Prevention and Law Enforcement:

1. **Custodian of Records** – This function of FPLE processes public records under the California Public Records Act. The purpose of the act is as follows:

> … a law passed by the California State Legislature and signed by the Governor in 1968 requiring inspection and/or disclosure of governmental records to the public upon request, unless exempted by law. The law is similar to the Freedom of Information Act, except for the fact that "the people have the right of access to information concerning the conduct of the people's business" is enshrined in Article 1 of the California Constitution due to California Proposition 59 (the Sunshine Amendment).[19]

Important about the law and why the RCFD provides this service is because of state legislation, which requires *local governments to comply with requests for publicly available documents*. Local governments are required to *pay the costs of those requests in full.* To meet the requirements, FPLE has a staff of three to administer to act as record custodians. These individuals work closely with the District Attorney's office and law enforcement agencies to provide subpoenas, etc. to the public.

2. **Hazard Reduction (HR)** – Hazard reduction is a tag for hazard abatement. It is one of the most critical functions performed by FPLE, especially considering the wildfire (and drought) conditions inherent to the region. The hazard abatement program covers monitoring and hazard mitigation for all unimproved, unincorporated vacant parcels and vacant lots. Personnel assigned to HR inspect right of ways to make sure railways throughout the county have clearance and do not pose fire hazards from vegetation. They also inspect power lines for posed sparking hazards as well as conduct tumbleweed abatement, monitor violations for open burning and citations for individuals throwing cigarettes from cars. Personnel also issue permits for fireworks.

FPLE responsibilities cover state property and the county. Partner cities are responsible for their jurisdictions. RCFD fire companies in coordination with FPLE perform limited company inspections for weed abatement around properties within a 10 minute radius around the fire station. If violations are issued and after a prescribed amount of time, the property owner does not remove the hazard, the FPLE has the power to clear the hazard through the hiring of contractors; the County then may recover any costs associated with the removal from the owner. The efforts of FPLE with the support of the regulations have improved the hazard abatement situation, though it is a continual process to maintain the progress. Laws on defensible space,

[19] https://en.wikipedia.org/wiki/California_Public_Records_Act

cost recovery for abatement, negligent arson and issuance of violations have all contributed to the positive results.

In 2015, FPLE conducted 66,664 inspections of parcels with 11,135 notices of violations issued. Private contractors were hired to correct 575 of the violations. FPLE also conducted:

- 28 investigations of groves/vineyards – 7 violations and 1abatement
- 470 miles of railroad right of ways – no violations
- 32,360 powerline inspections – 92 violations (31 corrections)

FPLE is to be commended on performing so much work over such a vast area. However, it is doing so with several vacancies, including a captain's position that was eliminated due to budget concerns. The number of violations issued vs. the number of violations corrected or abated is not a particularly good and shows that follow-up inspections need to be stepped up.

3. **Fire Investigation Section** – CAL FIRE Law Enforcement officers investigate origin and cause fires as part of their duties. A majority of investigations are result fires considered incendiary. Investigators automatically respond when there has been an arrest at a fire scene. They also respond when the following situations arise:

- Fatal fires
- Explosions
- Fires with injuries
- Multiple-alarm fires
- Occupied structure fires
- Wildfires

In 2015, RCFD investigators handled 327 cases. Of these, warrants were served in 24 cases with felony charges in 38 cases. Another 189 cases resulted in misdemeanor charges. Prosecutors in Riverside County received high marks for their knowledge and understanding in prosecuting criminal fire cases. Prosecutors have taken arson prosecutor training and participate in training with FPLE investigators. This is not always the true as prosecutors in many jurisdictions are not as familiar with how to handle arson cases.

When not automatically responding for the above-noted incidents, investigators would typically respond only after reviewing fire incident reports, or when requested by the fire scene commander. The response procedures used by RCFD are typical for most fire agencies having investigation responsibilities.

The Battalion Chief responsible for fire investigation in the county is of the opinion that a majority incendiary fires are related to:

- Drugs
- Insurance fraud
- Domestic violence cases
- Homelessness
- Mental health issues
- Gang related arson

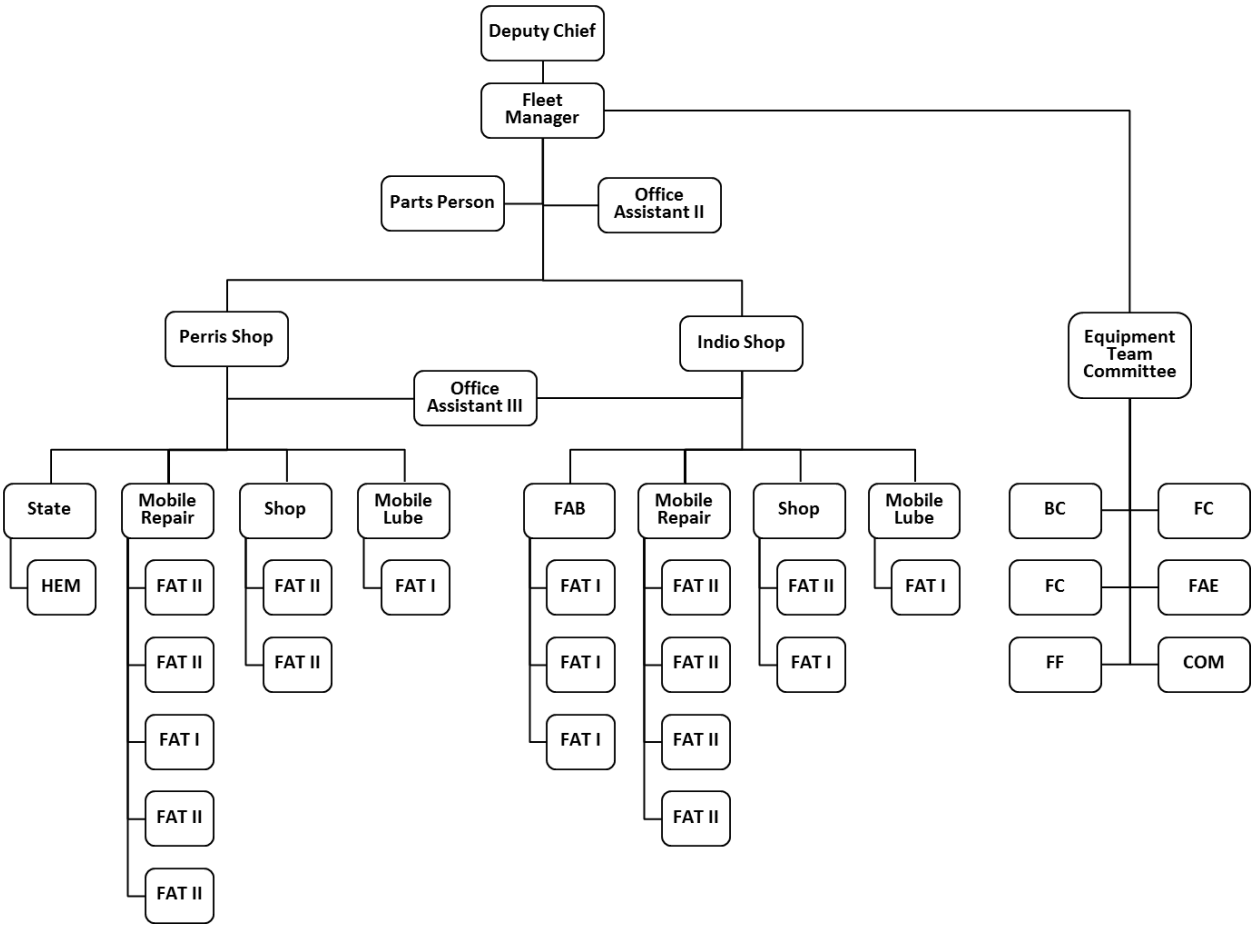
Recommendation 42: Fill the two vacancies in the FPLE and the Captain's position, which was eliminated to bring the staffing level to 24 FTEs. Staffing levels throughout the FPLE are low, given the scope of geographic area to be covered, level and number of inspections, and investigations.

Fleet Services

Fleet Services (FS) is headed by the Fleet Services Manager (FSM) who reports directly to the Deputy Fire Chief of Central Operations. Hired in 2013, the FSM has made positive strides in improving the division since his arrival. There are two relatively small apparatus service facilities/shops that serve the RCFD fleet for the entire County. An Apparatus Fleet Supervisor oversees each shop.

There are 23 FTE's in FS: 2 supervisors, 7 Fire Apparatus Technician (I), 11 Fire Apparatus Technician (II), 1 State HEM, 2 Office Assistants. A support group (Equipment Team Committee), which assists in writing and reviewing vehicle specifications is also under FS. Figure 89 shows the organizational structure of the FS.

Figure 89: RCFD Fleet Services



A site visit to the RCFD Apparatus Division shop was conducted in September 2015, during which we met with representatives from the Fleet Services. Apparatus maintenance is an integral part of any fire department and budget wise it is invariably a large ticket item—it takes a big chunk of the budget to maintain a fleet. RCFD is fortunate to have an excellent fleet. Most of the RCFD's fire units are in excellent condition and personnel take great pride in maintaining apparatus at their stations.

As fleets age, it is logical and sound planning to conclude that repairs and costs will increase. There are two proven ways to mitigate the long term and short-term costs associated with repairs and replacements. The primary way is to have a sound, dedicated Preventative Maintenance (PM) program that is on a regular cycle for each and every vehicle in a department's respective fleet. This strategy not only saves money, but saves lives as well by keeping the number of viable fleet apparatus ready to respond to emergencies. The other method is to have a realistic Capital Improvement Plan (CIP) replacement plan for new apparatus when the old has outlived its usefulness. NFPA 1911, which sets standards for Guidelines for First-Line and Reserve Fire Apparatus, has changed and adapted over the years to reflect the changes in industry standards. It states:

> "The length of that life depends on many factors, including vehicle maintenance, engine hours, quality of the preventive maintenance program, quality of driver training program, whether the fire apparatus was used within the design parameters …*there are fire apparatus with 8 to 10 years of service that are simply worn out. There are also fire apparatus …that have excellent maintenance, and that have responded to a minimum number of incidents that are still in serviceable condition after 20 years. …the care of fire apparatus while being used and the quality and timeliness of maintenance are perhaps the most significant factors in determining how well a fire apparatus ages."*[20] *[Italics added]*

The most important assumption for a review of this nature is that accurate data exist about the fleet and the dollar costs and labor time needed to maintain it. Without baseline data on fleet resources, it is extremely difficult to effectively analyze the fleet and to make recommendations about replacement schedules and mechanic productivity with full confidence.

Preventive Maintenance (PM) – PM on RCFD apparatus is performed every six months or 6000 miles and is tracked electronically by Fleet Mate software. RCFD drivers also do daily apparatus checks that come from a derived form developed by the fleet services. This is an effective and efficient maintenance program, which undoubtedly saves the department significant dollars. We see no need for any significant change to the current model. There is very little deviation from the PM schedule and adhering to PM and its predetermined schedule is a priority as there is little tolerance for not meeting the schedule.

The call volume that RCFD handles takes its toll in wear-and-tear on the apparatus. It is simply impossible to subject apparatus to the beating that most fire department vehicles of this complexity endure, not maintain them, and then expect them not to break down. Deferred maintenance does not defer the problems—it simply makes them more expensive to fix when they do emerge. PM is the best way to catch such problems early. NFPA 1911 is clear on this point:

> Fire apparatus are increasingly complex pieces of machinery that require regular preventive maintenance to keep them safe and reliable and to maximize their life and value. It is not enough to just repair problems when they occur or to perform maintenance when it is convenient… In order to keep a fleet of fire apparatus in good condition, a good plan is necessary to ensure that all required maintenance is performed.[21]

National Fire Protection Association (NFPA) Standard 1915 (Standard for Fire Apparatus Preventative Maintenance Program) addresses the minimum expectations for a comprehensive PM program. The benefits of implementing a PM program in compliance with NFPA 1915 are

[20] NFPA 1911 – Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus; Appendix D.
[21] http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1911

many. First, maintaining a vehicle is less expensive than repairing it. Second, vehicles that undergo PM on dedicated schedule are more likely to have a longer lifespan. Third, PM reduces time that a vehicle is unavailable for use in the community by reducing the chances of needing length repairs. Finally, demonstrating adherence to an NFPA 1915-compliant PM program reduces the chance of a maintenance-related untoward event and possible resulting lawsuits.

Procedures for Fleet Management – Having a set of well-planned, systematic, and structured performance guidelines and policies are one of the most important keys to success for a fleet management organization. This is accomplished in a number of ways:

- Monitoring the progress and, where necessary, expediting the completion of work. This includes protocols for passing work from one technician or shop to another, and/or from the shop to a vendor.
- Establishing strictly adhered to protocols and procedures for a Preventative Maintenance program for the entire fleet.
- Following up on repairs of which completion by a technician or vendor is excessively slow, and on parts for which delivery is overdue.
- Ensuring that appropriate controls over the services and costs provided by a vendor are in place. Such controls are particularly important as vehicles approach their planned replacement dates.
- Scheduling work into the shop in advance, in order to ensure the cost-effective utilization of in-house resources and to minimize maintenance and repair turn-around time and downtime.
- Performing minor repairs while the driver and his/her crew wait.
- Distributing work to technicians so as to promote high levels of productivity, efficiency, and effectiveness, and minimizing repair turn-around time by assigning work to a specific technician based on the skills needed to complete the job.
- Establishing priority systems for identifying vehicles that should be moved ahead in the repair queue based on their importance and/or the type of work involved.
- Assigning work to vendors, relied upon to help out for a variety of reasons, including managing in-house work backlogs and tooling; accomplishing specialty repairs; and achieving a degree of flexibility (in terms of locations, hours of service, etc.) in the provision of services.
- Mechanic tools requirements and acquisition

It appears that RCFD Fleet Services generally has a system of best practices in place that addresses these guidelines. Fleet Services is to be commended in this area. The fact that these general guidelines are in place is a testament to the leadership of the Fleet Services Manager and the Deputy Chief of Central Operations.

Fleet Records Management – The primary benefit of a fully integrated fleet management information system (FMIS) is the ability to manage all aspects of fleet operation through a single interface or toolkit. Having all pertinent transactional and management data consolidated in a single system and available to all fleet users provides an effective tool for day-to-day management of the operation, a basis for timely management decisions and an efficient information retrieval and reporting platform.

Accurate, easily accessible information is crucial to all aspects of fleet management. Top tier FMIS systems are specifically tailored to meet fleet management needs and can accommodate:

- detailed vehicle inventory information
- multiple methods for tracking vehicle use
- tracking and managing equipment maintenance, repairs, recalls, and warranty activities performed commercially and internally
- work scheduling
- maintaining reportable, historical information on all equipment utilization, fueling, and maintenance and repair activities and costs
- parts inventory and processing detail
- labor hours tracking and cost calculations
- billing and cost analysis tools
- site-specific data

The system must also be intuitive to enable a range of users to work effectively with the system while providing enough flexibility to manage and extract critical data for management analysis.

RCFD Fleet Services utilizes FLEETMATE Fleet Maintenance Management Software. FLEETMATE is a downloaded software program, which tracks hours of repair and mechanic hours spent on a particular job. It is full-featured fleet maintenance software program that helps you keep PM up to date, and it keeps your service, fuel and expense data organized and easy to access.

FLEETMATE is a versatile, economical fleet maintenance management software tool, which also has the capacity to track and keep parts inventories. Fleet Services stocks parts but does a poor job at tracking them. As a result mechanics have to chase down parts because they are inventoried very poorly and there is virtually no parts accountability. FLEETMATE is not currently being used for parts inventory and parts processing, including ordering, stocking, and parts movement. No apparent standard operating procedure, secure process, or consistent procedure is in place for any aspect of parts management.

If fully implemented, FLEETMATE can handle parts inventory management and parts tracking, that encompasses the entire procurement process from order and receipt through issues including warranty replacements, core tracking/returns, and vendor credits through the accounting system. Presently the parts inventory feature on FLEETMATE is not used at all. The problem appears to be the insufficient staff to implement and use the parts program. There have been discussions to hire a parts supervisor, though no one has been hired. Within FLEETMATE there is also a barcode function to track supplies and equipment. As with parts, this function is not used either.

Recommendation 43: Begin to use the parts control and barcode functions within the FLEETMATE program. Doing so will likely require hiring a parts supervisor.

Personnel Qualifications and Training – The two leading certifications for fire mechanics are Automotive Service Excellence (ASE) and Emergency Vehicle Technician (EVT). The EVT certification helps keep mechanics in this special field abreast of changes in complex technologies, diagnostic tools, and repair techniques. Requiring mechanics to have ASE certification is the industry standard in the fleet management profession. For emergency services, EVT has become the preferred standard (in addition to requiring that mechanics have ASE certification).

Mechanics in the RCFD Fleet Services Division are highly trained mechanics and have at a minimum ASE certification. Depending on their classification mechanics may also have:

- Fire Pump and Accessories Certification
- Fire Preventative Maintenance Certification
- Allison Transmission Certification
- Fire Electrical I Certification
- Fire Electrical II Certification (required for promotion)

Recommendation 44: Maintain the ASE standard for the fleet and begin to implement the EVT standard as time and resources allow.

Apparatus Replacement – The CIP replacement program for apparatus is generally good, though not well coordinated with contract cities. The replacement cycle is 20 years; 10 years for engines and ladder trucks in frontline service 10 years as a reserve. Because of the wear and tear on the apparatus Fleet Services would like to change the cycle to 8 years frontline and 12 years reserve. The replacement cycle is reasonable and within NFPA 1911 suggested standards.

RCFD is often at the mercy of the 20 contract cities in determining when fire units will be replaced. RCFD spends considerable time managing the apparatus procurement process having to coordinate separately with the county and contract cities. The current situation has evolved as the county contracted with more cities but now is a good time to adopt a more formal CIP schedule that is reviewed by cities every few years as the CIP is updated.

One of the recommendations of this study is to possibly change the way cities pay for services, such as by paying for a share of the total system not just their city. If such a plan were implemented, a regional CIP for apparatus becomes even more advantageous.

Recommendation 45: Formalize the CIP for apparatus replacement by having a single plan funded by the county and contract cities based on their share of the total system.

Fleet Facilities – The Perris facility is limited in space and the Apparatus Services division is in dire need of a new centralized facility which can handle the capacity of the entire 700 plus pieces of equipment in the fire department. A secondary facility is also available in Indio; however, this facility also has severe space limitations. Given the changes in the size of the fleet and the size of individual apparatus that compose the RCFD fleet since the shop facilities were constructed, both facilities have reached the end of their useful life as a repair facility.

The Perris shop is the main RCFD repair site. The layout is good, however there is insufficient floor space accommodate the large number of vehicles needing repairs. Many repairs are completed outside (which is not good in the hot climate experienced in Riverside County). Low ceiling height is also a problem.[22]

The apparatus work area in Perris was clean, well kept, organized and open. It seemed a hospitable place to work. The shop was so open that it was almost like an open space work area with plenty of ventilation. The work areas were tight but functional. Mechanics seemed motivated and were able to work well with each other within the confines of the available space. There were various apparatus parked on the aprons and tarmacs surrounding the facility, but not to the point of creating an unmanageable glut of unattended units.

Vehicle lifts, while mostly adequate, cannot support some of the RCFD units and there are a limited number of lifts. Mobile lifts are available and these are the only ones capable of lifting heavy apparatus. Problematic is that when service work requires a wheel to be removed from the vehicle, however, it cannot be accomplished with a mobile lift system in place as such systems lift the vehicle by the wheels. As a result, the units must be lowered onto portable jack stands. This is a time-consuming process, and it requires that the weight of the vehicle be transferred from the mobile lifts to the jack stands – a maneuver that can have disastrous consequences if not done correctly.

Recommendation 46: Begin the planning process to replace the Perris and Indio facilities, preferably within the next five years.

[22] Having high ceilings is essential for servicing fire apparatus because apparatus must often be lifted with the drivers' cab tilted, and aerial devices often need to be elevated for servicing or testing. A recent report written by the City of Albuquerque Office of Internal Audit surveyed nine jurisdictions and found ceiling heights in repair facilities for fire apparatus averaged more than 22 feet, with two shops having ceiling heights of greater than 30 feet.

IX. SUMMARY OF RECOMMENDATIONS

Following is the entire set of recommendations (and page number) for each.

Recommendation	Page
CHAPTER III. RCFD ORGANIZATION; FIRE, EMS, AND SPECIAL OPERATIONS	
Recommendation 1: Consider adding the position of chief deputy to oversee the entire operations division of the RCFD. Two deputy chiefs could each then manage a third of the coverage area. Well over 4,000 square miles of Riverside County from the Coachella Valley to Blythe is desert with little activity, so a deputy chief for the eastern area of the County is not really necessary.	44
Recommendation 2: Institute a formal professional development and succession planning program for aspiring officers, especially those wanting to be chief officers. A best practice is to include specific educational requirements and attendance to executive-level programs such as the EFOP. As part of the program, identify officers who should attend such programs and assign them to attend. Unless for personal reasons, an individual that refuses professional development opportunities are probably not the best to be considered for advancement.	44
Recommendation 3: Consider reorganizing the RCFD to achieve a better balance of division and battalion chiefs, at the same time adding the position of chief, special operations. Later in this section we discuss the staffing for the various divisions and battalion to achieve better balance and to improve the 24/7 coverage of chief officers.	50
Recommendation 4: Increase staffing at Calimesa to three and reduce staffing in Temecula from four to three and open Station 95.	52
Recommendation 5: RCFD should limit the number of consecutive work shifts for emergency responders assigned to structural and medical type duty.	53
Recommendation 6: Include as part of policy discussions concerning RCFD services and deployment, dialogue about the current workweek and schedule of fire personnel and its sustainability in the future. As the workweek and schedules are policies of the state (CAL FIRE), it will need to be part of any discussions about whether the situation in Riverside County is unique, as compared to other CAL FIRE departments that are considerably less busy.	53
Recommendation 7: Review the staffing factor used to determine the number of personnel needed to staff the RCFD. Going forward, continue to adjust the staffing multiplier as leave and work hours change.	53
Recommendation 8: Intensify efforts to change the unit staffing to the 'municipal mode' that has a fire captain on every fire unit.	53
Recommendation 9: Consider eliminating the battalion chief assigned to Battalion 8 and implement an alternative model, possibly one of the suggestions made above.	56

Recommendation	Page
Recommendation 10: Reorganize the RCFD's divisions and battalion to provide 24/7 coverage by 12 or 13 battalion chiefs. Coverage and response time is better achieved by having battalion chiefs in their districts 24/7 than on-call at home after hours. Under either plan (12 or 13 battalions) these can be effectively managed under four division chiefs.	58
Recommendation 11: With any realignment of battalions, change the policy to require battalion chiefs to remain in their battalion at night, preferably at the station which is their battalion headquarters.	58
Recommendation 12: Review the deployment of two engines at the above seven stations. At the same time develop a policy guideline for locating multiple units of the same type at stations. Where stations have two engines, evaluate the situation annually using the adopted guidelines.	61
Recommendation 13: Modify the cost formula for ladder trucks such that all communities pay a portion of the total cost for ladder trucks. This could be done on a county-wide basis to divide the cost amongst all of the contract cities and the county, or on a regional basis with the communities in the Coachella Valley (Central County) and West County apportioned for the ladder truck service in their region.	62
Recommendation 14: Consider adding a medic a squad to each station having a ladder truck and cross-staff the unit. The cost savings for the reduction of ladder truck maintenance will be significant, not to mention the costs of replacement due to overuse responding on medical calls.	62
Recommendation 15: Add several Zodiac water rescue crafts and strategically locate them based on historical experience with flooding. Train the crews at these stations in swift-water rescue tactics.	63
Recommendation 16: Reinstitute the position of chief, special operations. It is preferable that the position be at least a division chief.	64
Recommendation 17: Maintain the current level of response to structure fires.	65
Recommendation 18: Establish a policy to track the response travel times to all calls involving structure fires. Analyze the results at least quarterly and then use the analysis to determine any changes to unit locations that may be required, going forward.	65
Recommendation 19: Develop an urban/wildland ordinance and assertively work with the County and contract cities to obtain approval. In parallel, deliver a comprehensive public education program about the realities of wildland/urban interface fires and the need for defensible space and improved build location and construction within these areas previously mapped by CAL FIRE.	66
Recommendation 20: In addition to adding medic squads to stations with ladder trucks, add medic squads to the Stations 6, 7, 37, 65, 71, and 101.	67

Recommendation	Page
Recommendation 45: Formalize the CIP for apparatus replacement by having a single plan funded by the county and contract cities based on their share of the total system.	231
Recommendation 46: Begin the planning process to replace the Perris and Indio facilities, preferably within the next five years.	231

X. APPENDICES

A. RCFD Apparatus Resources and Locations

B. Total Incident Forecasting Method

C. Performance Measurement

D. Evaluating Unit Workloads

E. Unit Availability vs. Response Time Performance

F. Station Location GIS Analysis Maps

G. Information on Contract Fee Options and Comparisons

A. RCFD Apparatus Resources and Locations

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN01	D1	Dozer - Type 2	County	1	Paid	
	D3141	Dozer - Type 2	State	1	Paid	
	DT1	Dozer Tender	County	1	Paid	
	DT3141	Dozer Tender	State	1	Paid	
	E3168	Engine - Type 3	State	3	Paid	
	E3175	Engine - Type 3	State	N/A	Unstaffed	Reserve
	E3176	Engine - Type 3	State	3	Paid	
	WT1	Water Tender	City	1	Paid	
STN02	E2	Engine - Type 1	City	3	Paid	
	T2	Aerial Truck	City	4	Paid	
	USAR2	Urban Search & Rescue	City	N/A	Unstaffed	
STN03	E3	Engine - Type 1	County	3	Paid	
STN04	BR4	Engine - Type 3	County	N/A	Unstaffed	
	E4	Engine - Type 1	County	3	Paid	
STN05	E5	Engine - Type 1	City	3	Paid	
STN06	E206	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E6	Engine - Type 1	City	3	Paid	
STN07	E207	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E7	Engine - Type 1	City	3	Paid	
	SQ7	Squad	City	N/A	Unstaffed	
STN08	E8	Engine - Type 1	County	3	Paid	
	SQ8	Squad	County	N/A	Unstaffed	
	WT8	Water Tender	County	N/A	Unstaffed	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN09	E9	Engine - Type 1	County	3	Paid	
	WT9	Water Tender	County	N/A	Unstaffed	
STN10	E10	Engine - Type 1	City	3	Paid	
	E3166	Engine - Type 3	State	3	Paid	
	E3173	Engine - Type 3	State	3	Paid	
STN11	E11	Engine - Type 1	County	3	Paid	
	E211	Engine - Type 2	County	N/A	Unstaffed	Reserve
STN12	E12	Engine - Type 1	City	4	Paid	
	E212	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E3167	Engine - Type 3	State	3	Paid	
	E3171	Engine - Type 3	State	3	Paid	
STN13	E13	Engine - Type 1	County	3	Paid	
	SQ13	Squad	County	N/A	Unstaffed	
STN14	E3174	Engine - Type 3	State	3	Paid	
	E3178	Engine - Type 3	State	N/A	Unstaffed	Reserve
STN16	E16	Engine - Type 1	County	3	Paid	
STN17	E17	Engine - Type 1	County	3	Paid	
	SQ17	Squad	County	N/A	Unstaffed	
	T17	Aerial Truck	County	4	Paid	
	USAR17	Urban Search & Rescue	County	N/A	Unstaffed	
STN18	BR18	Engine - Type 3	County	N/A	Unstaffed	
	E18	Engine - Type 1	County	3	Paid	Winter Staffed
	MS18	Medic Squad	County	2	Paid	Summer Staffed
	E3164	Engine - Type 3	State	3	Paid	
STN19	E19	Engine - Type 1	County	3	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN20	D3142	Dozer - Type 2	State	1	Paid	
	DT3142	Dozer Tender	State	1	Paid	
	E20	Engine - Type 1	City	3	Paid	
	E3160	Engine - Type 3	State	3	Paid	
	E3170	Engine - Type 3	State	3	Paid	
STN21	E21	Engine - Type 1	City	2	Paid	
STN22	E22	Engine - Type 1	County	3	Paid	
	E222	Engine - Type 1	County	N/A	Unstaffed	Reserve
	WT22	Water Tender	County	N/A	Unstaffed	
STN23	E23	Engine - Type 1	County	3	Paid	
	E3172	Engine - Type 3	State	3	Paid	
	SQ23	Squad	County	N/A	Unstaffed	
STN24	E24	Engine - Type 1	County	3	Paid	
STN25	E225	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E25	Engine - Type 1	City	3	Paid	
	E3165	Engine - Type 3	State	3	Paid	
	SQ25	Squad	City	N/A	Unstaffed	
STN26	BS26	Breathing Support	County	N/A	Unstaffed	
	E26	Engine - Type 1	County	3	Paid	
	WT26	Water Tender	County	N/A	Unstaffed	
STN27	E227	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E27	Engine - Type 1	City	3	Paid	
	MS27	Medic Squad	City	2	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN28	E28	Engine - Type 2	County	N/A	Unstaffed	Reserve
	E3163	Engine - Type 3	State	3	Paid	
	E3169	Engine - Type 3	State	3	Paid	
	MS28	Medic Squad	County	2	Paid	
	WT28	Water Tender	County	N/A	Unstaffed	
STN29	E29	Engine - Type 2	County	N/A	Unstaffed	Reserve
	E3162	Engine - Type 3	State	3	Paid	
	MS29	Medic Squad	County	2	Paid	
STN30	E30	Engine - Type 2	County	3	Paid	
	SQ30	Squad	County	N/A	Unstaffed	
	WT30	Water Tender	County	N/A	Unstaffed	
STN32	E32	Engine - Type 1	City	3	Paid	
	SQ32	Squad	City	N/A	Unstaffed	
STN33	E33	Engine - Type 1	City	3	Paid	
	M233	Medic Unit	City	N/A	Unstaffed	Reserve
	M33	Medic Unit	City	2	Paid	
	SQ33	Squad	City	N/A	Unstaffed	
	T233	Aerial Truck	City	N/A	Unstaffed	Reserve
	T33	Aerial Truck	City	4	Paid	
	USAR33	Urban Search & Rescue	City	N/A	Unstaffed	
STN34	E34	Engine - Type 1	County	3	Paid	Cross Staffed with HM34
	HM34	Hazardous Materials Unit	County	3	Paid	Cross Staffed with E34
	HM34R	Hazardous Materials Unit	County	N/A	Unstaffed	Reserve
	HMS34	Hazardous Materials Squad	County	2	Paid	
	HMS34R	Hazardous Materials Squad	County	N/A	Unstaffed	Reserve

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN35	E35	Engine - Type 1	County	3	Paid	
	BS235	Breathing Support	County	N/A	Unstaffed	Reserve
	BS35	Breathing Support	County	1	Paid	
STN36	E36	Engine - Type 1	County	3	Paid	
STN37	E237	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E37	Engine - Type 1	City	3	Paid	
	SQ36	Squad	City	N/A	Unstaffed	
STN38	BS38	Breathing Support	City	N/A	Unstaffed	
	E238	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E38	Engine - Type 1	City	3	Paid	
STN39	BR39	Engine - Type 3	County	N/A	Unstaffed	
	E39	Engine - Type 1	County	3	Paid	
	WT39	Water Tender	County	N/A	Unstaffed	
STN40	BR40	Engine - Type 3	County	N/A	Unstaffed	
	E240	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E40	Engine - Type 1	County	3	Paid	
	MS40	Medic Squad	County	2	Paid	
STN41	E41	Engine - Type 1	County	3	Paid	
STN43	E243	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E43	Engine - Type 1	County	3	Paid	
	WT43	Water Tender	County	N/A	Unstaffed	
STN44	E44	Engine - Type 1	County	3	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN45	BS45	Breathing Support	County	N/A	Unstaffed	
	E245	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E45	Engine - Type 1	County	3	Paid	
	USAR45	Urban Search & Rescue	County	N/A	Unstaffed	
STN46	BOAT46	Rescue Boat	County	N/A	Unstaffed	Volunteer Station
	E46	Engine - Type 1	County	N/A	Unstaffed	Volunteer Station
STN47	E47	Engine - Type 1	City	3	Paid	
STN48	E48	Engine - Type 1	City	3	Paid	
STN49	E249	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E49	Engine - Type 1	County	4	Paid	
	WT49	Water Tender	County	N/A	Unstaffed	
STN50	E250	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E50	Engine - Type 1	City	3	Paid	
	M50	Medic Unit	City	N/A	Unstaffed	
STN51	E51	Engine - Type 2	County	3	Paid	
STN53	E253	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E3161	Engine - Type 3	State	3	Paid	
	E53	Engine - Type 1	County	3	Paid	
	WT53	Water Tender	County	N/A	Unstaffed	
STN54	E54	Engine - Type 1	County	3	Paid	
	SQ54	Squad	County	N/A	Unstaffed	
STN55	E55	Engine - Type 1	City	3	Paid	
	M255	Medic Unit	City	2	Paid	
	M355	Medic Unit	City	N/A	Unstaffed	Reserve
	M55	Medic Unit	City	2	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN56	E56	Engine - Type 1	County	3	Paid	
STN57	E257	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E57	Engine - Type 1	City	3	Paid	
	NART57	Animal Rescue Unit	City	N/A	Unstaffed	
STN58	BR58	Engine - Type 3	City	N/A	Unstaffed	
	E58	Engine - Type 1	City	3	Paid	
	SQ58	Squad	City	N/A	Unstaffed	
STN59	E259	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E59	Engine - Type 1	County	3	Paid	
STN60	E60	Engine - Type 1	City	3	Paid	
STN61	E261	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E61	Engine - Type 1	City	3	Paid	
STN63	BR63	Engine - Type 3	County	N/A	Unstaffed	
	E63	Engine - Type 2	County	3	Paid	
	SQ63	Squad	County	N/A	Unstaffed	
STN64	E264	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E64	Engine - Type 1	County	3	Paid	
STN65	E265	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E65	Engine - Type 1	City	3	Paid	
STN66	E266	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E66	Engine - Type 1	City	3	Paid	
	SQ66	Squad	City	N/A	Unstaffed	
STN67	E67	Engine - Type 1	City	3	Paid	
	M67	Medic Unit	City	2	Paid	
STN68	E68	Engine - Type 1	City	3	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN69	E69	Engine - Type 1	City	3	Paid	
	M269	Medic Unit	City	N/A	Unstaffed	Reserve
	M69	Medic Unit	City	2	Paid	
STN70	E270	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E70	Engine - Type 1	City	3	Paid	
STN71	BS71	Breathing Support	City	N/A	Unstaffed	
	E271	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E71	Engine - Type 1	City	3	Paid	
	M271	Medic Unit	City	N/A	Unstaffed	Reserve
	M71	Medic Unit	City	2	Paid	
STN72	E272	Engine - Type 1	County	N/A	Unstaffed	Reserve
	E72	Engine - Type 1	County	3	Paid	
	SQ72	Squad	County	N/A	Unstaffed	
STN73	E73	Engine - Type 1	City	4	Paid	
	SQ73	Squad	City	N/A	Unstaffed	
	T73	Aerial Truck	City	4	Paid	
	USAR73	Urban Search & Rescue	City	N/A	Unstaffed	
STN75	BR75	Engine - Type 3	County	N/A	Unstaffed	
	E75	Engine - Type 1	County	3	Paid	
STN76	E76	Engine - Type 1	City	3	Paid	
	SQ76	Squad	City	N/A	Unstaffed	
	T76	Aerial Truck	City	4	Paid	
	USAR76	Urban Search & Rescue	City	N/A	Unstaffed	
STN77	E77	Engine - Type 2	County	3	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN79	E279	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E79	Engine - Type 1	City	2	Paid	
	MS79	Medic Squad	City	2	Paid	
	WT79	Water Tender	City	N/A	Unstaffed	
STN80	E80	Engine - Type 1	City	3	Paid	
	M280	Medic Unit	City	N/A	Unstaffed	Reserve
	M80	Medic Unit	City	2	Paid	
STN81	E81	Engine - Type 1	County	3	Paid	Cross Staffed with HM81
	HM81	Hazardous Materials Unit	County	3	Paid	Cross Staffed with E81
	HM81R	Hazardous Materials Unit	County	N/A	Unstaffed	Reserve
	HMS81	Hazardous Materials Squad	County	2	Paid	
	HMS81R	Hazardous Materials Squad	County	N/A	Unstaffed	Reserve
STN82	E82	Engine - Type 1	County	3	Paid	
STN83	E83	Engine - Type 1	County	3	Paid	
	OES353	Engine - Type 1	Oes	N/A	Unstaffed	
	WT83	Water Tender	County	N/A	Unstaffed	
STN84	E284	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E84	Engine - Type 1	City	4	Paid	
	MS84	Medic Squad	City	N/A	Unstaffed	
STN85	BOAT85	Rescue Boat	City	N/A	Unstaffed	
	E85	Engine - Type 1	City	3	Paid	
STN86	E86	Engine - Type 1	City	3	Paid	
	T86	Aerial Truck	City	4	Paid	
	M286	Medic Unit	City	N/A	Unstaffed	Reserve
	M86	Medic Unit	City	2	Paid	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN87	E287	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E87	Engine - Type 1	City	3	Paid	
	WT87	Water Tender	City	N/A	Unstaffed	
STN88	E88	Engine - Type 1	City	3	Paid	
	M288	Medic Unit	City	N/A	Unstaffed	Reserve
	M88	Medic Unit	City	2	Paid	
STN89	E89	Engine - Type 1	City	3	Paid	
STN90	BS90	Breathing Support	City	N/A	Unstaffed	
	E290	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E90	Engine - Type 1	City	N/A	Unstaffed	
	Q90	Aerial Truck	City	4	Paid	
	SQ90	Squad	City	N/A	Unstaffed	
STN91	E91	Engine - Type 1	City	3	Paid	
	SQ91	Squad	City	N/A	Unstaffed	
	T291	Aerial Truck	City	N/A	Unstaffed	Reserve
STN92	BS92	Breathing Support	City	N/A	Unstaffed	
	E92	Engine - Type 1	City	4	Paid	
	SQ92	Squad	City	N/A	Unstaffed	
STN93	E93	Engine - Type 1	City	3	Paid	
STN94	E294	Engine - Type 1	City	N/A	Unstaffed	Reserve
	E94	Engine - Type 1	City	3	Paid	
STN96	E96	Engine - Type 1	County	3	Paid	
STN97	Q297	Aerial Truck	City	N/A	Unstaffed	Reserve
	Q97	Aerial Truck	City	4	Paid	
	SQ97	Squad	City	N/A	Unstaffed	

Station	Unit	Equipment Type	Ownership	Daily Staffing	Staffing Type	Notes
STN99	E99	Engine - Type 1	City	3	Paid	
STN101	E101	Engine - Type 1	City	3	Paid	
BCTC	E701	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E702	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E703	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E704	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E705	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E706	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E707	Engine - Type 2	County	N/A	Unstaffed	Training Program
	WT701	Water Tender	County	N/A	Unstaffed	Training Program
RAAB	D3140	Dozer - Type 2	State	1	Paid	
	DT3140	Dozer Tender	State	1	Paid	
RWTC	E721	Engine - Type 1	County	N/A	Unstaffed	Training Program
	E722	Engine - Type 1	County	N/A	Unstaffed	Training Program

B. Total Incident Forecasting Method

In statistics, linear regression is an approach to modeling the relationship between a dependent variable *y* and one or more independent variables denoted x_i. For our incident type trending, we are using year (x_1) and population (x_2) to predict incident type totals (y). We realize that time and population are not the only factors determining emergency services demand, so the model is not perfect for predicting the number of incidents. Linear regression is useful in that it shows trends, and trends are valuable for planning purposes.

For any model, it is necessary to say how statistically accurate it is, or what the confidence is in the estimates. For example, if we predict that there will be 1,000 emergency incidents ten years from now, we also have to state the confidence limits of that prediction. The confidence interval is a statistical plus/minus calculation. To continue with our example, we might say there will be 1,000 emergency incidents, plus or minus 100, with 95 percent likelihood it will be in that range. This gives the reader both a prediction and a range within which we are fairly certain (95 percent certain) that the eventual number of incidents will fall.

The confidence intervals are the result of a statistical calculation that analyzes how accurately our prediction model represents the actual data. A good model will have a small plus-minus confidence interval. This often happens when the historical trend stays fairly steady from year to year; as a result, a multi-linear regression is able to make fairly accurate predictions for total incidents for at least several years into the future. The further into the future, the wider the confidence limits become.

Large confidence intervals occur when there are large incidence fluctuations from year to year that are inconsistent and cannot be accurately modeled with any of the independent variables (time and population). For instance, if the annual number of incidents fluctuates up 30 percent one year and down 30 percent the next, and then up 40 percent and down 5, the model cannot accurately predict the exact number of incidents for a given year. In that case, there would be a large confidence interval that essentially says we predict *y*, but the number could be much higher or much lower.

C. Performance Measurement

Many fire departments measure their deployment performance based entirely on the NFPA 1710 standard. The problem with using this standard "carte-blanche" is that it assumes all areas need equal fire protection. Even if it were possible to provide truly equal fire protection, the reality is that urban, downtown areas have different fire protection needs than a more rural area. A sparsely populated and sparely structured area of the city, for instance, does not need three ladder trucks within an 8-minute reach; some urban, downtown areas do.

The NFPA 1710 standard is oriented towards achieving a 6-minute total response time, a time at which fires are likely to expand rapidly (flashover), and defibrillated cardiac arrest patients have a markedly lower chance of survival. NFPA 1710 does not actually specify a total response time standard. Instead, it provides time and reliability standards for each of the time segments that comprise total response time (call-processing, turnout, and travel). For example, the standard specifies that for fires and special operations incidents, the first-arriving unit will have a travel time (time from the unit leaving the station to arrival at the emergency incident) of four-minutes 90 percent of the time. In this case, four minutes is the time standard, and 90 percent is the reliability standard. Although the NFPA 1710 standard is an excellent goal to work towards, few fire departments are able to completely meet the standard.

The standard is based on what is ideal and not necessarily what is realistic. For instance, to achieve a six-minute total response time, the original version of the standard specified a call-processing time of one minute, a turnout time of one minute, and a travel time of four minutes. It was subsequently realized that one-minute was not enough time for firefighters to get to their unit, don full turnout gear and leave the station. As a result, the 2010 version of the NFPA 1710 standard was revised to allow 80 seconds of turnout time for fire and special operations incidents.

Just as the standard itself was revised to reflect reality, it makes sense to consider whether the standard makes sense for all parts of the jurisdiction in its current form. Take for instance a rural, sparsely populated area. It may not be reasonable to expect a four-minute travel time for 90 percent of incidents. The jurisdiction might consider specifying a 5-minute travel time for 70 percent of incidents to account for the area's rural character.

Appropriate performance levels should be based on the characteristics of individual planning areas. Response time and reliability goals should match a particular area's risk characteristics, not just conform to a one-size-fits-all standard. For this to occur, fire departments need to consider that a data-driven approach can be a better approach for risk management than merely applying standards across the board, in our opinion. The UK after having been a model for standards of cover has completely dropped them nationally, in favor of locally made risk tradeoffs. Heavier investment in prevention might be considered vs. increasing suppression. We should try to develop the data on which to make such judgments.

Assessing Deployment Performance – Deployment decisions concerning fire station and apparatus locations should be an ongoing process based on periodic performance measurement. Because jurisdictional needs do change, the deployment change recommendations made in this study should be considered as a step in a continuing process. Going forward, the fire department needs to be regularly conducting neighborhood-level performance measurement for the process to be effective.

Police departments are decades ahead of most fire departments when it comes to analyzing data to drive operations. Most city and county police departments have several technical crime analysts who specialize in data analysis and mapping. Many fire departments should consider hiring a dedicated data analyst and begin to incorporate performance measurement into a regular (perhaps quarterly) review of deployment. The fire department culture, which is based on meeting standards, should reconsider its emphasis on static deployment (where unit locations and first-due areas rarely change) to one of dynamic deployment based on data-driven performance goals.

An excellent resource on how to measure performance and adapt deployment is the Center for Public Safety Excellence's (CPSE) Developing Standards of Cover Manual. One of the advanced, but effective techniques used by the manual is to measure the trade-off between unit availability (percentage of incidents where the correct (first due) unit handled the call) and response time performance (percentage of incidents below the response time goal).

Generally speaking, as the first-in correct unit for a particular area becomes less available (due to other calls, training, etc.), performance for that area decreases because units from other stations have to travel further to handle the call. How much of an impact reliability has on performance is largely dependent on how far away the nearest fire stations are. This type of analysis can be used to determine if a station needs an additional unit or might benefit from a first-due area adjustment. Fire departments should familiarize themselves with this performance measurement methodology and consider its use to gauge station and unit location performance.

Reporting Deployment Performance – After taking the time to establish deployment goals for each neighborhood or planning district and learning some of the more advanced CPSE analysis methodologies, the last step is to establish regular reporting mechanisms. We recommend that fire departments consider producing the following two types of reports:

- **Monthly Deployment Performance Report** – This report should be distributed department-wide each month. Such a report serves several important functions. First, it provides information and data feedback to those entering incident data; getting a detailed report that shows workload by units and response time performance can provide firefighters the ability to gauge and challenge themselves to better performance (e.g. one engine crew that has had the slowest turnout time in the past few months makes it their goal to be in the top three engine companies for turnout time in the next reporting period). Also, putting out a monthly report provides an excellent error checking mechanism, as firefighters will be the first to notice and announce any problematic performance statistics. Finally, having somebody try and

pull together some statistics with Excel for an annual report is asking for problems because you cannot truly be familiar with data only looked at once a year. Putting together monthly reports helps to ensure that the fire department is on top of its data collection and performance measurement.

- **Quarterly Report** – While the monthly report can be fairly short and limited to some simple workload and response time results, we recommend a more in-depth quarterly report. The report should be set up so that department leaders can review deployment performance for the entire system and each individual planning district. The report should be set up to note performance changes/trends in specific planning areas so that fire department officials are in a good position to recommend near- and long-term deployment modifications. We strongly recommend that this annual performance measurement report reflect most of the analysis types found in the CPSE Standards of Cover Manual.

D. Evaluating Unit Workloads

The location of fire stations is only one factor in determining whether response-time goals will be achieved. The 'busyness' factor or workload is also important since units that are extremely busy may not be available for the next call, thus necessitating the response from a station further away. EMS workload is typically described as Unit Hour Utilization (UHU), which is discussed later in this section.

Through CAD systems, fire departments are able to keep detailed records about service times; these data are useful in determining the availability of a specific unit or station. Again, the concept of workload is not merely a count of how many calls to which a unit was dispatched. One unit can have fewer responses than another but remains on the scene longer on average (e.g. more working incidents, or a more distant hospital for EMS patients), and so has a greater workload. Evaluating workload is important when looking at the overlaps in coverage to an area that may be required to achieve the response time goals adopted by the county/department and is part of the CFAI self-assessment process. An analysis of workload also can indicate whether a new station should be built or new apparatus purchased—or if current stations should be closed or units moved.

A fire/EMS system must incorporate the necessary redundancies based on whether adjacent stations or units are likely to be available for emergency response. Below are general guidelines developed by TriData to show the level of redundancy (overlap) necessary to achieve response-time goals. These were developed based on many fire department studies we have undertaken.

- **Very Low Workload (<500 responses/yr.)** – Simultaneous calls are infrequent and unit availability usually is assured. Stations/units can be spaced at the maximum distance possible to achieve stated travel time objectives established by the community.
- **Low Workload (500–999 responses/yr.)** – Few calls will overlap and unit availability usually is assured. Stations/units can be spaced at the maximum distance possible to achieve stated travel time objectives established by the community.
- **Moderate Workload (1,000–1,999 responses/yr.)** – Some overlap of calls will occur, usually at peak demand periods; however, stations/units are usually available. Stations/units must be located with marginal overlap to achieve stated travel time objectives established by the community.
- **High Workload (2,000–2,999 responses/yr.)** – Additional overlap of calls will likely occur; however, stations/units will probably be available for emergency response. Stations/units must be located with significant overlap to achieve stated travel time objectives established by the community. This footprint usually achieves the best results in terms of cost efficiency and effectiveness of service delivery. (Overlap can be achieved with additional stations or additional units in existing stations.)

- **Very High Workload (3,000–3,999 responses/yr.)** – Overlapping calls occur daily, usually during peak demand periods, and working incidents are frequent. The closest station/unit may not be available, thus requiring the response of adjacent stations/units. Stations/units must be located with the significant overlap to achieve stated travel time objectives established by the community. (Overlap can be achieved with additional stations or additional units in existing stations.)
- **Extremely High Workload (>4,000 responses/yr.)** – Overlapping calls may occur hourly, regardless of the time of day. The closest station/unit is likely to be unavailable thus requiring the response of adjacent stations/units. Frequent transfers or move-ups are required for the delivery system to meet demand. Stations/units must be located with redundancy (back-up units) to achieve stated travel time objectives established by the community. This footprint is usually found in very densely populated urban areas and is especially evident in EMS services located in urban areas with very high demand. (Overlap can be achieved with additional stations or additional units in existing stations.)

The 3,000–3,900 response level (*very high workload)* is the point at which units are often considered "busy" and their availability should be evaluated. This is a rough rule of thumb, not a fixed standard. At this point, response times often begin getting longer because of simultaneous call occurring in the same area.[23] As units become busier, the chances for overlap or simultaneous alarms increase, and second-due units begin to answer more calls. This causes a domino effect where unit B is dispatched to a call in unit A's area because unit A is already engaged, causing unit B to be unavailable for the next call in its own area. Unit C must then respond to unit B or unit A's area, and so forth.

Again, the 3,000-response threshold is just a rule of thumb. How much time a unit is unavailable due to being involved with another incident is better assessment of the impact of workloads on availability and response times. This is the second factor in workload, known as unit hour utilization (UHU).

Unit Hour Utilization – UHU is a calculation that estimates the amount of time a unit is occupied on emergency calls as a percentage of the total amount of hours a unit is staffed and available for response (a unit staffed full-time is available 8,760 hours per year). In other words, UHU measures the percentage of on-duty time consumed by emergency service field activities. A high UHU means lower availability for calls. Poor availability negatively impacts response times.

[23] A "first-due" 'area is a certain geographic area of the overall fire department response jurisdiction assigned to a particular fire station.

The specific formula used to calculate the UHU for each unit is:

$$UHU = \frac{\text{(number of calls) } x \text{ (average call duration in hours)}}{\text{8,760 (total hours in a year)}}$$

UHU measures the percent of a unit's time in service that is spent running calls. However, there is other productive time *not* accounted for, such as for training, maintenance public education, and other preparedness-related functions. When units are not engaged in emergency response, it does not mean they are not working.

UHU is used more in relation to EMS units than fire suppression units; although, evaluation of UHUs is useful to different extents for both functions.

While there is consensus within the industry on the importance of utilization rates and how to measure them, the interpretation of how indicative utilization rates are of overall system efficiency is debatable. Most believe that a UHU between 35 and 45 percent for EMS is good for economic efficiency. (This is more common with private ambulance providers.) If a UHU is greater than 45 percent, units often are not available and response times suffer. If a UHU is below 35 percent, units may not be well utilized, but response times may be high too often. Many communities choose to aim for a UHU in the 15 to 25 percent range to balance productivity of a unity with good response times. If a unit has a UHU of 40 percent, it will not be available for the next call 40 percent of the time. This is, of course, an average over the course of the day.

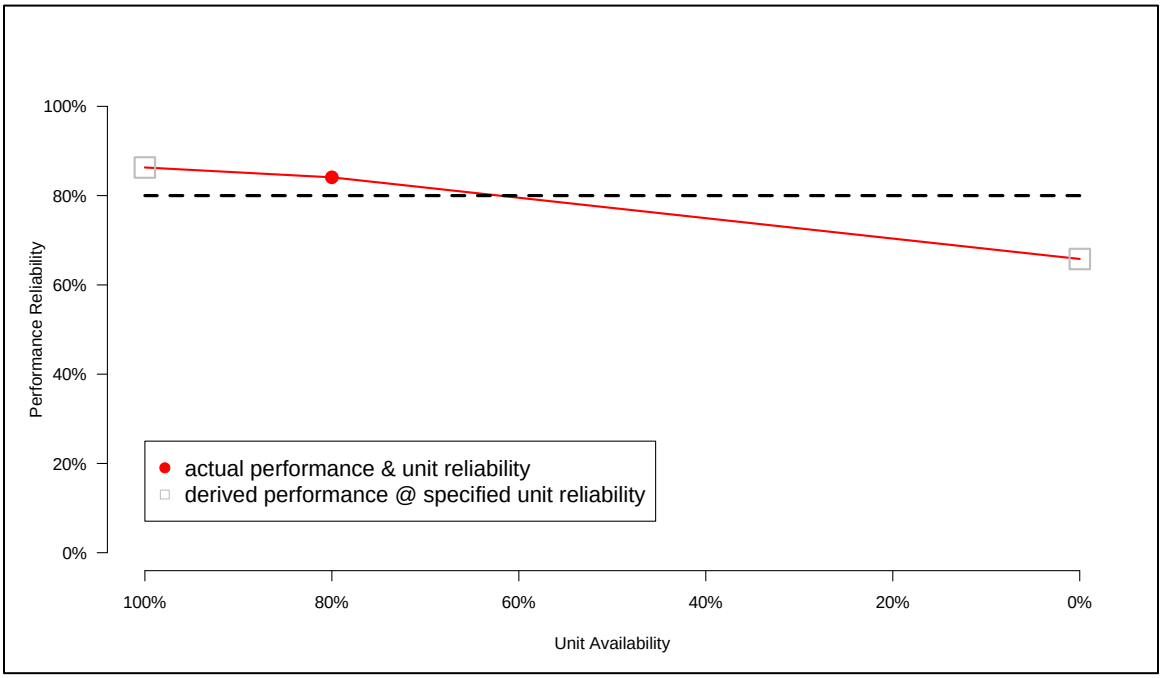
In order to develop an effective resource deployment plan, units must be available to respond to incidents most of the time. No amount of resource placement planning will improve system-wide response times if the responding units are not available.

E. Unit Availability vs. Response Time Performance

The premise of the Center for Public Safety Excellence (CPSE) "unit availability vs. performance" assessment method is that for each station's area, there is a tradeoff between unit availability and performance. Unit availability is defined as the percentage of incidents where the closest unit was available to handle the call and did so. Performance is defined as the percentage of incidents where the travel time for the particular incident was responded to within the desired response time. Using this performance analysis method, we can look at the performance differences that occur when a correct units versus an incorrect units responds to a call.

Figure F-1 shows an example of unit availability vs. performance graph. The red dot plotted in the figure represents the actual performance and correct-unit availability percentage for all calls in a station's first-due area. In this case, it appears that a correct unit responded slightly less than 80 percent of the time and about 85 percent of the incidents had response times the fell below the performance goal. The station performance in this example is above the goal. Had the red dot fallen below the dotted black goal line, it would indicate that the station is currently not meeting its performance goal.

Figure E-1. Example of Response Time Performance



In addition to showing whether performance is being achieved, the performance graph can also show workload sensitivity or fire station location problems. In the example figure, the red line has a red dot and two black squares. The dot represents the actual unit availability and performance and the squares represent theoretical data points. The square at 100 percent unit availability is calculating by looking only at those incidents where a unit from the correct station responded. The square at zero percent unit availability is calculating by looking only at those

incidents where a unit from a fire station other than the first-due station responded (because the first-due unit was busy). The red line is then interpolated between these three data points to give the unit availability vs. performance line.

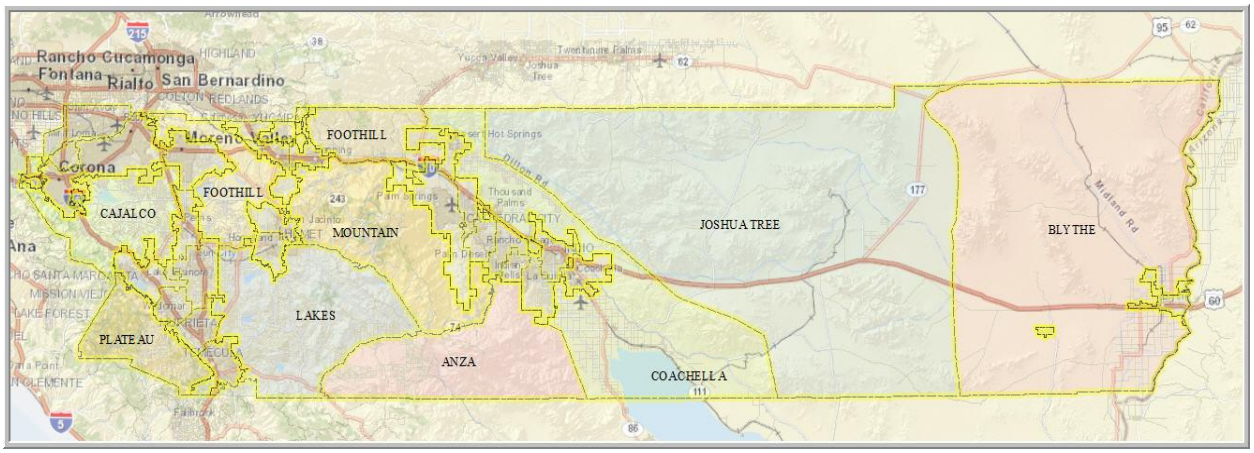
The slope of the line assesses workload sensitivity. A nearly horizontal line indicates that unit availability has little impact on performance, meaning that the area in question has low workload sensitivity. First-due areas with low workload sensitivity typically have either multiple first-due units or several nearby fire stations that can cover calls if the first-due units are unavailable. A line that slopes strongly downwards indicates that performance is heavily dependent on unit availability. These areas are very workload sensitive because second-due units are generally unable to achieve travel time goals when the first-due unit is unavailable.

The location of the line at 100 percent unit availability assesses fire station location problems. If this part of the line is under the 80 percent performance threshold, it means that, even when the correct unit responds, travel time goals are not being met 20 percent of the time. This means that the station is not well located to reach all parts of its first-due area. This problem can be fixed by relocating the current station, building a new station, or (perhaps the best solution) re-evaluating first-due boundaries to make sure that the most appropriate station is responding.

F. Station Location GIS Analysis Maps

The GIS analysis maps in this section are divided into the nine unincorporated area planning areas and 21 contract cities. The first section, unincorporated planning areas include:

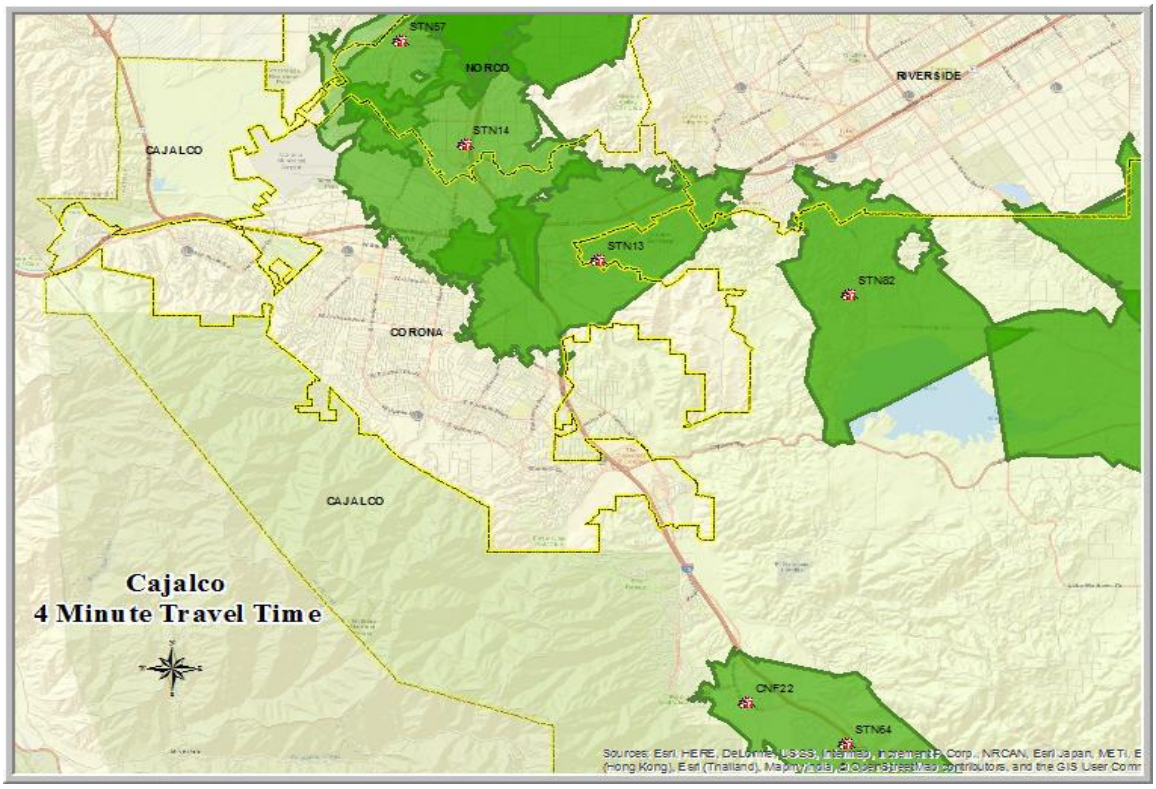
Cajalco	Plateau	Foothill
Lake	Mountain	Anza
Coachella	Joshua Tree	Blythe



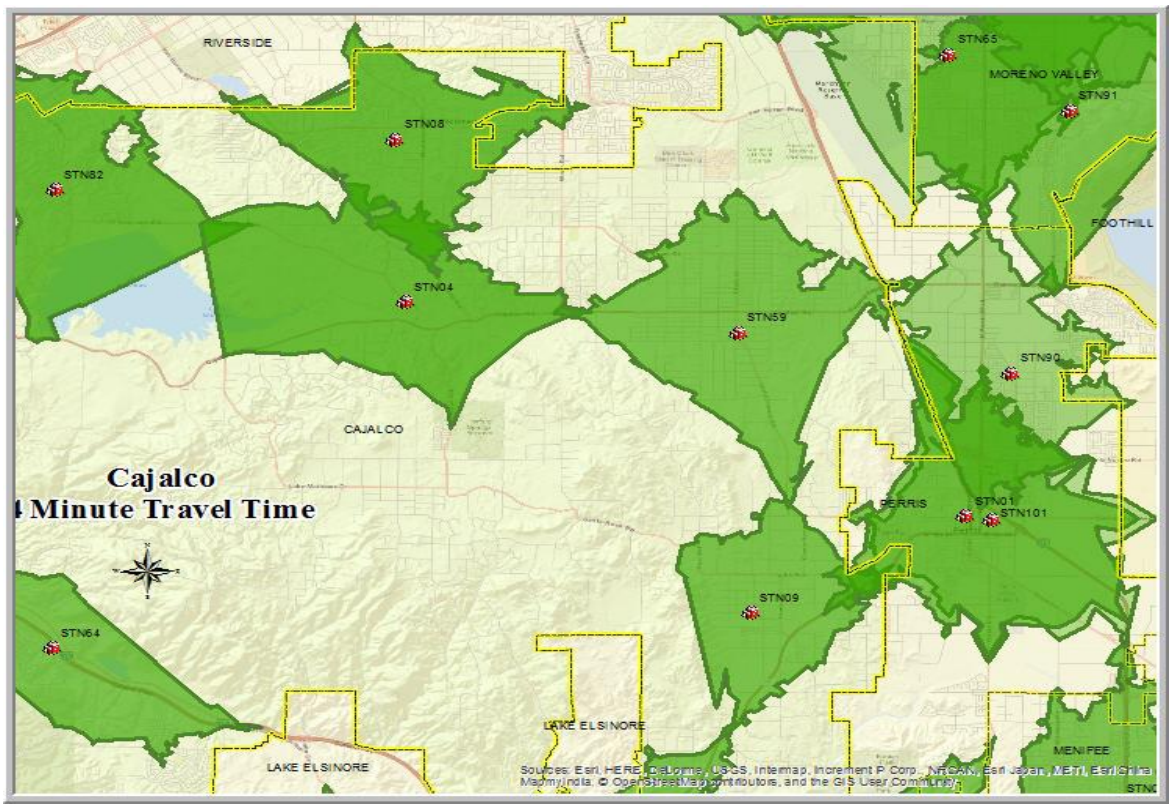
There are multiple maps for some planning areas due to the size of the area, and to show coverage detail. The names of the planning area and cities surrounding the area are labeled on each map. The yellow dashed line on each map identifies the boundary for the cities and each of the nine planning areas. The travel time areas are layered to distinguish the intensity of coverage. The darker green colors indicate a saturation of units available to respond within the given travel time (multiple unit response coverage), where the lighter green colors indicate a lesser number of units available to respond (minimal unit response coverage).

4-Minute Travel Time Maps and Coverage Analysis

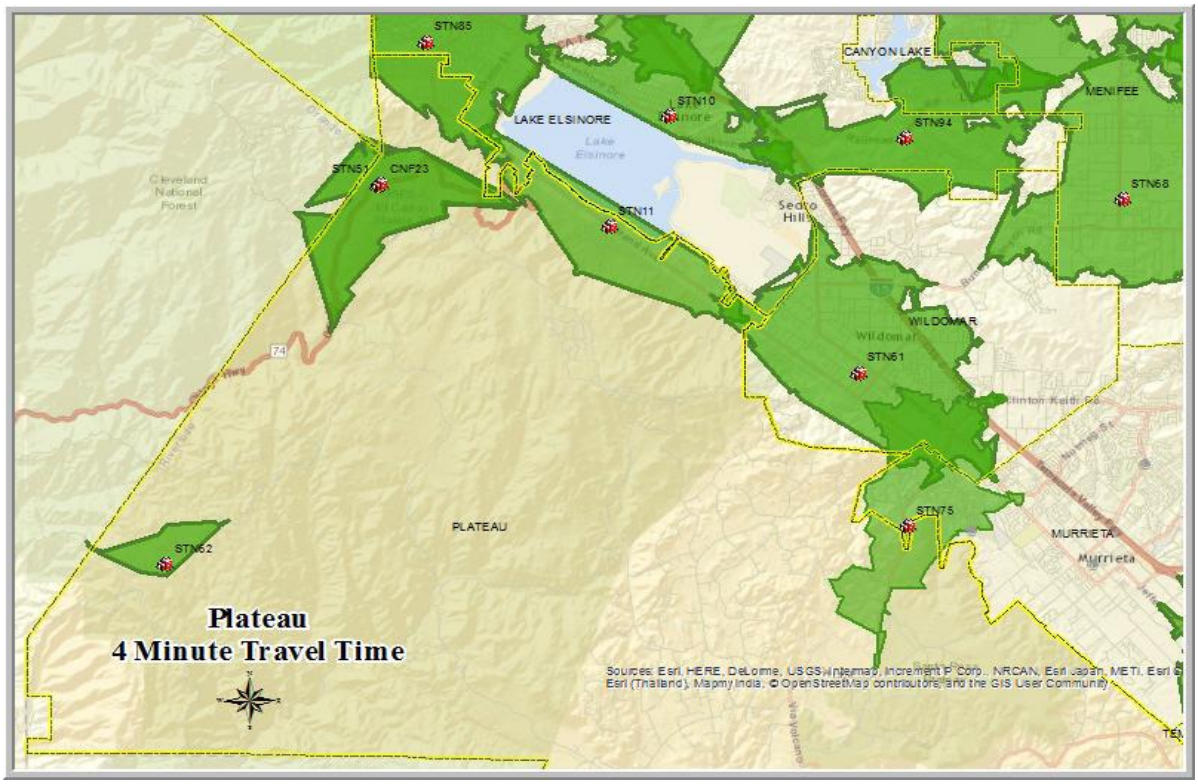
1. Cajalco
    a. The Northwestern portion of Cajalco (north and west of Corona) cannot be covered in four minutes.
    b. The area south of Riverside has some four minute coverage.
    c. There is some overlap coverage toward the south with Temescal Station 22 and Station 64.
    d. There is considerable coverage and some overlap provided by Stations 4, 8, 9, 59 and 82 in the northern and eastern areas.

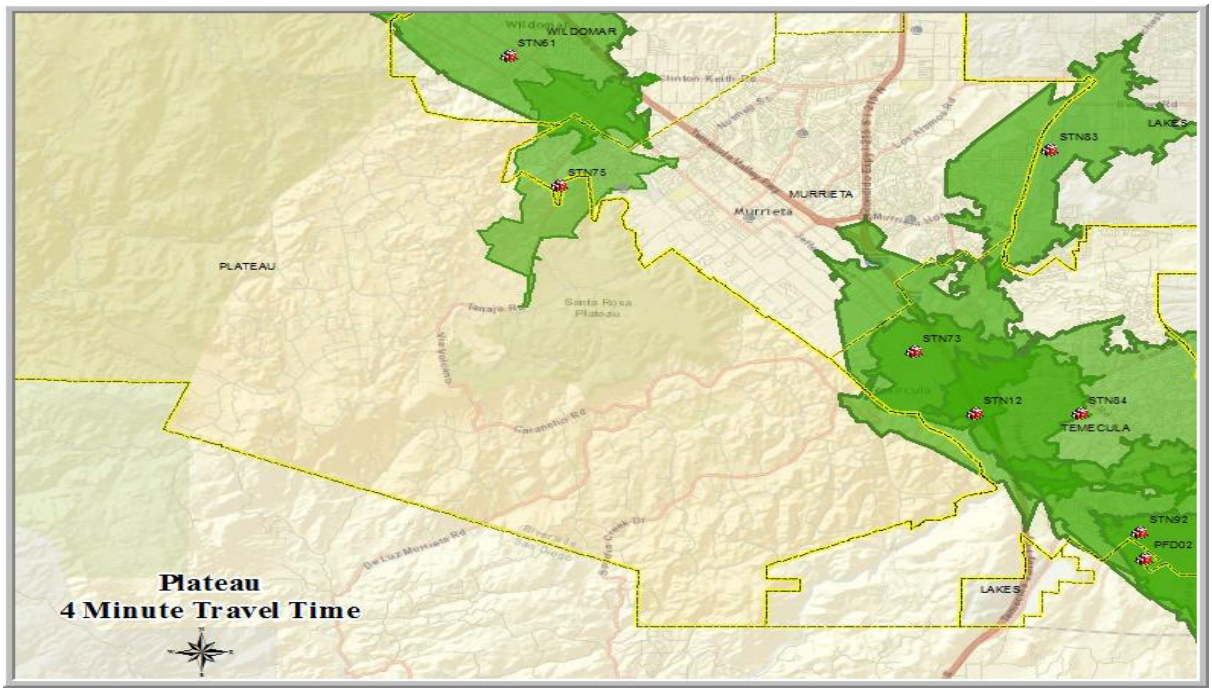

STN57
NORCO
RIVERSIDE
STN14
CAJALCO
STN13
STN82
CORONA
CAJALCO
Cajalco
4 Minute Travel Time
CNF22
STN64


STN13
STN82
STN08
RIVERSIDE
CORONA
STN04
STN59
CAJALCO
CNF22
STN64
STN09
STN97
STN85
LAKE ELSINORE
STN10
Cajalco
4 Minute Travel Time
STN51
CNF23
STN11

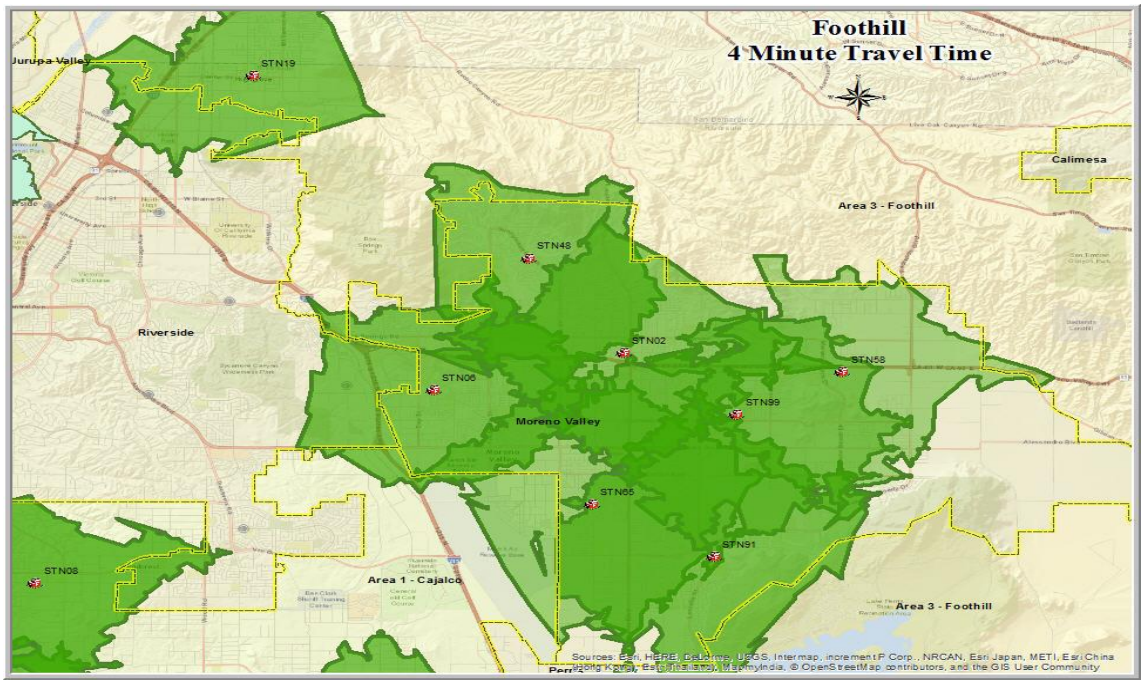

RIVERSIDE
STN65
MORENO VALLEY
STN91
STN08
STN82
FOOTHILL
STN04
STN59
STN90
CAJALCO
Cajalco
Minute Travel Time
PERRIS
STN01
STN101
STN09
STN64
LAKE ELSINORE
LAKE ELSINORE
MENIFEE

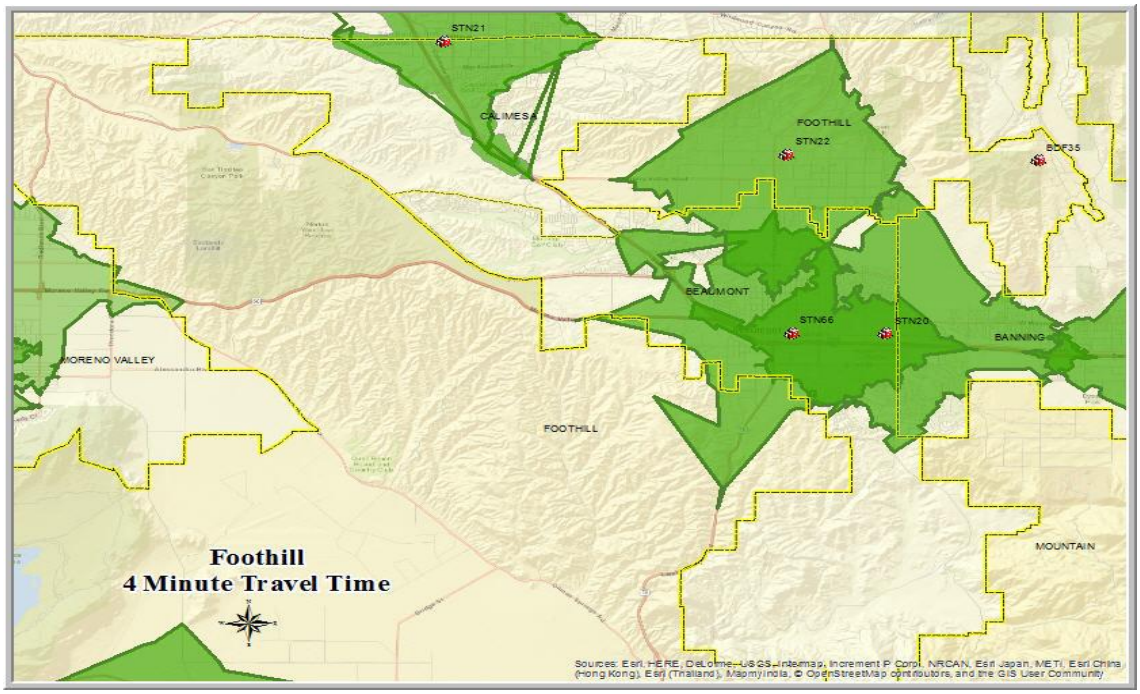
2. Plateau
    a. There is good four minute coverage at the northern edge of the area.
    b. Four minute coverage throughout the majority of the area is generally poor.
    c. There is good overlap coverage between Stations 61 and 75 within the southern boundary of Wildomar which is a contract city.

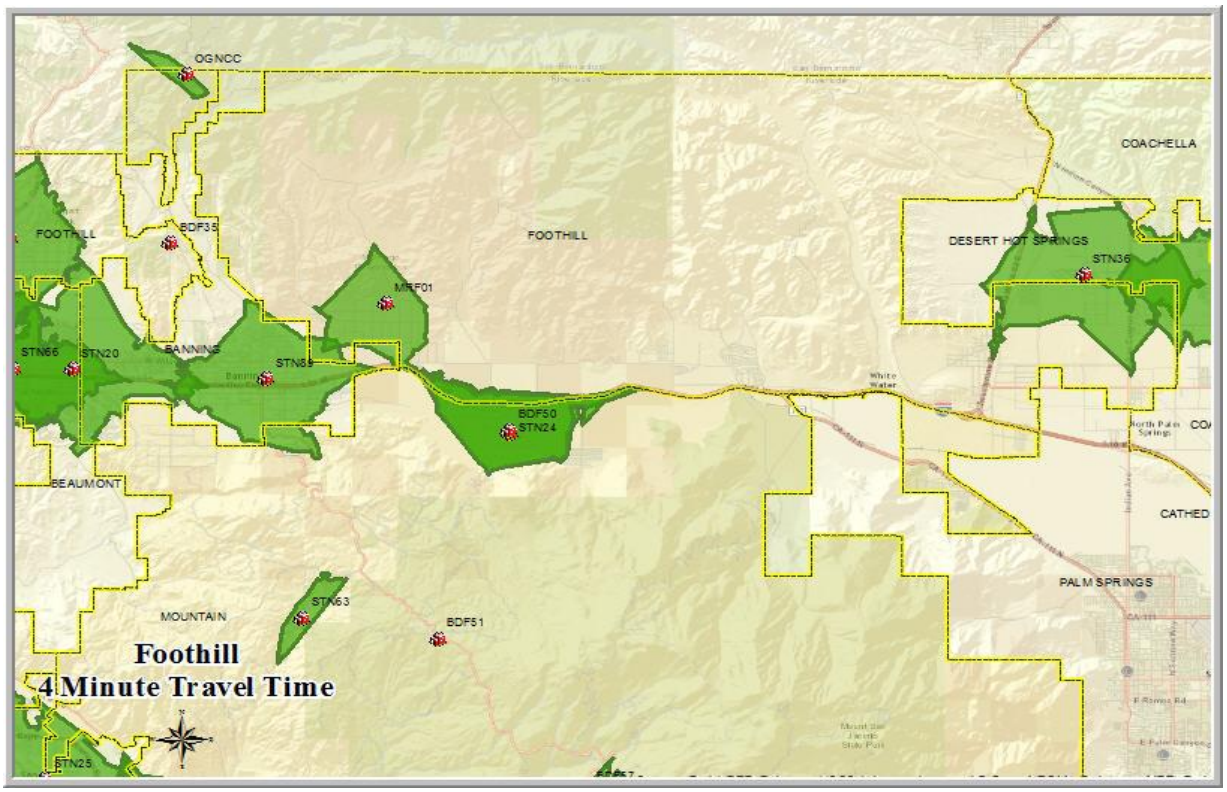


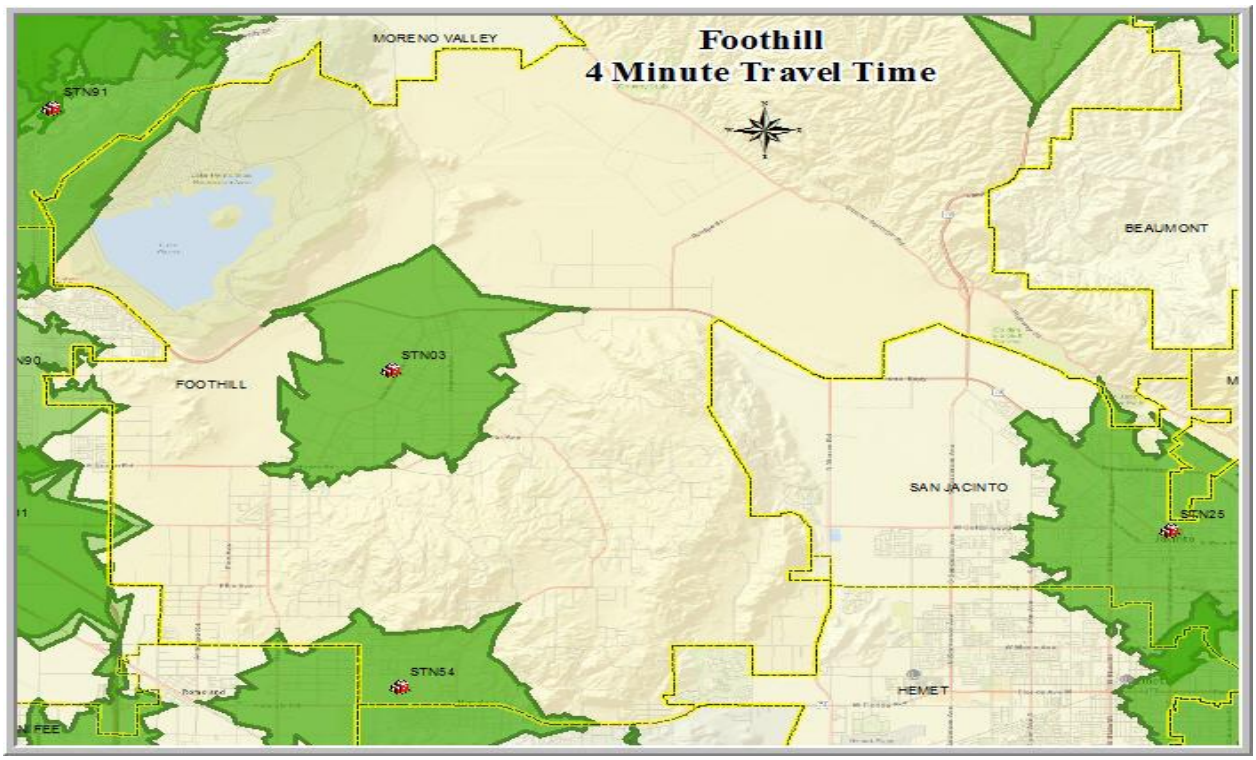

WILDOMAR
STN61
STN75
MURRIETA
Murrieta
STN83
LAKES
PLATEAU
Santa Rosa Plateau
STN73
STN12
STN84
TEMECULA
STN92
PFD02
LAKES
Plateau
4 Minute Travel Time

3. Foothill
    a. There is some four minute coverage in the northwest corner of the area (Station 19), and the in the northeast section (Station 22).
    b. Some coverage is also provided in the center and south of the area (Station 3 and Station 54).
    c. Some coverage is provided toward the west by Morongo Station 1, and further northwest by Oak Glen Conservation Camp Station.

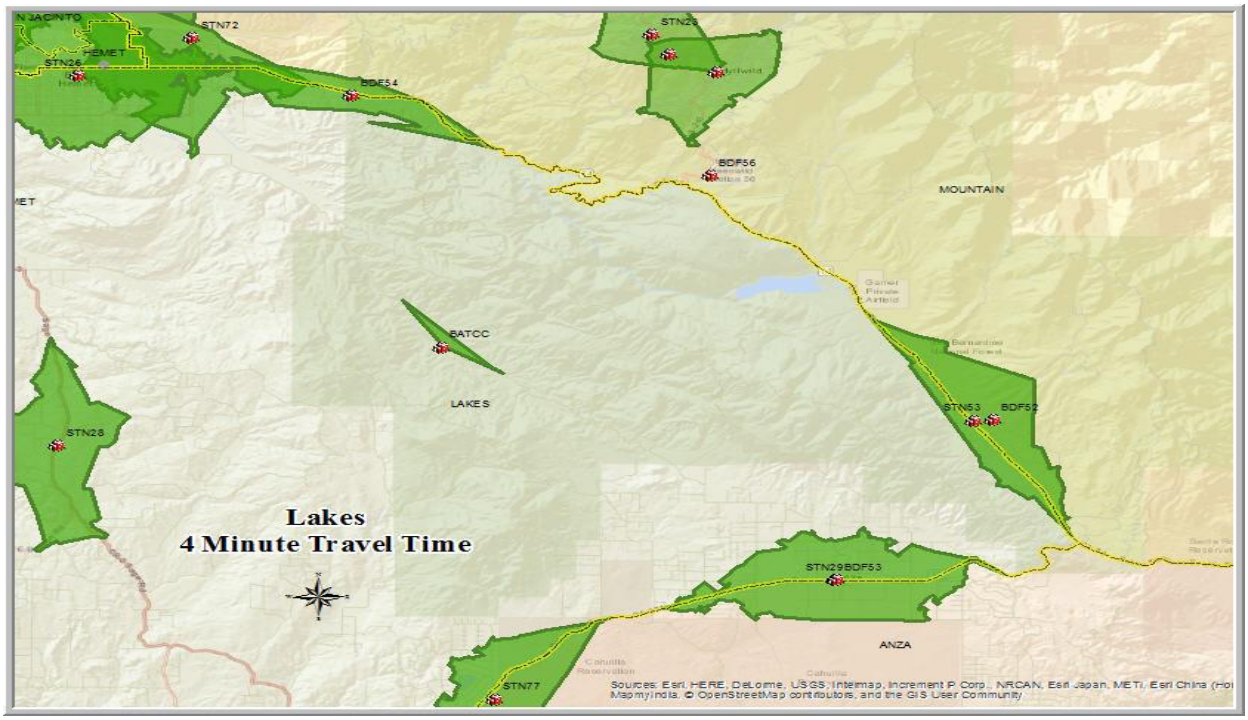


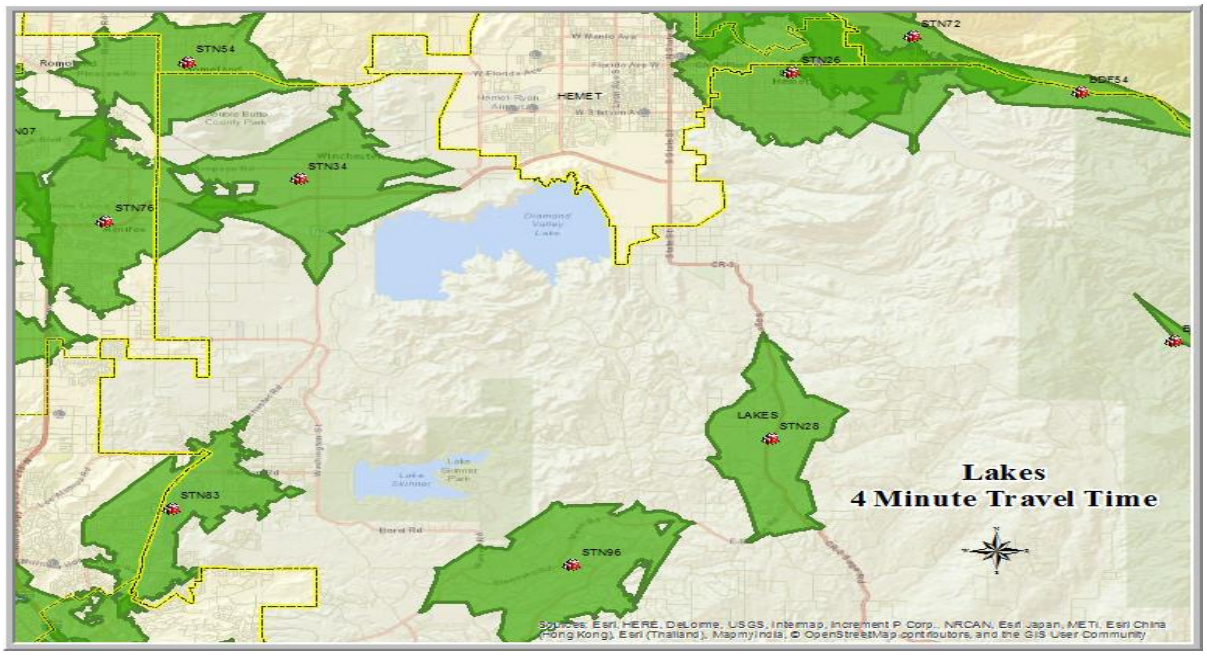

STN21
CALIMESA
FOOTHILL
STN22
BDF35
BEAUMONT
STN66
STN20
BANNING
MORENO VALLEY
FOOTHILL
MOUNTAIN
Foothill
4 Minute Travel Time
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

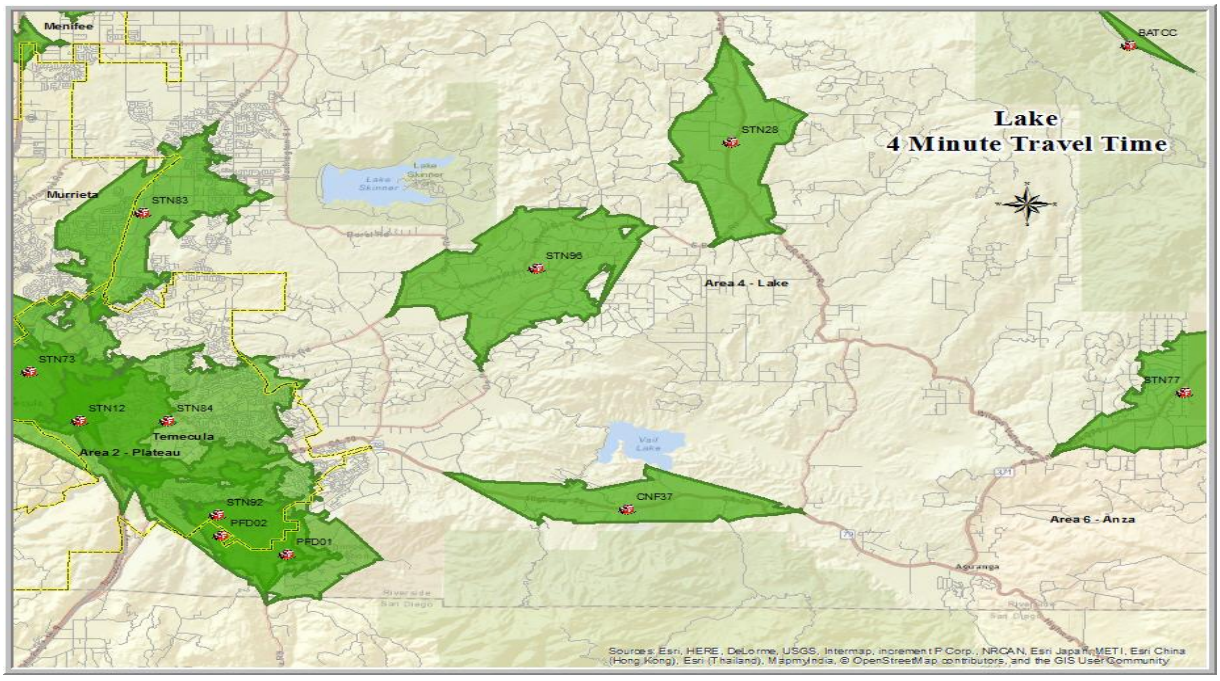

OGNCC
COACHELLA
FOOTHILL
BDF35
FOOTHILL
DESERT HOT SPRINGS
STN36
MTF01
STN66
STN20
BANNING
STN65
BDF50
STN24
BEAUMONT
CATHED
PALM SPRINGS
STN63
MOUNTAIN
BDF51
Foothill
4 Minute Travel Time
STN25


Foothill
4 Minute Travel Time
MORENO VALLEY
STN91
BEAUMONT
STN03
FOOTHILL
SAN JACINTO
STN25
STN54
HEMET

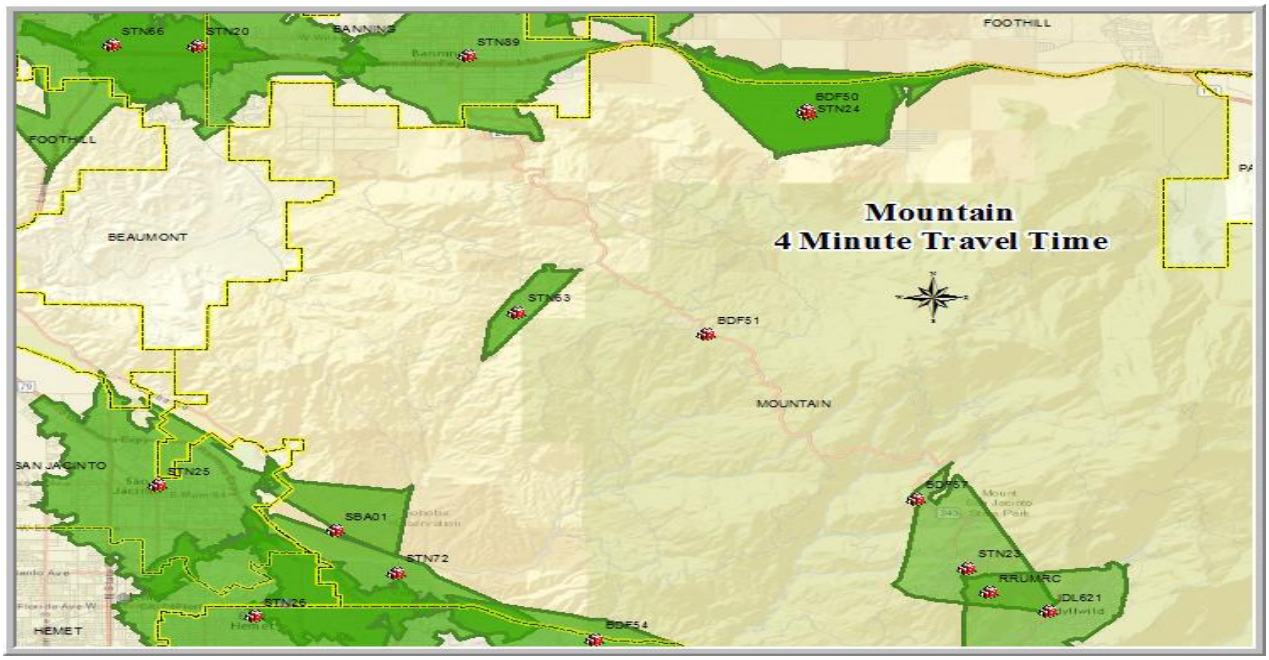
4. Lake
    a. There is some four minute coverage in the northwest corner of the area provided by Stations 34, 54, and 76.
    b. There is some coverage east of Hemet and along the eastern border of the area.
    c. Station 53 provides coverage toward the southeast.
    d. Station 29 provides coverage to the south.
    e. There is some four minute coverage to the south of the area.

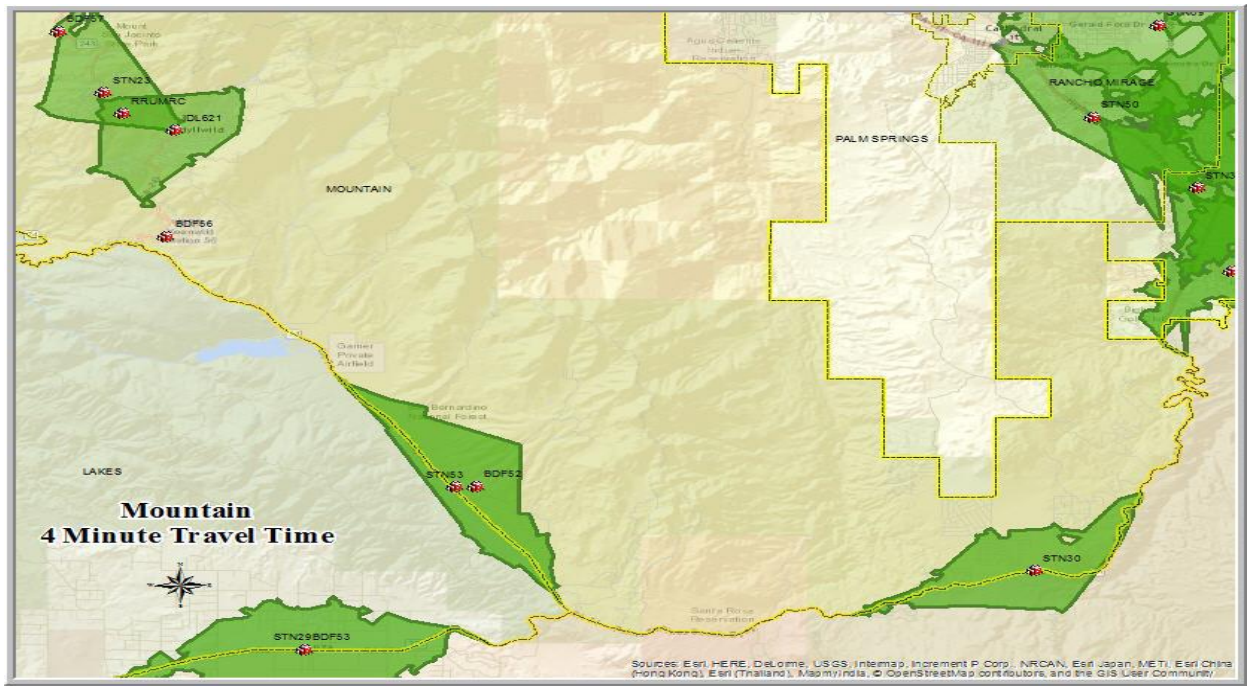



STN54
STN72
STN26
SDF54
HEMET
STN34
STN76
LAKES
STN28
STN83
STN96
Lakes
4 Minute Travel Time
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

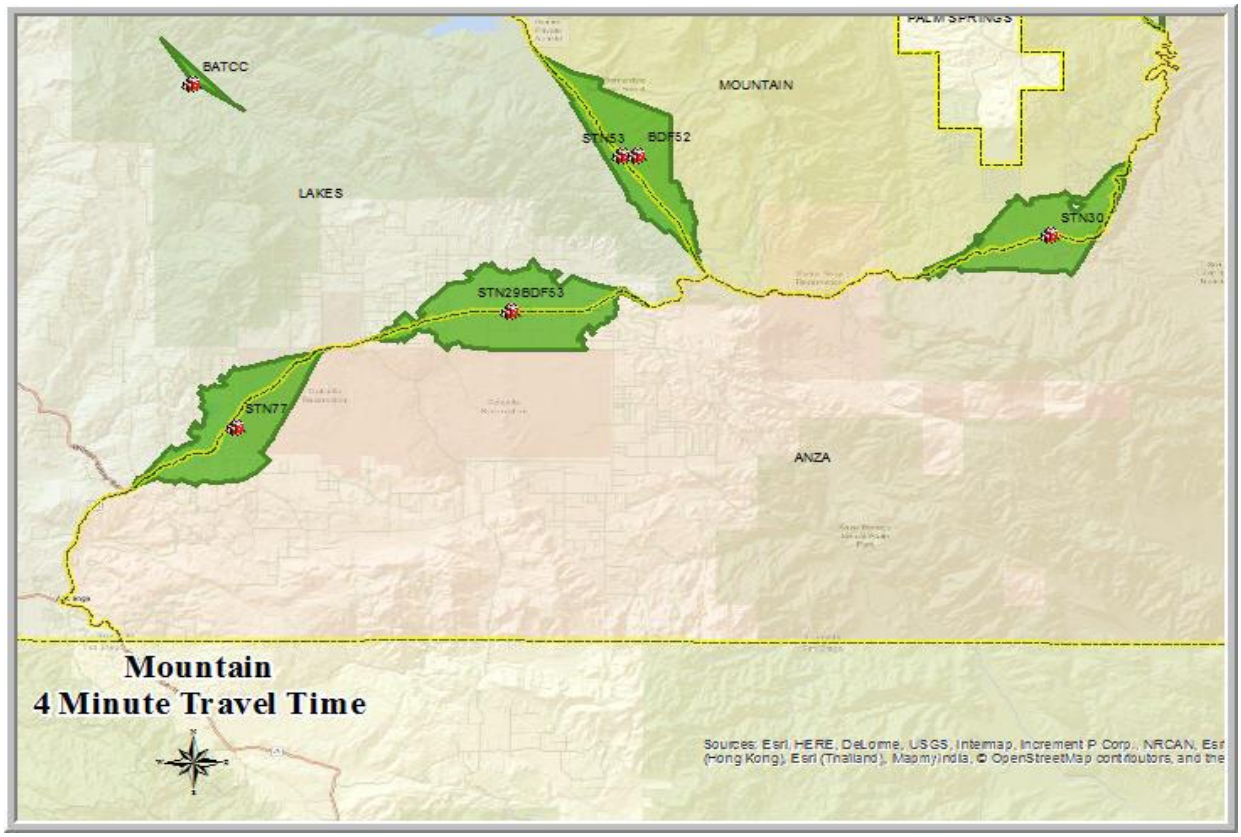

Menifee
BATCC
Lake
4 Minute Travel Time
STN28
Murrieta
STN83
STN96
Area 4 - Lake
STN73
STN77
STN12
STN84
Temecula
Area 2 - Plateau
CNF37
STN92
PFD02
PFD01
Area 6 - Anza
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

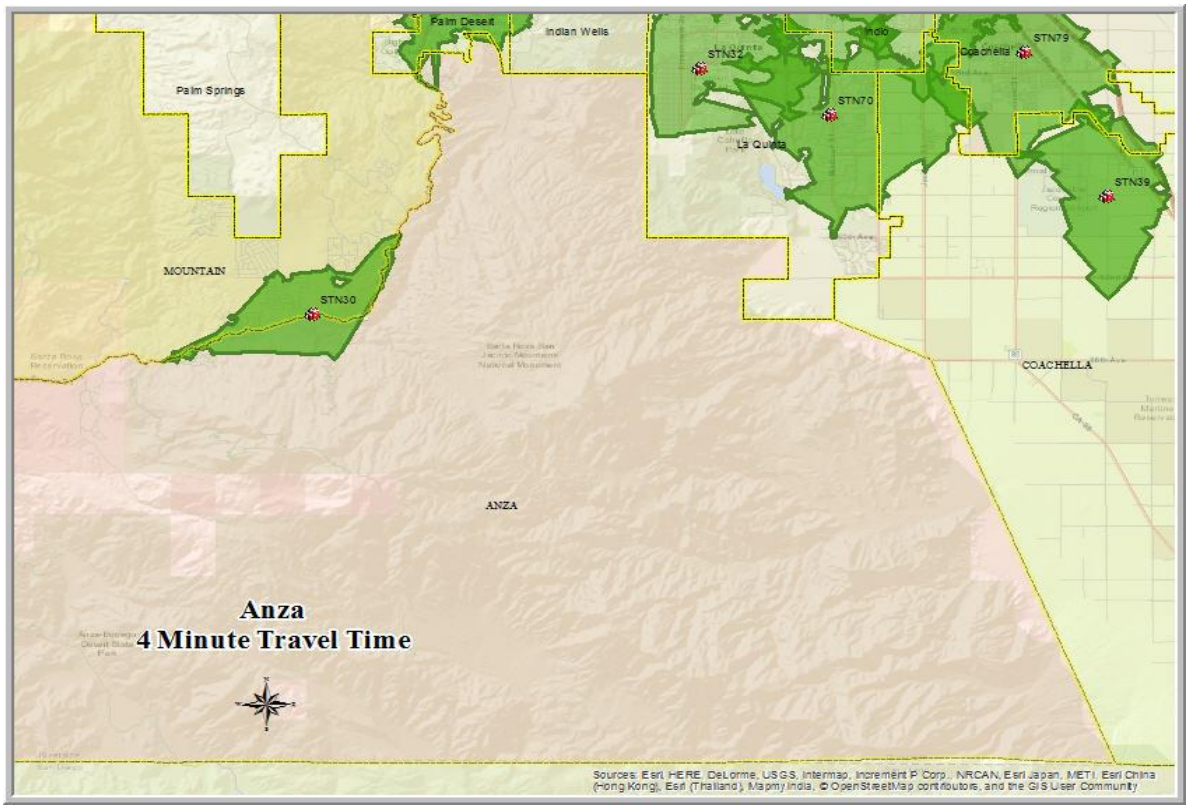
5. Mountain
    a. There is four minute coverage in the north with Station 24.
    b. There is some coverage in the center of the area with four minute overlap provided by Station 23 and Idyllwild Station 621.
    c. Station 30 provides some coverage to the south.
    d. There is some coverage along the southwestern border (Station 54, 72 and Soboba Station 1).
    e. Coverage is provided by Station 53 in the southwest.



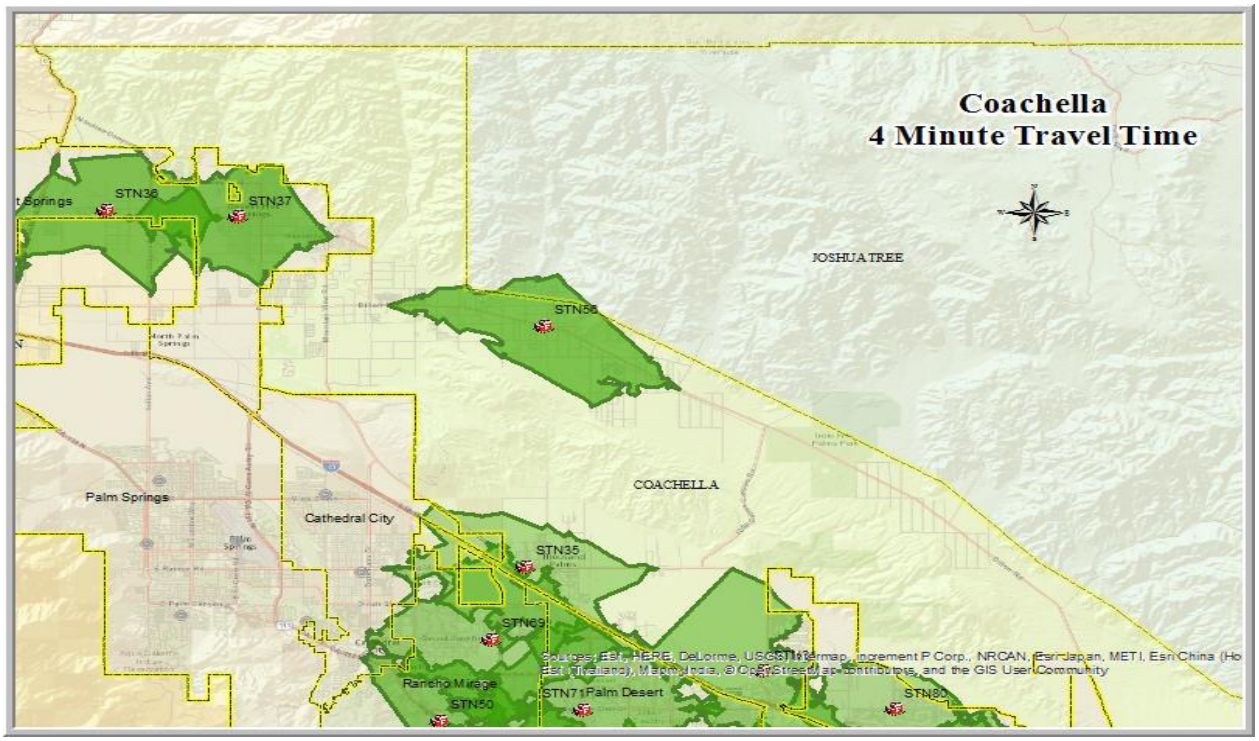

STN25
RRUMRC
JDL621
MOUNTAIN
BDF56
PALM SPRINGS
RANCHO MIRAGE
STN60
LAKES
STN53
BDF52
Mountain
4 Minute Travel Time
STN30
STN29BDF53
Sources: Esri, HERE, DeLorme, USGS, Intermap, Increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

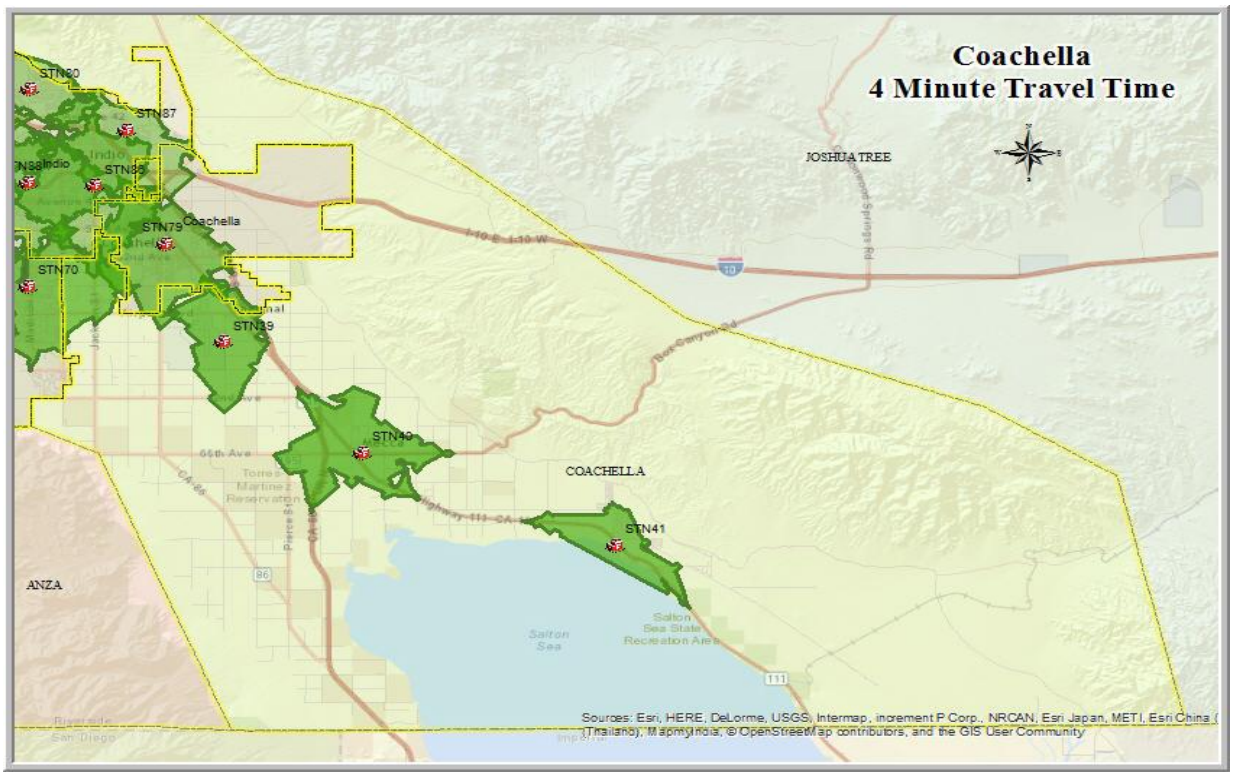
6. Anza
    a. There is some four minute coverage along the northwestern border (Stations 29, 30 and77).
    b. There is no coverage in the southern portions of this area.



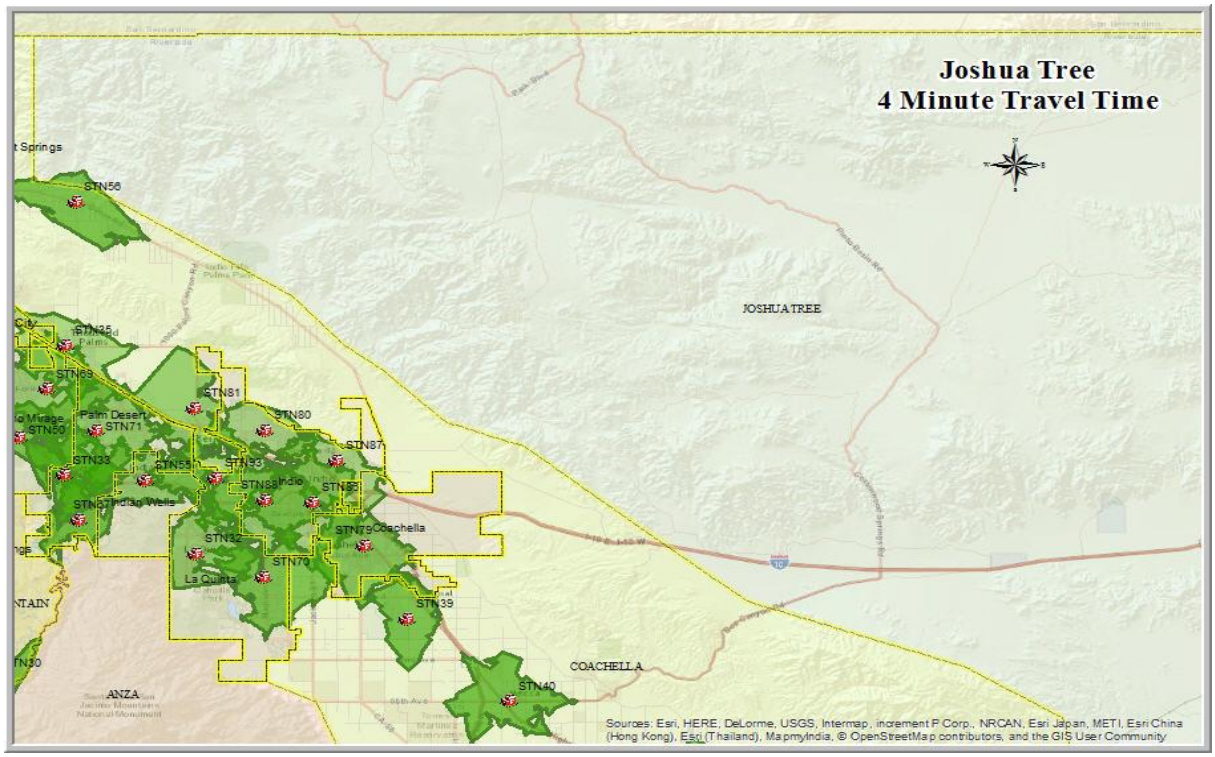

Palm Desert
Indian Wells
Palm Springs
STN32
Indio
Coachella
STN79
STN70
La Quinta
STN39
MOUNTAIN
STN30
COACHELLA
ANZA
Anza
4 Minute Travel Time
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

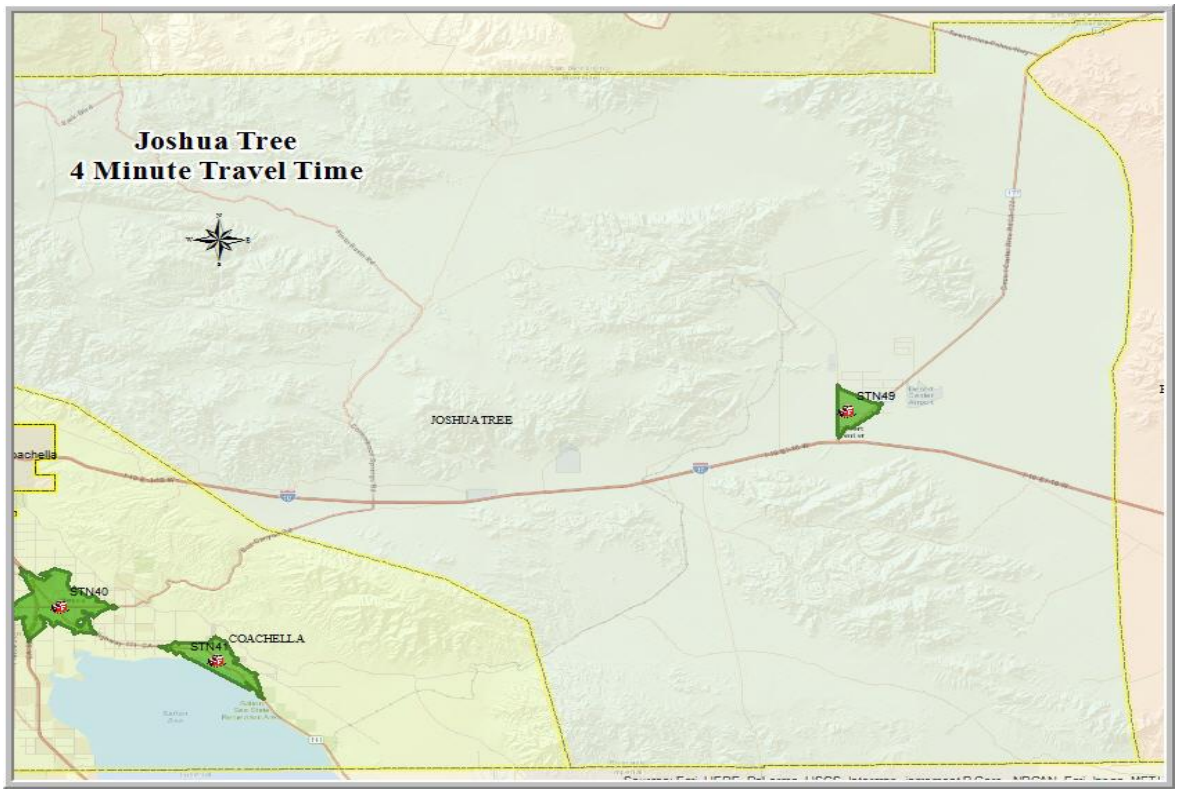
7. Coachella
    a. There is very good four minute coverage in the northern area provided by Stations 35, 56 and 81.
    b. Stations 39, 40 and 41 provide very good four minute coverage in the southern portion of the area.




Coachella
4 Minute Travel Time
JOSHUA TREE
STN80
STN87
STN88
Indio
STN85
STN79
Coachella
STN70
STN39
STN40
COACHELLA
STN41
ANZA
Salton Sea
Salton Sea State Recreation Area
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

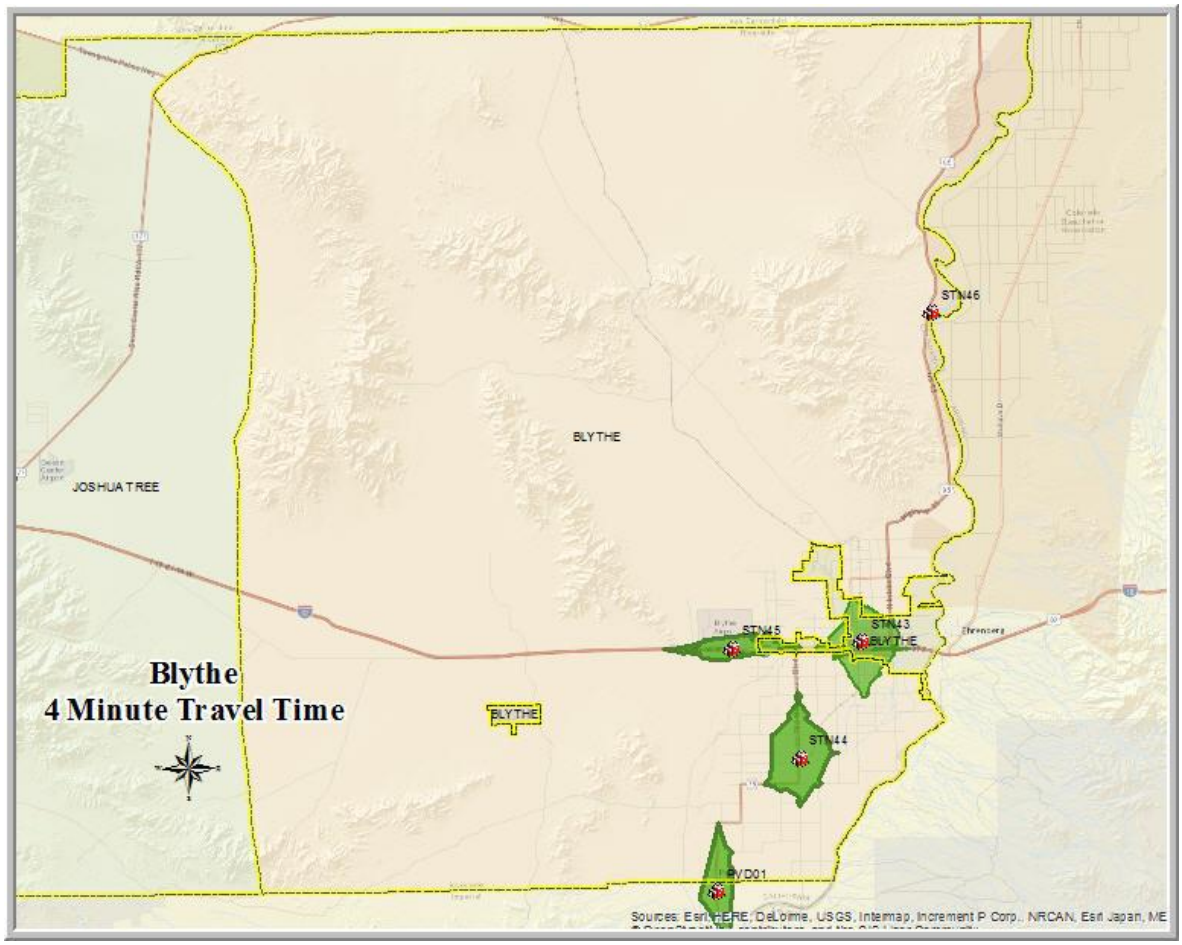
8. Joshua Tree
    a. Station 56 provides minimal coverage along a portion of Dillon Rd, north of Indio Hills.
    b. Station 49 provides some four minute coverage in the Desert Center area toward the south east.




Joshua Tree
4 Minute Travel Time
JOSHUA TREE
STN49
STN40
COACHELLA
STN41

9. Blythe

    a. There is good four minute coverage provided in the area toward the south and east by Stations 43, 44 and 45.



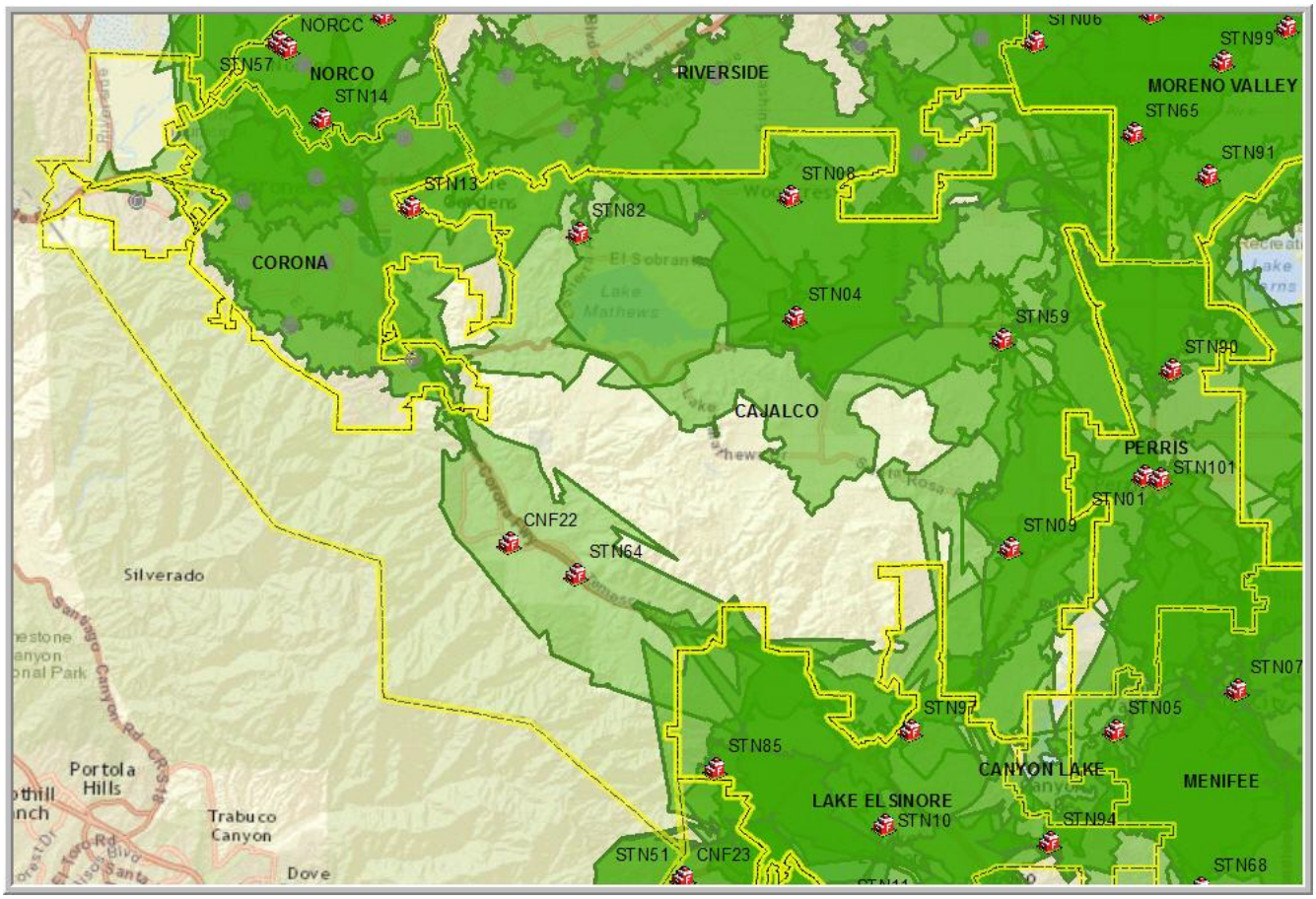
8-Minute Travel Time Maps and Coverage Analysis

1. Cajalco

    a. Northwestern portion of Cajalco (north and southwest of Corona) cannot be covered in eight minutes.

    b. Most of the heavily populated areas south of Riverside and east of Corona, can be reached and have considerable eight minute coverage.

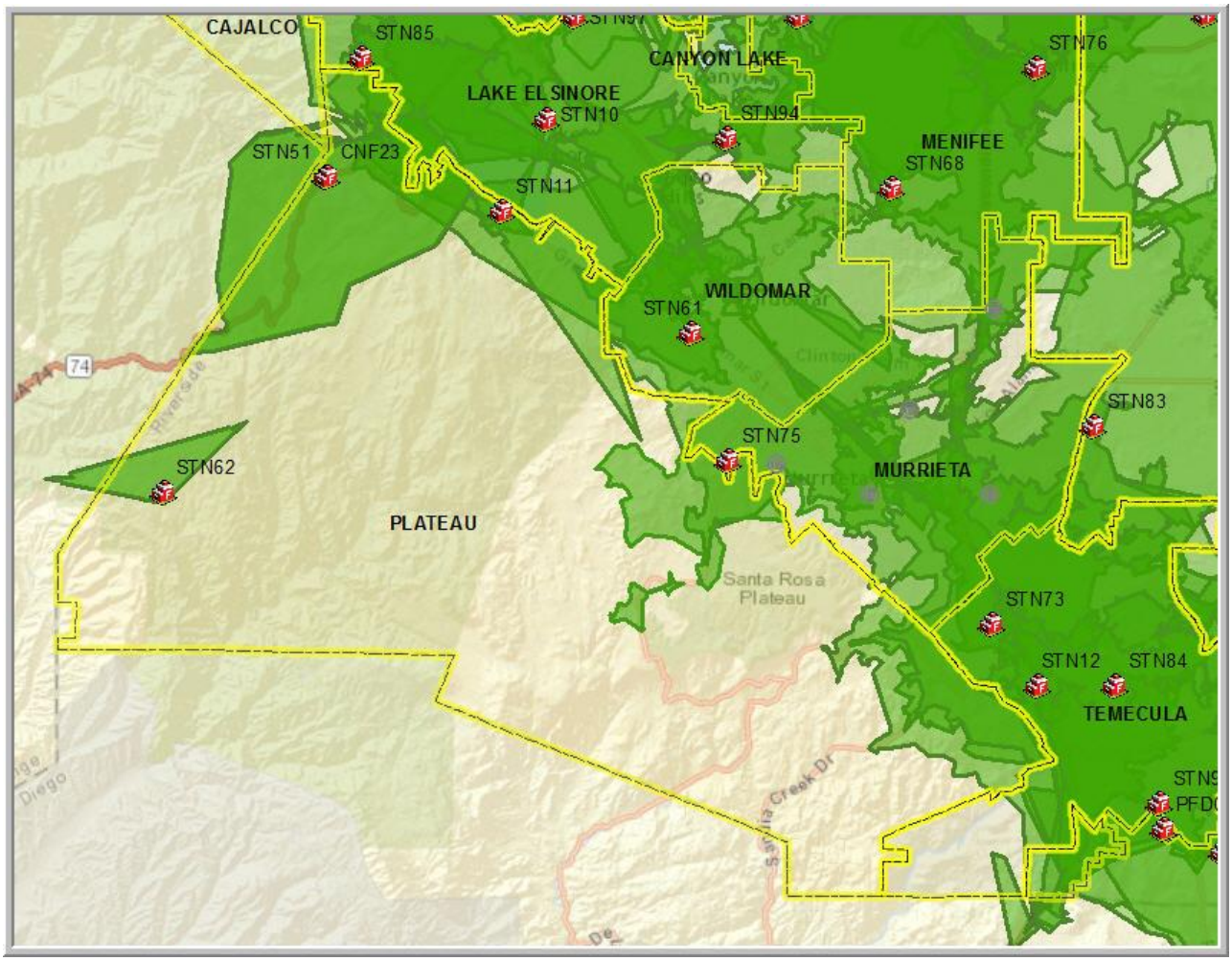
    c. Overlap coverage exist where multiple units can reach the northern and eastern areas.



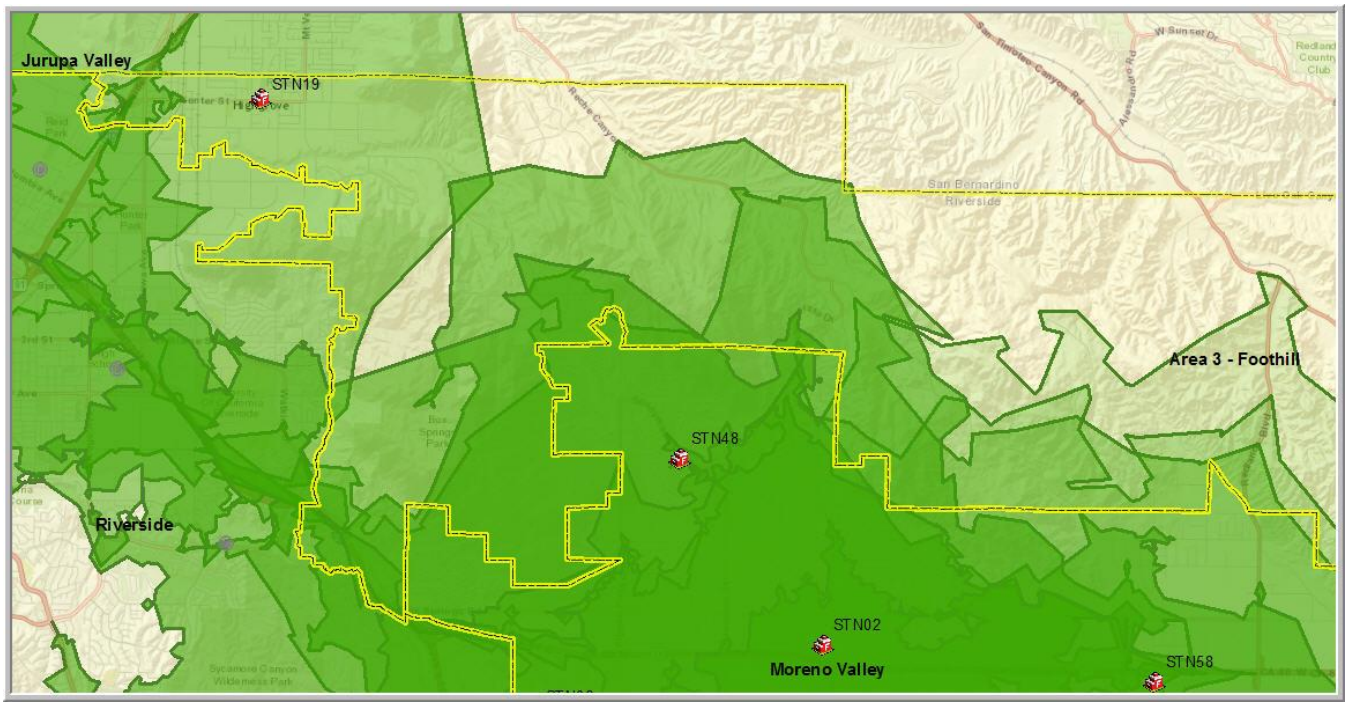
2. Plateau

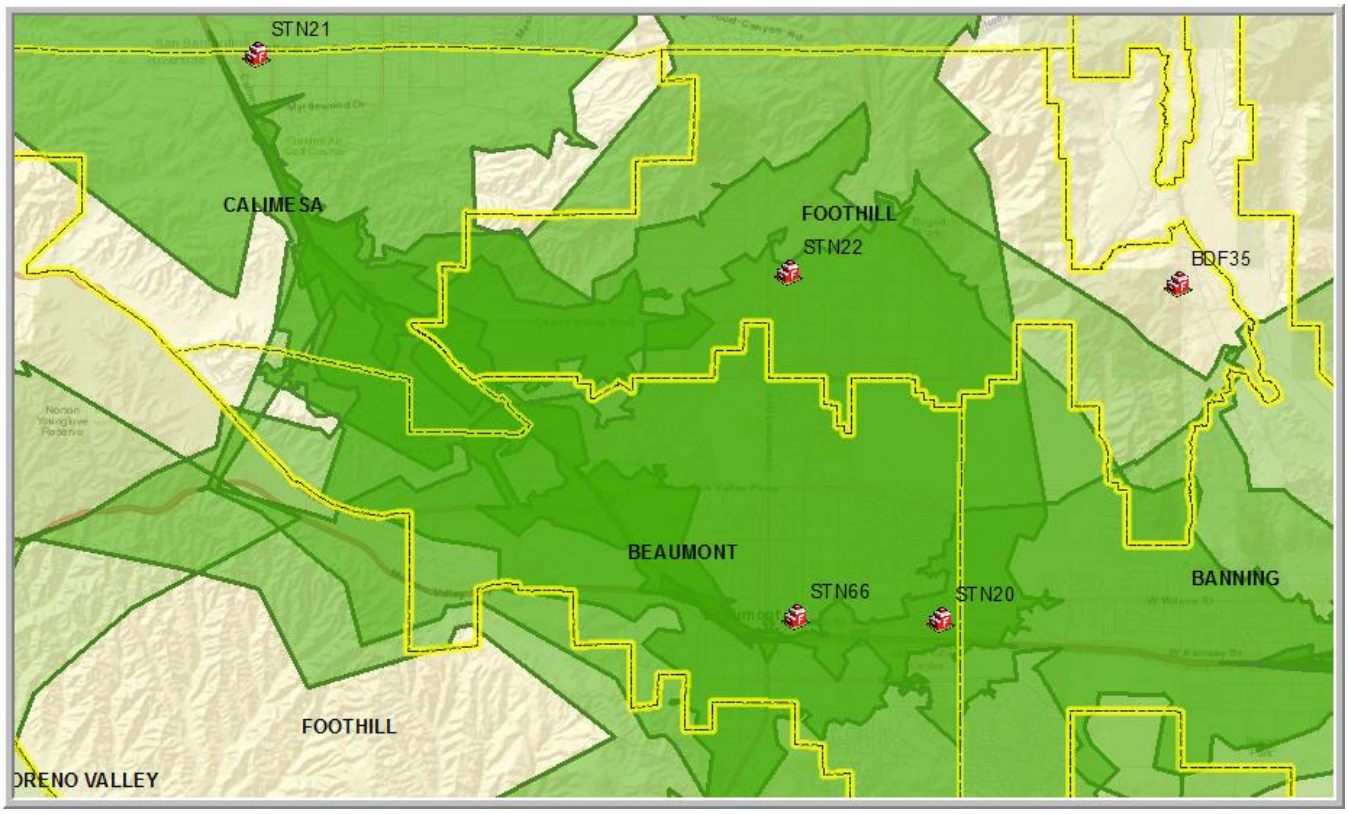
    a. There is some overlap coverage north and east in the area provided by Stations 11, 61 and 75.

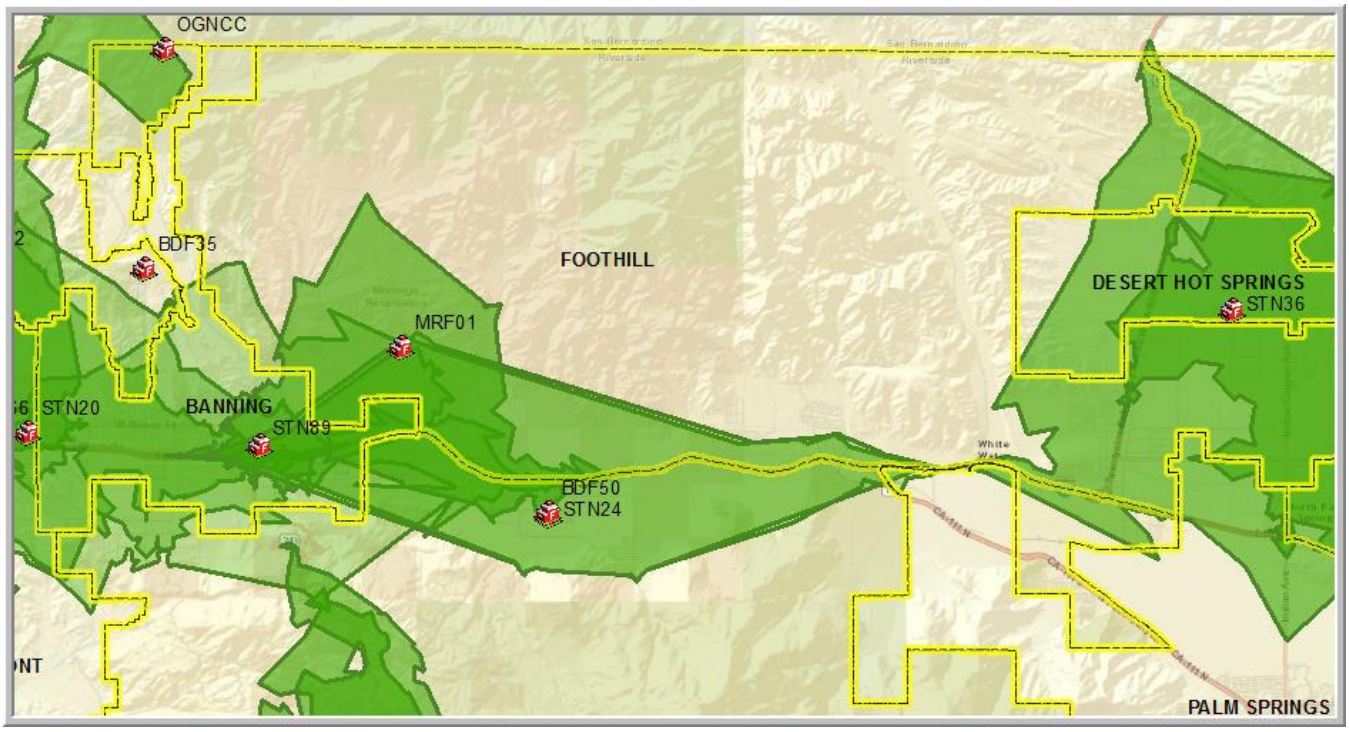
    b. Some overlap is provided in the south by Stations 12, 73 and 84.

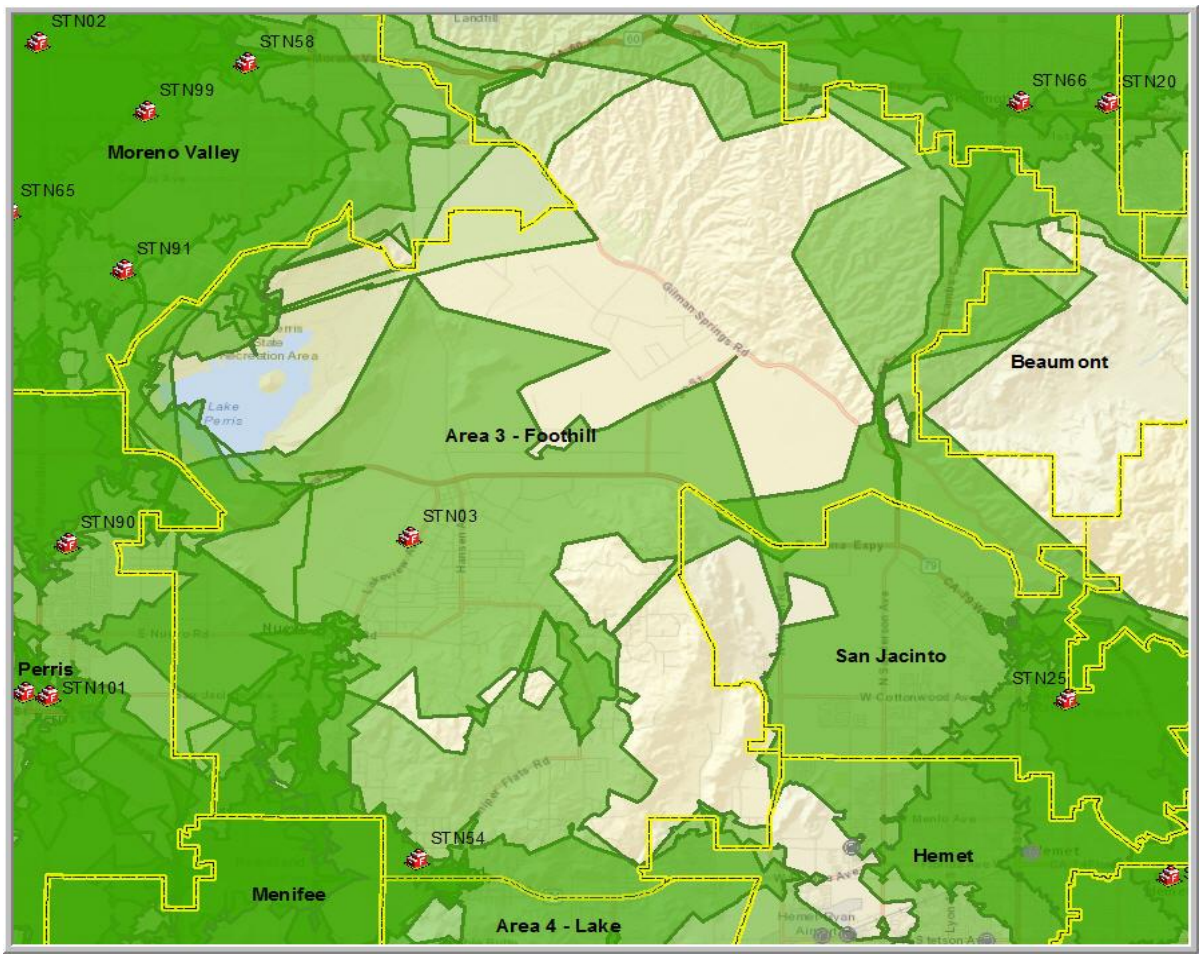


3. Planning Area 3-Foothill
    a. There is eight minute coverage in the northwest corner of the area (Station 19), but no overlap.
    b. There is very good coverage provided by Station 22 in the center section of Foothill and considerable overlap to that section.
    c. The eastern section of Foothill has good coverage to the south and west, with considerable overlap just east of Banning.
    d. Station 3 and Station 54 provides good eight minute coverage in the southern section near the south. There is some overlap coverage along the southern borders of this section.

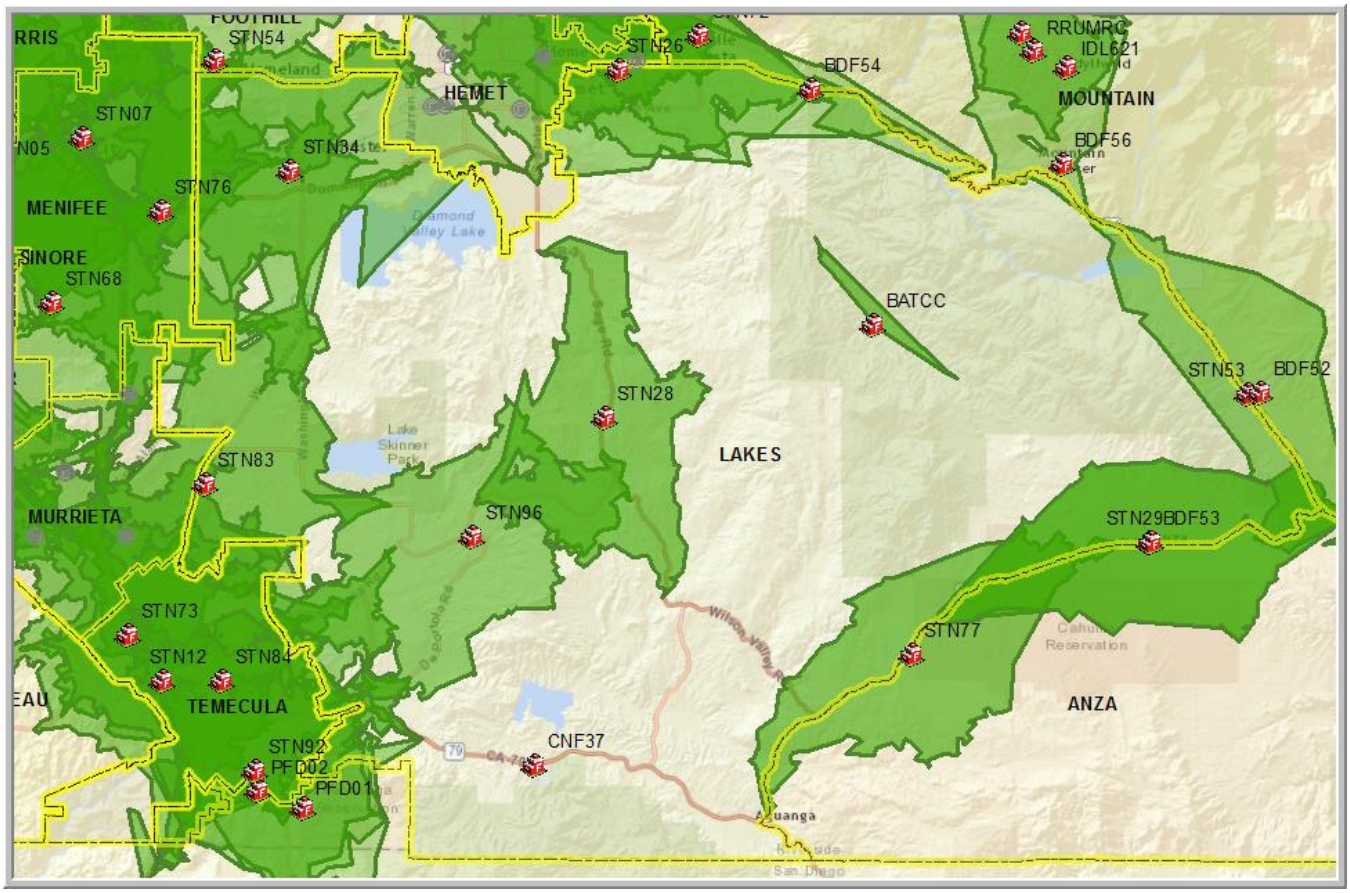



STN21
CALIMESA
FOOTHILL
STN22
BDF35
BEAUMONT
STN66
STN20
BANNING
FOOTHILL
ORENO VALLEY

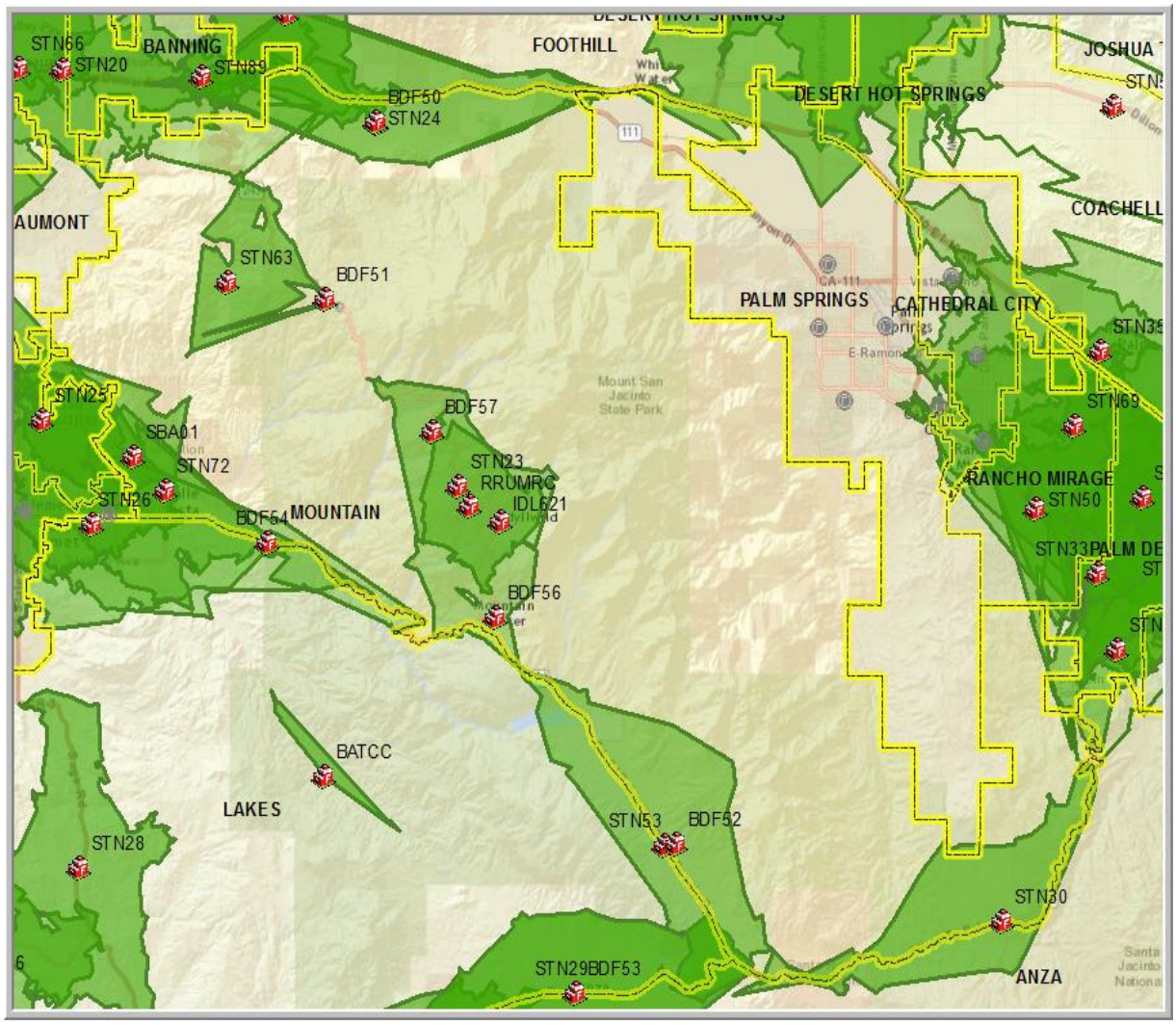

OGNCC
BDF35
FOOTHILL
DESERT HOT SPRINGS
STN36
MRF01
STN20
BANNING
STN89
BDF50
STN24
PALM SPRINGS


STN02
STN58
STN99
Moreno Valley
STN65
STN91
STN66
STN20
Beaumont
Area 3 - Foothill
STN03
STN90
San Jacinto
Perris
STN101
STN25
STN54
Hemet
Menifee
Area 4 - Lake

4. Lakes
    a. There is good eight minute and some overlap coverage in the north and northwest corner of the area.
    b. The center of the area along Sage Rd has coverage and some overlap (Stations 28 and 96).
    c. Major road areas along the southern portion have coverage (Station 29 and 77).



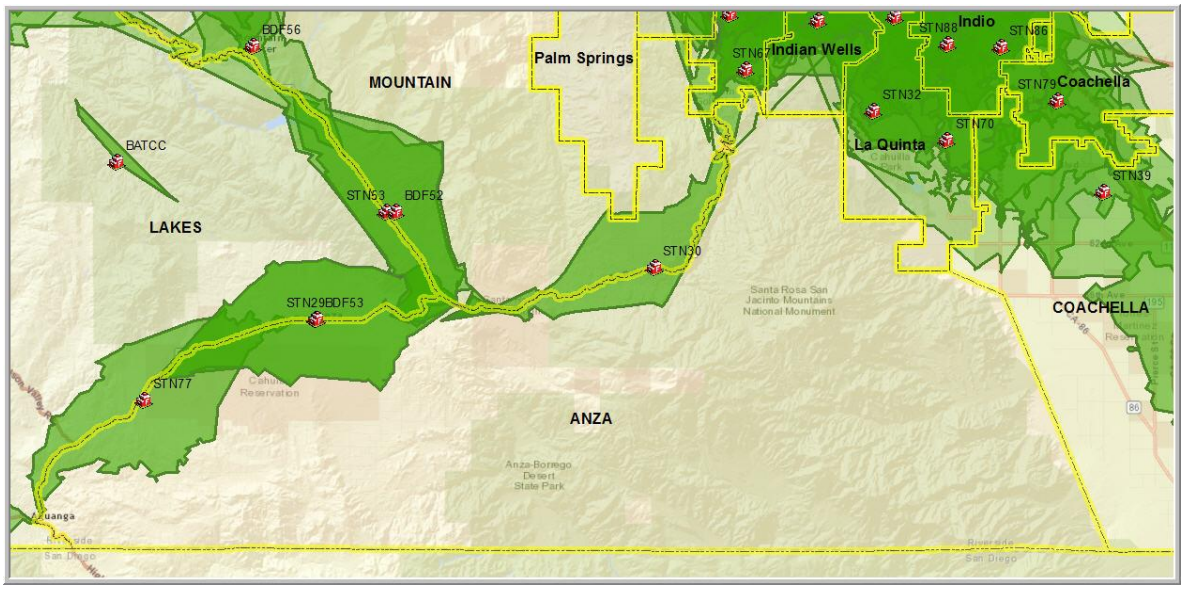
5. Mountain
    a. Station 24 provided good eight-minute coverage in the north. There is little overlap.
    b. There is considerable eight minute overlap coverage in the center of the area (Station 23 and Idyllwild Station 621).
    c. There is a little overlap in the western portion of the area extending along the southwestern boundary.



6. Anza

   a. Eight minute coverage extends along the northwestern border (Stations 29, 30 and 77), with little overlap.

   b. The southern, central and eastern areas cannot be reached in eight-minutes.

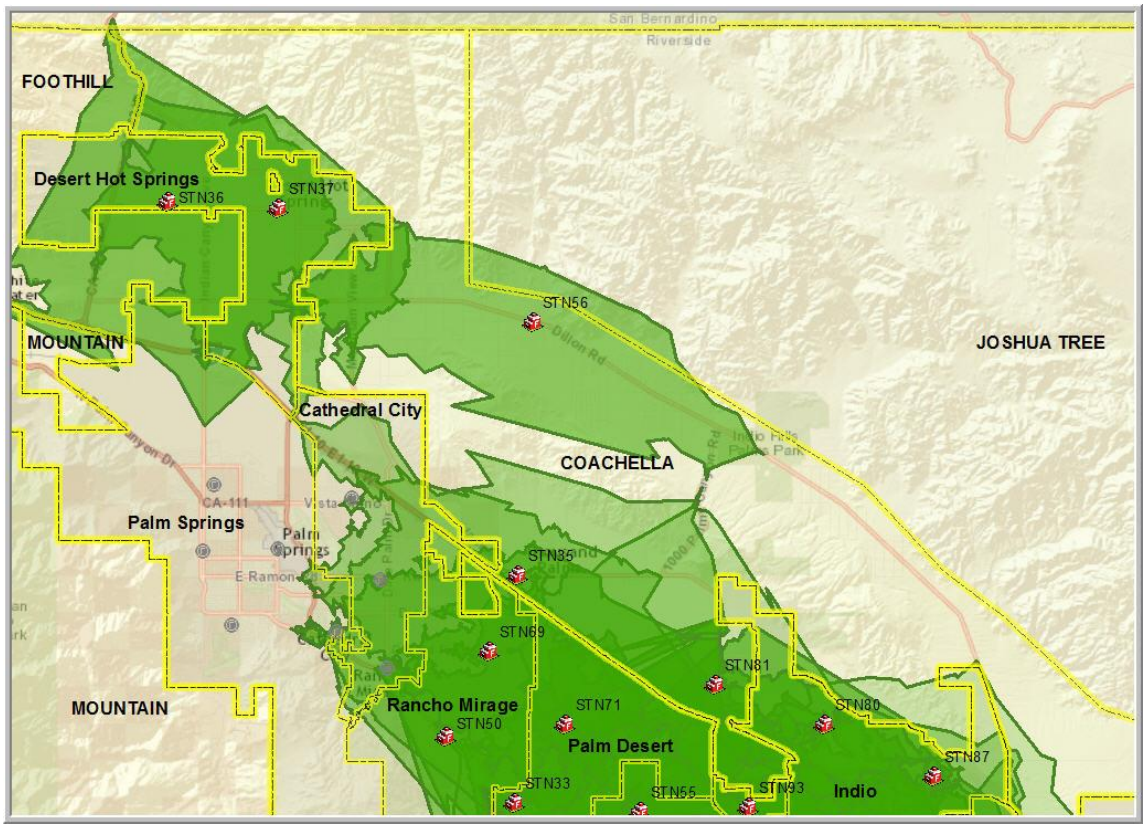


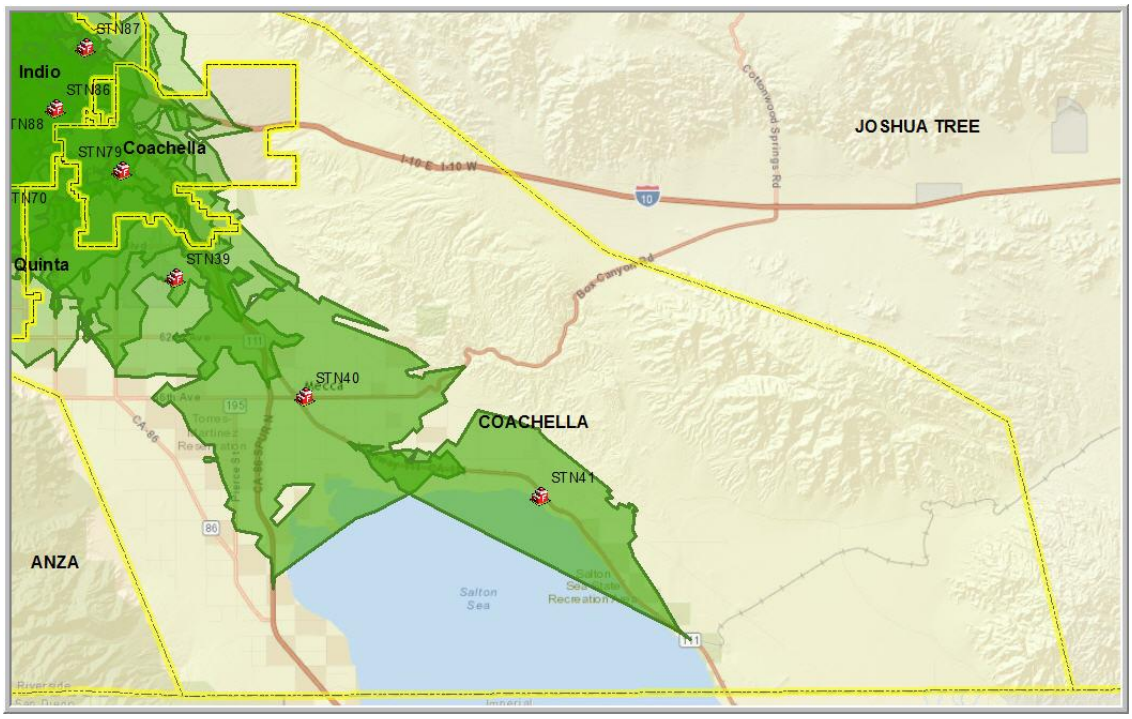
7. Coachella

    a. There is good eight minute coverage in the northern portion of the area with good overlap in some sections.

    b. Eight minute coverage extends along Dillon Rd into the Indio Hills area, with considerable overlap along Thousand Palms Rd area. Eight minute coverage extends up 1000 Palms Canyon Rd with some overlap.

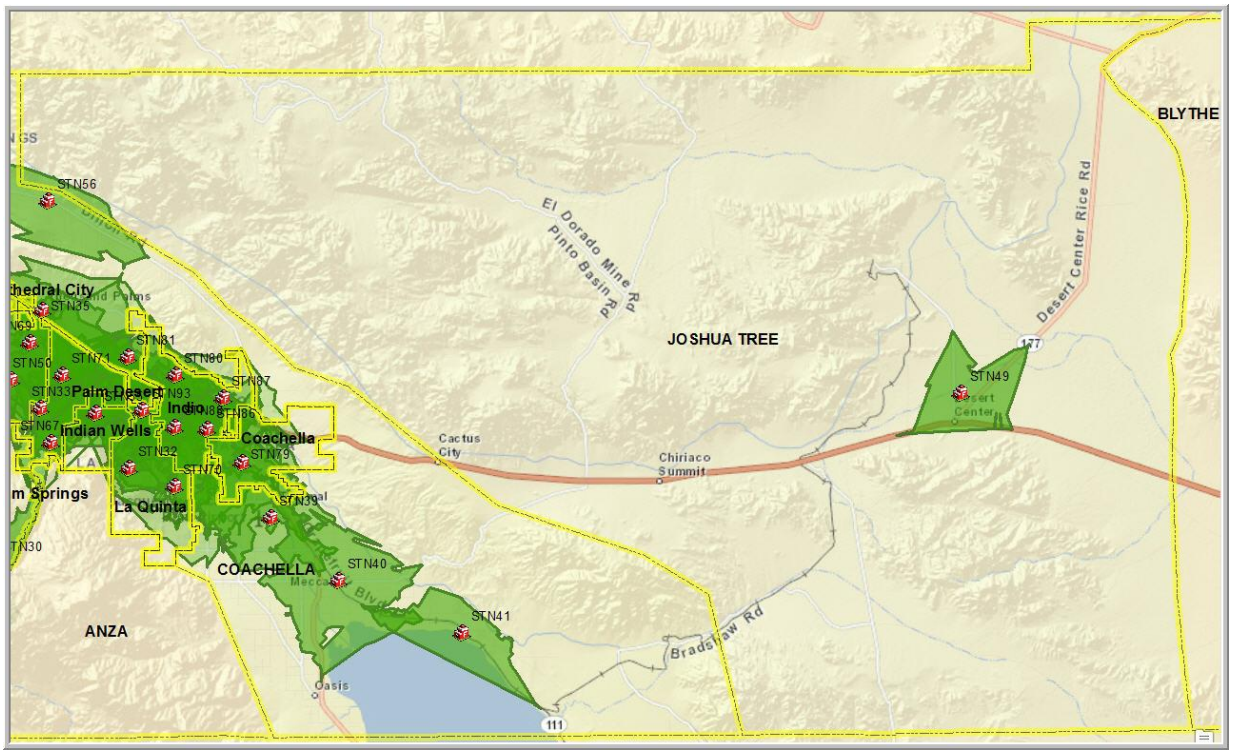
    c. There is also good coverage in the southern portion of the area and along Highway 111, north of Salton Sea with some overlap.





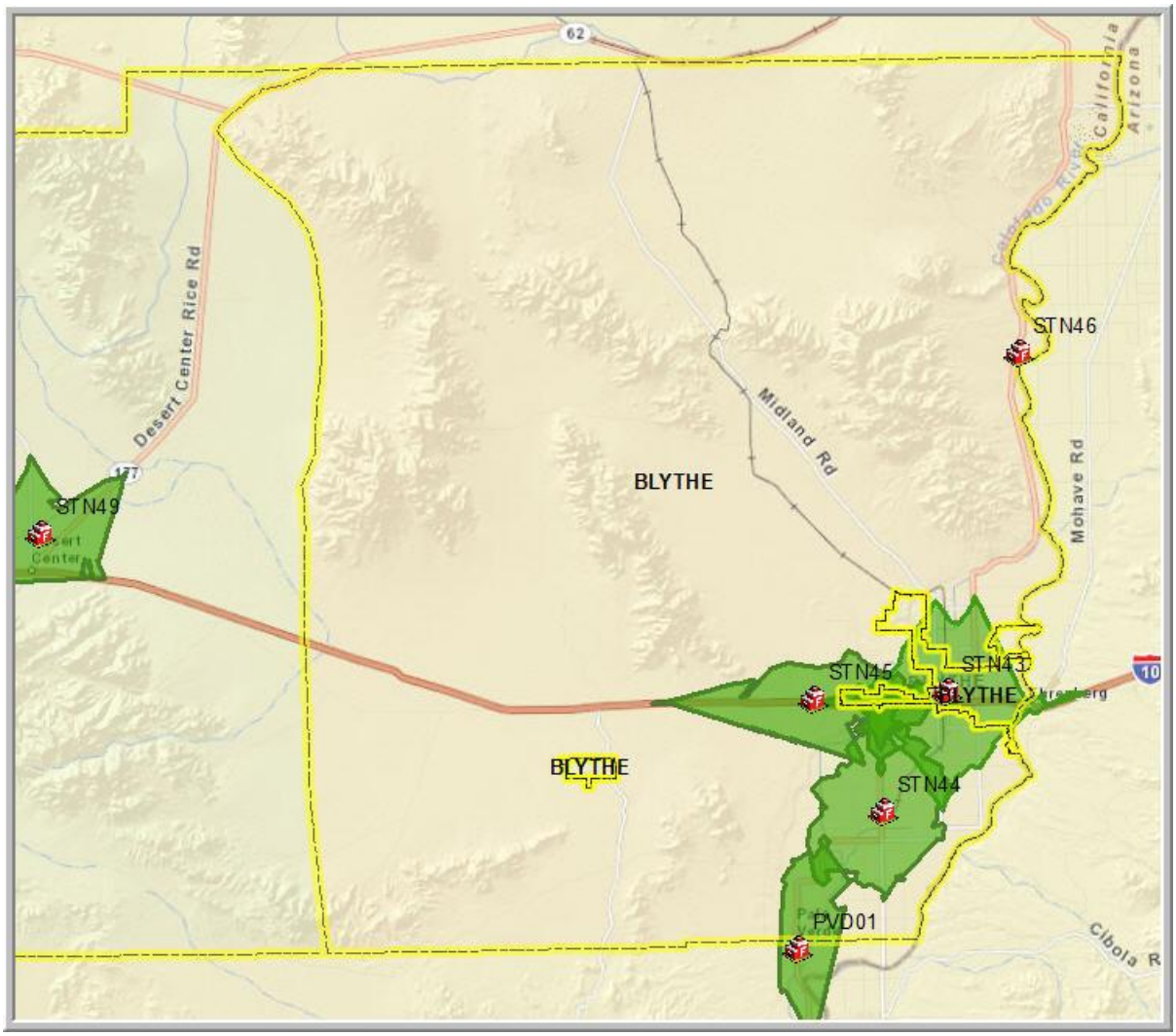
8. Joshua Tree

    a. There is little to no coverage in the northern area, and eight minute coverage around Desert Center.

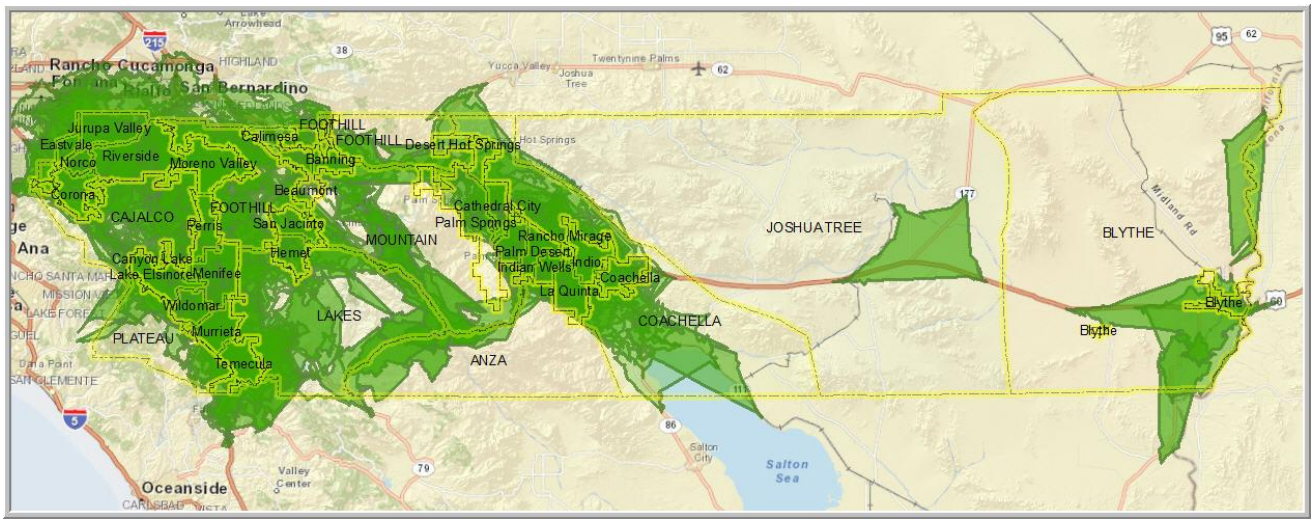


9. Planning Area 9-Blythe

    a. There is good eight minute coverage provided in the area toward the south and east by Stations 43, 44, 45 and PVD01 with little overlap in the south.



15-Minute Travel Time Maps and Coverage Analysis – Across all planning areas most of the heavily populated places can be reached within fifteen minutes, providing overlap in many places. The combined large number of stations involved in the effort to provide emergency services allows this. Below is a map showing the entire area with the fifteen minute travel-time coverage throughout the region.

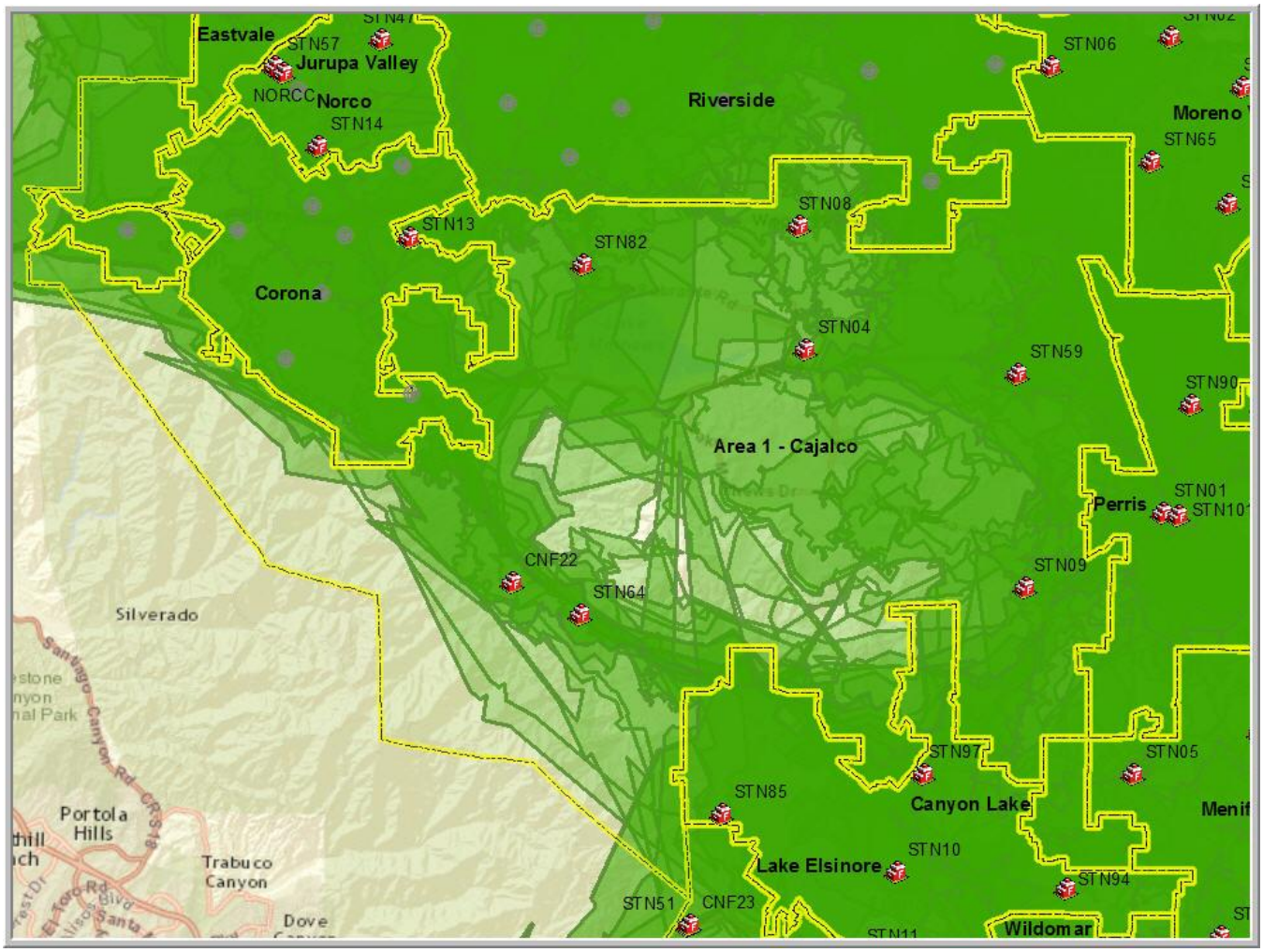


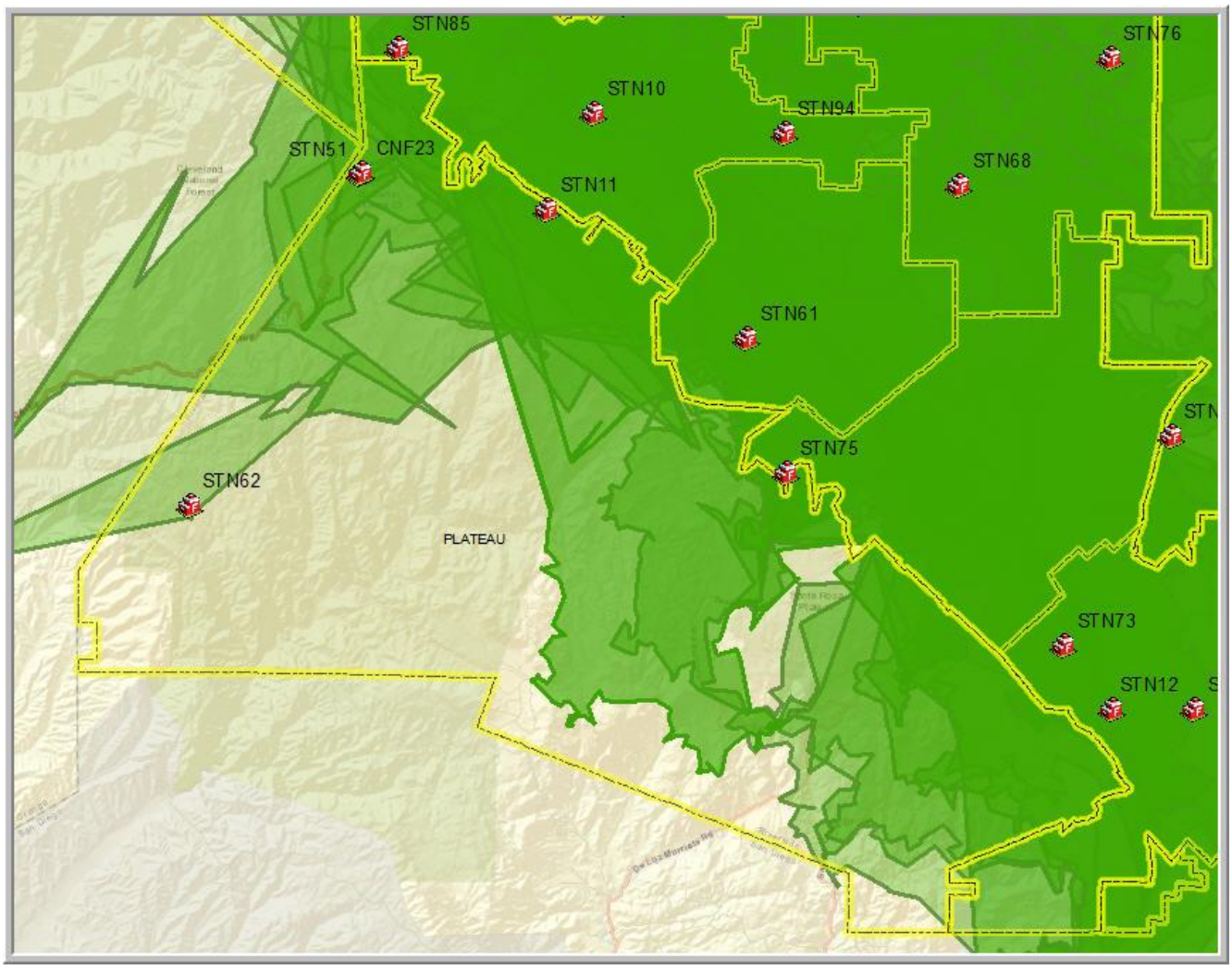
There are however, some things that do stand out. Fifteen minute travel time maps for each of the planning areas can be seen on the following pages.

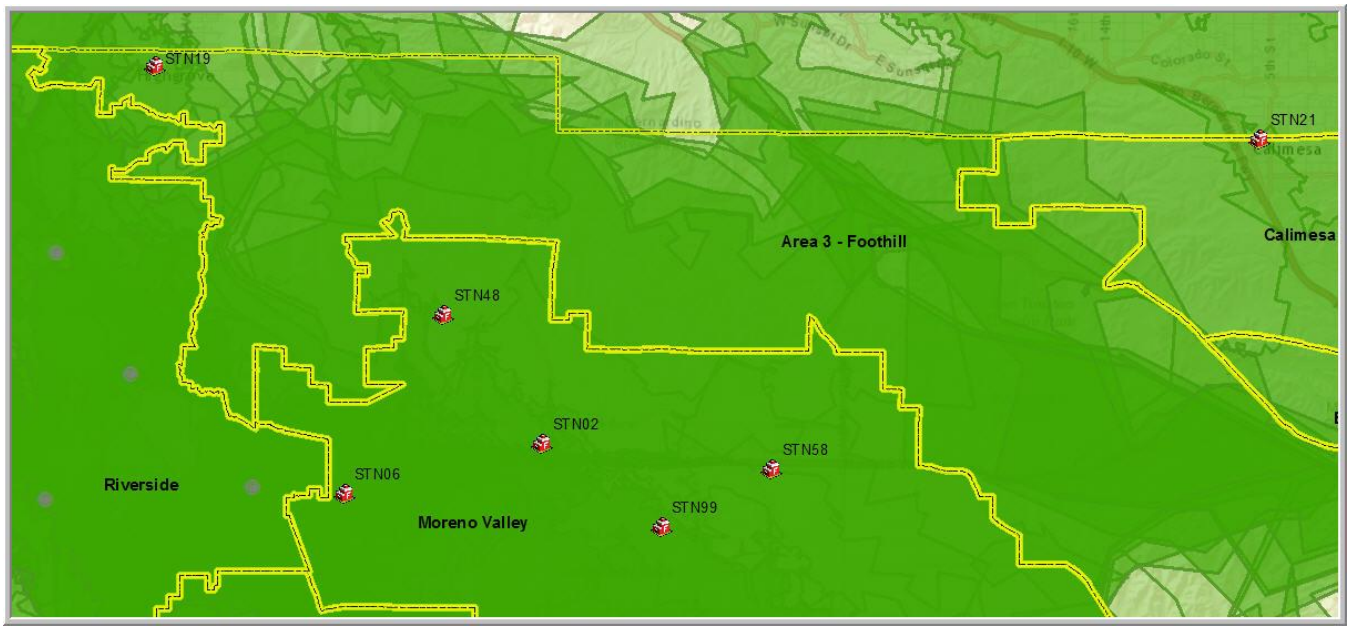
1. **Cajalco –** Mountainous areas along the western border and center are difficult to reach.
2. **Plateau –** Center and southern areas cannot be reached, and Station 62 stands isolated with no support from other stations within fifteen minutes.
3. **Foothill –** There is very good overlap coverage in most of the area, and good overlap in the northern portions of the area.
4. **Lake –** The center portion of the area lacks sufficient overlap coverage for incidents requiring more than two units.
5. **Mountain –** There is very good overlap coverage along the major roads within the area. There are stations in close proximity providing identical coverage, where there may be a possibility to reallocate some resources.
6. **Anza –** Only the northern portions of the area can be reached in fifteen minutes with good overlap.
7. **Coachella –** Almost all of the area can be reached in fifteen minutes with excellent overlap in most areas.
8. **Joshua Tree –** Station 49 is isolated with no support from other stations in fifteen minutes.

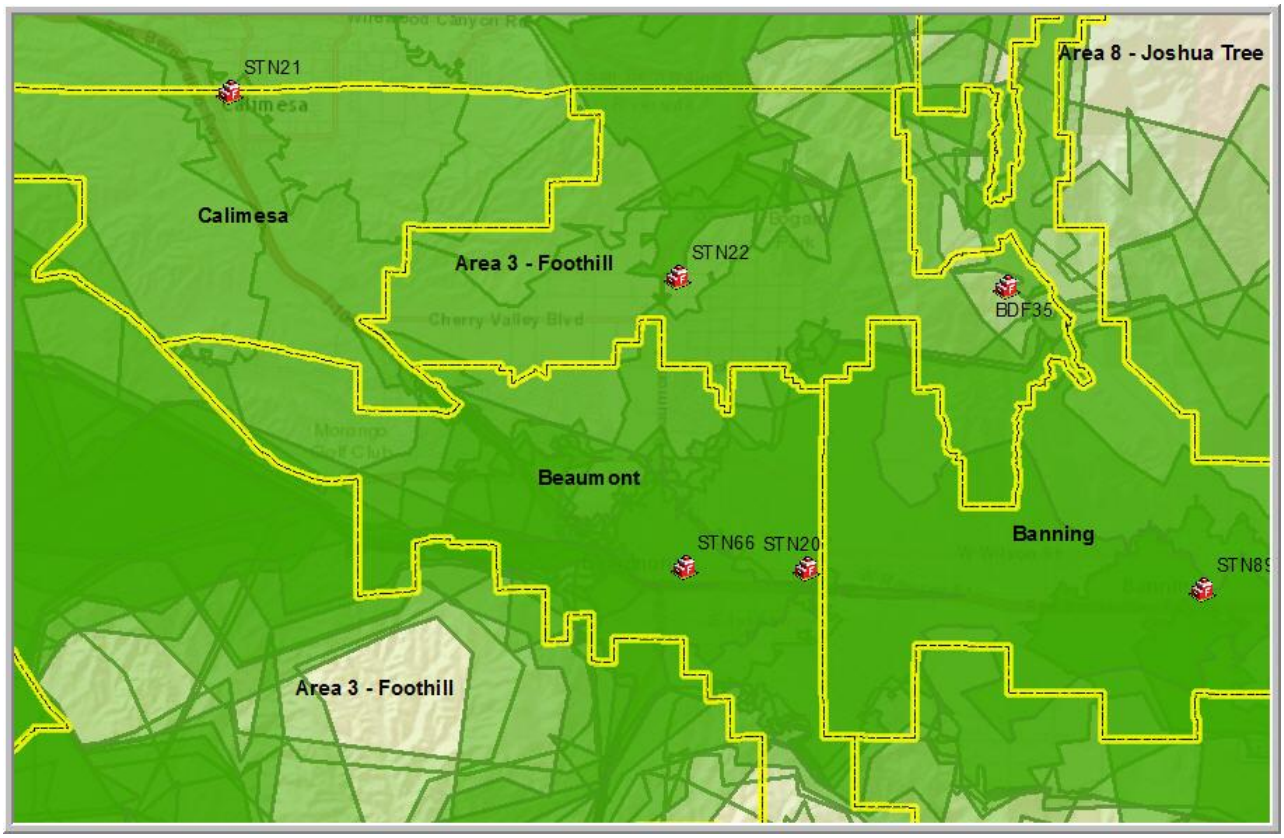
9. **Blythe –** Stations 46 has no support from other stations within fifteen minutes, but there is considerable overlap in the southern area.

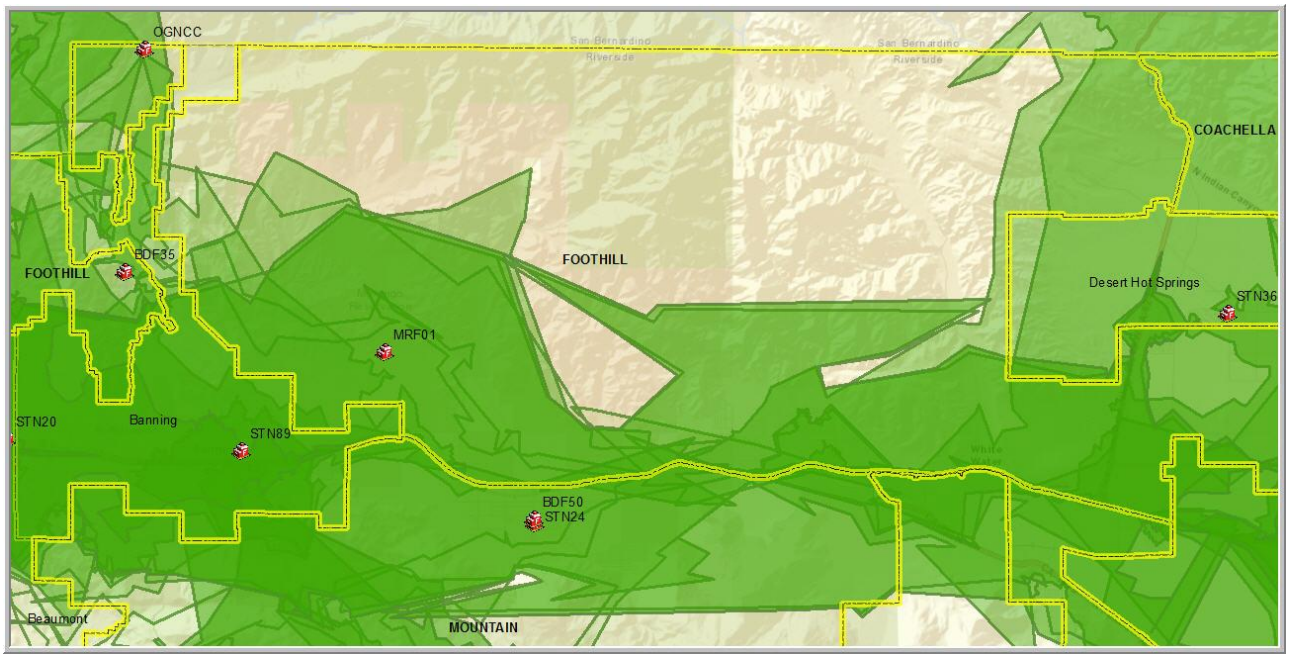
Each of the planning areas and their fifteen minute coverage and overlap is shown in the following maps:

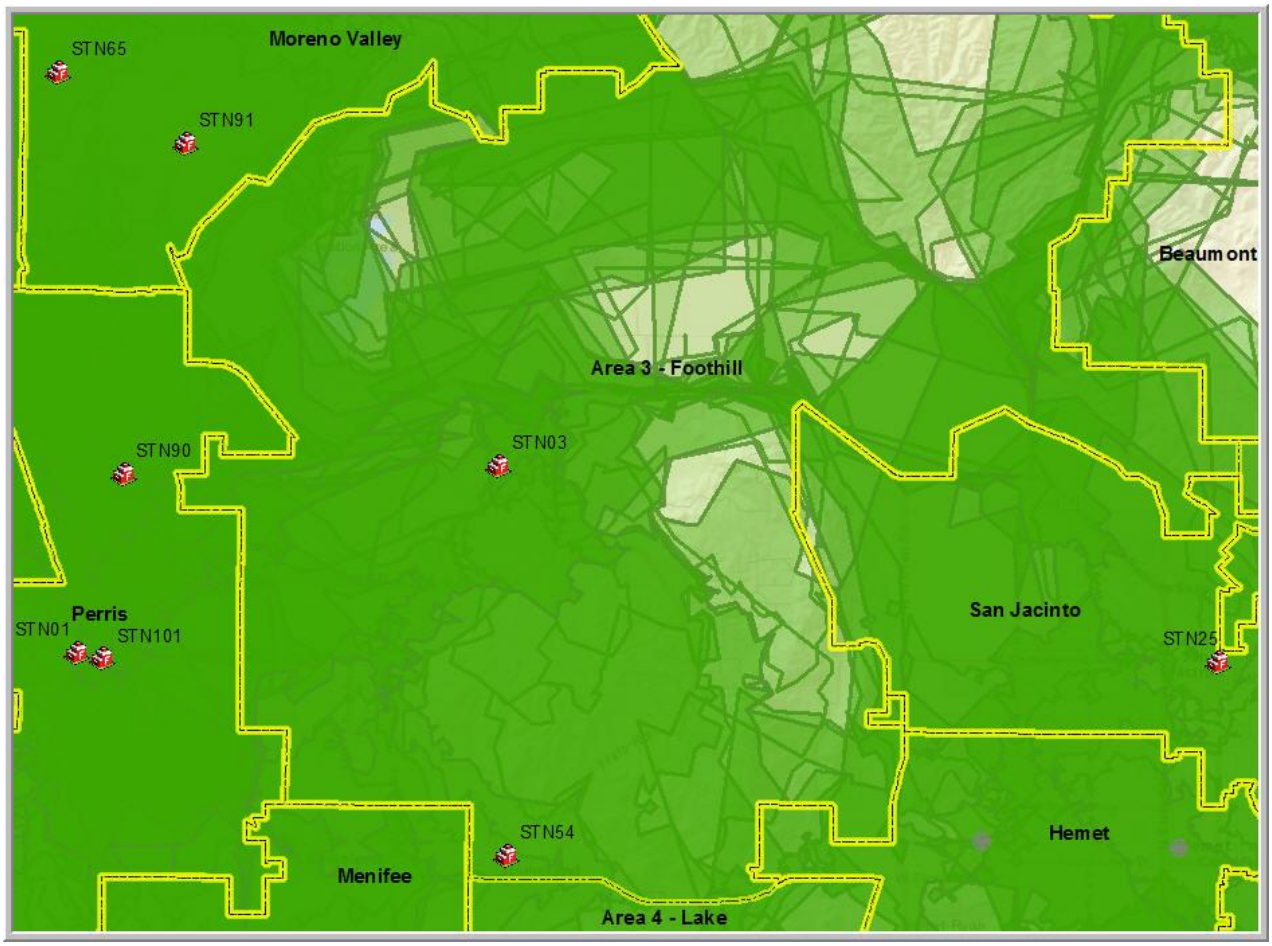


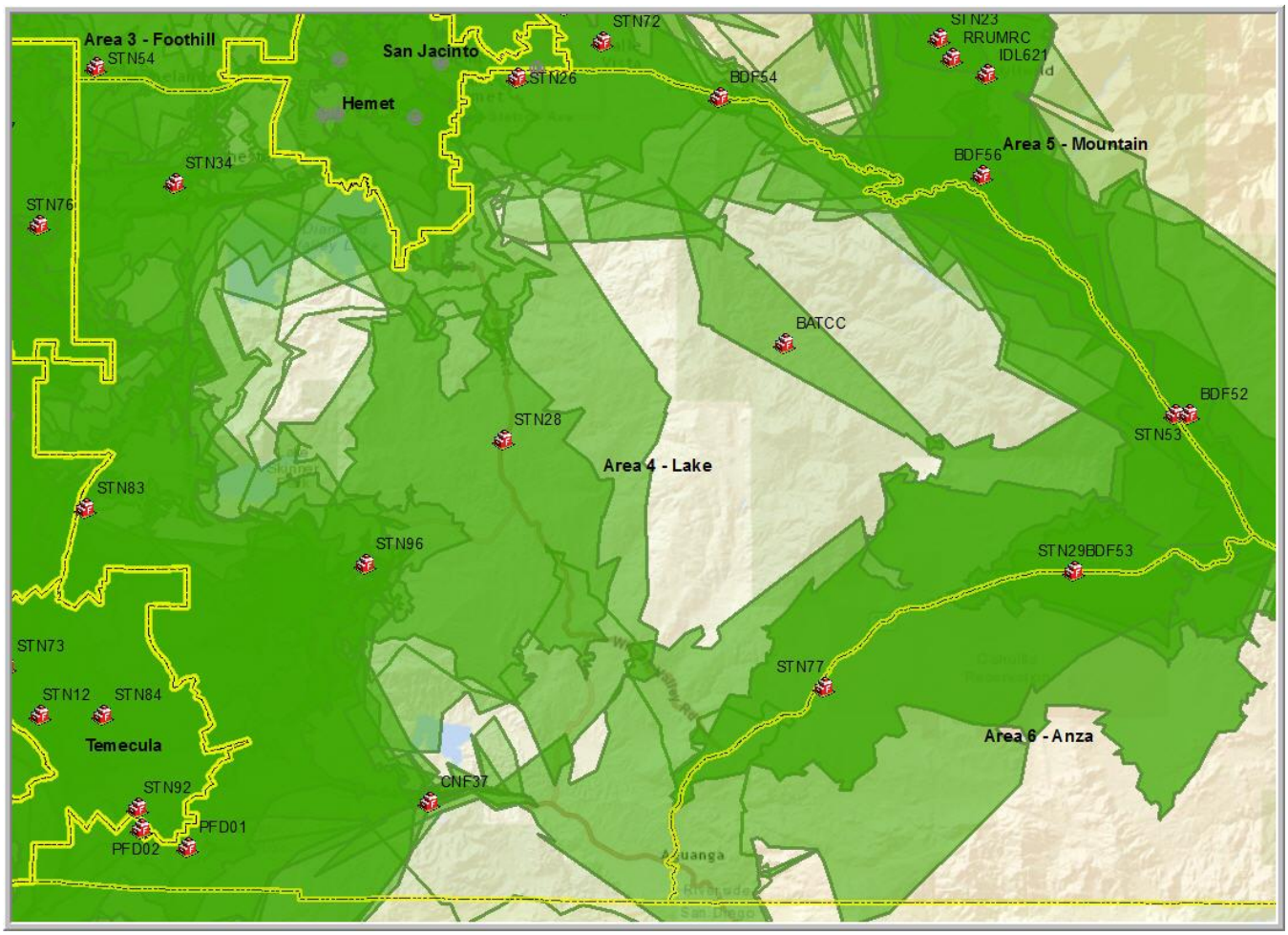

STN85
STN76
STN10
STN94
STN51
CNF23
STN68
STN11
STN61
STN75
STN62
PLATEAU
STN73
STN12

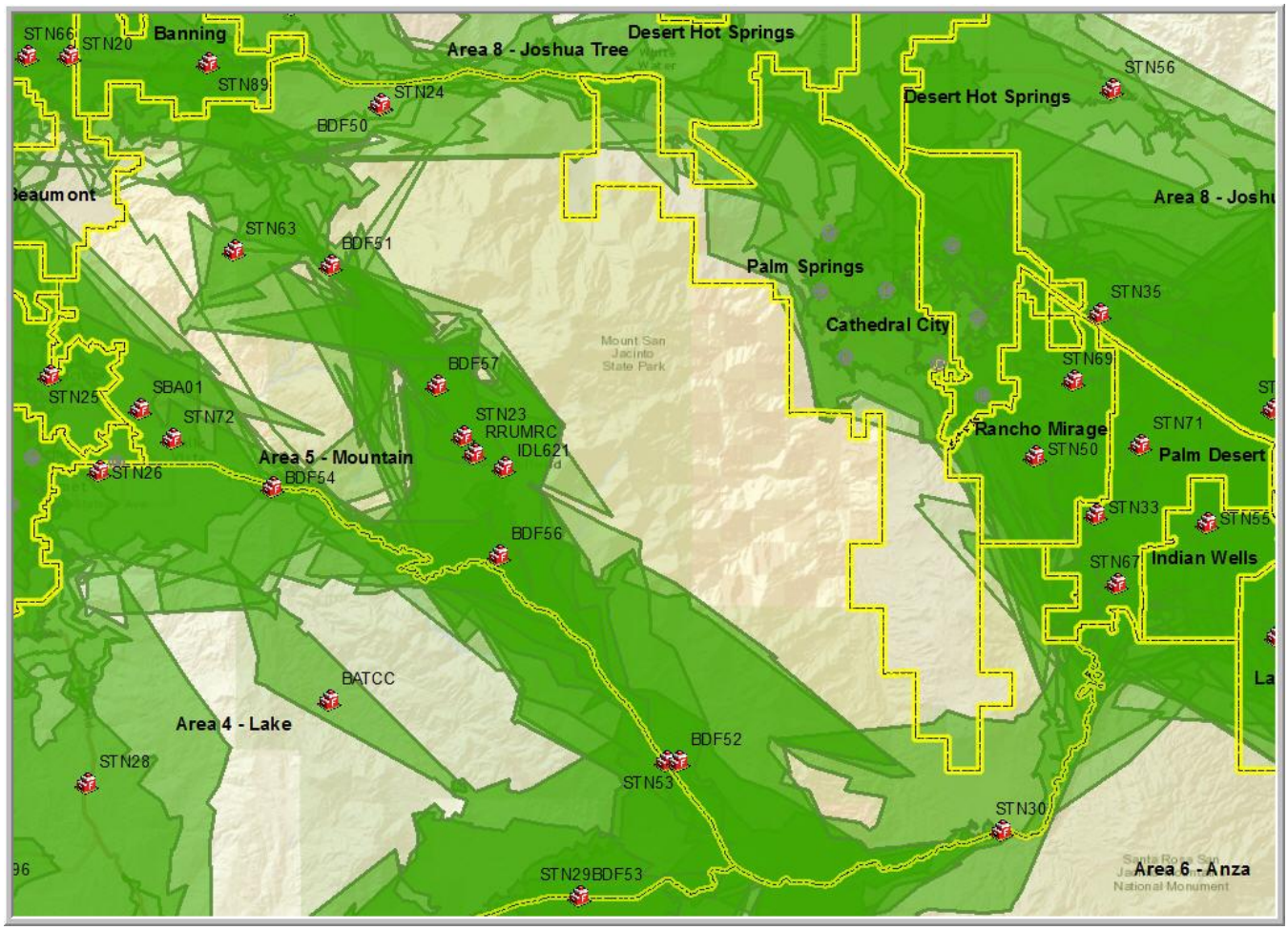

STN19
STN21
Area 3 - Foothill
Calimesa
STN48
STN02
STN58
STN06
Riverside
Moreno Valley
STN99

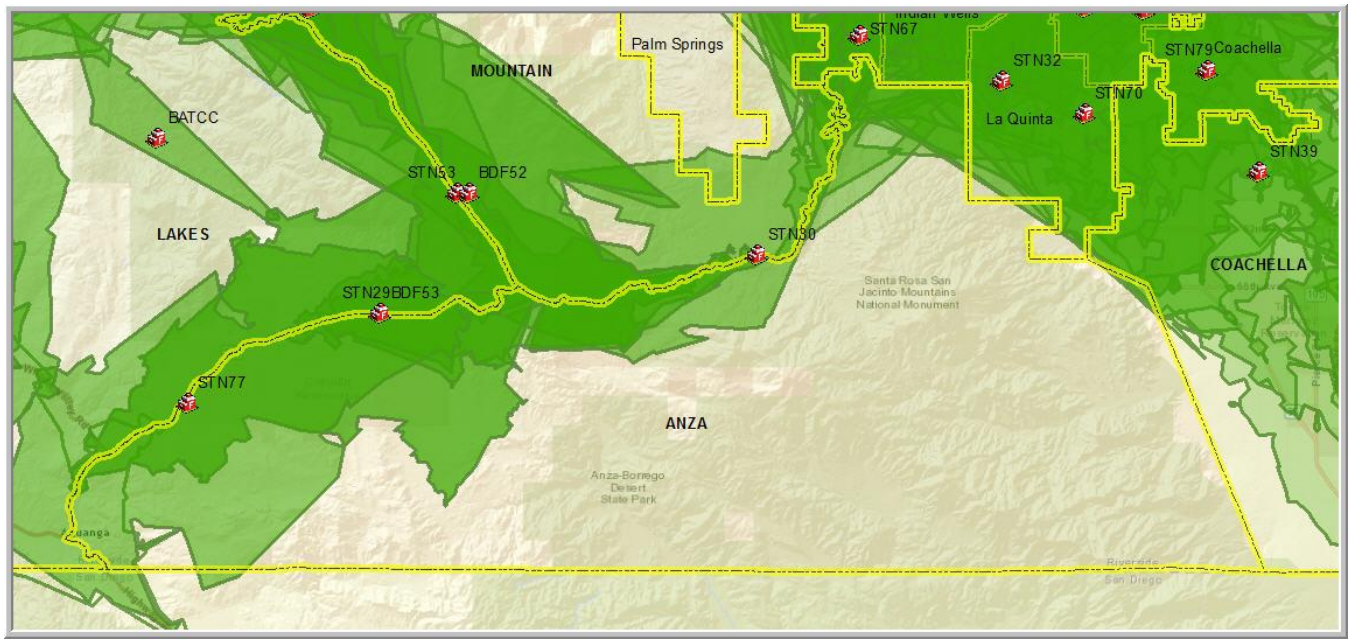

STN21
Area 8 - Joshua Tree
Calimesa
Area 3 - Foothill
STN22
BDF35
Beaumont
Banning
STN66
STN20
STN89
Area 3 - Foothill

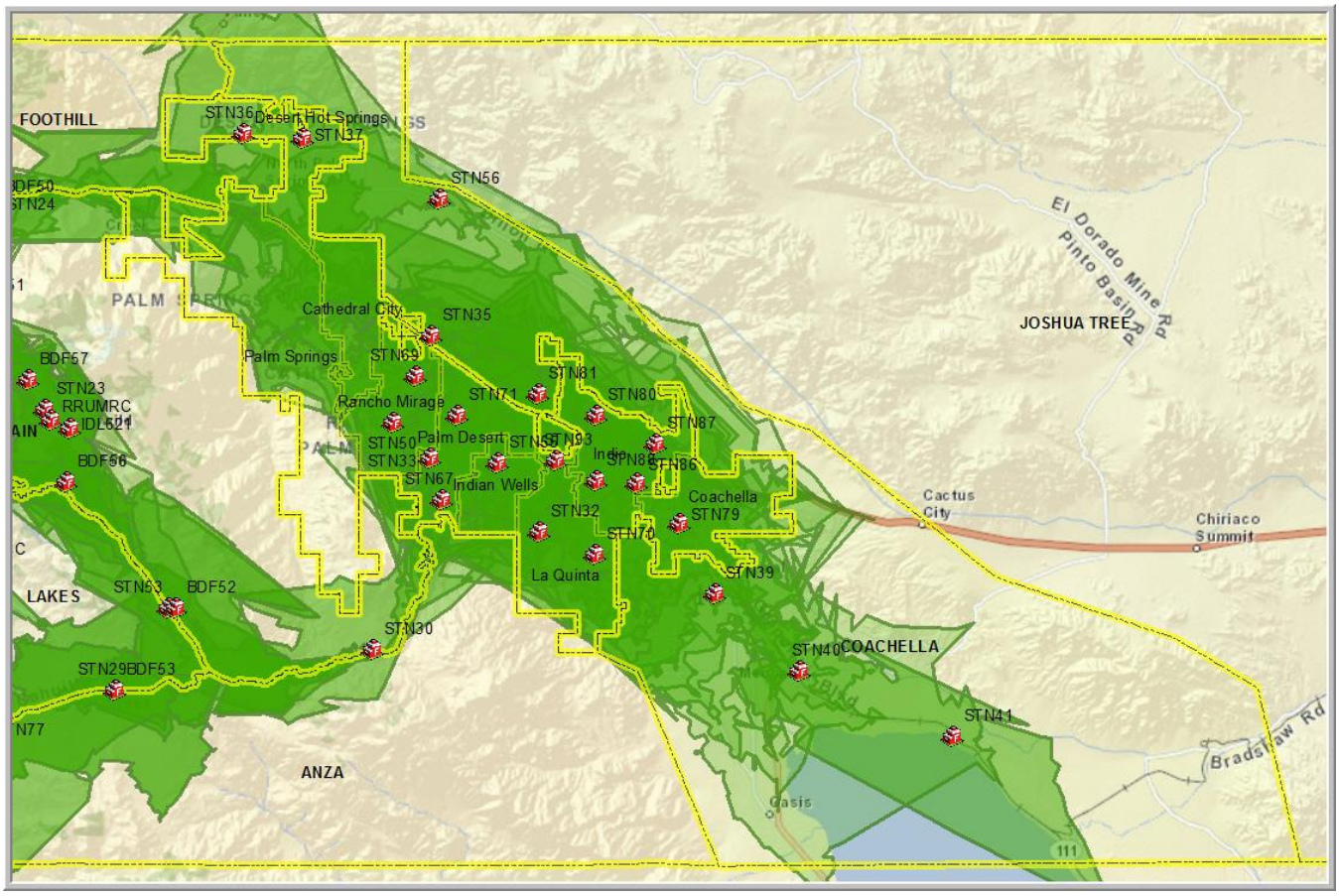

OGNCC
COACHELLA
FOOTHILL
BDF35
FOOTHILL
Desert Hot Springs
STN36
MRF01
STN20
Banning
STN89
BDF50
STN24
Beaumont
MOUNTAIN

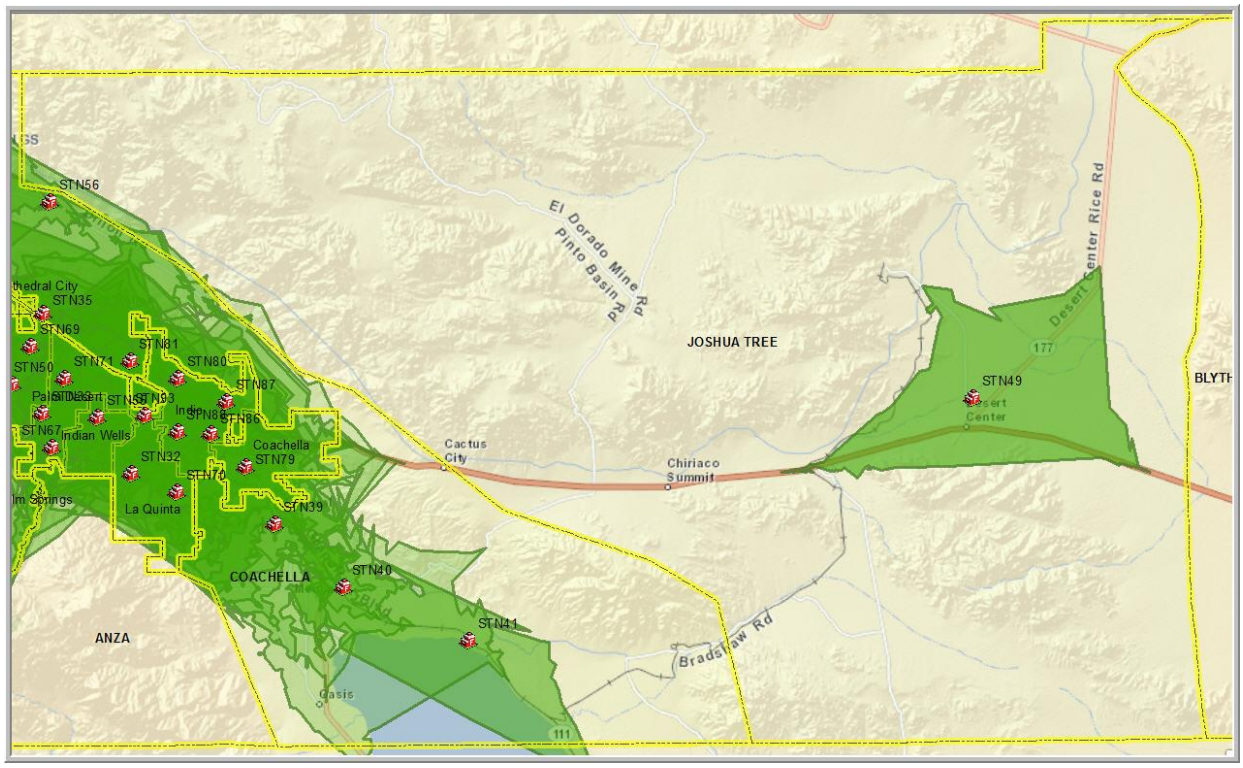

STN65
Moreno Valley
STN91
Beaumont
Area 3 - Foothill
STN90
STN03
Perris
STN01
STN101
San Jacinto
STN25
STN54
Hemet
Menifee
Area 4 - Lake


Area 3 - Foothill
STN54
San Jacinto
STN72
STN26
BDF54
Hemet
STN23
RRUMRC
IDL621
Area 5 - Mountain
BDF56
STN34
STN76
BATCC
BDF52
STN53
STN28
Area 4 - Lake
STN83
STN96
STN29BDF53
STN73
STN77
STN12
STN84
Temecula
Area 6 - Anza
CNF37
STN92
PFD01
PFD02


STN66
STN20
Banning
STN89
Area 8 - Joshua Tree
Desert Hot Springs
STN24
BDF50
STN56
Desert Hot Springs
Area 8 - Joshu
STN63
BDF51
Palm Springs
STN35
Cathedral City
Mount San Jacinto State Park
BDF57
STN69
STN25
SBA01
STN72
STN23
RRUMRC
IDL621
Rancho Mirage
STN71
STN50
Palm Desert
Area 5 - Mountain
BDF54
STN26
STN33
STN55
BDF56
STN67
Indian Wells
BATCC
Area 4 - Lake
BDF52
STN28
STN53
STN30
STN29BDF53
Area 6 - Anza
National Monument


Palm Springs
STN67
MOUNTAIN
STN32
STN79Coachella
STN70
BATCC
La Quinta
STN39
STN53
BDF52
LAKES
STN30
COACHELLA
STN29BDF53
Santa Rosa San Jacinto Mountains National Monument
STN77
ANZA
Anza-Borrego Desert State Park

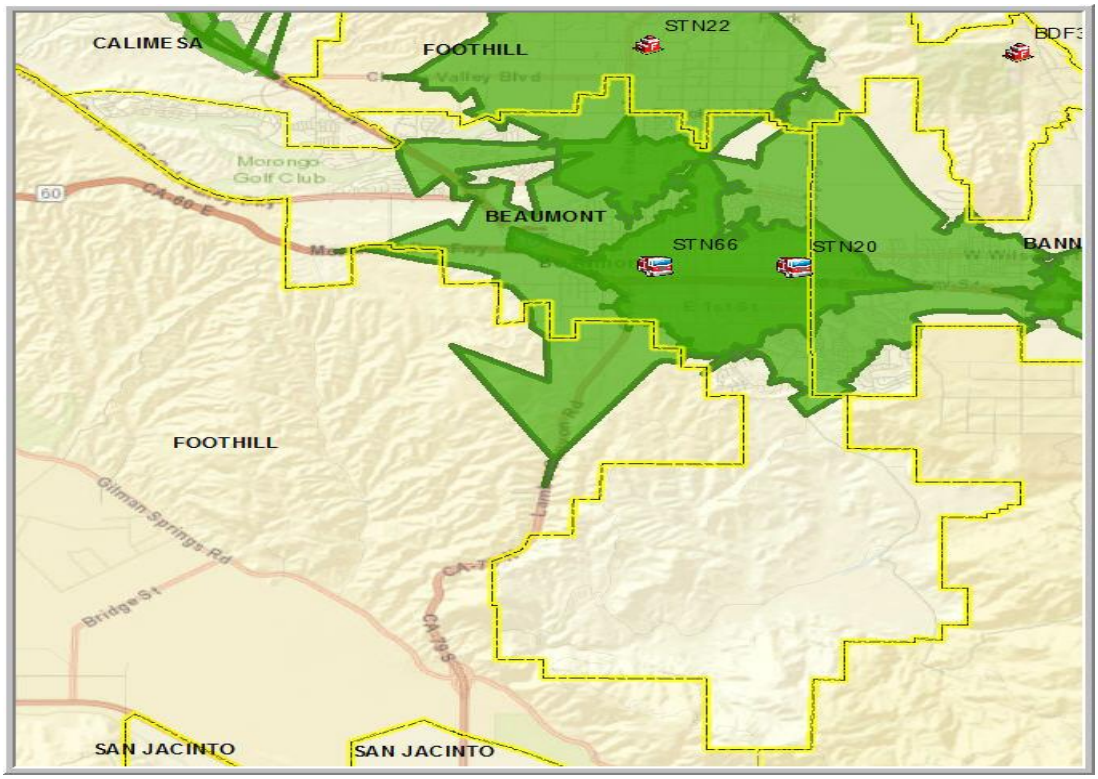

FOOTHILL
STN36
Desert Hot Springs
STN37
STN56
El Dorado Mine Rd
Pinto Basin Rd
JOSHUA TREE
PALM SPRINGS
Cathedral City
STN35
Palm Springs
STN69
STN81
STN71
STN80
STN87
Rancho Mirage
STN50
Palm Desert
STN33
STN93
Indio
STN86
STN67
Indian Wells
Coachella
STN79
STN32
STN70
La Quinta
STN39
Cactus City
Chiriaco Summit
BDF57
STN23
RRUMRC
IDL621
BDF56
LAKES
STN63
BDF52
STN30
STN29
BDF53
STN40
COACHELLA
STN41
Bradshaw Rd
ANZA
Oasis
111


STN56
El Dorado Mine Rd
Pinto Basin Rd
JOSHUA TREE
Desert Center Rice Rd
177
STN49
Desert Center
STN35
STN69
STN81
STN71
STN80
STN87
STN50
STN93
Indio
STN86
STN67
Indian Wells
STN32
Coachella
STN79
STN70
La Quinta
STN39
Cactus City
Chiriaco Summit
COACHELLA
STN40
STN41
Bradshaw Rd
ANZA
Oasis
111

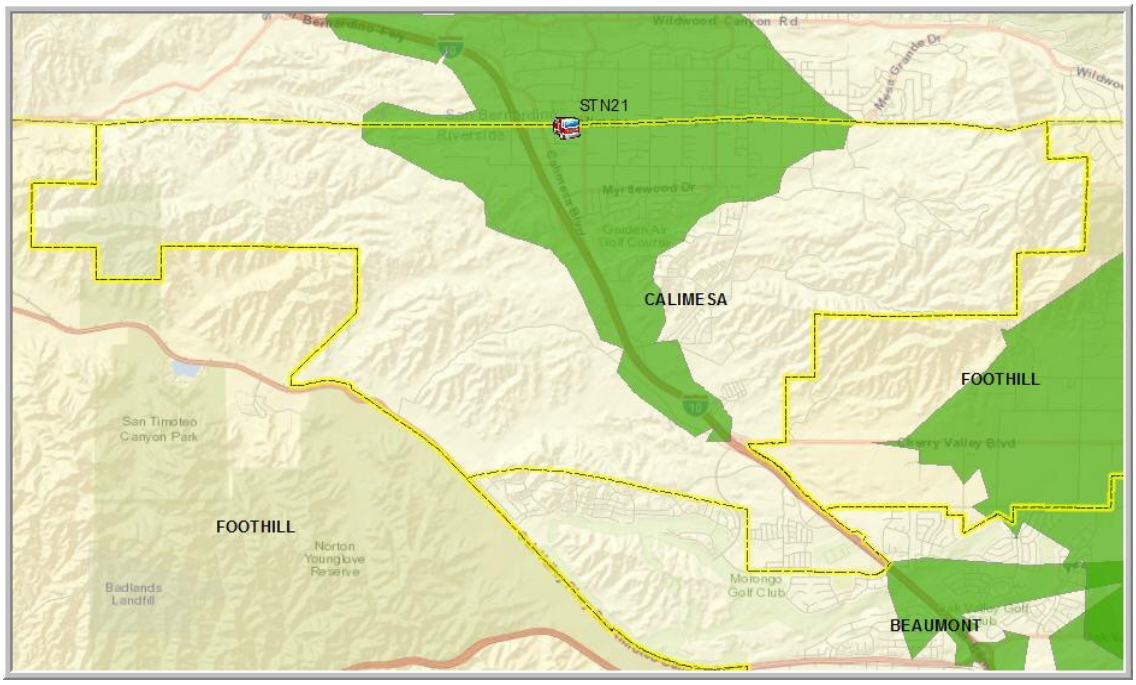
Contract Cities and State Coverage – Looking at the contract cities and state stations and their locations, we reviewed the 4 and 8 minute travel time impact into Riverside County by planning areas. As with the previous section, the names of the planning area and cities are labeled on each map, with the yellow dashed line depicting the boundary. The travel time areas are layered to distinguish the intensity of coverage. The darker green colors indicate a saturation of units available to respond within the given travel time (multiple unit response coverage), where the lighter green colors indicate a limited number of units available to respond (minimal unit response coverage). The City and State stations are shown with a fire engine icon on the maps and labeled.

4-Minute Travel Time Maps and Coverage Analysis: The map below shows all of the contract cities stations and the four minute travel time coverage they provide.

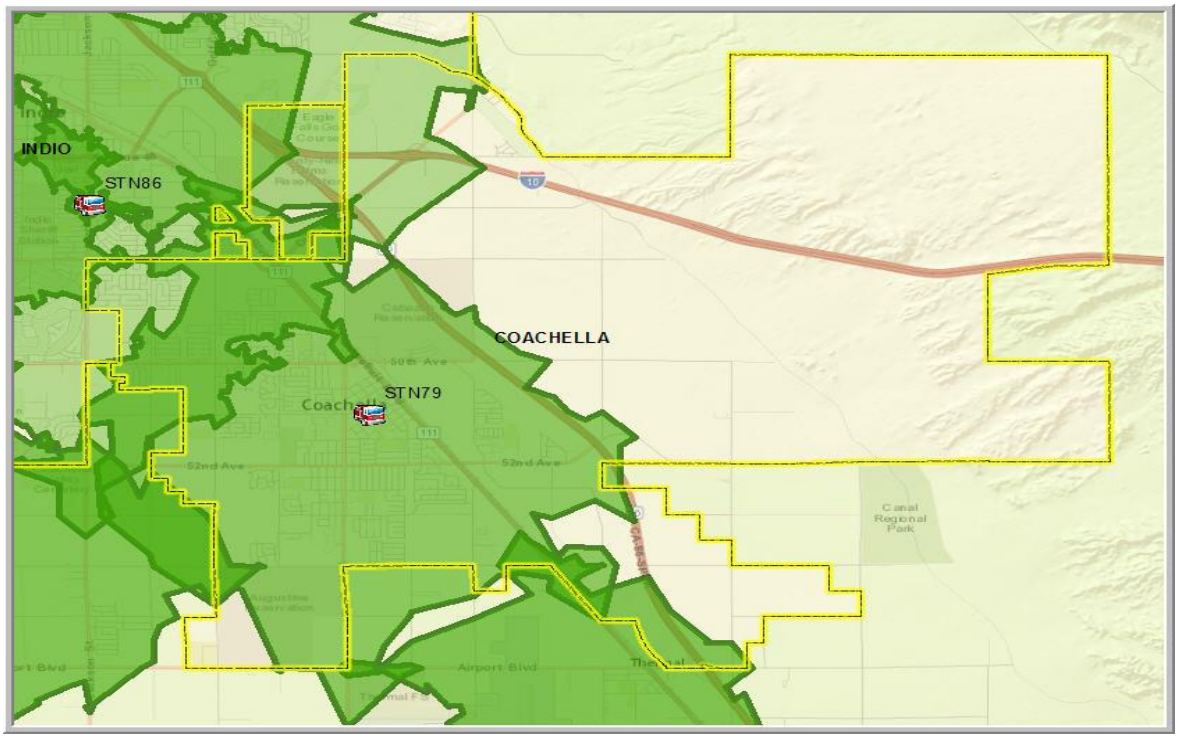
1. **Banning:** Very little coverage into the Foothill and Mountain areas is provided from Station 89. Riverside County stations cannot reach Banning in four minutes. Beaumont Station 20 covers the western portion of Banning in four minutes. There are no State units present at the station.
2. **Beaumont:** Station 66 provides some coverage into Foothill. Riverside County Station 22 provides good four-minute coverage in the north and some overlap with Beaumont stations.



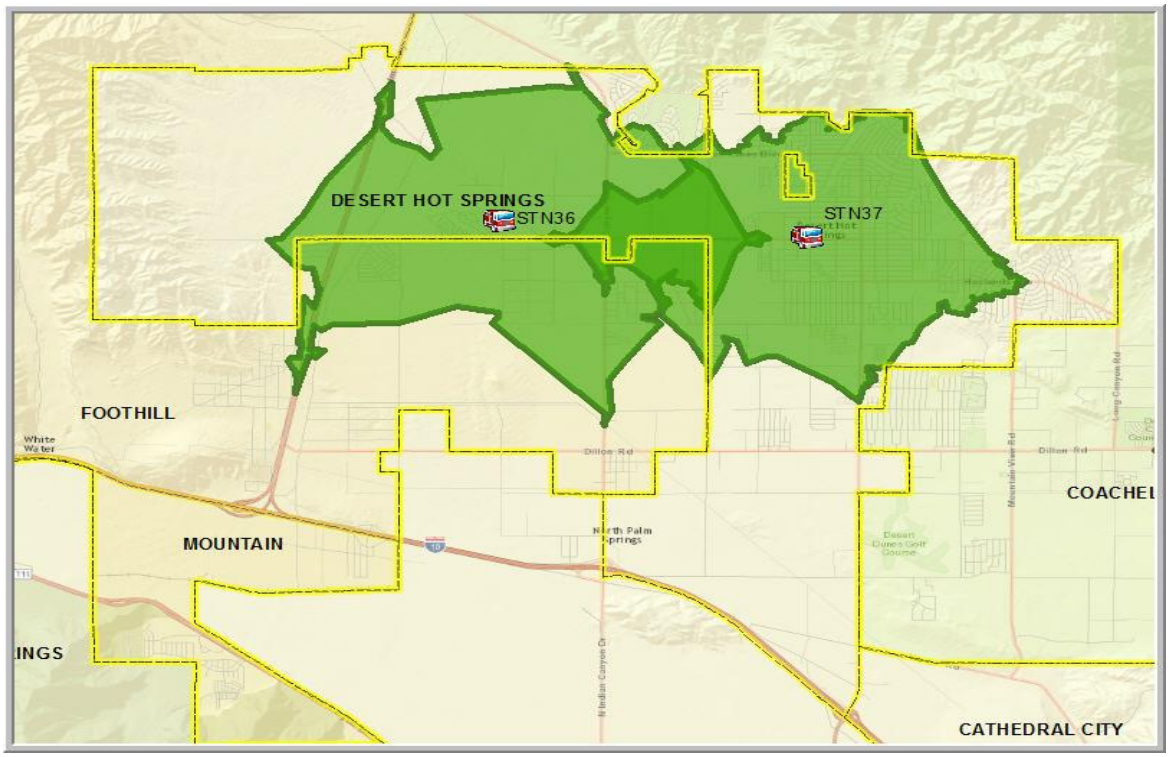
3. **Calimesa:** Station 21 covers the northern section of Calimesa in four-minutes.



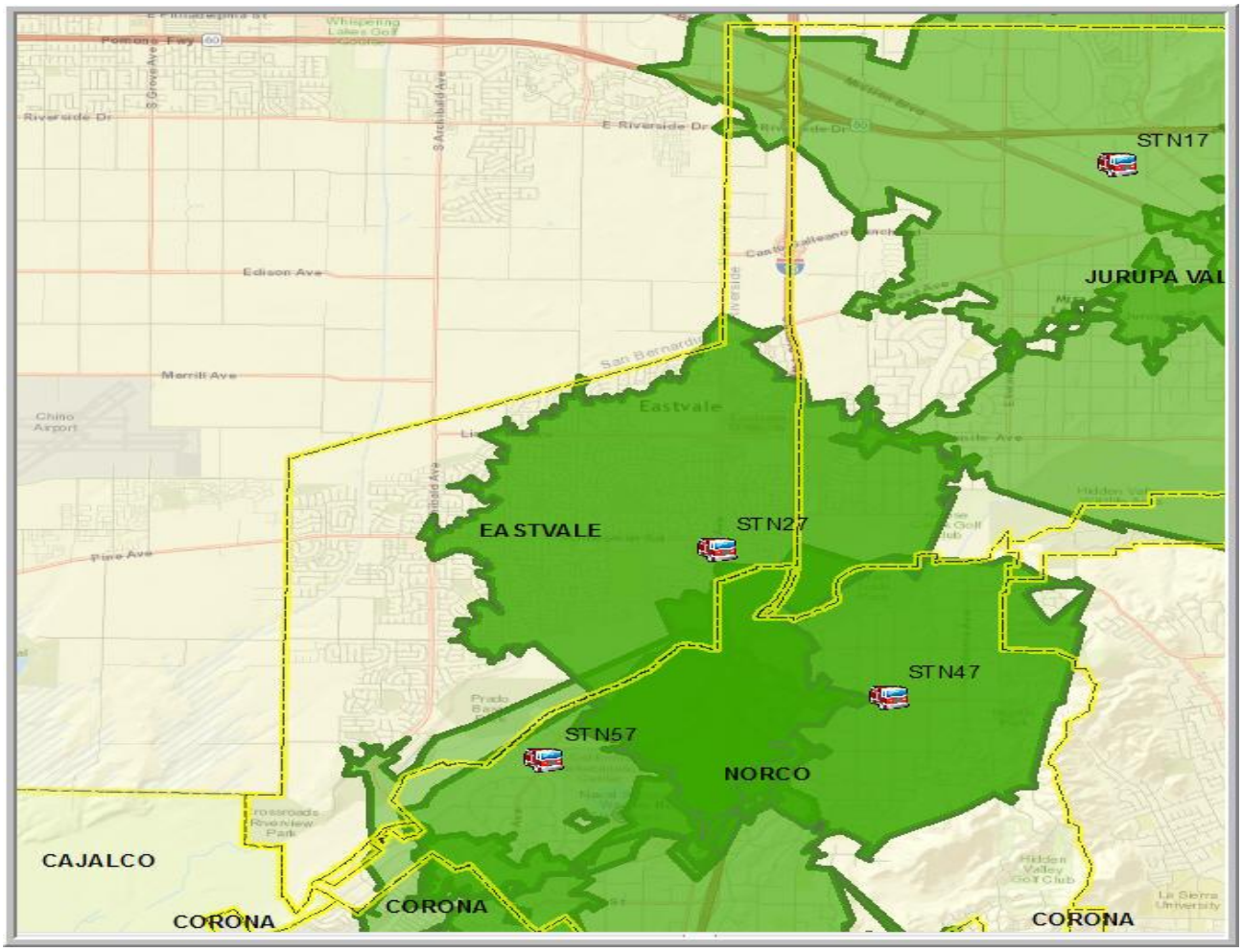
4. **Coachella:** Station 79 provides very little coverage into the unincorporated Coachella area. Indo Station 86 provides some overlap coverage in the northern portion of Coachella.



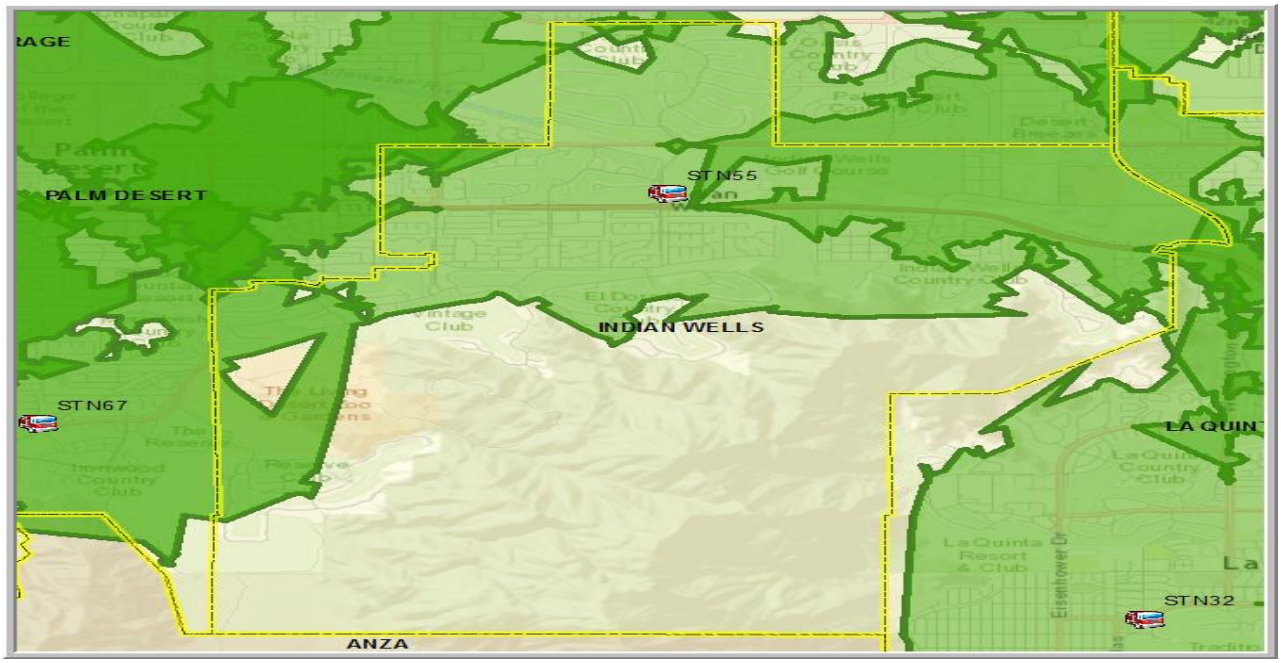
5. **Desert Hot Springs**: Station 36 provides good four-minute coverage to the Foothill area to the south. There are no Riverside stations within four-minute travel time of Desert Hot Springs.



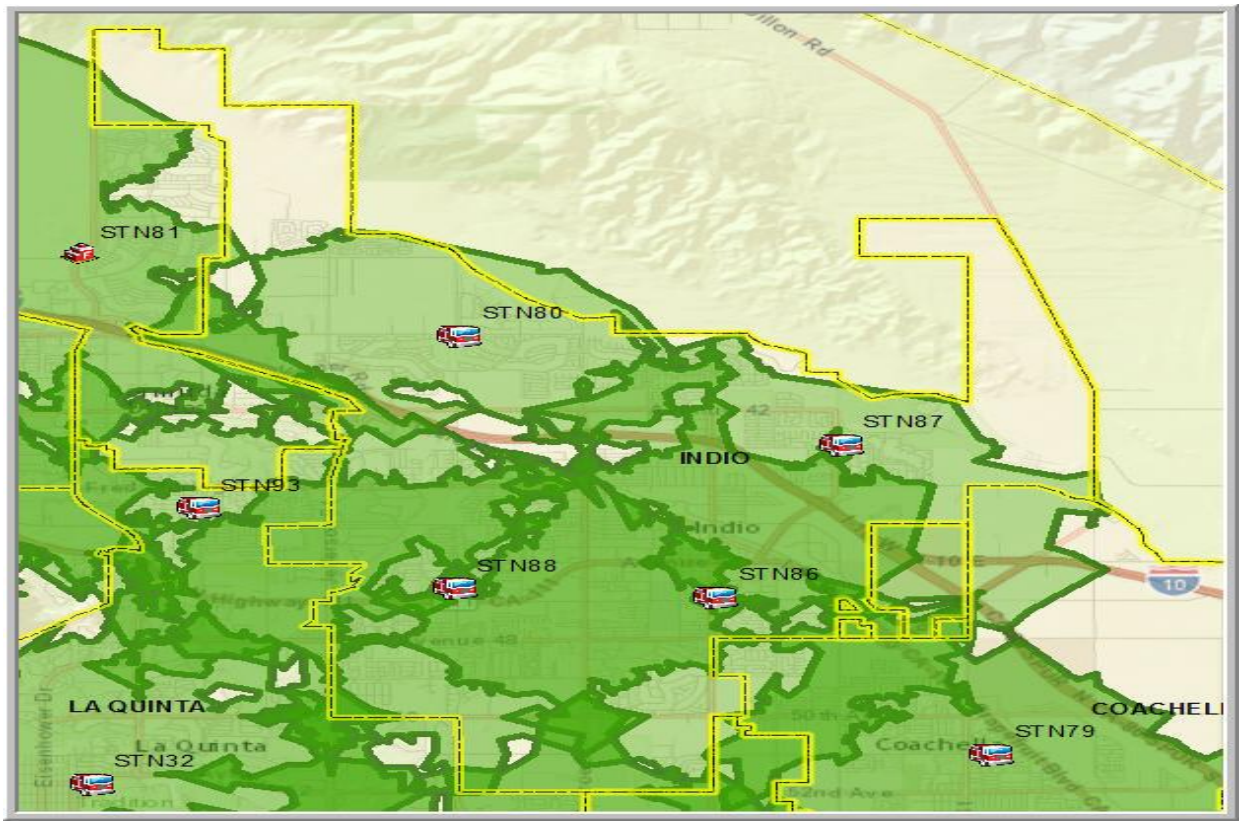
6. **Eastvale:** Station 27 covers most of Eastvale but leaves the western portion of the area uncovered. The position of this station provides good overlap coverage to Norco and Jurupa Valley.



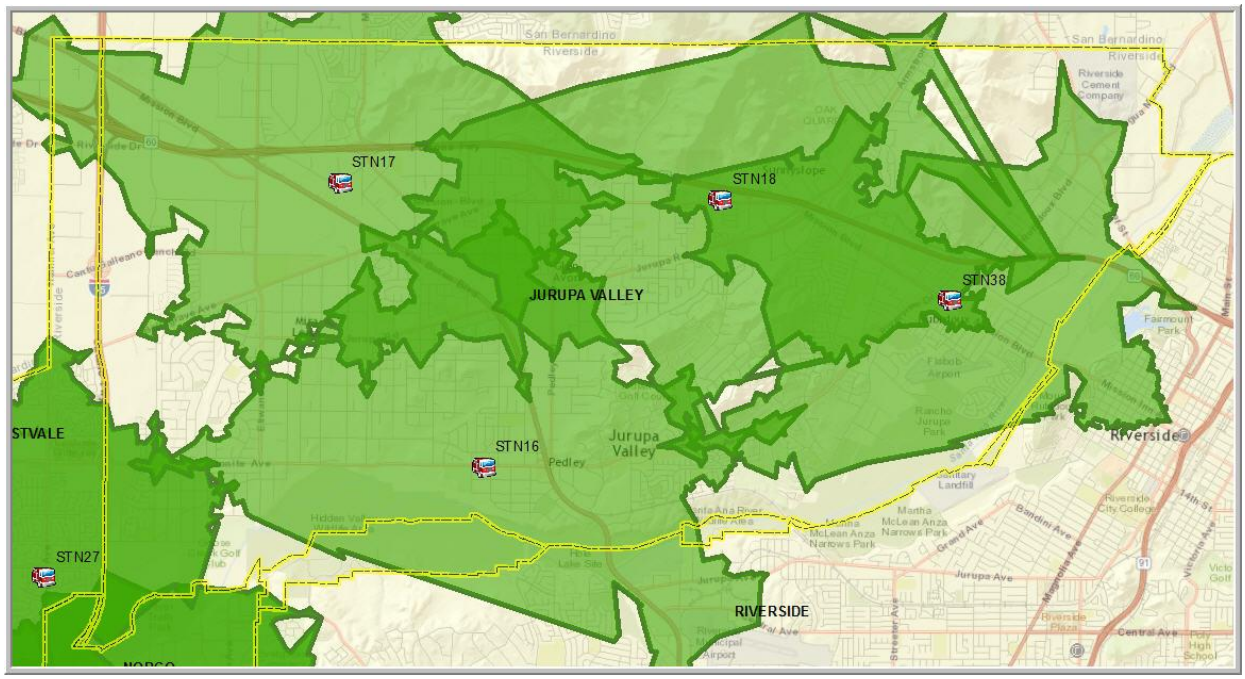
7. **Indian Wells:** Station 55 covers most of the northern portion of the area. La Quinta Station 93 provides very good four-minute coverage to Indian Wells. Palm Desert provides some coverage to the southwest.



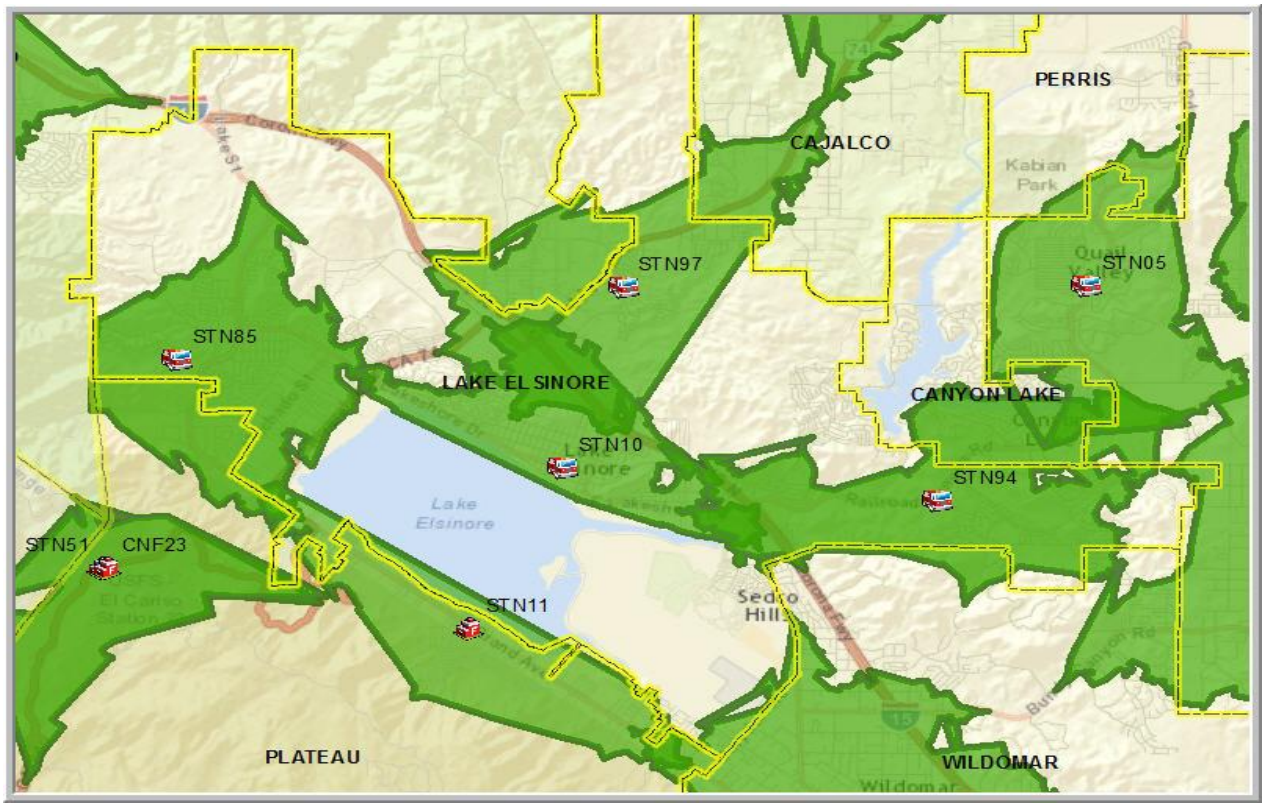
8. **Indio:** Most of Indio is covered in four-minutes with overlap provided by the surroundings jurisdictions. Riverside Station 81 provides little coverage in the north.



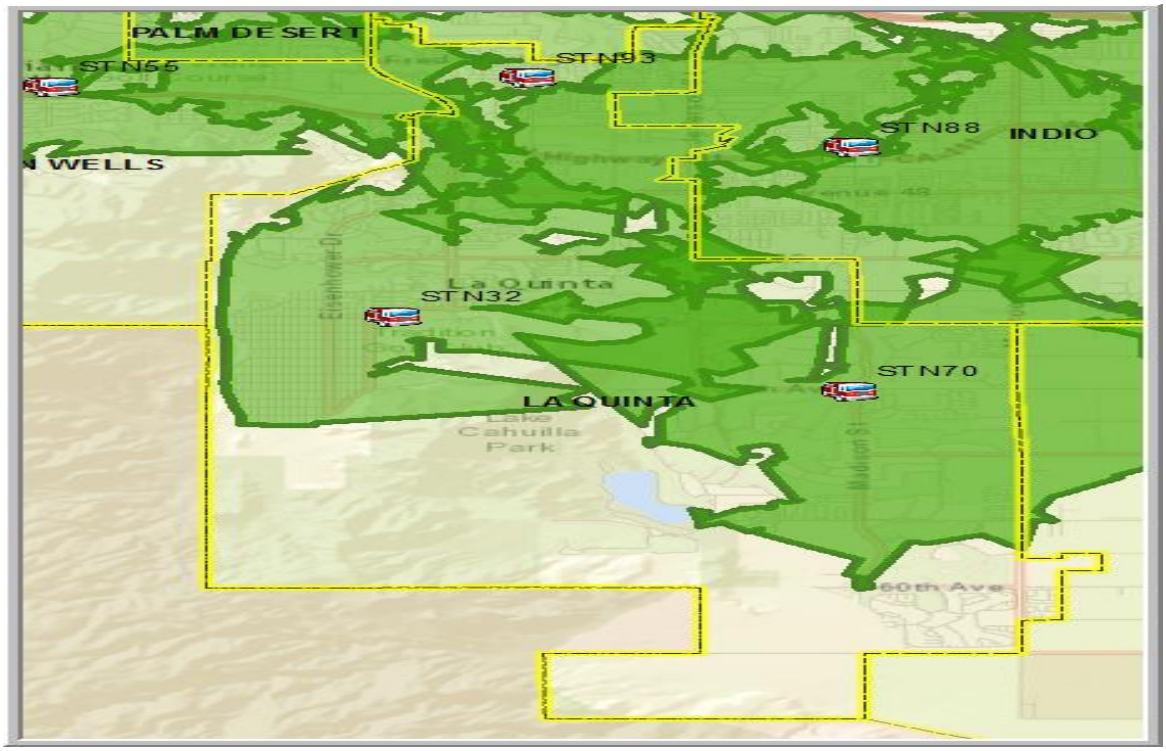
9. **Jurupa Valley:** The four stations provide excellent coverage to the majority of the area, and good overlap. Eastvale Station 27 covers the southeast area. Stations 16 and 38 reaches well into Riverside in four-minutes. Riverside is not currently a contract city.



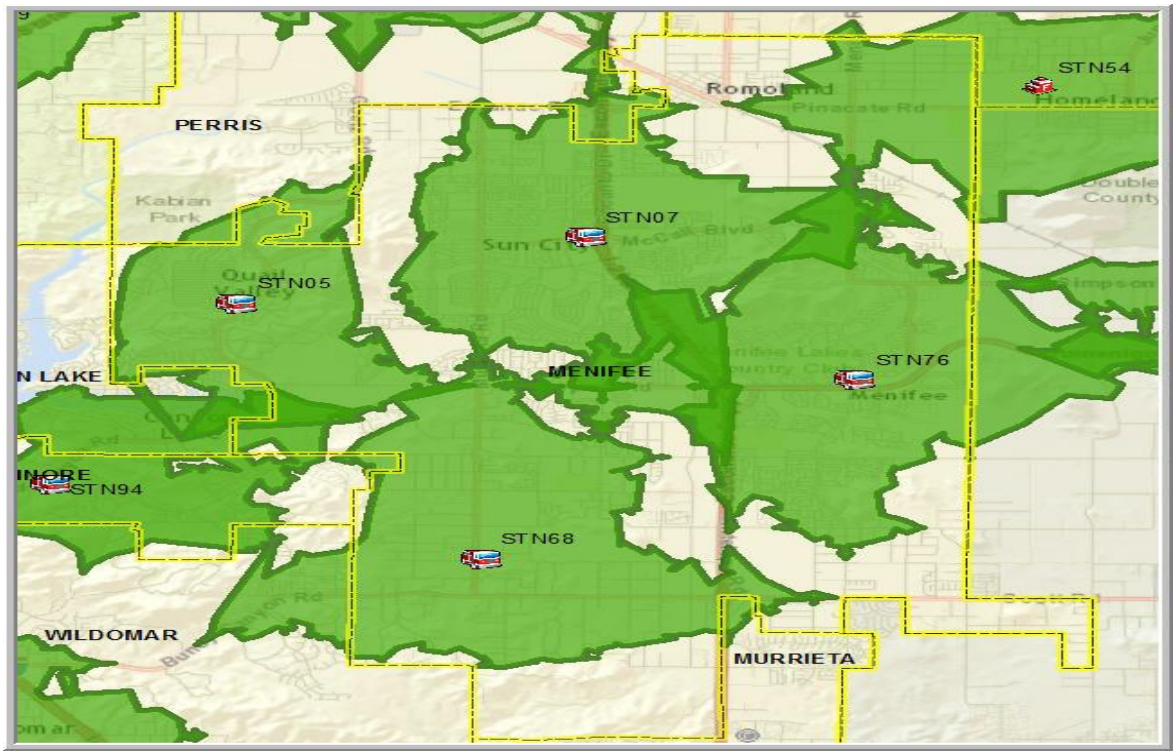
10. Lake Elsinore: Station 85 provides considerable four minute reach into the northern portion of Plateau. Station 97 provides considerable reach into Cajalco. Riverside County Stations 11 and 61 can reach into Lake Elsinore's border in four minutes.



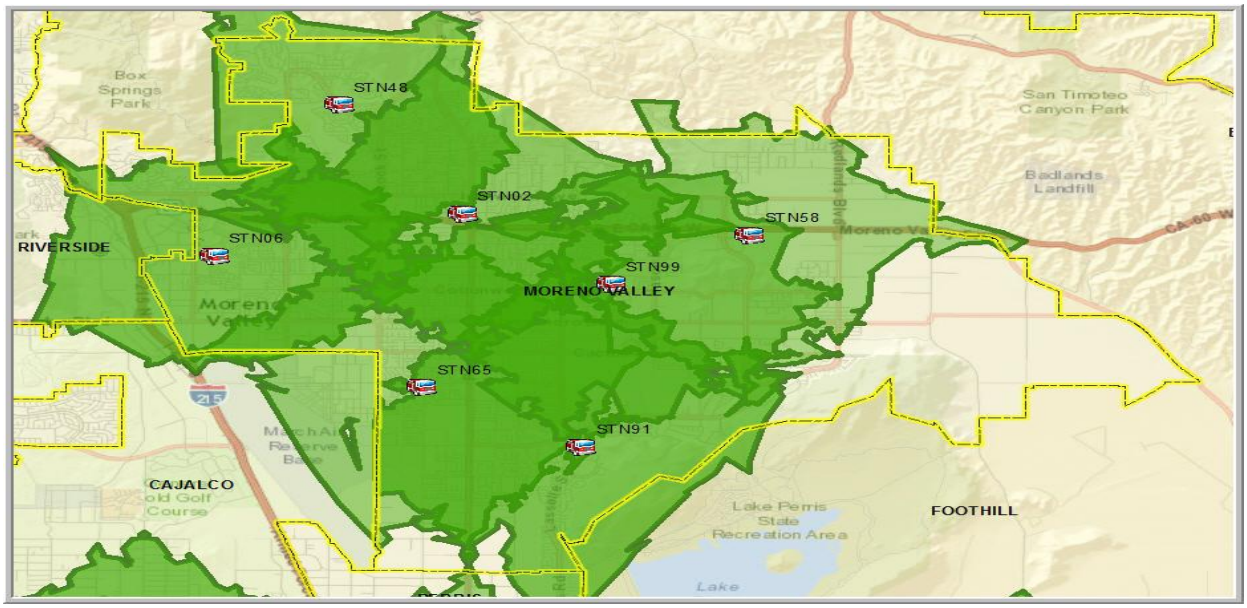
11. **La Quinta:** There is good four-minute coverage north and center of the area, with good overlap. The southern portion of the area is uncovered. No coverage is provided to the unincorporated areas.



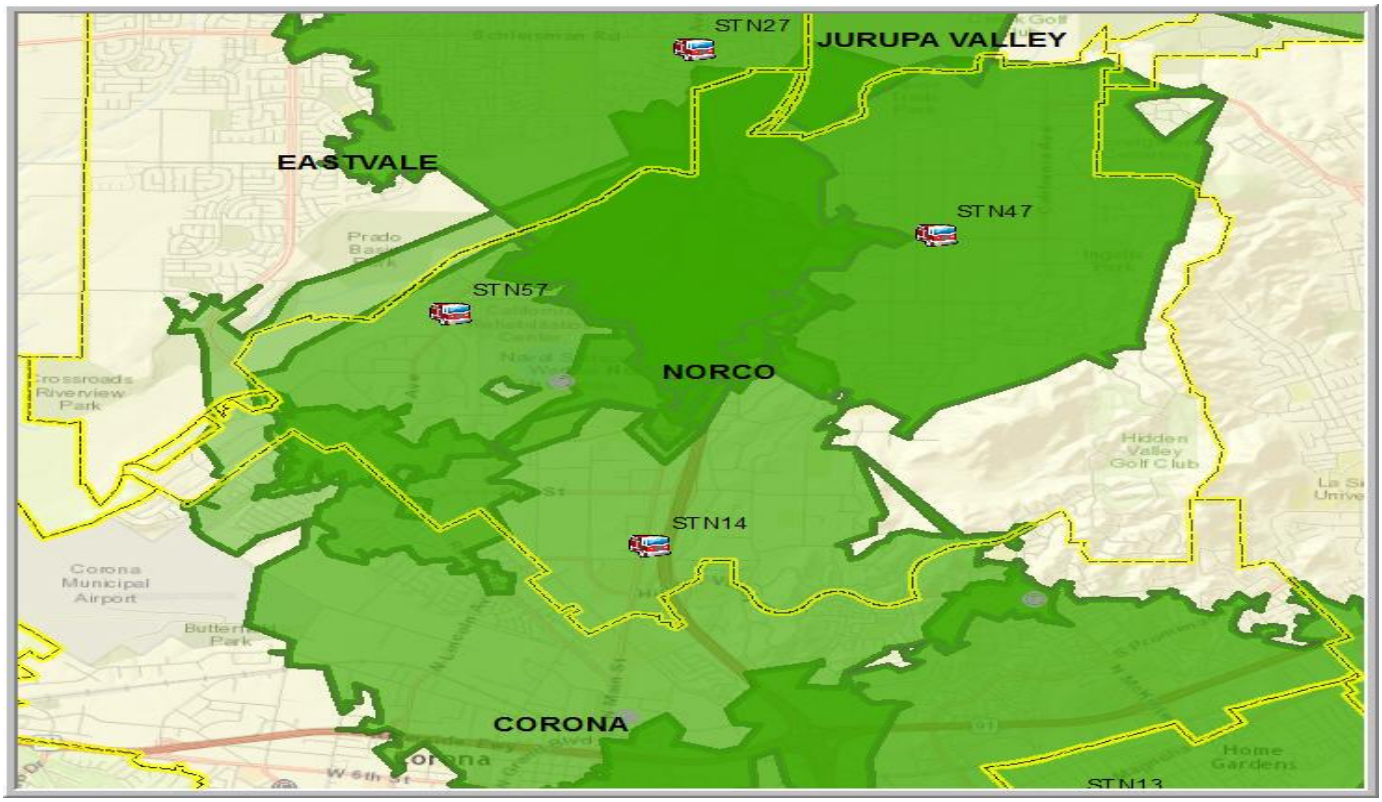
12. **Menifee:** Station 76 provides considerable four minute reach into the Lake unincorporated area to the east of it. Riverside County Station 54 can cover a considerable portion of the northeast corner of Menifee in four minutes. There are no State units in Menifee.



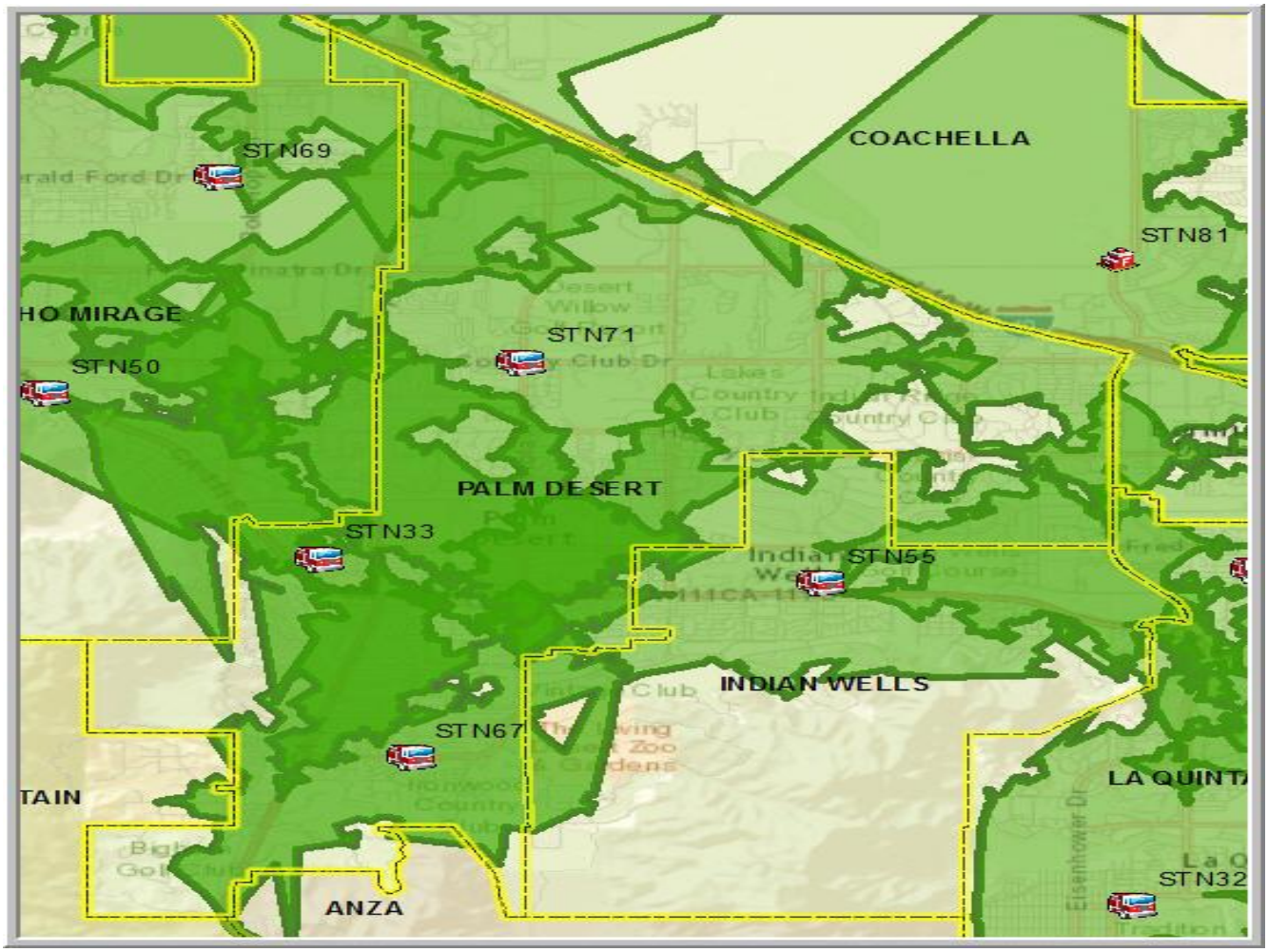
13. **Moreno Valley:** There is excellent four-minute coverage, and very good overlap throughout the area except for the east. Riverside County stations cannot reach Moreno Valley in four minutes.



14. **Norco:** Stations 14, 47 and 57 provide very good coverage over most of the area. There is also very good overlap in the center of the jurisdiction, some being provided by Eastvale Station 27. Station 14 provides excellent four-minute coverage to Corona in the south, which is not currently a contract city.

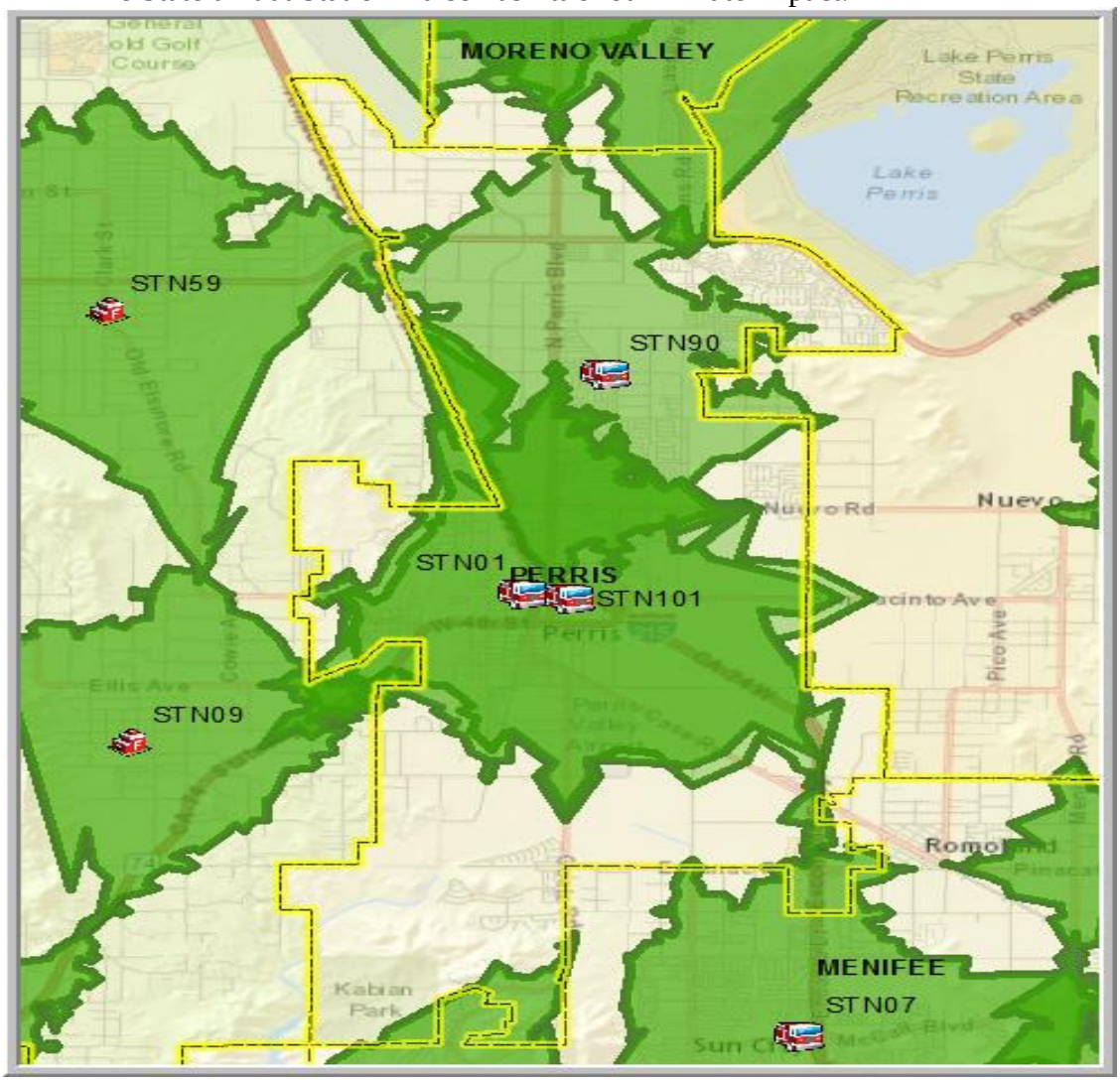


15. **Palm Desert:** Stations 33, 67 and 71 provide very good coverage in the north, west and southern portions of the area. There is also very good overlap in the center of the area with coverage from Stations 55 and 69. Riverside Station 81 provides four-minute coverage to the east, and some overlap with Station 71 along Country Club Dr.

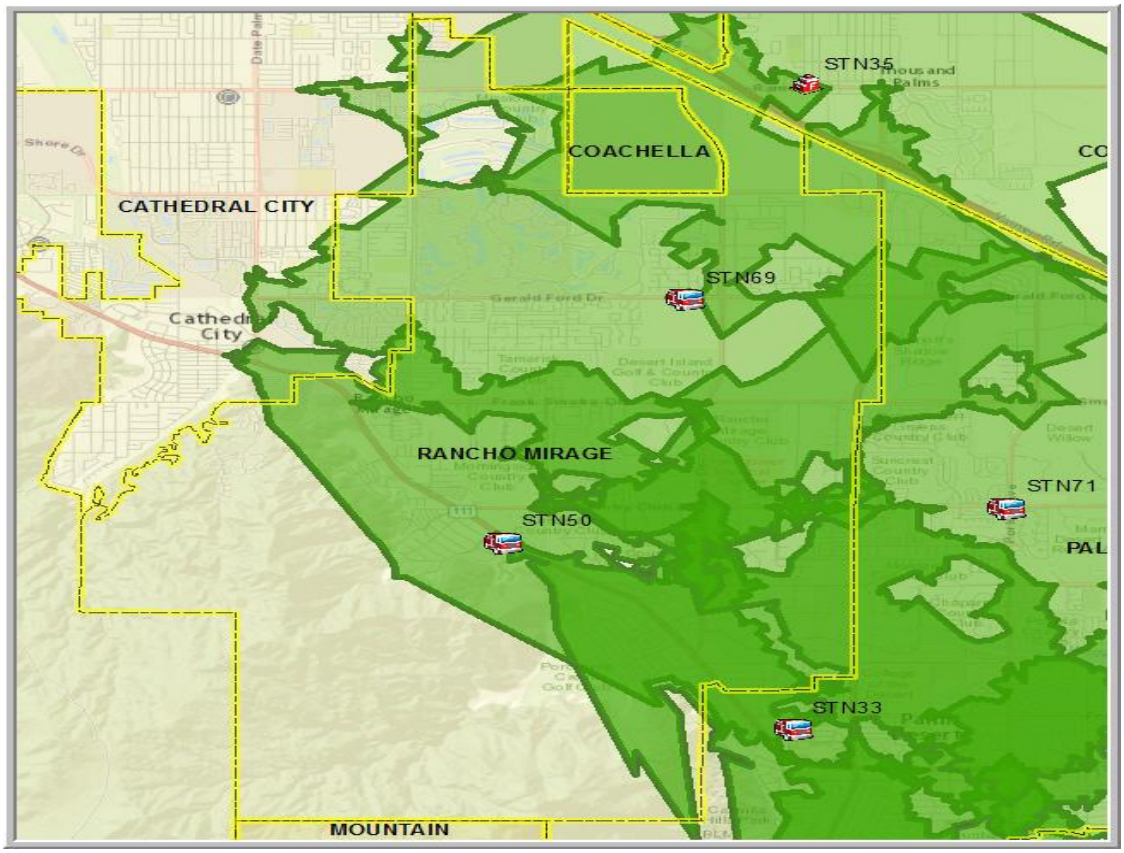


16. **Perris:** There is very little four minute coverage into Riverside County areas from. Station 1 reaches Cajalco, Station 101 Cajalco and Foothill, and 90 into Foothill. Riverside County Station 59 can just barely reach inside the Perris border in four minutes.

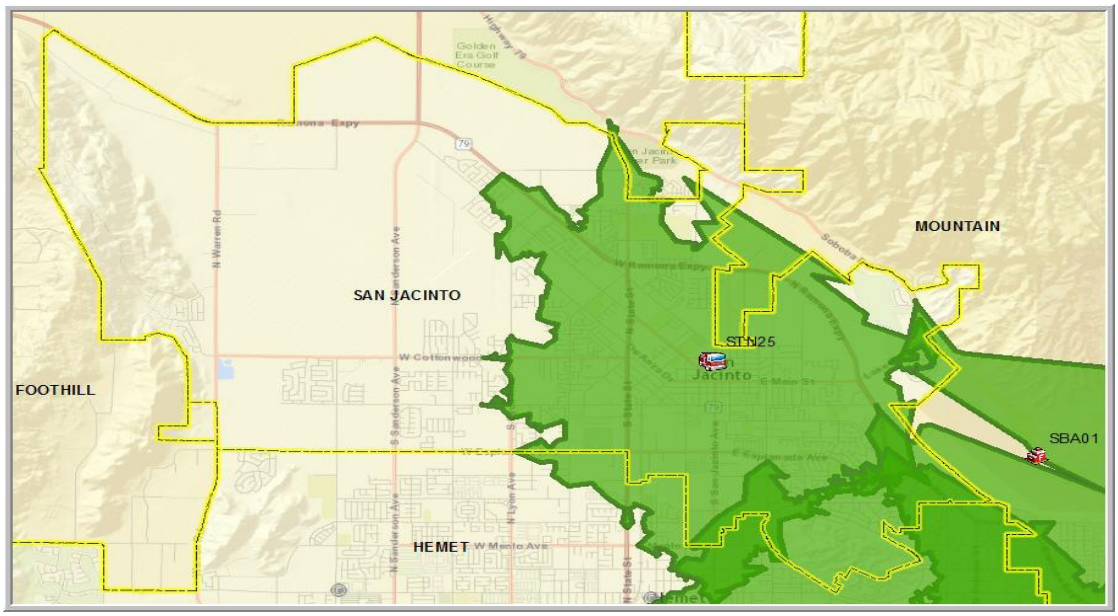
    The State unit at Station 1 also has little four minute impact.



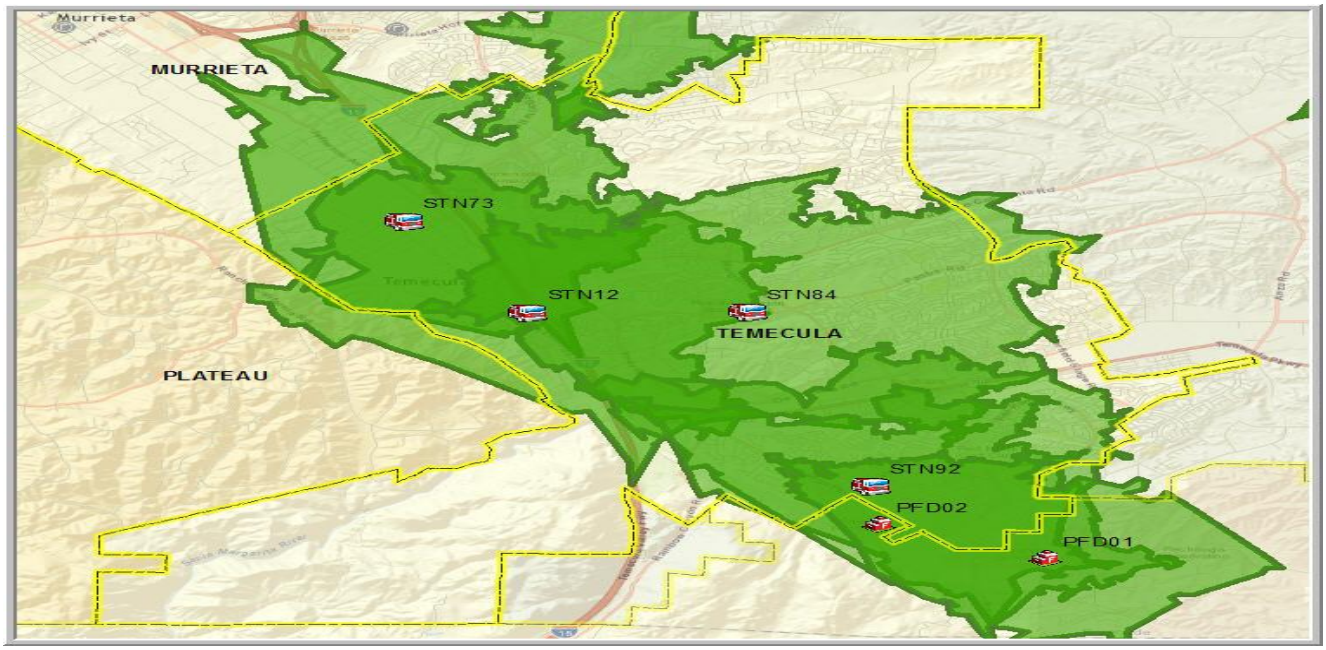
17. **Rancho Mirage:** Stations 50 and 69 provides very coverage to most of the populated area center and north of the jurisdiction. There is some overlap near the center, and the reach extends into Cathedral City, which is not currently a contract city. Riverside Station 35 provides four-minute overlap in the north of the jurisdiction, and covers little uncovered area there.



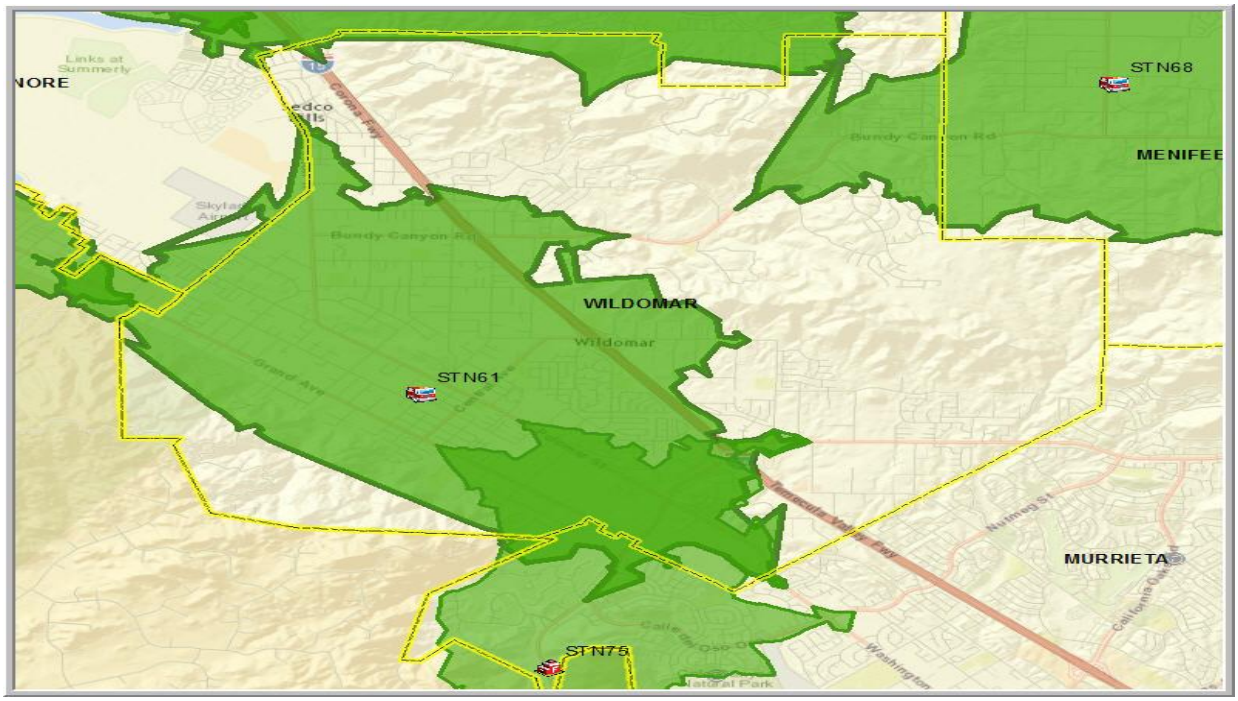
18. **San Jacinto:** The eastern half of the jurisdiction is covered in four minutes with little overlap in the south east. The west is totally uncovered.



19. **Temecula:** There is very good coverage and overlap down the center of Temecula. Station 84 and 92 has a little four-minute reach into the Lake area east of its border. Station 12 covers very little of the Plateau area. Pechanga Station 1 and 2 have a considerable four-minute reach into Temecula, Station 2 being most substantial. The State unit at Station 12 provides very little four-minute coverage in the Plateau area, identical to Station 12.

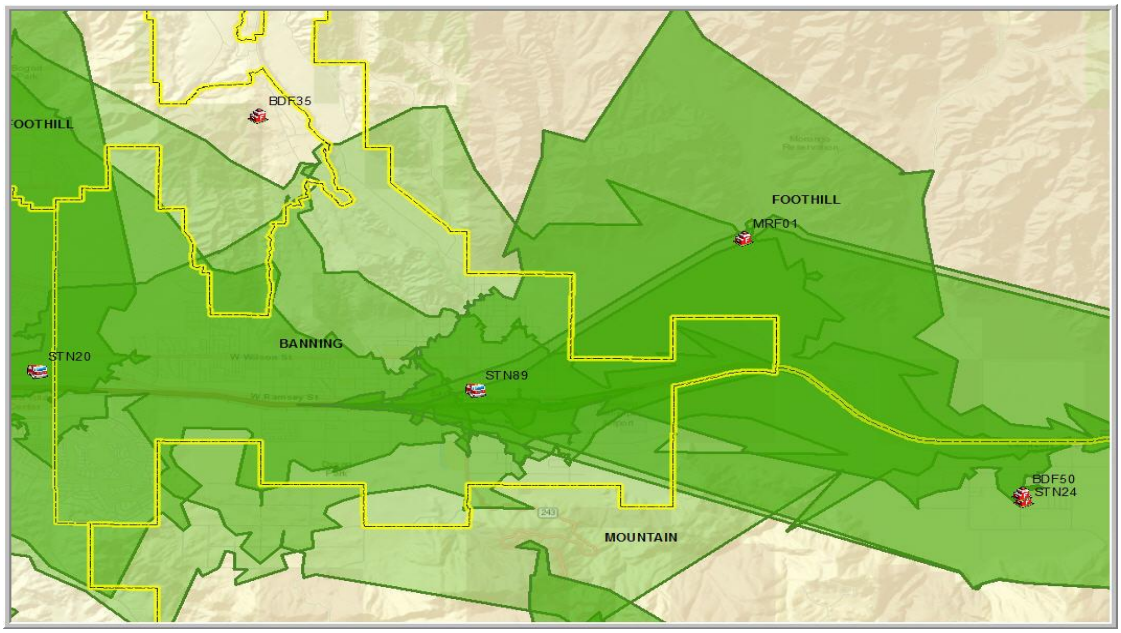


20. **Wildomar:** Station 61 covers little of the Plateau area in four-minutes. Riverside County stations cannot reach Wildomar in four minutes.

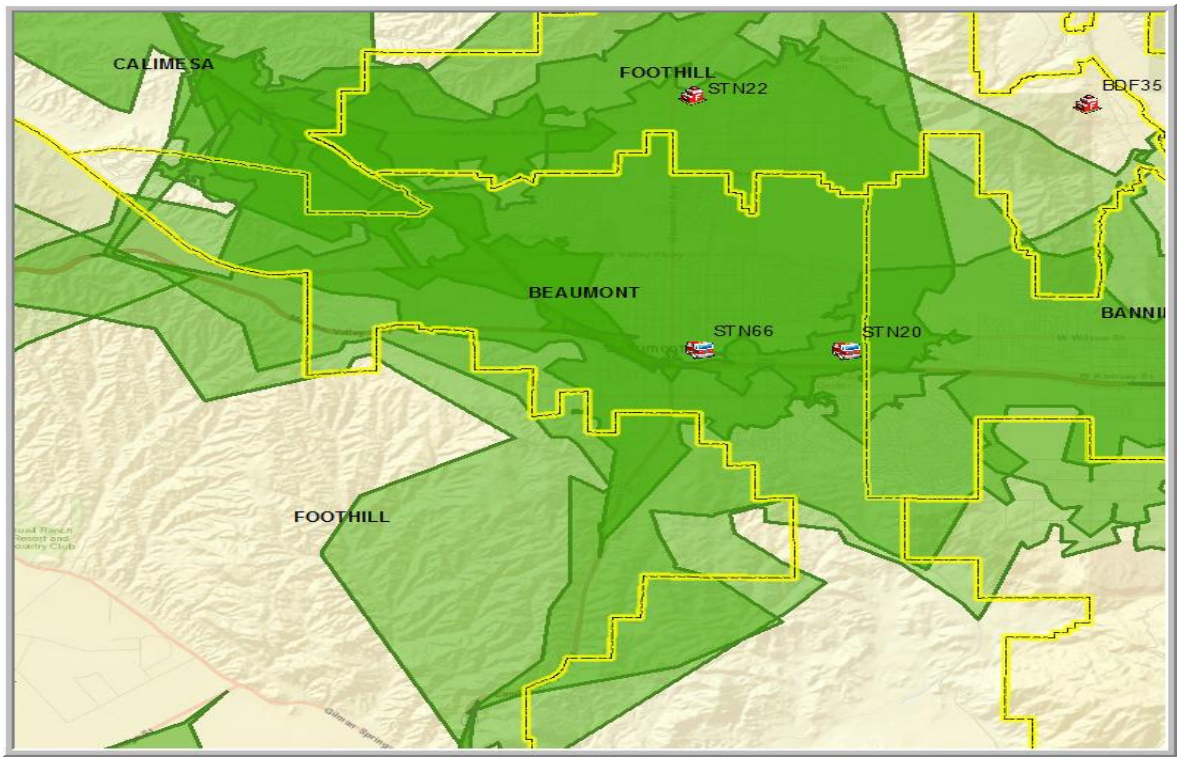


8-Minute Travel Time Maps and Coverage Analysis

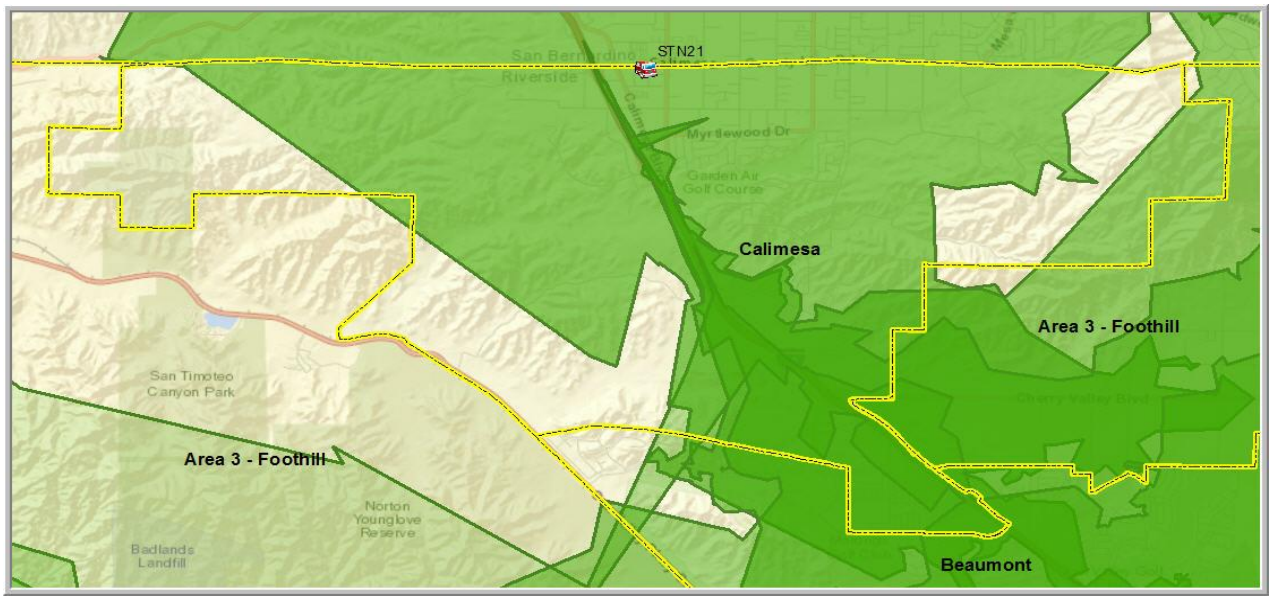
1. **Banning:** Station 89 covers most of the Banning area, and provides some coverage in the Foothill and Mountain areas in eight minutes. Riverside County Station 24 and MFR01covers the east side in eight minutes. The northern ends of the jurisdiction cannot be reached but can be reached in 15 minutes.



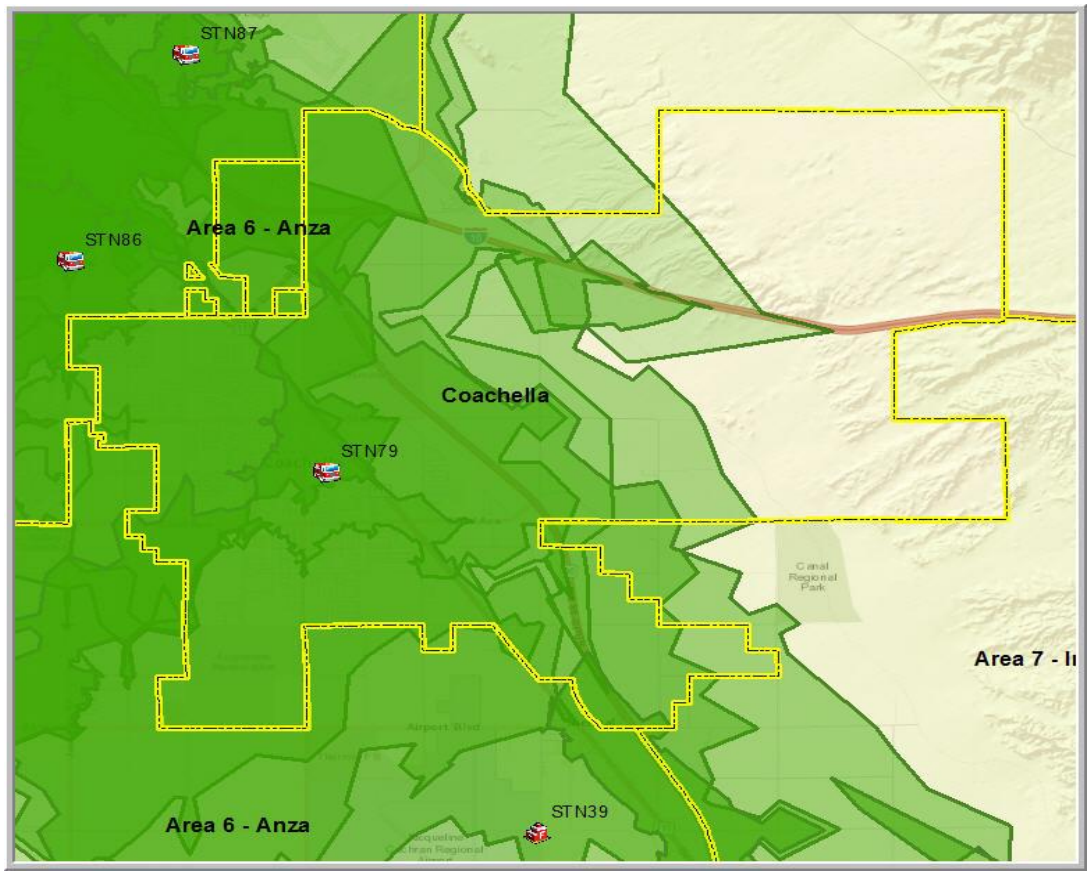
2. **Beaumont:** Station 66 provides good coverage into Foothill. Riverside County Station 22 provides good eight-minute overlap coverage in the north half of Banning.



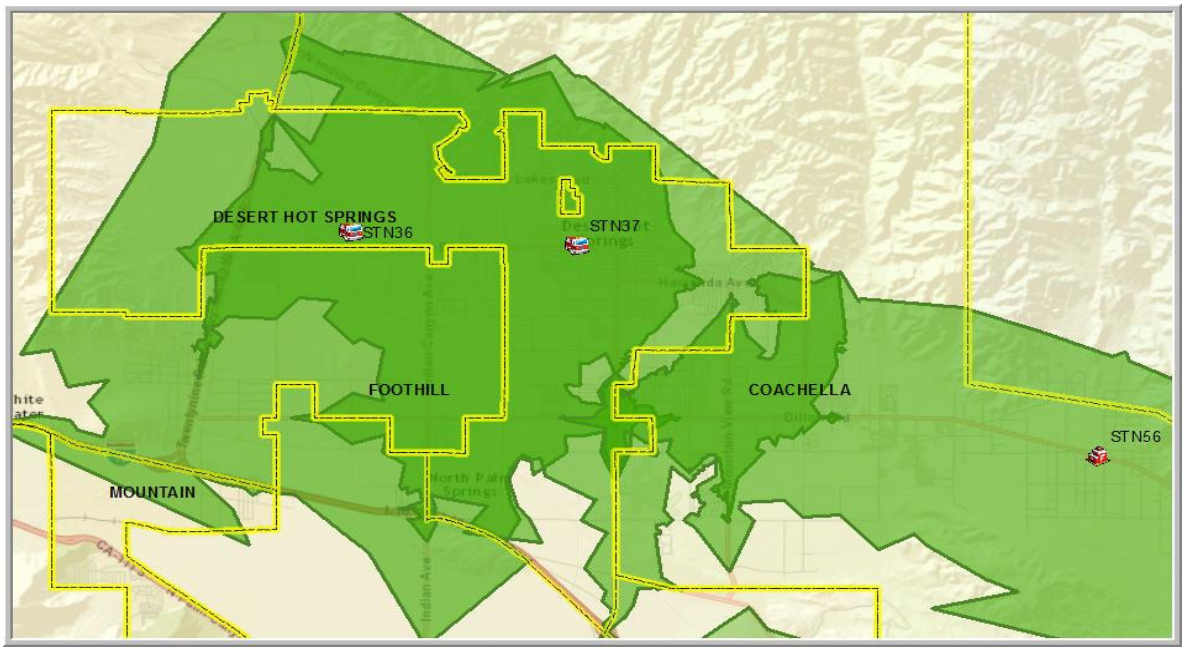
3. **Calimesa:** Most of Calimesa is covered in eight minutes. Some overlap is provided in the southern portion by Riverside Station 22 and the Beaumont stations.



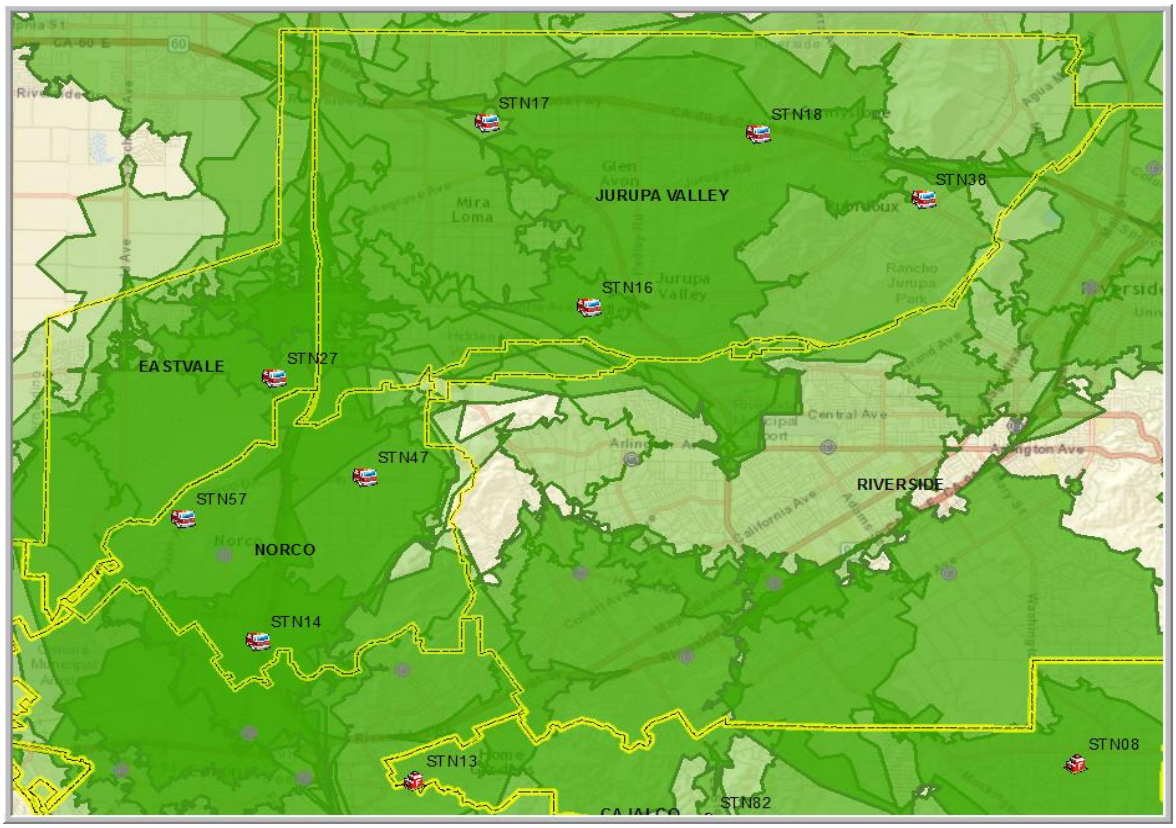
4. **Coachella:** Almost all of Coachella is covered in eight minutes with excellent overlap. Station 79 provides some coverage into the unincorporated Coachella and Anza areas. Riverside Station 39 provides some overlap coverage in the southern area.



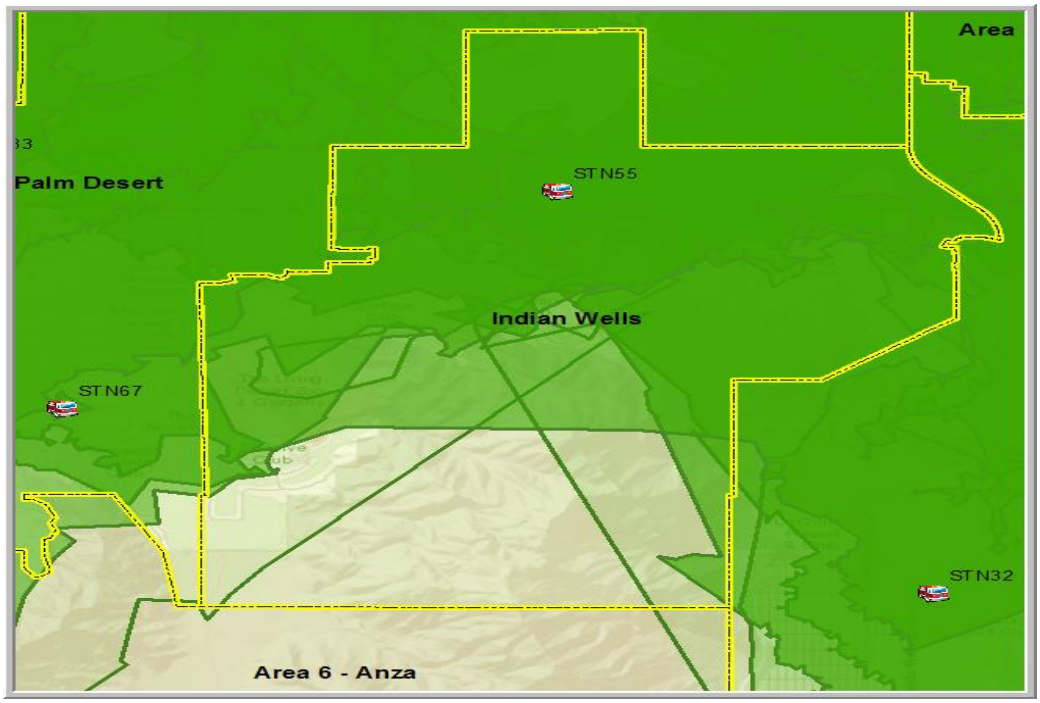
5. **Desert Hot Springs**: Stations can reach some of the Coachella, Foothill and little of the Mountain area in eight minutes. Riverside Station56 can reach the eastern boundary of the jurisdiction.



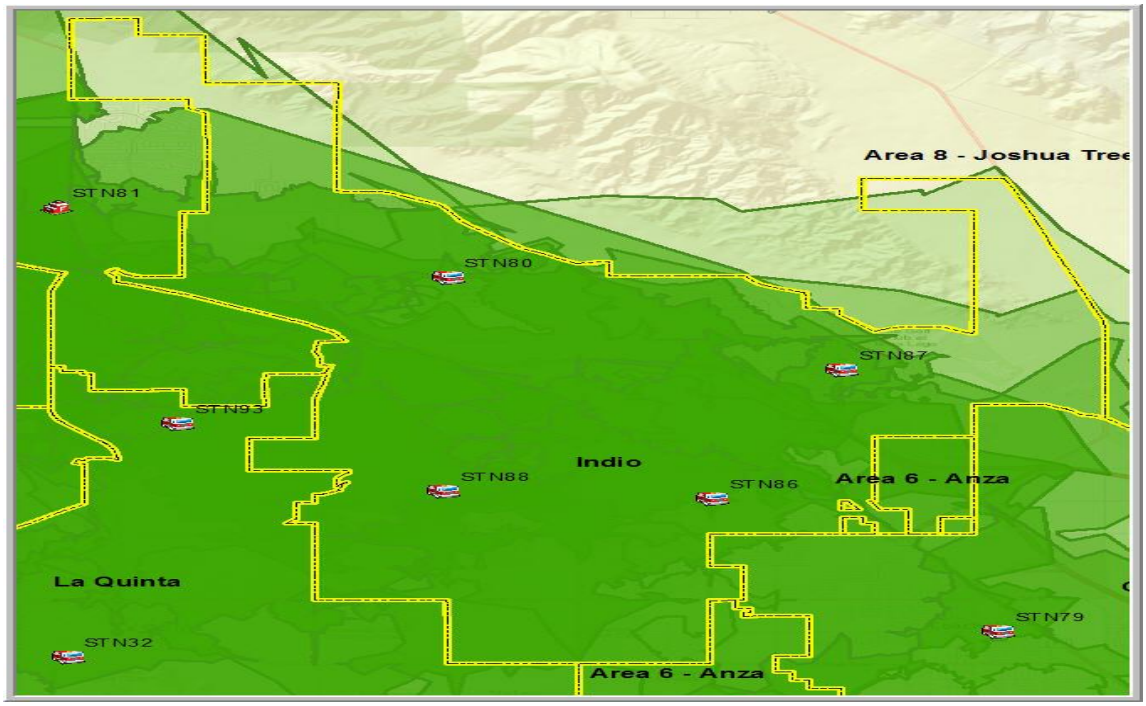
6. **Eastvale:** All of the area is covered in eight minutes. Riverside County Stations cannot cover the area. Norco and Jurupa Valley stations provide eight-minute overlap to the area.



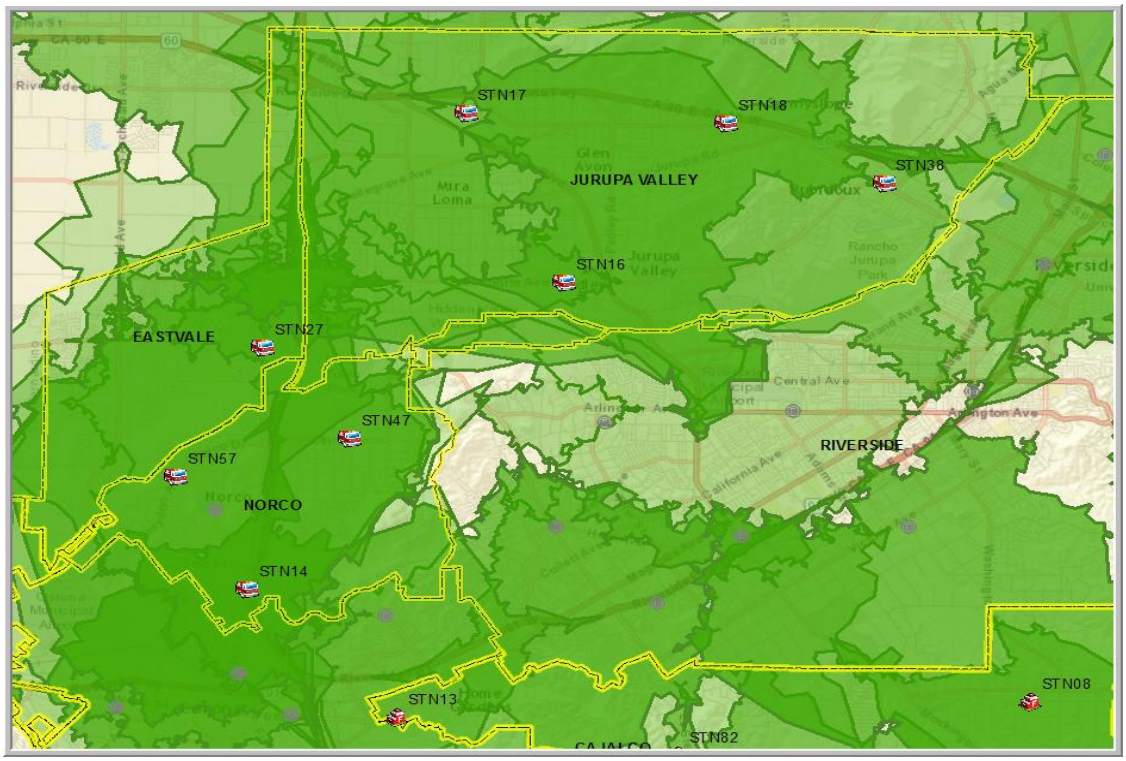
7. **Indian Wells:** Station 55 covers most of the area and provides overlap coverage to La Quinta and Palm Desert, and cannot reach the unincorporated areas in eight minutes. There is considerable saturation of overlap from the surrounding jurisdictions. Riverside Station 8 reaches the northern area of Indian Wells in eight minutes.



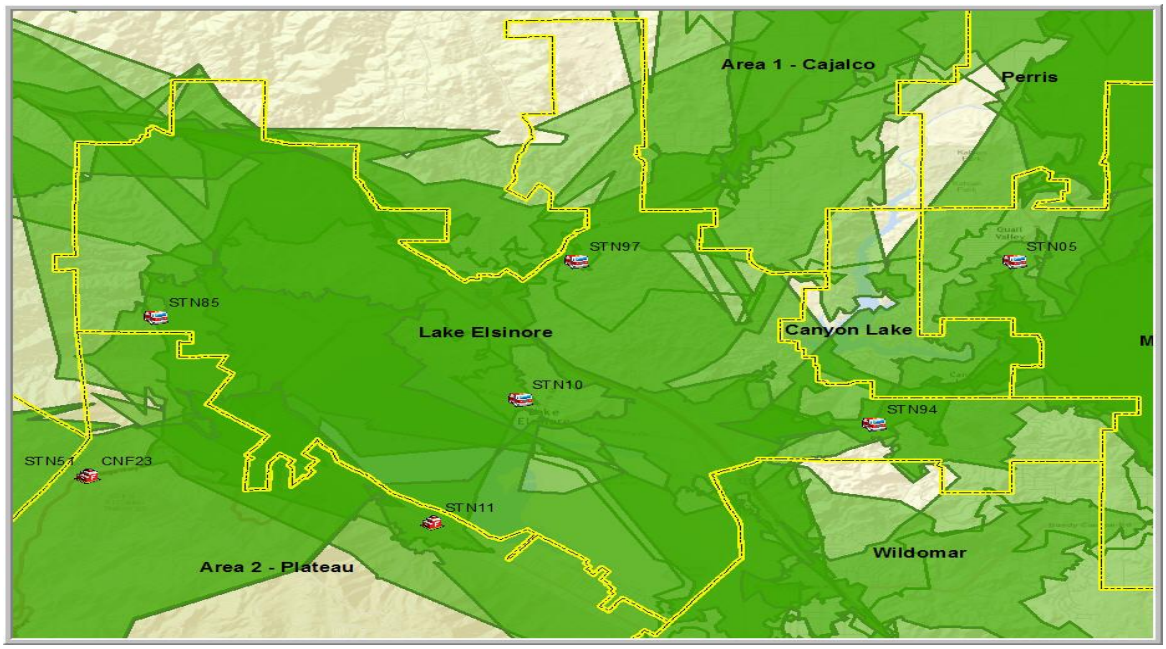
8. **Indio:** Stations 80, 86 and 87 provide some eight minute coverage to the unincorporated Coachella area. Most of the overlap is provided to and come from the surroundings jurisdictions. Riverside Station 81 provides good coverage in the north and west.



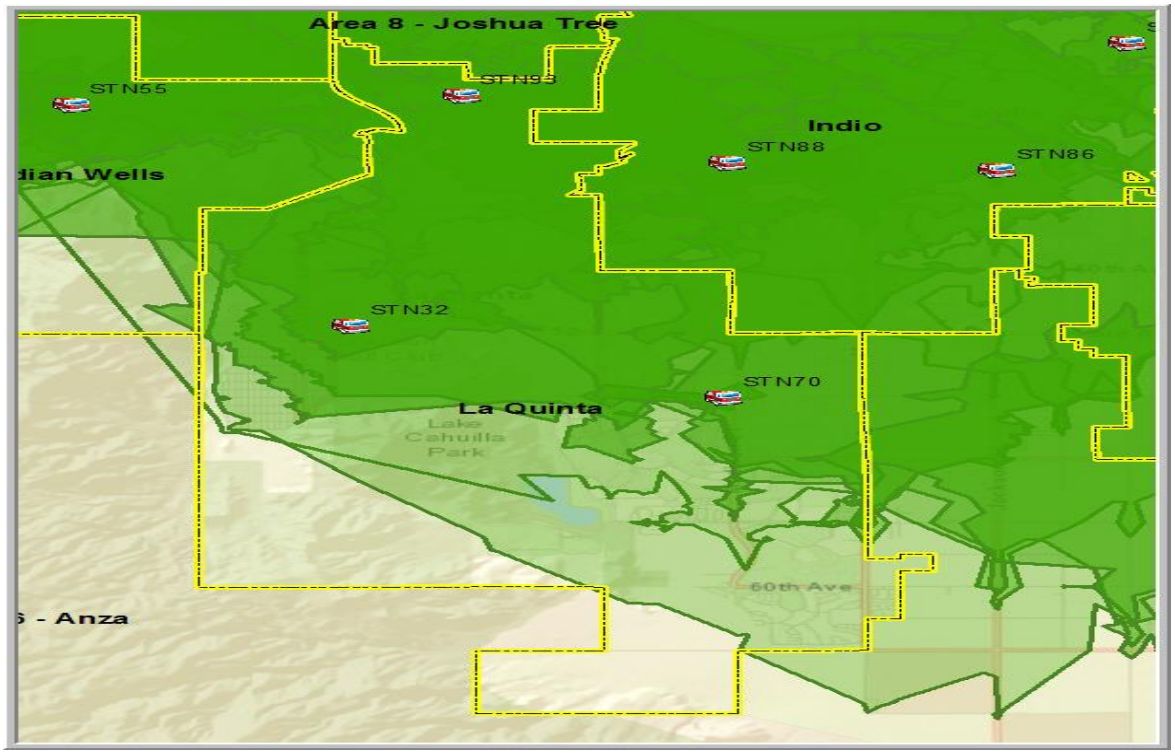
9. **Jurupa Valley:** There is very good cover and overlap coverage throughout with the exception of the eastern area. There is not much overlap in the eastern portion of the area. The City of Riverside would provide sufficient overlap coverage if it was a contract city. Riverside County Station 19 provides some overlap coverage to the east.



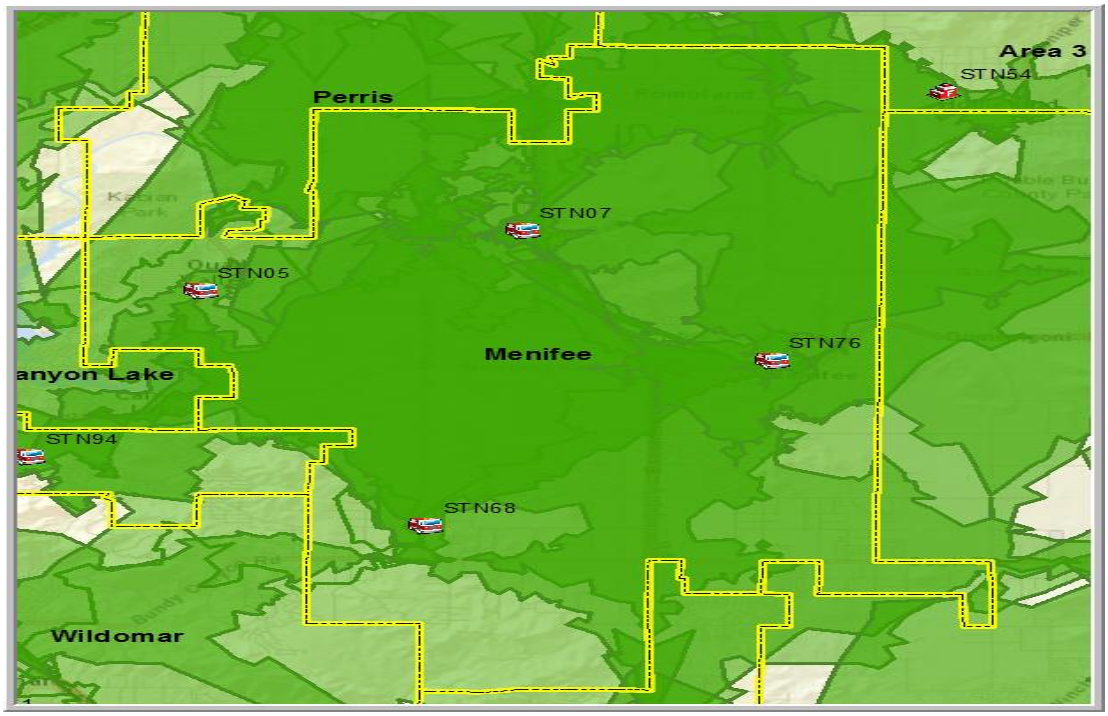
10. **Lake Elsinore:** Stations 85 and 97 provides eight minute coverage into Cajalco to the north and west. Station 10 provides some coverage to Plateau to the south. Riverside County Stations 11 and 51 provides some eight minute coverage and overlap to the southern and western portions of the area.



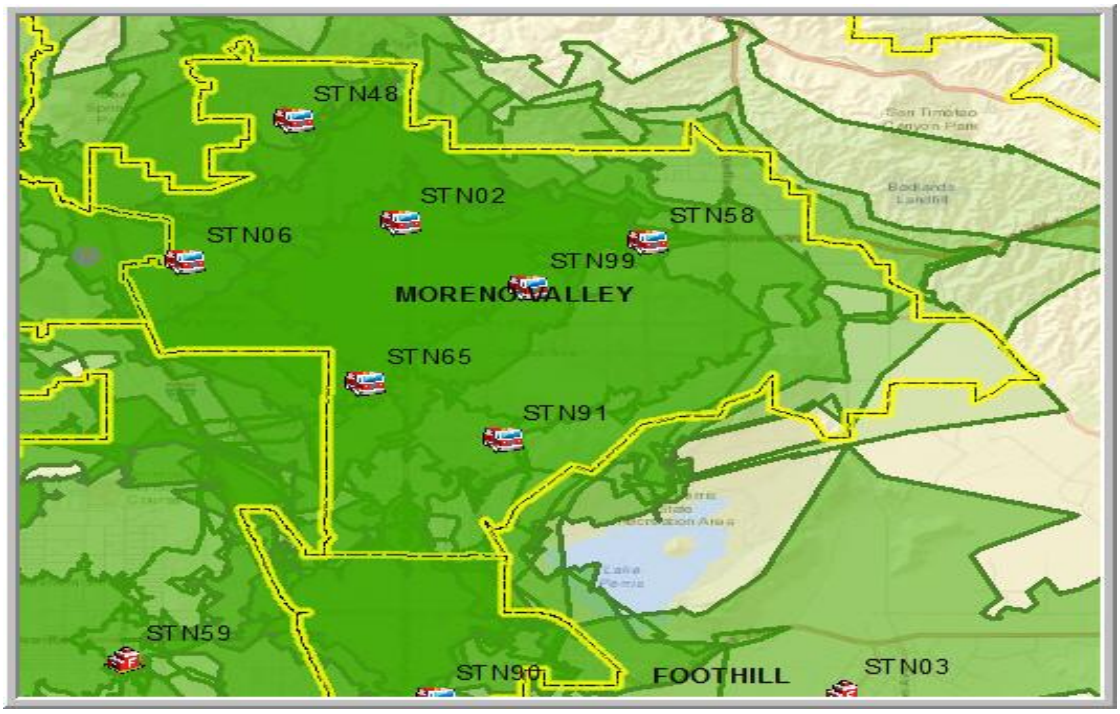
11. **La Quinta:** Station 93 provides eight minute overlap coverage to the unincorporated Coachella area in the north. Station 70 covers some of the southern area. Riverside Station 81 provides eight minute overlap to the northern section of the area.



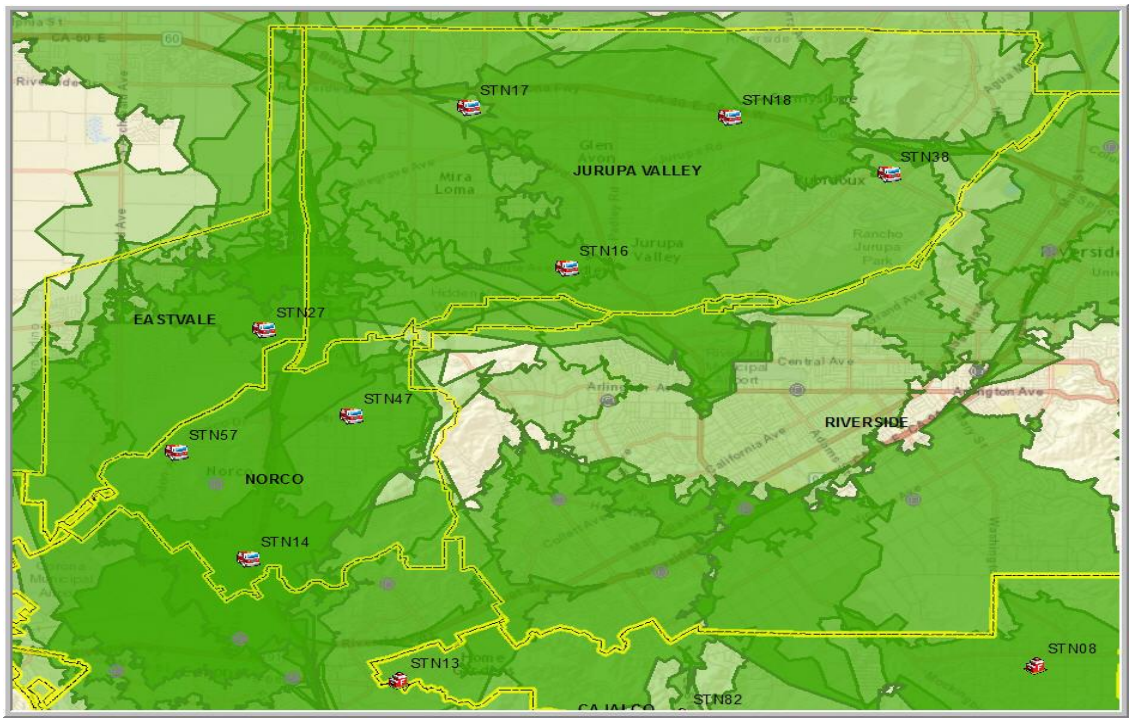
12. **Menifee:** Station 76 provides eight minute overlap coverage into the Lake unincorporated area to the east just short of the border with Hemet. of it. Riverside County Station 54 extends overlap coverage in the northeast of the jurisdiction.



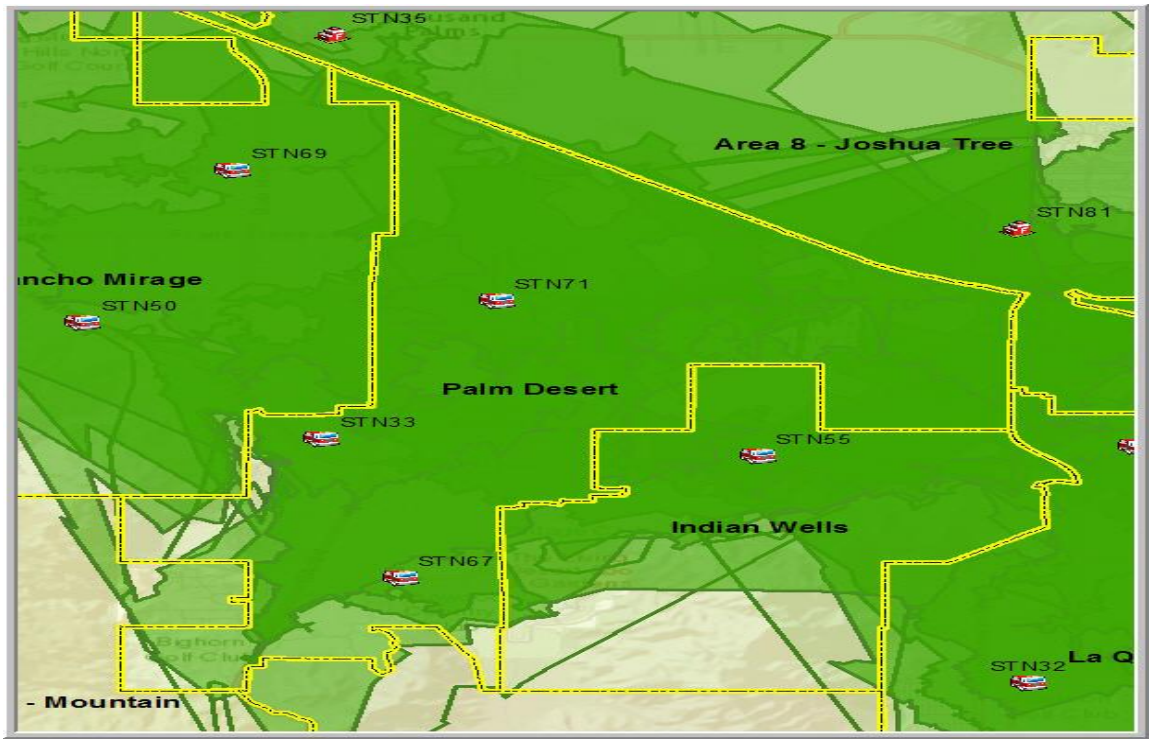
13. **Moreno Valley**: Much of the northern Foothill area is covered in eight minutes by Moreno Valley stations. There is excellent coverage in the jurisdiction. Riverside County Station 59 can reach the southern area in eight minutes.



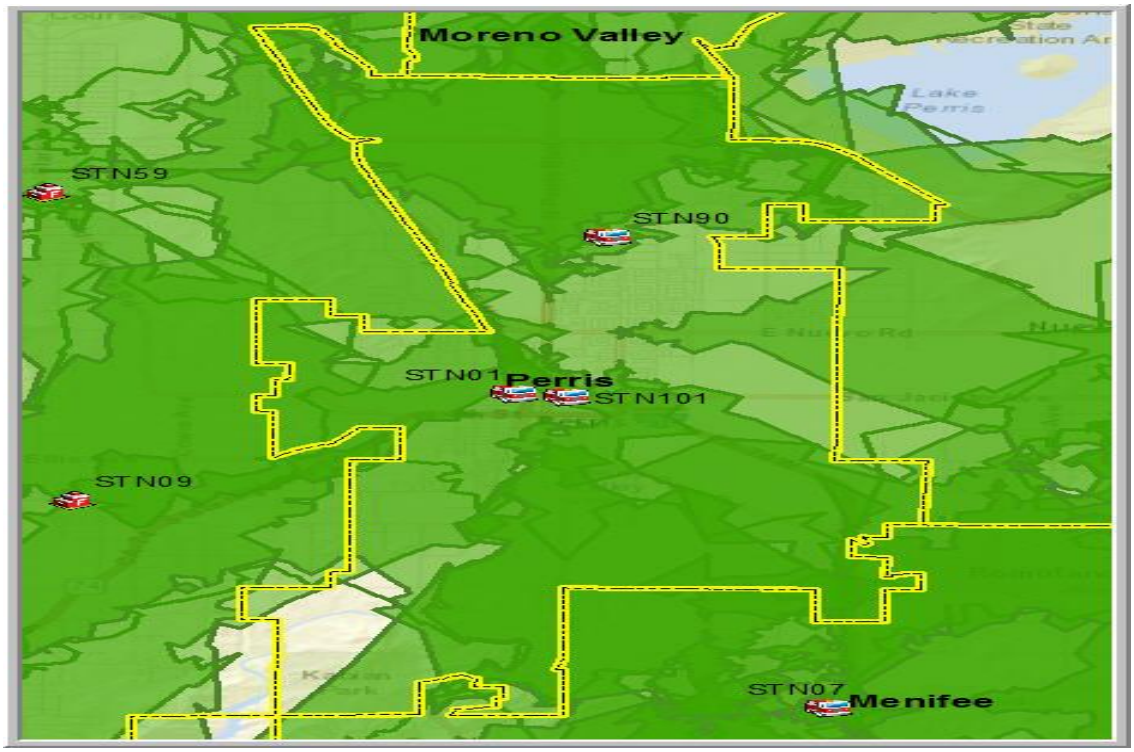
14. **Norco:** The area has excellent eight minute overlap. Station 14 covers all of Norco and Corona in eight minutes. Riverside County Station 13 provides good eight-minute coverage to the southern portion of the area.



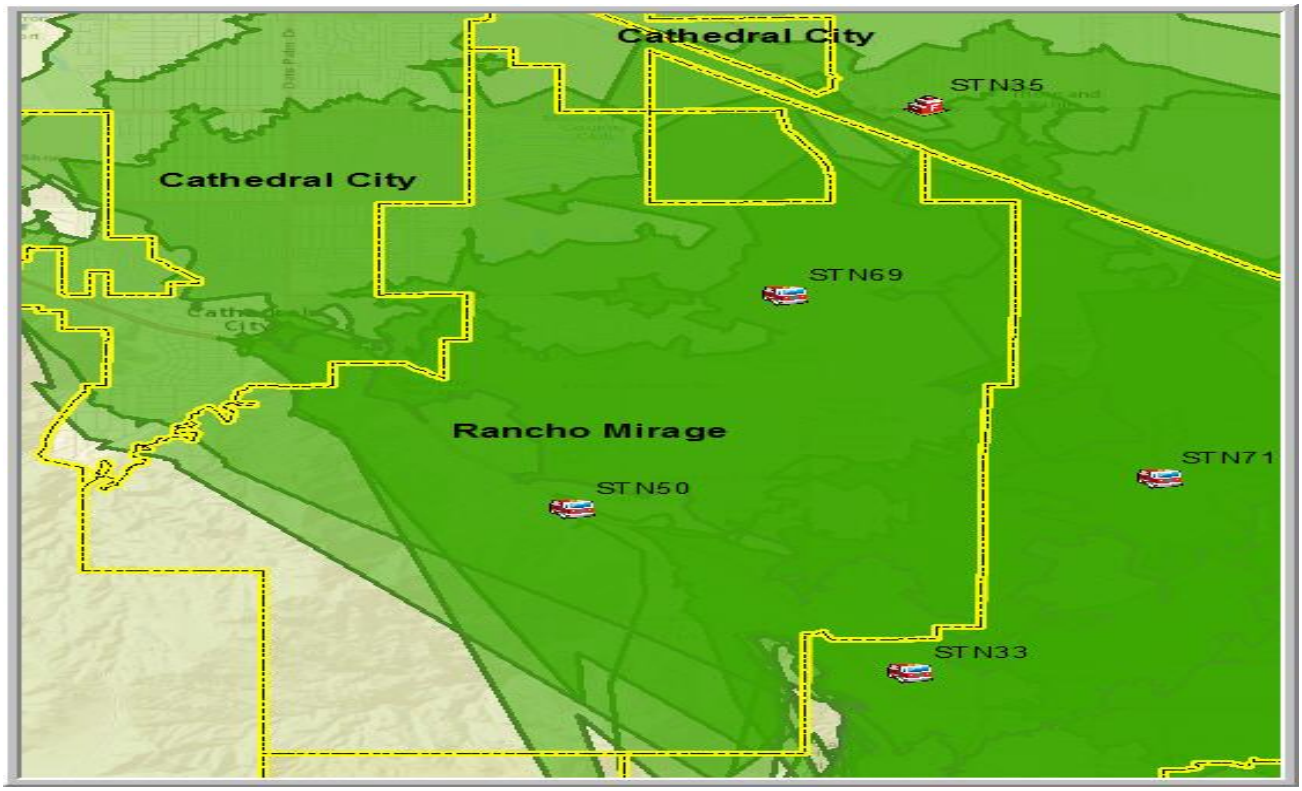
15. **Palm Desert:** Stations 55 and 71 provide good eight minute coverage in the northern portion of the unincorporated Coachella area. Riverside County Station 35and 81 provides double eight-minute coverage in the north section of the jurisdiction.



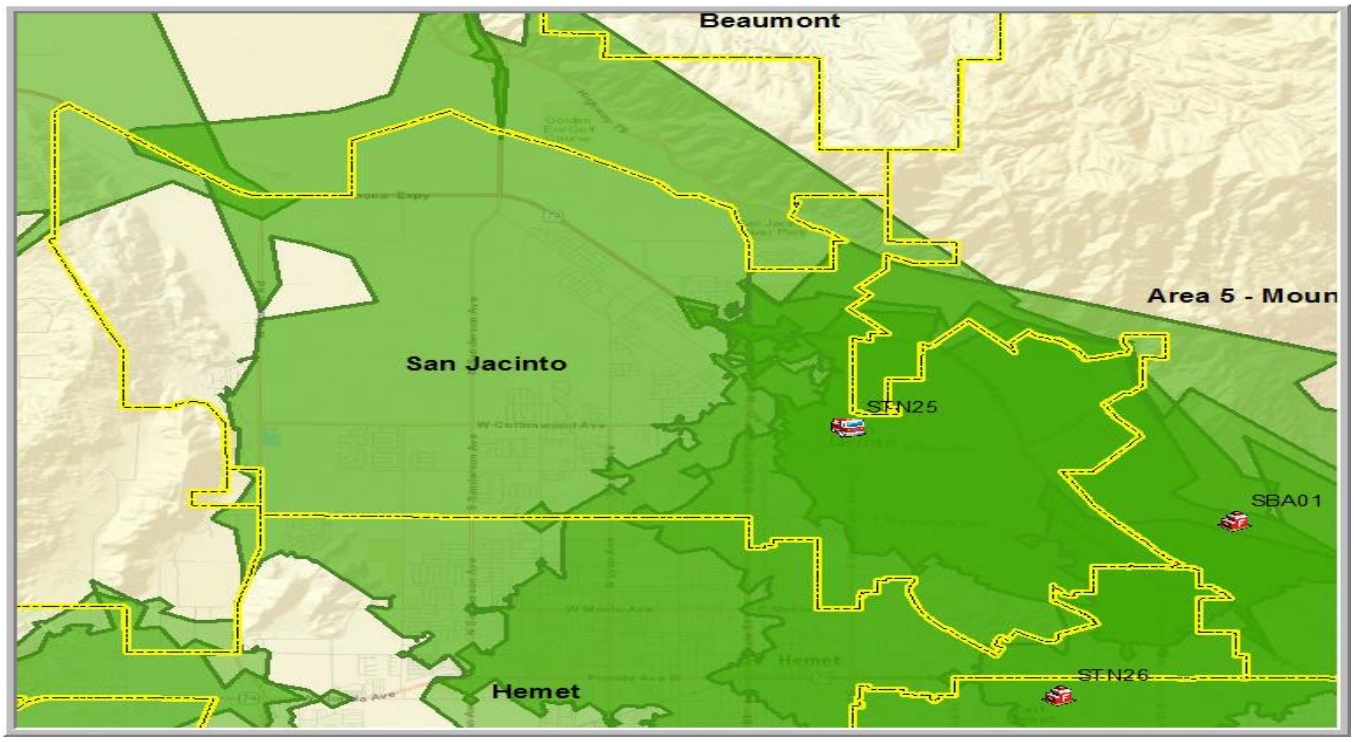
16. **Perris:** Stations 1 and 101 provide very good coverage to the western Foothill and the eastern Cajalco areas. Riverside County Stations 3, 5 and 9 can almost coverage the entire area in eight minutes.



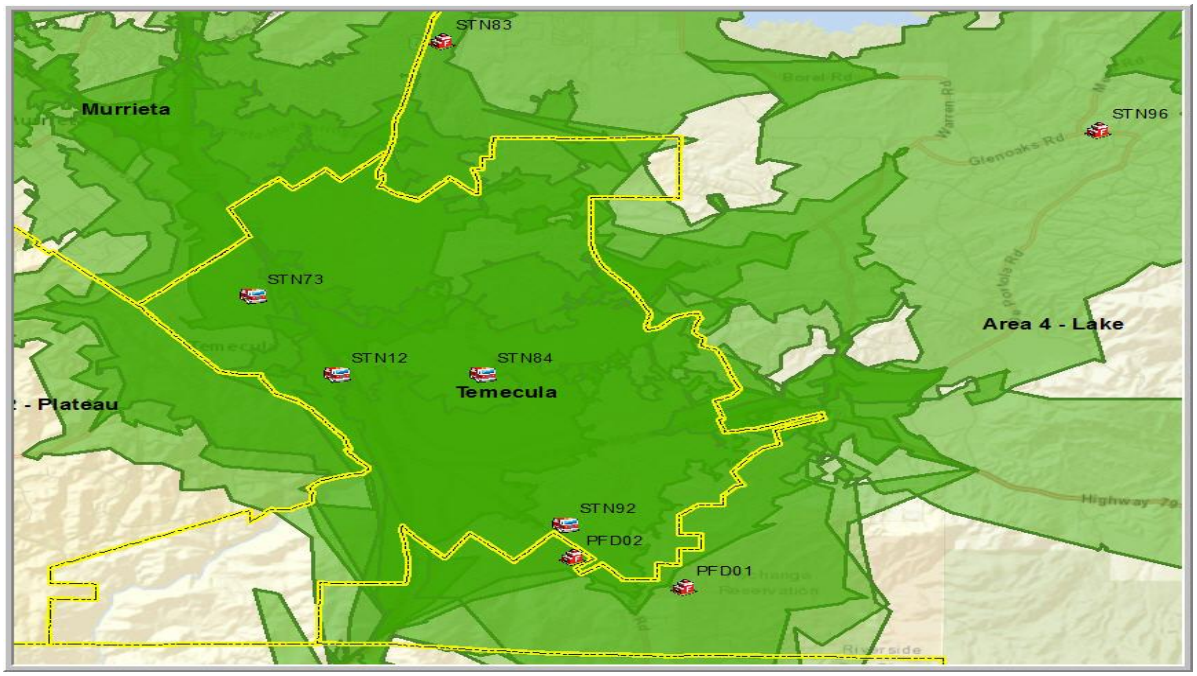
17. **Rancho Mirage:** Stations 69 provides good coverage to part of the unincorporated Coachella area. Riverside County Station 35covers more than half of the area in eight minutes.



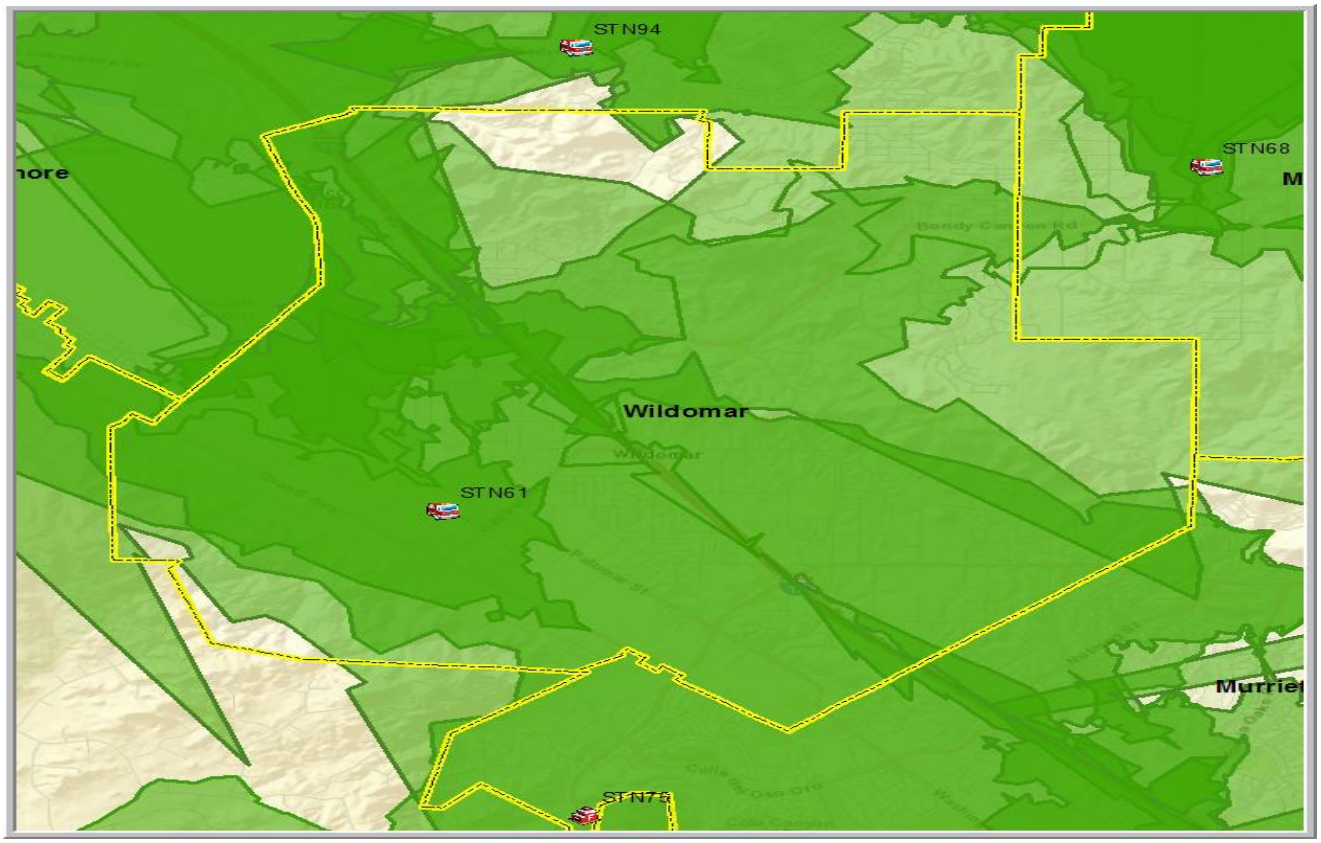
18. **San Jacinto:** The entire jurisdiction is covered in eight minutes by Station 25 with good overlap in the south east. Stations 26 and 72 covers the southeast in eight minutes.



19. **Temecula:** Station 84 provides good eight minute coverage to the Lakes area. Stations 12 and 73 extend good coverage to the Plateau area. Riverside County Station 83 covers the north in eight minutes. Stations PFD01 and PFD02 provides cover to two thirds of the area.



20. Wildomar: Station 61 covers more of the Plateau area in eight-minutes, and provides overlap to Lake Elsinore which is a contract city and Murrieta to the south which is not. Riverside County Station 75 covers more than half of Wildomar in eight minutes.



G. Information on Contract Fee Options and Comparisons

- Scenario A - Countywide
  - A1 – 33% Assessed Valuation, 33% Population, 33% Incidents
  - A2 – 33% Assessed Valuation, 33% Population, 33% Incidents, Remote Stations
  - A3 – 75% Costs, 25% Incidents
- Scenario B – Divisional Regions
  - B1 – 75% Costs, 25% Total Responses
  - B2 – 75% Costs, 25% Total Responses, Remote Stations
  - B3 – 75% Costs, 25% Responses from Other Areas
  - B4 – 75% Costs, 25% Responses from Other Areas, Remote Stations
- Scenario C – Local Regions
  - C1 – 75% Costs, 25% Total Responses
  - C2 – 75% Costs, 25% Responses from Other Areas

Scenario A Comparisons – Countywide

Scenarios		Scenario A1		Scenario A2		Scenario A3	
Cities	FY 14/15 Exhibit A's	Cost	Difference	Cost	Difference	Cost	Difference
Banning	$2,444,148	$3,786,566	$1,342,419	$3,099,347	$655,199	$3,590,064	$1,145,916
Beaumont	$2,053,936	$4,154,097	$2,100,161	$3,400,175	$1,346,239	$2,725,890	$671,954
Calimesa	$1,052,754	$1,141,512	$88,758	$938,551	($114,203)	$1,296,478	$243,724
Canyon Lake	$1,346,388	$1,389,063	$42,675	$1,141,174	($205,214)	$1,332,012	($14,377)
Coachella	$2,942,901	$3,369,907	$427,006	$2,760,435	($182,466)	$3,045,506	$102,605
Desert Hot Springs	$1,846,651	$3,495,290	$1,648,639	$2,865,145	$1,018,494	$3,109,442	$1,262,791
Eastvale	$2,732,175	$6,374,097	$3,641,922	$5,223,609	$2,491,434	$3,068,901	$336,726
Indian Wells	$2,435,972	$3,305,374	$869,401	$2,824,355	$388,383	$2,261,759	($174,213)
Indio	$11,077,609	$10,788,681	($288,928)	$9,178,705	($1,898,904)	$10,405,146	($672,463)
La Quinta	$4,855,957	$7,635,202	$2,779,245	$6,262,130	$1,406,174	$4,914,681	$58,724
Lake Elsinore	$6,705,260	$6,051,723	($653,537)	$4,966,035	($1,739,225)	$6,902,817	$197,557
Menifee	$7,945,198	$10,001,362	$2,056,164	$8,209,925	$264,727	$8,621,120	$675,922
Moreno Valley	$13,923,038	$19,897,648	$5,974,610	$16,315,922	$2,392,885	$15,455,366	$1,532,328
Norco	$3,391,619	$3,137,136	($254,483)	$2,576,202	($815,417)	$3,440,620	$49,002
Palm Desert	$10,725,723	$14,255,600	$3,529,877	$12,300,982	$1,575,260	$9,340,779	($1,384,944)
Perris	$3,697,068	$7,156,070	$3,459,001	$5,865,745	$2,168,676	$5,180,140	$1,483,072
Rancho Mirage	$4,530,975	$6,526,196	$1,995,221	$5,520,046	$989,071	$5,112,777	$581,802
Rubidoux	$1,714,028	$3,018,345	$1,304,317	$2,476,610	$762,582	$2,316,785	$602,757
San Jacinto	$2,855,651	$5,024,658	$2,169,007	$4,116,949	$1,261,299	$4,279,569	$1,423,919
Temecula	$11,324,607	$12,684,816	$1,360,208	$10,403,717	($920,890)	$9,561,309	($1,763,298)
Wildomar	$2,052,574	$3,637,621	$1,585,047	$2,983,262	$930,688	$2,724,472	$671,898
Jurupa Valley	$7,518,567	$9,331,864	$1,813,297	$7,638,236	$119,669	$8,062,514	$543,947
County	$78,781,917	$41,791,888	($36,990,029)	$66,887,457	($11,894,461)	$71,206,566	($7,575,351)
City Share	**$101,654,230**	**$136,830,962**	**$35,176,732**	**$113,429,022**	**$11,774,792**	**$108,685,634**	**$7,031,404**
County Share	**$86,300,484**	**$51,123,752**	**($35,176,732)**	**$74,525,692**	**($11,774,792)**	**$79,269,080**	**($7,031,404)**

Scenario B Comparisons – Divisional Regions

Scenarios		Scenario B1		Scenario B2		Scenario B3		Scenario B4	
Cities	FY 14/15 Exhibit A's	Cost	Difference	Cost	Difference	Cost	Difference	Cost	Difference
Banning	$2,444,148	$3,059,809	$615,661	$2,775,511	$331,363	$2,178,036	($266,112)	$2,098,097	($346,051)
Beaumont	$2,053,936	$2,430,604	$376,668	$2,224,303	$170,367	$2,967,697	$913,761	$2,636,920	$582,984
Calimesa	$1,052,754	$1,159,415	$106,661	$1,073,699	$20,945	$1,020,759	($31,995)	$967,177	($85,576)
Canyon Lake	$1,346,388	$1,312,617	($33,771)	$1,281,944	($64,444)	$2,060,607	$714,218	$1,954,171	$607,783
Coachella	$2,942,901	$3,432,688	$489,788	$3,325,297	$382,396	$3,438,617	$495,717	$3,330,772	$387,872
Desert Hot Springs	$1,846,651	$3,238,819	$1,392,168	$3,096,918	$1,250,267	$3,085,407	$1,238,756	$2,955,249	$1,108,598
Eastvale	$2,732,175	$3,408,618	$676,443	$3,270,918	$538,743	$4,068,345	$1,336,170	$3,863,822	$1,131,647
Indian Wells	$2,435,972	$2,309,361	($126,611)	$2,272,437	($163,535)	$2,459,876	$23,904	$2,411,431	($24,541)
Indio	$11,077,609	$10,744,916	($332,693)	$10,504,059	($573,550)	$9,028,229	($2,049,380)	$8,918,775	($2,158,834)
La Quinta	$4,855,957	$5,074,905	$218,948	$4,951,636	$95,679	$4,633,119	($222,838)	$4,543,666	($312,290)
Lake Elsinore	$6,705,260	$6,690,238	($15,022)	$6,521,969	($183,292)	$6,768,857	$63,597	$6,592,624	($112,636)
Menifee	$7,945,198	$8,552,137	$606,939	$8,194,494	$249,296	$7,184,652	($760,546)	$6,965,520	($979,678)
Moreno Valley	$13,923,038	$15,354,412	$1,431,375	$14,692,625	$769,587	$9,491,499	($4,431,538)	$9,423,557	($4,499,481)
Norco	$3,391,619	$3,389,995	($1,624)	$3,304,276	($87,342)	$3,864,674	$473,055	$3,730,876	$339,257
Palm Desert	$10,725,723	$9,571,717	($1,154,006)	$9,293,624	($1,432,099)	$9,998,635	($727,088)	$9,687,864	($1,037,859)
Perris	$3,697,068	$4,814,411	$1,117,343	$4,607,620	$910,551	$5,123,972	$1,426,904	$4,885,826	$1,188,757
Rancho Mirage	$4,530,975	$5,272,470	$741,496	$5,129,007	$598,032	$6,306,669	$1,775,695	$6,084,044	$1,553,069
Rubidoux	$1,714,028	$2,595,193	$881,165	$2,462,538	$748,511	$2,066,163	$352,135	$1,987,093	$273,065
San Jacinto	$2,855,651	$3,386,841	$531,190	$3,098,277	$242,626	$2,860,488	$4,837	$2,693,911	($161,740)
Temecula	$11,324,607	$9,286,355	($2,038,253)	$9,014,086	($2,310,521)	$7,417,899	($3,906,709)	$7,334,884	($3,989,724)
Wildomar	$2,052,574	$2,711,308	$658,734	$2,592,611	$540,037	$5,422,182	$3,369,608	$5,028,904	$2,976,330
Jurupa Valley	$7,518,567	$7,868,338	$349,771	$4,445,152	($3,073,415)	$7,133,905	($384,661)	$3,785,109	($3,733,458)
County	$78,781,917	$72,289,548	($6,492,370)	$79,821,714	$1,039,797	$79,374,427	$592,509	$86,074,422	$7,292,505
City Share	**$101,654,230**	**$107,796,829**	**$6,142,599**	**$103,687,848**	**$2,033,618**	**$101,446,383**	**($207,848)**	**$98,095,183**	**($3,559,047)**
County Share	**$86,300,484**	**$80,157,885**	**($6,142,599)**	**$84,266,866**	**($2,033,618)**	**$86,508,332**	**$207,848**	**$89,859,531**	**$3,559,047**

Scenario C – Regional

Scenarios		Scenario C1		Scenario C2	
Cities	FY 14/15 Exhibit A's	Cost	Difference	Cost	Difference
Banning	$2,444,148	$2,691,924	$247,776	$2,135,646	($308,502)
Beaumont	$2,053,936	$2,163,649	$109,713	$2,792,291	$738,355
Calimesa	$1,052,754	$1,048,498	($4,256)	$992,345	($60,408)
Canyon Lake	$1,346,388	$1,344,489	($1,899)	$1,769,408	$423,019
Coachella	$2,942,901	$3,286,115	$343,214	$3,291,425	$348,524
Desert Hot Springs	$1,846,651	$3,045,145	$1,198,494	$2,907,761	$1,061,109
Eastvale	$2,732,175	$2,957,632	$225,457	$3,429,516	$697,341
Indian Wells	$2,435,972	$2,258,966	($177,007)	$2,393,756	($42,216)
Indio	$11,077,609	$10,416,182	($661,427)	$8,878,841	($2,198,768)
La Quinta	$4,855,957	$4,906,661	$50,704	$4,511,030	($344,927)
Lake Elsinore	$6,705,260	$6,865,089	$159,829	$6,286,698	($418,562)
Menifee	$7,945,198	$8,923,767	$978,569	$6,585,125	($1,360,073)
Moreno Valley	$13,923,038	$14,033,795	$110,757	$9,397,709	($4,525,328)
Norco	$3,391,619	$3,109,256	($282,363)	$3,446,755	$55,136
Palm Desert	$10,725,723	$9,192,161	($1,533,562)	$9,574,478	($1,151,245)
Perris	$3,697,068	$4,401,752	$704,684	$4,795,228	$1,098,160
Rancho Mirage	$4,530,975	$5,076,664	$545,690	$6,002,818	$1,471,843
Rubidoux	$1,714,028	$2,160,732	$446,704	$1,819,187	$105,159
San Jacinto	$2,855,651	$3,013,436	$157,786	$2,772,155	($83,496)
Temecula	$11,324,607	$9,569,271	($1,755,336)	$7,190,776	($4,133,831)
Wildomar	$2,052,574	$2,834,649	$782,075	$4,346,205	$2,293,631
Jurupa Valley	$7,518,567	$7,128,769	($389,798)	$6,660,931	($857,636)
County	$78,781,917	$77,526,114	($1,255,804)	$85,974,633	$7,192,716
City Share	**$101,654,230**	**$103,299,832**	**$1,645,602**	**$95,319,151**	**($6,335,080)**
County Share	**$86,300,484**	**$84,654,882**	**($1,645,602)**	**$92,635,564**	**$6,335,080**

A1 – 33% Assessed Valuation, 33% Population, 33% Incidents

Cities	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Banning	$ 2,444,148	$ 3,786,566	$ -	**$ 3,786,566**	$ 1,342,419
Beaumont	$ 2,053,936	$ 4,154,097	$ -	**$ 4,154,097**	$ 2,100,161
Calimesa	$ 1,052,754	$ 1,118,312	$ 23,200	**$ 1,141,512**	$ 88,758
Canyon Lake	$ 1,346,388	$ 1,365,863	$ 23,200	**$ 1,389,063**	$ 42,675
Coachella	$ 2,942,901	$ 3,358,182	$ 11,725	**$ 3,369,907**	$ 427,006
Desert Hot Springs	$ 1,846,651	$ 3,472,090	$ 23,200	**$ 3,495,290**	$ 1,648,639
Eastvale	$ 2,732,175	$ 6,339,172	$ 34,925	**$ 6,374,097**	$ 3,641,922
Indian Wells	$ 2,435,972	$ 2,650,405	$ 654,969	**$ 3,305,374**	$ 869,401
Indio	$ 11,077,609	$ 8,870,939	$ 1,917,742	**$ 10,788,681**	$ (288,928)
La Quinta	$ 4,855,957	$ 7,565,602	$ 69,600	**$ 7,635,202**	$ 2,779,245
Lake Elsinore	$ 6,705,260	$ 5,982,123	$ 69,600	**$ 6,051,723**	$ (653,537)
Menifee	$ 7,945,198	$ 9,870,791	$ 130,571	**$ 10,001,362**	$ 2,056,164
Moreno Valley	$ 13,923,038	$ 19,735,248	$ 162,400	**$ 19,897,648**	$ 5,974,610
Norco	$ 3,391,619	$ 3,090,736	$ 46,400	**$ 3,137,136**	$ (254,483)
Palm Desert	$ 10,725,723	$ 10,769,911	$ 3,485,689	**$ 14,255,600**	$ 3,529,877
Perris	$ 3,697,068	$ 7,109,670	$ 46,400	**$ 7,156,070**	$ 3,459,001
Rancho Mirage	$ 4,530,975	$ 5,543,871	$ 982,325	**$ 6,526,196**	$ 1,995,221
Rubidoux	$ 1,714,028	$ 2,984,951	$ 33,394	**$ 3,018,345**	$ 1,304,317
San Jacinto	$ 2,855,651	$ 5,001,458	$ 23,200	**$ 5,024,658**	$ 2,169,007
Temecula	$ 11,324,607	$ 12,568,816	$ 116,000	**$ 12,684,816**	$ 1,360,208
Wildomar	$ 2,052,574	$ 3,605,505	$ 32,116	**$ 3,637,621**	$ 1,585,047
Subtotal	**$ 101,654,230**	**$ 128,944,306**	**$ 7,886,656**	**$ 136,830,962**	**$ 35,176,732**
Jurupa Valley	$ 7,518,567	$ 9,331,864	$ -	**$ 9,331,864**	$ 1,813,297
County	$ 78,781,917	$ 41,791,888	$ -	**$ 41,791,888**	$ (36,990,029)
Total	**$ 187,954,714**	**$ 180,068,058**	**$ 7,886,656**	**$ 187,954,714**	**$ -**

A2 – 33% Assessed Valuation, 33% Population, 33% Incidents, Remote Stations

Cities	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Banning	$ 2,444,148	$ 3,099,347	$ -	**$ 3,099,347**	$ 655,199
Beaumont	$ 2,053,936	$ 3,400,175	$ -	**$ 3,400,175**	$ 1,346,239
Calimesa	$ 1,052,754	$ 915,351	$ 23,200	**$ 938,551**	$ (114,203)
Canyon Lake	$ 1,346,388	$ 1,117,974	$ 23,200	**$ 1,141,174**	$ (205,214)
Coachella	$ 2,942,901	$ 2,748,710	$ 11,725	**$ 2,760,435**	$ (182,466)
Desert Hot Springs	$ 1,846,651	$ 2,841,945	$ 23,200	**$ 2,865,145**	$ 1,018,494
Eastvale	$ 2,732,175	$ 5,188,684	$ 34,925	**$ 5,223,609**	$ 2,491,434
Indian Wells	$ 2,435,972	$ 2,169,386	$ 654,969	**$ 2,824,355**	$ 388,383
Indio	$ 11,077,609	$ 7,260,963	$ 1,917,742	**$ 9,178,705**	$ (1,898,904)
La Quinta	$ 4,855,957	$ 6,192,530	$ 69,600	**$ 6,262,130**	$ 1,406,174
Lake Elsinore	$ 6,705,260	$ 4,896,435	$ 69,600	**$ 4,966,035**	$ (1,739,225)
Menifee	$ 7,945,198	$ 8,079,354	$ 130,571	**$ 8,209,925**	$ 264,727
Moreno Valley	$ 13,923,038	$ 16,153,522	$ 162,400	**$ 16,315,922**	$ 2,392,885
Norco	$ 3,391,619	$ 2,529,802	$ 46,400	**$ 2,576,202**	$ (815,417)
Palm Desert	$ 10,725,723	$ 8,815,293	$ 3,485,689	**$ 12,300,982**	$ 1,575,260
Perris	$ 3,697,068	$ 5,819,345	$ 46,400	**$ 5,865,745**	$ 2,168,676
Rancho Mirage	$ 4,530,975	$ 4,537,721	$ 982,325	**$ 5,520,046**	$ 989,071
Rubidoux	$ 1,714,028	$ 2,443,216	$ 33,394	**$ 2,476,610**	$ 762,582
San Jacinto	$ 2,855,651	$ 4,093,749	$ 23,200	**$ 4,116,949**	$ 1,261,299
Temecula	$ 11,324,607	$ 10,287,717	$ 116,000	**$ 10,403,717**	$ (920,890)
Wildomar	$ 2,052,574	$ 2,951,146	$ 32,116	**$ 2,983,262**	$ 930,688
Subtotal	**$ 101,654,230**	**$ 105,542,366**	**$ 7,886,656**	**$ 113,429,022**	**$ 11,774,792**
Jurupa Valley	$ 7,518,567	$ 7,638,236	$ -	**$ 7,638,236**	$ 119,669
County	$ 78,781,917	$ 34,207,131	$ 32,680,326	**$ 66,887,457**	$ (11,894,461)
Total	**$ 187,954,714**	**$ 147,387,733**	**$ 40,566,982**	**$ 187,954,714**	**$ -**

A3 – 75% Costs, 25% Incidents

Cities	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Banning	$ 2,444,148	$ 3,590,064	$ -	**$ 3,590,064**	$ 1,145,916
Beaumont	$ 2,053,936	$ 2,725,890	$ -	**$ 2,725,890**	$ 671,954
Calimesa	$ 1,052,754	$ 1,273,278	$ 23,200	**$ 1,296,478**	$ 243,724
Canyon Lake	$ 1,346,388	$ 1,308,812	$ 23,200	**$ 1,332,012**	$ (14,377)
Coachella	$ 2,942,901	$ 3,033,781	$ 11,725	**$ 3,045,506**	$ 102,605
Desert Hot Springs	$ 1,846,651	$ 3,086,242	$ 23,200	**$ 3,109,442**	$ 1,262,791
Eastvale	$ 2,732,175	$ 3,033,976	$ 34,925	**$ 3,068,901**	$ 336,726
Indian Wells	$ 2,435,972	$ 1,606,790	$ 654,969	**$ 2,261,759**	$ (174,213)
Indio	$ 11,077,609	$ 8,487,404	$ 1,917,742	**$ 10,405,146**	$ (672,463)
La Quinta	$ 4,855,957	$ 4,845,081	$ 69,600	**$ 4,914,681**	$ 58,724
Lake Elsinore	$ 6,705,260	$ 6,833,217	$ 69,600	**$ 6,902,817**	$ 197,557
Menifee	$ 7,945,198	$ 8,490,549	$ 130,571	**$ 8,621,120**	$ 675,922
Moreno Valley	$ 13,923,038	$ 15,292,966	$ 162,400	**$ 15,455,366**	$ 1,532,328
Norco	$ 3,391,619	$ 3,394,220	$ 46,400	**$ 3,440,620**	$ 49,002
Palm Desert	$ 10,725,723	$ 5,855,090	$ 3,485,689	**$ 9,340,779**	$ (1,384,944)
Perris	$ 3,697,068	$ 5,133,740	$ 46,400	**$ 5,180,140**	$ 1,483,072
Rancho Mirage	$ 4,530,975	$ 4,130,452	$ 982,325	**$ 5,112,777**	$ 581,802
Rubidoux	$ 1,714,028	$ 2,283,391	$ 33,394	**$ 2,316,785**	$ 602,757
San Jacinto	$ 2,855,651	$ 4,256,369	$ 23,200	**$ 4,279,569**	$ 1,423,919
Temecula	$ 11,324,607	$ 9,445,309	$ 116,000	**$ 9,561,309**	$ (1,763,298)
Wildomar	$ 2,052,574	$ 2,692,356	$ 32,116	**$ 2,724,472**	$ 671,898
Subtotal	**$ 101,654,230**	**$ 100,798,978**	**$ 7,886,656**	**$ 108,685,634**	**$ 7,031,404**
Jurupa Valley	$ 7,518,567	$ 8,062,514	$ -	**$ 8,062,514**	$ 543,947
County	$ 78,781,917	$ 38,526,241	$ 32,680,326	**$ 71,206,566**	$ (7,575,351)
Total	**$ 187,954,714**	**$ 147,387,733**	**$ 40,566,982**	**$ 187,954,714**	**$ -**

B1 – 75% Costs, 25% Total Responses

	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Coachella	$ 2,942,901	$ 3,420,963	$ 11,725	$ 3,432,688	$ 489,788
Desert Hot Springs	$ 1,846,651	$ 3,215,619	$ 23,200	$ 3,238,819	$ 1,392,168
Indian Wells	$ 2,435,972	$ 1,654,392	$ 654,969	$ 2,309,361	$ (126,611)
Indio	$ 11,077,609	$ 8,827,174	$ 1,917,742	$ 10,744,916	$ (332,693)
La Quinta	$ 4,855,957	$ 5,005,305	$ 69,600	$ 5,074,905	$ 218,948
Palm Desert	$ 10,725,723	$ 6,086,028	$ 3,485,689	$ 9,571,717	$ (1,154,006)
Rancho Mirage	$ 4,530,975	$ 4,290,145	$ 982,325	$ 5,272,470	$ 741,496
County - Zone 7	$ 17,794,345	$ 16,565,256		$ 16,565,256	$ (1,229,089)
Eastern Operations Total		**$ 49,064,882**	**$ 7,145,250**	**$ 56,210,132**	
Banning	$ 2,444,148	$ 3,059,809	$ -	$ 3,059,809	$ 615,661
Beaumont	$ 2,053,936	$ 2,430,604	$ -	$ 2,430,604	$ 376,668
Calimesa	$ 1,052,754	$ 1,136,215	$ 23,200	$ 1,159,415	$ 106,661
San Jacinto	$ 2,855,651	$ 3,363,641	$ 23,200	$ 3,386,841	$ 531,190
County - Zone 4, Zone 5, Zone 6	$ 21,458,447	$ 19,828,267		$ 19,828,267	$ (1,630,180)
Central Operations Total		**$ 29,818,535**	**$ 46,400**	**$ 29,864,935**	
Canyon Lake	$ 1,346,388	$ 1,289,417	$ 23,200	$ 1,312,617	$ (33,771)
Eastvale	$ 2,732,175	$ 3,373,693	$ 34,925	$ 3,408,618	$ 676,443
Jurupa Valley	$ 7,518,567	$ 7,868,338		$ 7,868,338	$ 349,771
Lake Elsinore	$ 6,705,260	$ 6,620,638	$ 69,600	$ 6,690,238	$ (15,022)
Menifee	$ 7,945,198	$ 8,421,566	$ 130,571	$ 8,552,137	$ 606,939
Moreno Valley	$ 13,923,038	$ 15,192,012	$ 162,400	$ 15,354,412	$ 1,431,375
Norco	$ 3,391,619	$ 3,343,595	$ 46,400	$ 3,389,995	$ (1,624)
Rubidoux	$ 1,714,028	$ 2,561,799	$ 33,394	$ 2,595,193	$ 881,165
Perris	$ 3,697,068	$ 4,768,011	$ 46,400	$ 4,814,411	$ 1,117,343
Temecula	$ 11,324,607	$ 9,170,355	$ 116,000	$ 9,286,355	$ (2,038,253)
Wildomar	$ 2,052,574	$ 2,679,192	$ 32,116	$ 2,711,308	$ 658,734
County - Zone 1, Zone 2, Zone 3	$ 30,768,823	$ 27,135,722		$ 27,135,722	$ (3,633,101)
Western Operations Total		**$ 92,424,338**	**$ 695,006**	**$ 93,119,344**	
Joshua Tree, Blythe	$ 8,760,302	$ 8,760,302		$ 8,760,302	$ -
Zone 8 and 9 Total		**$ 8,760,302**	**$ -**	**$ 8,760,302**	
Total City Cost	**$ 101,654,230**			**$ 107,796,829**	**$ 6,142,599**
Total County Cost plus Jurupa Valley	**$ 86,300,484**			**$ 80,157,885**	**$ (6,142,599)**
Total	**$ 187,954,714**			**$ 187,954,714**	

B2 – 75% Costs, 25% Total Responses, Remote Stations

	FY 14/15 Actual Exhibit A's	Subtotal	Added Services	Total	Difference
Coachella	$ 2,942,901	$ 3,313,572	$ 11,725	$ 3,325,297	$ 382,396
Desert Hot Springs	$ 1,846,651	$ 3,073,718	$ 23,200	$ 3,096,918	$ 1,250,267
Indian Wells	$ 2,435,972	$ 1,617,468	$ 654,969	$ 2,272,437	$ (163,535)
Indio	$ 11,077,609	$ 8,586,317	$ 1,917,742	$ 10,504,059	$ (573,550)
La Quinta	$ 4,855,957	$ 4,882,036	$ 69,600	$ 4,951,636	$ 95,679
Palm Desert	$ 10,725,723	$ 5,807,935	$ 3,485,689	$ 9,293,624	$ (1,432,099)
Rancho Mirage	$ 4,530,975	$ 4,146,682	$ 982,325	$ 5,129,007	$ 598,032
County - Zone 7	$ 12,412,328	$ 12,255,138		$ 12,255,138	$ (157,190)
Eastern Operations Total		**$ 43,682,865**	**$ 7,145,250**	**$ 50,828,115**	
Banning	$ 2,444,148	$ 2,775,511	$ -	$ 2,775,511	$ 331,363
Beaumont	$ 2,053,936	$ 2,224,303	$ -	$ 2,224,303	$ 170,367
Calimesa	$ 1,052,754	$ 1,050,499	$ 23,200	$ 1,073,699	$ 20,945
San Jacinto	$ 2,855,651	$ 3,075,077	$ 23,200	$ 3,098,277	$ 242,626
County - Zone 4, Zone 5, Zone 6	$ 14,536,982	$ 13,771,680		$ 13,771,680	$ (765,302)
Central Operations Total		**$ 22,897,070**	**$ 46,400**	**$ 22,943,470**	
Canyon Lake	$ 1,346,388	$ 1,258,744	$ 23,200	$ 1,281,944	$ (64,444)
Eastvale	$ 2,732,175	$ 3,235,993	$ 34,925	$ 3,270,918	$ 538,743
Jurupa Valley	$ 7,518,567	$ 4,445,152		$ 4,445,152	$ (3,073,415)
Lake Elsinore	$ 6,705,260	$ 6,452,369	$ 69,600	$ 6,521,969	$ (183,292)
Menifee	$ 7,945,198	$ 8,063,923	$ 130,571	$ 8,194,494	$ 249,296
Moreno Valley	$ 13,923,038	$ 14,530,225	$ 162,400	$ 14,692,625	$ 769,587
Norco	$ 3,391,619	$ 3,257,876	$ 46,400	$ 3,304,276	$ (87,342)
Rubidoux	$ 1,714,028	$ 2,429,144	$ 33,394	$ 2,462,538	$ 748,511
Perris	$ 3,697,068	$ 4,561,220	$ 46,400	$ 4,607,620	$ 910,551
Temecula	$ 11,324,607	$ 8,898,086	$ 116,000	$ 9,014,086	$ (2,310,521)
Wildomar	$ 2,052,574	$ 2,560,495	$ 32,116	$ 2,592,611	$ 540,037
County - Zone 1, Zone 2, Zone 3	$ 19,152,282	$ 21,114,571		$ 21,114,571	$ 1,962,289
Western Operations Total		**$ 80,807,797**	**$ 695,006**	**$ 81,502,803**	
Joshua Tree, Blythe	$ 8,760,302	$ 8,760,302		$ 8,760,302	$ -
Zone 8 and 9 Total		**$ 8,760,302**	**$ -**	**$ 8,760,302**	
Remote County Stations - Stations 4, 8, 30, 40, 41, 51, 62, 63, 64, 77, 82, 96	$ 23,920,023			$ 23,920,023	
Total City Cost	**$ 101,654,230**			**$ 103,687,848**	**$ 2,033,618**
Total County Cost plus Jurupa Valley	**$ 86,300,484**			**$ 84,266,866**	**$ (2,033,618)**
Total	**$ 187,954,714**			**$ 187,954,714**	

B3 – 75% Costs, 25% Responses from Other Areas

	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Coachella	$ 2,942,901	$ 3,426,892	$ 11,725	$ 3,438,617	$ 495,717
Desert Hot Springs	$ 1,846,651	$ 3,062,207	$ 23,200	$ 3,085,407	$ 1,238,756
Indian Wells	$ 2,435,972	$ 1,804,907	$ 654,969	$ 2,459,876	$ 23,904
Indio	$ 11,077,609	$ 7,110,487	$ 1,917,742	$ 9,028,229	$ (2,049,380)
La Quinta	$ 4,855,957	$ 4,563,519	$ 69,600	$ 4,633,119	$ (222,838)
Palm Desert	$ 10,725,723	$ 6,512,946	$ 3,485,689	$ 9,998,635	$ (727,088)
Rancho Mirage	$ 4,530,975	$ 5,324,344	$ 982,325	$ 6,306,669	$ 1,775,695
County - Zone 7	$ 17,794,345	$ 17,259,580		$ 17,259,580	$ (534,766)
Eastern Operations Total		**$ 49,064,882**	**$ 7,145,250**	**$ 56,210,132**	
Banning	$ 2,444,148	$ 2,178,036	$ -	$ 2,178,036	$ (266,112)
Beaumont	$ 2,053,936	$ 2,967,697	$ -	$ 2,967,697	$ 913,761
Calimesa	$ 1,052,754	$ 997,559	$ 23,200	$ 1,020,759	$ (31,995)
San Jacinto	$ 2,855,651	$ 2,837,288	$ 23,200	$ 2,860,488	$ 4,837
County - Zone 4, Zone 5, Zone 6	$ 21,458,447	$ 20,837,956		$ 20,837,956	$ (620,491)
Central Operations Total		**$ 29,818,535**	**$ 46,400**	**$ 29,864,935**	
Canyon Lake	$ 1,346,388	$ 2,037,407	$ 23,200	$ 2,060,607	$ 714,218
Eastvale	$ 2,732,175	$ 4,033,420	$ 34,925	$ 4,068,345	$ 1,336,170
Jurupa Valley	$ 7,518,567	$ 7,133,905		$ 7,133,905	$ (384,661)
Lake Elsinore	$ 6,705,260	$ 6,699,257	$ 69,600	$ 6,768,857	$ 63,597
Menifee	$ 7,945,198	$ 7,054,081	$ 130,571	$ 7,184,652	$ (760,546)
Moreno Valley	$ 13,923,038	$ 9,329,099	$ 162,400	$ 9,491,499	$ (4,431,538)
Norco	$ 3,391,619	$ 3,818,274	$ 46,400	$ 3,864,674	$ 473,055
Rubidoux	$ 1,714,028	$ 2,032,769	$ 33,394	$ 2,066,163	$ 352,135
Perris	$ 3,697,068	$ 5,077,572	$ 46,400	$ 5,123,972	$ 1,426,904
Temecula	$ 11,324,607	$ 7,301,899	$ 116,000	$ 7,417,899	$ (3,906,709)
Wildomar	$ 2,052,574	$ 5,390,066	$ 32,116	$ 5,422,182	$ 3,369,608
County - Zone 1, Zone 2, Zone 3	$ 30,768,823	$ 32,516,588		$ 32,516,588	$ 1,747,766
Western Operations Total		**$ 92,424,338**	**$ 695,006**	**$ 93,119,344**	
Joshua Tree, Blythe	$ 8,760,302	$ 8,760,302		$ 8,760,302	$ -
Zone 8 and 9 Total		**$ 8,760,302**	**$ -**	**$ 8,760,302**	
Total City Cost	**$ 101,654,230**			**$ 101,446,383**	**$ (207,848)**
Total County Cost plus Jurupa Valley	**$ 86,300,484**			**$ 86,508,332**	**$ 207,848**
Total	**$ 187,954,714**			**$ 187,954,714**	

B4 – 75% Costs, 25% Responses from Other Areas, Remote Stations

	FY 14/15 Actual Exhibit A's	Subtotal	Added Services	Total	Difference
Coachella	$ 2,942,901	$ 3,319,047	$ 11,725	$ 3,330,772	$ 387,872
Desert Hot Springs	$ 1,846,651	$ 2,932,049	$ 23,200	$ 2,955,249	$ 1,108,598
Indian Wells	$ 2,435,972	$ 1,756,462	$ 654,969	$ 2,411,431	$ (24,541)
Indio	$ 11,077,609	$ 7,001,033	$ 1,917,742	$ 8,918,775	$ (2,158,834)
La Quinta	$ 4,855,957	$ 4,474,066	$ 69,600	$ 4,543,666	$ (312,290)
Palm Desert	$ 10,725,723	$ 6,202,175	$ 3,485,689	$ 9,687,864	$ (1,037,859)
Rancho Mirage	$ 4,530,975	$ 5,101,719	$ 982,325	$ 6,084,044	$ 1,553,069
County - Zone 7	$ 12,412,328	$ 12,896,314		$ 12,896,314	$ 483,986
Eastern Operations Total		**$ 43,682,865**	**$ 7,145,250**	**$ 50,828,115**	
Banning	$ 2,444,148	$ 2,098,097	$ -	$ 2,098,097	$ (346,051)
Beaumont	$ 2,053,936	$ 2,636,920	$ -	$ 2,636,920	$ 582,984
Calimesa	$ 1,052,754	$ 943,977	$ 23,200	$ 967,177	$ (85,576)
San Jacinto	$ 2,855,651	$ 2,670,711	$ 23,200	$ 2,693,911	$ (161,740)
County - Zone 4, Zone 5, Zone 6	$ 14,536,982	$ 14,547,365		$ 14,547,365	$ 10,383
Central Operations Total		**$ 22,897,070**	**$ 46,400**	**$ 22,943,470**	
Canyon Lake	$ 1,346,388	$ 1,930,971	$ 23,200	$ 1,954,171	$ 607,783
Eastvale	$ 2,732,175	$ 3,828,897	$ 34,925	$ 3,863,822	$ 1,131,647
Jurupa Valley	$ 7,518,567	$ 3,785,109		$ 3,785,109	$ (3,733,458)
Lake Elsinore	$ 6,705,260	$ 6,523,024	$ 69,600	$ 6,592,624	$ (112,636)
Menifee	$ 7,945,198	$ 6,834,949	$ 130,571	$ 6,965,520	$ (979,678)
Moreno Valley	$ 13,923,038	$ 9,261,157	$ 162,400	$ 9,423,557	$ (4,499,481)
Norco	$ 3,391,619	$ 3,684,476	$ 46,400	$ 3,730,876	$ 339,257
Rubidoux	$ 1,714,028	$ 1,953,699	$ 33,394	$ 1,987,093	$ 273,065
Perris	$ 3,697,068	$ 4,839,426	$ 46,400	$ 4,885,826	$ 1,188,757
Temecula	$ 11,324,607	$ 7,218,884	$ 116,000	$ 7,334,884	$ (3,989,724)
Wildomar	$ 2,052,574	$ 4,996,788	$ 32,116	$ 5,028,904	$ 2,976,330
County - Zone 1, Zone 2, Zone 3	$ 19,152,282	$ 25,950,418		$ 25,950,418	$ 6,798,136
Western Operations Total		**$ 80,807,797**	**$ 695,006**	**$ 81,502,803**	
Joshua Tree, Blythe	$ 8,760,302	$ 8,760,302		$ 8,760,302	$ -
Zone 8 and 9 Total		**$ 8,760,302**	**$ -**	**$ 8,760,302**	
Remote County Stations - Stations 4, 8, 30, 40, 41, 51, 62, 63, 64, 77, 82, 96	$ 23,920,023			$ 23,920,023	
Total City Cost	**$ 101,654,230**			**$ 98,095,183**	**$ (3,559,047)**
Total County Cost plus Jurupa Valley	**$ 86,300,484**			**$ 89,859,531**	**$ 3,559,047**
Total	**$ 187,954,714**			**$ 187,954,714**	

C1 – 75% Costs, 25% Total Responses

	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Lake Elsinore	$ 6,705,260	$ 6,795,489	$ 69,600	$ 6,865,089	$ 159,829
Canyon Lake	$ 1,346,388	$ 1,321,289	$ 23,200	$ 1,344,489	$ (1,899)
Wildomar	$ 2,052,574	$ 2,802,533	$ 32,116	$ 2,834,649	$ 782,075
Menifee	$ 7,945,198	$ 8,793,196	$ 130,571	$ 8,923,767	$ 978,569
Temecula	$ 11,324,607	$ 9,453,271	$ 116,000	$ 9,569,271	$ (1,755,336)
County - Zone 2 Plateau, Zone 4 Lakes	$ 13,367,386	$ 13,204,149		$ 13,204,149	$ (163,237)
Group 1 Total		**$ 42,369,927**	**$ 371,487**	**$ 42,741,414**	
Jurupa Valley	$ 7,518,567	$ 7,128,769		$ 7,128,769	$ (389,798)
Eastvale	$ 2,732,175	$ 2,922,707	$ 34,925	$ 2,957,632	$ 225,457
Rubidoux	$ 1,714,028	$ 2,127,338	$ 33,394	$ 2,160,732	$ 446,704
Norco	$ 3,391,619	$ 3,062,856	$ 46,400	$ 3,109,256	$ (282,363)
Group 2 Total		**$ 15,241,669**	**$ 114,719**	**$ 15,356,388**	
Moreno Valley	$ 13,923,038	$ 13,871,395	$ 162,400	$ 14,033,795	$ 110,757
Perris	$ 3,697,068	$ 4,355,352	$ 46,400	$ 4,401,752	$ 704,684
County - Zone 1 Cajalco, Zone 3 Foothill	$ 17,334,688	$ 16,519,247		$ 16,519,247	$ (815,441)
Group 3 Total		**$ 34,745,994**	**$ 208,800**	**$ 34,954,794**	
San Jacinto	$ 2,855,651	$ 2,990,236	$ 23,200	$ 3,013,436	$ 157,786
Banning	$ 2,444,148	$ 2,691,924	$ -	$ 2,691,924	$ 247,776
Beaumont	$ 2,053,936	$ 2,163,649	$ -	$ 2,163,649	$ 109,713
Calimesa	$ 1,052,754	$ 1,025,298	$ 23,200	$ 1,048,498	$ (4,256)
County - Zone 5 Mountain, Zone 6 Anza	$ 4,950,824	$ 4,439,806		$ 4,439,806	$ (511,018)
Group 4 Total		**$ 13,310,913**	**$ 46,400**	**$ 13,357,313**	
La Quinta	$ 4,855,957	$ 4,837,061	$ 69,600	$ 4,906,661	$ 50,704
Indian Wells	$ 2,435,972	$ 1,603,997	$ 654,969	$ 2,258,966	$ (177,007)
Indio	$ 11,077,609	$ 8,498,440	$ 1,917,742	$ 10,416,182	$ (661,427)
Coachella	$ 2,942,901	$ 3,274,390	$ 11,725	$ 3,286,115	$ 343,214
Palm Desert	$ 10,725,723	$ 5,706,472	$ 3,485,689	$ 9,192,161	$ (1,533,562)
Desert Hot Springs	$ 1,846,651	$ 3,021,945	$ 23,200	$ 3,045,145	$ 1,198,494
Rancho Mirage	$ 4,530,975	$ 4,094,339	$ 982,325	$ 5,076,664	$ 545,690
County - Zone 7 Coachella	$ 10,448,693	$ 10,682,587		$ 10,682,587	$ 233,893
Group 5 Total		**$ 41,719,231**	**$ 7,145,250**	**$ 48,864,481**	
County - Zone 8 Joshua Tree, Zone 9 Blythe	$ 8,760,302	$ 8,760,302		$ 8,760,302	$ -
Group 6 Total		**$ 8,760,302**	**$ -**	**$ 8,760,302**	**$ -**
Remote County Stations - Stations 4, 8, 30, 40, 41, 51, 62, 63, 64, 77, 82, 96	$ 23,920,023			$ 23,920,023	$ -
Total City Cost	**$ 101,654,230**			**$ 103,299,832**	**$ 1,645,602**
Total County Cost plus Jurupa Valley	**$ 86,300,484**			**$ 84,654,882**	**$ (1,645,602)**
Total	**$ 187,954,714**			**$ 187,954,714**	

C2 – 75% Costs, 25% Responses from Other Areas

	FY 14/15 Actual Exhibit A's	Calculated Subtotal	Added Services	Total	Difference
Lake Elsinore	$ 6,705,260	$ 6,217,098	$ 69,600	$ 6,286,698	$ (418,562)
Canyon Lake	$ 1,346,388	$ 1,746,208	$ 23,200	$ 1,769,408	$ 423,019
Wildomar	$ 2,052,574	$ 4,314,089	$ 32,116	$ 4,346,205	$ 2,293,631
Menifee	$ 7,945,198	$ 6,454,554	$ 130,571	$ 6,585,125	$ (1,360,073)
Temecula	$ 11,324,607	$ 7,074,776	$ 116,000	$ 7,190,776	$ (4,133,831)
County - Zone 2 Plateau, Zone 4 Lakes	$ 13,367,386	$ 16,563,203		$ 16,563,203	$ 3,195,817
Group 1 Total		**$ 42,369,927**	**$ 371,487**	**$ 42,741,414**	
Jurupa Valley	$ 7,518,567	$ 6,660,931		$ 6,660,931	$ (857,636)
Eastvale	$ 2,732,175	$ 3,394,591	$ 34,925	$ 3,429,516	$ 697,341
Rubidoux	$ 1,714,028	$ 1,785,793	$ 33,394	$ 1,819,187	$ 105,159
Norco	$ 3,391,619	$ 3,400,355	$ 46,400	$ 3,446,755	$ 55,136
Group 2 Total		**$ 15,241,669**	**$ 114,719**	**$ 15,356,388**	
Moreno Valley	$ 13,923,038	$ 9,235,309	$ 162,400	$ 9,397,709	$ (4,525,328)
Perris	$ 3,697,068	$ 4,748,828	$ 46,400	$ 4,795,228	$ 1,098,160
County - Zone 1 Cajalco, Zone 3 Foothill	$ 17,334,688	$ 20,761,857		$ 20,761,857	$ 3,427,169
Group 3 Total		**$ 34,745,994**	**$ 208,800**	**$ 34,954,794**	
San Jacinto	$ 2,855,651	$ 2,748,955	$ 23,200	$ 2,772,155	$ (83,496)
Banning	$ 2,444,148	$ 2,135,646	$ -	$ 2,135,646	$ (308,502)
Beaumont	$ 2,053,936	$ 2,792,291	$ -	$ 2,792,291	$ 738,355
Calimesa	$ 1,052,754	$ 969,145	$ 23,200	$ 992,345	$ (60,408)
County - Zone 5 Mountain, Zone 6 Anza	$ 4,950,824	$ 4,664,876		$ 4,664,876	$ (285,948)
Group 4 Total		**$ 13,310,913**	**$ 46,400**	**$ 13,357,313**	
La Quinta	$ 4,855,957	$ 4,441,430	$ 69,600	$ 4,511,030	$ (344,927)
Indian Wells	$ 2,435,972	$ 1,738,787	$ 654,969	$ 2,393,756	$ (42,216)
Indio	$ 11,077,609	$ 6,961,099	$ 1,917,742	$ 8,878,841	$ (2,198,768)
Coachella	$ 2,942,901	$ 3,279,700	$ 11,725	$ 3,291,425	$ 348,524
Palm Desert	$ 10,725,723	$ 6,088,789	$ 3,485,689	$ 9,574,478	$ (1,151,245)
Desert Hot Springs	$ 1,846,651	$ 2,884,561	$ 23,200	$ 2,907,761	$ 1,061,109
Rancho Mirage	$ 4,530,975	$ 5,020,493	$ 982,325	$ 6,002,818	$ 1,471,843
County - Zone 7 Coachella	$ 10,448,693	$ 11,304,372		$ 11,304,372	$ 855,679
Group 5 Total		**$ 41,719,231**	**$ 7,145,250**	**$ 48,864,481**	
County - Zone 8 Joshua Tree, Zone 9 Blythe	$ 8,760,302	$ 8,760,302		$ 8,760,302	$ -
Group 6 Total		**$ 8,760,302**	**$ -**	**$ 8,760,302**	**$ -**
Remote County Stations - Stations 4, 8, 30, 40, 41, 51, 62, 63, 64, 77, 82, 96	$ 23,920,023			$ 23,920,023	$ -
Total City Cost	**$ 101,654,230**			**$ 95,319,151**	**$ (6,335,080)**
Total County Cost plus Jurupa Valley	**$ 86,300,484**			**$ 92,635,564**	**$ 6,335,080**
Total	**$ 187,954,714**			**$ 187,954,714**	