

CITYGATE ASSOCIATES, LLC

■ FOLSOM (SACRAMENTO), CA

MANAGEMENT CONSULTANTS ■



HIGH-LEVEL FIRE DEPARTMENT REVIEW FOR THE

CITY OF REDLANDS, CA

VOLUME 1 OF 3 – MAIN REPORT

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CITYGATE ASSOCIATES, LLC
FIRE & EMERGENCY SERVICES

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VOLUME 3 of 3 – Statistical Appendix (separately bound)

EXECUTIVE SUMMARY

The City of Redlands retained Citygate Associates, LLC to conduct a high-level fire department deployment review, resident survey and review of the current firefighter Memorandum of Understanding (MOU) to look for operational changes that could result in economic savings without a significant reduction in service for the City. This comprehensive study is presented in several sections including this Executive Summary of the most important findings and recommendations, followed by the deployment analysis supported by maps and response statistics, and a headquarters function review including the Memorandum of Understanding review. The final section integrates all findings and recommendations throughout the report and concludes with likely next steps should service changes be desired or possible.

POLICY CHOICES FRAMEWORK

First, there are no mandatory Federal or State regulations directing the level of fire service response times and outcomes. Thus, communities have the level of fire services that they can afford, which is not always what they would desire. The body of regulations on the fire service provides that *if fire services are provided at all, they must be done so with the safety of the firefighters and citizens in mind* (see regulatory discussion on pages 14-16, California is an OSHA state plan state and has adopted all of the federal OSHA guidelines). Given this situation, the overall challenge for Redlands is to design fire services within the fiscal constraints that limit its ability to quickly staff, train and equip a safe and effective fire/medical response force in a community experiencing modest growth.

In brief, Citygate finds that the challenge of providing fire services in the City of Redlands is similar to that found in many California communities: providing an adequate level of fire services within the context of limited fiscal resources, competing needs, growing populations and uncertainty surrounding the exact timing of future development.

OVERALL CITYGATE OPINIONS ON THE STATE OF REDLANDS' FIRE SERVICES

It needs to be stated at the front of this study that Citygate Associates team members who spent time with the Redlands Fire Department found the fire staff at all levels very cooperative and helpful. They are well aware of fire service “best practices” as well as research and efforts to develop more effective ways of delivering quality emergency response services. They are committed to their city, agency, and mission. There is pride and on-going effort to deliver the best customer service with the currently available resources. Fires are being attended to with successful outcomes and medical calls are being answered with excellent patient care.

Overall, the City is protected by a full service, trained and equipped agency meeting most of the community’s needs. However, there are emerging issues of how to meet response coverage needs in some parts of the community. Solving these issues can be planned for over time as funding allows. The field deployment system could be improved to better meet the needs of the City as it grows, but doing so will require more resources than the City has in the short term.

The current headquarters staff is appropriate for the needs of the size of the agency and the services provided. There is no excess to reduce from the Department; it is not at all too expansive for the risks present in Redlands and expected in the near term. If fiscal challenges

require significant budget reductions, any reduction in headquarters personnel will slow service delivery and/or program supervision.

The current headquarters organization consists of:

- ◆ 1 Fire Chief
- ◆ 1 Deputy Fire Chief
 - 3 Battalion Chiefs – one per duty platoon
- ◆ 1 Fire Marshal
 - 1 Asst. Fire Marshal
 - 1 Fire Investigator/Inspector/Cost Recovery
- ◆ 1 Battalion Chief – Emergency Medical Program and Citywide Disaster Preparedness
- ◆ 1 Battalion Chief – Citywide Training and Safety Programs
- ◆ 1 Administrative Analyst
- ◆ 2 Administrative Assistants (clerical support).

These twelve management and line positions support 54 firefighters (18 per day) on six units 24/7/365. The programs that must be managed by the headquarters team (fully explained in Section 3.2) range from fire crew and emergency incident supervision to fire prevention/fire code enforcement, the hazardous materials community clean-up program, paramedic program mandated oversight and City staff disaster preparedness.

Many of the Fire Department's training, safety and fire code regulation programs are now regulated by the Federal and State governments, and if done, must be done to meet these regulations. Some, like the paramedic program, are audited by the EMS oversight agencies and require in-house quality assurance programs in addition to on-going, continuing education. The fire service has become increasingly technical and complex, requiring program managers or specialists who require training and who need to spend considerable time in the training in order to perform adequately and to be competent.

Redlands Fire Department, like many suburban agencies, has its managers supervise several program areas, doing the essential elements of each. While this is cost effective, it also means that the most regulated and audited functions are done first, and then the others receive some attention. As a result, programs like public education and disaster preparedness are never done to the complete degree possibly desired, due to lack of resources. Even citizen volunteer programs still require coordination, budgeting, scheduling, the training/auditing of the volunteers to standards, etc.

Over the years, the City of Redlands and its fire department has shown leadership in developing its fire services using leading techniques to improve the safety of its citizens. Some of these are:

- ◆ Paramedics
 - 1982 - Paramedic Assessment is passed to fund an initial program of 6 personnel for 1 Paramedic Squad (2 personnel on each shift)

-
- 1986 - Station #263 is opened with a paramedic Engine with 6 additional personnel (2 on each shift) funded from the General Fund
 - 2004 - Station #264 is opened
 - ◆ Fire Prevention
 - Typically meets and exceeds turn around times for new construction plan check services
 - Most businesses receive an annual fire inspection
 - Quick response to special requests for fire code services
 - ◆ Residential Automatic Fire Sprinklers
 - The City has for years required automatic fire sprinklers in all buildings larger than 200 square feet in size
 - ◆ Public Education and Disaster Preparedness
 - The Department coordinates City disaster preparedness
 - The Department offers a variety of public education programs
 - ◆ Training and Safety
 - Up-to-date firefighter protective clothing
 - A Training Chief, program and funding for training and safety
 - A trained Battalion Chief as Incident Commander for each duty shift 24/7/365
 - ◆ Apparatus Replacement Fund
 - A program exists to plan and save the funds to replace expensive fire apparatus in a timely manner
 - ◆ Succession Planning
 - The Department leadership has reviewed their likely turnover and started a program of succession planning and education for future officers
 - ◆ Better radio and dispatch systems – regional dispatch center
 - ◆ Open door approach to management and problem solving.

In Citygate's experience, the above list is impressive and exceeds what many suburban fire departments in the state have done, especially the stringent automatic fire sprinkler requirements. However, much of the community's building stock, given its age, does not enjoy fire sprinkler protection, and as such, needs an effective fire department response. Additionally, the Fire Department's programs reflect knowledge of fire service best practices and willingness to research and be willing to try new ideas, such as participation in a JPA to provide regional fire dispatching and the feasibility of a consolidation with Loma Linda.

The Fire Department is also cost recovery aware and already charges for many services as approved by the City Council. In the adopted fiscal year 07/08 budget, the Department expects \$331,100 in fee revenue from programs such as fire code enforcement. The supplemental

Emergency Medical Services Assessment brings in approximately \$1.1M, and the paramedic program also charges a non-resident fee that collects approximately \$12,000. The household hazardous materials waste program generates \$115,000 in revenue. Taken together, this revenue is approximately \$1.533M. While this is a modest 15 percent of the entire Fire Department budget, it is a positive step, in concert with what is allowed under California fee regulations. In some cases, Citygate does not see even this level of cost recovery in other suburban fire departments.

In the context of this performance review, the above leading edge strategies mean that Redlands is already doing what it can and should to cost effectively improve services and control the risk of serious emergencies. The City should be commended for being so proactive in the requirement of automatic fire sprinklers and regional fire dispatching.

MAIN CHALLENGES

The key challenge that confronts Redlands is that providing fire services is a very personnel intensive operation. While some technical advances have been made, such as automatic fire sprinklers and public education, there is not currently a substitute for having firefighters deployed in an appropriate time frame and quantity to control the emergency as desired by the City. The basic choice that all communities have is the level of service. If a better fire or emergency medical outcome is desired, then that system is far more expensive than one that, for example, would only confine a fire to the building or block of origin. Typically, what sets apart the level of effort in rural to suburban to urban fire services is not just different risk but each community's economic ability to pay for a higher level of service.

Citygate evaluated the requested aspects of the Department during the preparation of this study. Throughout this report, Citygate makes observations, key findings and, where appropriate, specific action item recommendations. Starting in Section 4 on page 66, all the findings and recommendations are presented together, in order. Overall, there are 15 key findings and 3 specific action item recommendations.

In this Executive Summary, instead of citing all the findings and recommendations, Citygate will only highlight the most critical ones.

Field Operations Deployment (Fire Stations)

Fire department deployment, simply stated, is about the *speed* and *weight* of the attack. Speed calls for first-due, all risk intervention units (engines, trucks and specialty) strategically located across a department. These units are tasked with controlling everyday average emergencies without the incident escalating to second alarm or greater size, which then unnecessarily depletes the department's resources as multiple requests for service occur. Weight is about multiple-unit response for significant emergencies like a "room and contents structure fire," a multiple-patient incident, a vehicle accident with extrication required, or a complex rescue incident. In these situations, departments must assemble enough firefighters in a reasonable period in order to control the emergency safely, have a reasonable chance of a positive outcome, and keep the emergency from escalating a greater alarm response requiring multiple additional units.

In Section 2 of this study, Standards of Cover (Deployment) Analysis, Citygate's analysis of prior response statistics and use of geographic mapping tools reveals that Redlands has a less

timely first-due unit response time coverage in the northeast and eastern areas of the City. As will be reviewed in depth, this is not a critical issue, but if the City has the funding in the future to improve service in these areas, there are several strategies the City can consider as it plans going forward.

For effective outcomes on serious medical emergencies and to keep serious, but still-emerging fires small, this study and national best practice thinking all conclude that the first-due fire unit should arrive within 7 minutes of the 911-call receipt, 90 percent of the time. For serious fires and rescues, the balance of the multiple units needed (first alarm) should arrive within 11 minutes of the 911-call receipt, 90 percent of the time. In Redlands, with only four fire stations, this recommended goal is just missed. In Redlands, for all fire and medical responses averaged Citywide it actually occurs:

1st Apparatus on scene 7:00 minutes @ 87.7 % of the time

1st Alarm On Scene <= 11:00 @ 76% of the time

In Redlands, the amount by which the goal is missed is very small for the first-due unit measure. In fact, 97 percent of all calls receive a unit within 10 minutes. This is much better than if the calls for service past the desired goal were five, ten, or fifteen minutes past the goal for a large amount of calls. Therefore, even at seven to ten minutes, Redlands is getting a level of service that will provide an acceptable level of outcome in a suburban setting. As the deployment section of this study will explain, the Redlands measure is as good as it is due to many of the calls for service being closer to the existing fire stations.

Currently, Redlands is staffed for one serious fire at a time **or** 2 to 3 medical calls for service. This model has served the community well in the past, but the growing number of daily emergency responses as the community population grows will increasingly strain the ability of the Fire Department to handle more than one serious event and to provide equitable coverage in all of the neighborhoods.

Citygate's **key** deployment findings and recommendations are summarized below. For reference purposes, the findings and recommendation numbers refer to the sequential numbers in the main body of the report. Note that **not all** findings and recommendations that appear in this report are listed in this Executive Summary.

Finding #1: The City has not adopted nor uses an informal fire deployment measure that includes a specific time measure definition specifying the beginning and end time measurement points with a goal statement tied to risks and outcome expectations. The deployment measure should also have a second measurement statement to define multiple-unit response coverage for serious emergencies. Making these deployment goal changes will meet the best practice recommendations of the Commission on Fire Accreditation International and provide the City with a continuing measure of its response effectiveness as the community grows.

Finding #2: As both the maps of the 4-minute travel time measure and Insurance Service Office requirements for a 1.5-mile travel distance coverage display, the core of the City receives adequate first-due unit coverage. This is not possible to all outer edge neighborhoods, where timely response does not meet nationally recommended goals, which could provide a greater likelihood of a positive outcome in the emergency response.

Finding #7: While the further reaches of the coverage areas for fire stations #262 and #263 are too far away to serve quickly, the overall citywide response times are statistically still close to a recommended best practice at 90 percent @ 8 minutes because many more calls are located in the core of the City, close to two stations.

Finding #8: Currently, the number of 2 or more simultaneous incidents at 42 percent is a growing problem and the Department should carefully watch this as calls for service grow with the current number of fire stations. Simultaneous calls for a department staffed at the present Redlands staffing level, mean that there could be inadequate resources to provide a sufficient number of people to effectively respond to two large emergencies such as fires or serious vehicle accidents, especially if the mutual aid system could not immediately respond.

Finding #9: The multiple-unit (first alarm) compliance measures are not meeting a best practices goal across the City due to the lack of a northeast to eastern area fire station, or due to the significant response area overlap spacing of the two central area stations.

Finding #10: Calls for service are principally driven by population. Over the last three years, calls for service have grown, and as population grows, so will the demands on the Fire Department. From Fiscal Year 04/05 thru 06/07, total calls for service have grown 14.2 percent to just over 8,000 per year.

Summarized, Redlands has two fire deployment issues that warrant improvement:

1. There are not enough primary neighborhood fire stations to provide equitable, first-due unit coverage for all emergency types equally in all parts of the City. This is most evident in the northeast and east outer areas of the City.
2. There are not enough firefighters on-duty to handle more than one moderate building fire at a time or 2 to 3 medical calls when fires occur. At least **42** percent of the time at peak workload hours of the day, Redlands has two simultaneous calls for service open, which take 2 engines or an engine and medic squad out of service. Fortunately, for Redlands, the vast majority of calls for service are medical emergencies, which are usually handled in less than one hour. Put this way, two simultaneous medical calls consume 6 firefighters, 33 percent of the total number of firefighters, and 40 percent of the fire attack units.

If funding is available, the City has three choices in changing the deployment of its fire services to meet these two field deployment issues:

1. The City could choose to open a 5th fire station to improve response times in the northeast and eastern sections of the City. This station could be staffed by either:
 - a. Hiring additional staff to operate a 3-person crew engine company, or
 - b. Relocating staff from the two-person medic squad, plus relocating the 4th person on the medic engine, to staff a 3-person engine company at the 5th fire station. This option could require the City to meet and confer with the

Redlands Firefighters, given the minimum-staffing clause in their agreement with the City.

2. On the other hand, the City could keep the unit staffing as is, and relocate one or both Stations #261 and #264 to spread them out to cover more of the northeast and eastern areas, which would reduce overlapping coverage in the higher call volume core area.

Both of these options have strengths and weakness to be further researched and costed out. By relocating existing staffing to a 5th fire station, the outer neighborhood coverage is improved, but the squad is not available to handle simultaneous calls in the core of the City. In addition, this plan does not increase the total number of firefighters on-duty to better handle more than one serious fire emergency at a time. This plan requires the cost of a 5th fire station, assumes a suitable parcel could be identified and acquired and an additional fire engine has to be purchased.

The option of re-locating one or both of the core area stations (#261 and #264) keeps the staffing per unit the same, but the coverage is increased in the northeast and eastern areas by reducing the travel coverage overlap in the central area. If one or both station moves occurred, some simultaneous calls in the core area might receive longer response times. There are more calls for service in this area and not as many in the lighter zoning density outer areas. However, this plan does improve response time coverage into the outer areas. This change also requires one or two new station sites be found and the funds to construct the stations become available.

Citygate feels the staff needs to further explore both options and study how much growth might occur in the eastern areas as well as the age and repair conditions of Stations #261 and #264.

Citygate's near-term recommendations within the scope of this deployment performance review are designed establish a framework within which the City can make a best fit decision on changes to fire service deployment.

Recommendation #1: The City should adopt revised performance measures to direct fire station location planning. The measures should be designed to deliver outcomes that will save patients medically salvageable upon arrival and keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:

1.1 Distribution of Fire Stations for Built-up Suburban Areas: To treat medical patients and control small fires, the first-due unit should arrive within 7 minutes, 90 percent of the time from the receipt of the 911 call. This equates to 1-minute dispatch time, 2 minutes company turnout time and 4 minutes drive time spacing for single stations.

1.2 Multiple-unit Effective Response Force for Built-up Suburban Areas: To confine fires near the room of origin, to stop wildland fires to under 5 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 15 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1-minute dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units.

Recommendation #2: Staff needs to carefully analyze the availability of funds and both the capital and operating costs involved in building and operating a 5th new fire station with existing or additional personnel, versus the costs of re-locating existing Stations #261 and #264.

As discussed earlier in this Executive Summary, there are no mandatory standards regarding the level of fire service. Each community can have the level of service that they choose to afford. As Redlands considers the description, analysis and strategies for improving service levels in this report, Citygate is well aware of the need for the community to consider current availability and priority of funding.

Support Functions

A fire department Redlands' size needs to have a management team that is the proper size and adequately trained and supported. There are increasing regulations to be dealt with in operating fire services, and the proper hiring, training and supervision of line employees requires an equally serious commitment to leadership and general management functions.

Finding #11: In Citygate's experience, we find the headquarters-staffing amount is entirely consistent and appropriate for the needs of a career fire department the size of Redlands. Redlands is providing a full services fire department, and as such, its firefighting, emergency medical and fire prevention programs are complex, regulated by the federal and state governments and should be properly supervised.

Finding #13: EMS is the majority of the Department's emergency workload and creates significant occupational health and safety exposure. In order to deliver high quality medical emergency service and to meet the mandated oversight requirements of the County and State, the Department needs to retain its present training and EMS quality assurance programs.

Finding #14: Citygate finds that the Redlands Fire Department is doing what most contemporary suburban fire departments are doing to cost-effectively deliver fire and paramedic services while controlling risks with education, code enforcement and automatic fire sprinklers. Where other agencies will partner to control costs, such as fire dispatching, Redlands is willing and part of a regional solution. Redlands has shown early leadership in requiring residential automatic fire sprinklers and keeping the City staff up to date on disaster preparedness issues. Redlands demonstrated this leadership again in its study of possible fire services consolidation with the City of Loma Linda.

Given the support programs overview and the findings regarding the leading edge risk management programs that Redlands is already doing, there is really not much else new in the fire service today that Redlands could explore that would offset its risks and costs of suppression and paramedic program oversight. Most of the best practice recommendations that Citygate would usually make are already in place in Redlands.

If more funding were to become available over the years to enhance the "support" services in the Fire Department, Citygate would recommend increasing civilian staffing and program

expenditures in fire prevention and public education to really deliver a large preventative outreach program effort.

MEMORANDUM OF UNDERSTANDING OPERATIONAL REVIEW

Citygate was asked to review the current Memorandum of Understanding between the City and the Redlands Association of Fire Management Employees and between the City and Redlands Professional Firefighters Association, Union Local no. 1354, I.A.F.F. to advise the City whether any changes can be made in the operational provisions of the MOU that might save significant money without a significant reduction in service level to any portion of the City.

Two key overriding facts are that both agreements expire June 30, 2010 and both contain clauses that effectively prevent the City from making unilateral changes in operations that will save staffing costs unless these changes are the result of meeting and conferring. Furthermore, the Firefighter MOU incorporates into the MOU by reference all rules and regulations in effect September 2005 and defines a grievance as an alleged violation of the MOU, with the final outcome of the grievance subject to binding arbitration.

With the above provisions in mind, the following operational provisions in the Firefighter MOU are important:

- ◆ The City is required to maintain a minimum daily staffing of 18 firefighters
- ◆ In meeting the 18 minimum staffing requirement, the City is required to staff squad, engine and ladder companies as follows:
 - 2 on each Squad
 - 3 on each Basic Life Support Engine
 - 4 on each Advanced Life Support Engine
 - 3 on each Ladder Company
- ◆ Two on each Advanced Life Support Engine staff shall be paramedics
- ◆ Each engine or ladder company shall have a minimum of 1 Captain, 1 Engineer, and 1 Firefighter.

Given the provisions in the MOU that clearly spell out the operational staffing standards of the Fire Department, there were only two areas to effectively examine for cost savings in the MOUs: overall staffing levels and daily vacancies creating overtime costs.

Can Staffing Levels be Reduced?

Often there is a focus on reducing or eliminating the minimum manning provisions in order to avoid bringing staff in on overtime in order to fill positions vacant due to vacation, sick leave, injury, etc. However, the present Redlands staffing is not able to handle several large incidents simultaneously, and reducing the number of daily staff would reduce service levels and increase the likelihood that serious medical emergencies would not have a positive outcome and small fires would not be contained to the room of origin.

Finding 15: Both the number of staff and the staff rankings specified in the MOU are reasonable operational standards and varying from them in Redlands would reduce service levels.

The Firefighter MOU does not give the City control over the number of vacancies per day that must be filled by calling back fire staff on overtime. If the City were to require scheduling vacations and compensatory time off to minimize vacancies resulting from this discretionary time off, there might be some reduction in overtime costs. However, a change in the present practice would require the City to meet and confer on the change in rules, regulations and long time practice.

RESIDENT SURVEY REVIEW

As part of this fire department review, the City wanted to conduct a survey of its residents as to their opinions on Redlands fire services. City staff and Citygate designed questions, which were then made available via an Internet-based survey tool, as well as hard copies when requested. The Fire Department mailed out 300 survey invitation cards to residents throughout the City. Additionally, the Department handed out survey invitations at the Household Hazardous Waste collection center on a Saturday.

The survey was available on-line for one month. In all, 53 responses were received or about 18 percent of the total invitations sent out. The complete survey, questions and responses are attached to this report as Appendix 1.

In summary, the survey responses are almost uniformly excellent across all dimensions of service, quality and responsiveness. In the last two years, just over half of the respondents had used services from the Fire Department of one or more types.

Overall, these survey results, in Citygate's experience, are typical of the attitude and experience in most communities. Residents see their firefighters positively, and when the services are used, the clients report very high levels of customer service and satisfaction. Even though this survey sample size is small and not statistically significant, given the zero quantity of poor ratings, Redlands appears to be providing trained employees who are meeting the service needs of their clients.

One section of the survey dealt with the issue of public education programs. This is an area where a department can help its residents to help themselves and lower risks citywide. When asked if they had taken a CPR class, 83 percent said no. Additionally, 64 percent said they would attend a disaster preparedness class. Responses were split as the best time for training – weeknights or Saturday daytime.

As resources allow, the City could follow-up on the apparent willingness to take City-sponsored emergency preparedness classes.

LIKELY PHASING STEPS

While all the recommendations can be worked on in parallel and some will take several fiscal years both in time and funding, Citygate recommends the following short-term priorities:

Phase One

- ◆ Absorb the policy recommendations of this master plan and adopt revised fire department performance measures to drive the future location and timing of fire stations.

Phase Two

- ◆ Review in depth the issues and costs associated with either:
 - Re-distributing existing staff to open a 5th fire station, or
 - Re-locate both Stations #261 and #264 farther apart to increase coverage to the east and northeast sections of the City.

CONCLUDING THOUGHTS

With regard to Redlands's fire services, City residents need to know that they do have a caring, committed, Fire Department. It provides many of the services of a larger agency and has proven its willingness to take on new services, such as paramedics, community disaster preparedness, and regional solutions where appropriate, residential fire sprinklers and household hazardous waste collection.

The Department is increasingly busy, in both field operations and administrative programs. Any significant reductions in personnel or programs will reduce services. The Department can continue to operate its current programs as staffed for a modest period of time while the community grows its revenue ability to make significant service enhancements to staffing or stations locations.

SECTION 1—INTRODUCTION AND BACKGROUND

1.1 *REPORT ORGANIZATION*

This report and future planning document is structured into the following sections that group appropriate information together for the reader.

This Volume (**Volume 1**) includes:

- Section 1 Introduction and Background: Background facts about Redlands' current fire services.
- Section 2 Standards of Response Cover (Deployment) Analysis: An in-depth examination of the Fire Department's deployment ability to meet the community's risks, expectations and emergency needs.
- Section 3 Headquarters Function Review: A review of administrative functions, such as supervision, labor agreement issues and resident perceptions, and a review of the Fire Department's line firefighter employment agreement to look for operational changes that could result in economic savings without a significant reduction in service for the City.
- Section 4 Recommendations Solutions and Phasing Plan: A recommendations and conclusions section.

Separately attached:

Volume 2 Response Coverage Geographic Maps

Volume 3 In-depth Response Statistics Appendix.

As each of the sections mentioned above impart information, this report will cite findings and make recommendations, if appropriate, that relate to each finding. There is a sequential numbering of all of the findings and recommendations throughout the first three sections of this report. To provide a comprehensive summary, a complete ordered listing of all these same findings and recommendations is presented in Section 4. Finally, attention will be brought to the highest priority needs and possible timing of addressing those needs.

This document also provides technical information about how fire services are provided, legally regulated, and how the Redlands Fire Department currently operates. The result is a solid technical foundation upon which to understand the advantages and disadvantages of the choices facing the Redlands leadership and community on how best to provide fire services, and more specifically, at what level of desired outcome and expense.

In the United States, there are no federal or state regulations on what a minimum level of fire services has to be. Each community, through the public policy process, is expected to understand the local fire risks, their ability to pay, and then to choose their level of fire services. **If** fire services are provided at all, the federal and state regulations specify how to do it safely for the personnel involved.

While this report and technical explanation can provide a framework for the discussion of fire services for Redlands, neither this report nor the Citygate consulting team can make the final decisions or cost out in detail every possible alternative. Once choices are given policy approval, staff can conduct any final costing and fiscal analysis.

1.2 BACKGROUND

In this report, the term “Department” will be used when referring to the fire agency itself, and the term “City” will be used when referring to the City of Redlands.

The City commissioned this study to evaluate the current capacity of the Department to respond to emergency fire, rescue, and medical incidents within its area, and review other related operational issues within the context of very limited revenue to support all service needs citywide. In its entirety, this analysis and corresponding findings and recommendations will allow the City Council to make informed policy decisions about the level of fire, rescue, and emergency medical services desired and the best method to deliver and fund them.

The challenges facing the community and City are not unique. Growing communities in California all face the dilemma of how to provide municipal services, while prior to the build-out of an area, there is usually not a high enough growth rate in General Fund revenue sources to build up fire services as fast as the community would prefer.

1.3 REDLANDS PROJECT APPROACH AND RESEARCH METHODS

Citygate used several tools to gather, understand, and model information about the City and Fire Department for this study. We started by making a large document request to the Department to gain background information on costs, current and prior service levels, the history of service level decisions and what other prior studies, if any, had to say.

Citygate team members followed up on this information by conducting focused interviews of fire management team members. We reviewed demographic information about the City and growth projections. As we collected and understood information about the City and Department, Citygate obtained electronic map and response data from which to model current and projected fire services deployment. The goal was to identify the location(s) of stations and company quantities required to serve the City currently and as it develops.

Once Citygate gained an understanding of the Department service area with its fire, rescue, and EMS risks, the Citygate team developed a model of fire services that was tested against the mapping and prior response data to ensure an appropriate fit. This resulted in Citygate being able to propose an approach to fire services in the Department that would also meet reasonable expectations and fiscal abilities of the City.

1.4 REDLANDS FIRE DEPARTMENT BACKGROUND INFORMATION

The City of Redlands has an area of approximately 38 square miles. The 2007 population within the City reached 71,375 residents. This does not take into account the City’s “mobile” population of visitors, employees and travelers in autos on the freeway. The City is adding, over the next few years, a moderate amount of commercial, industrial and institutional projects, which

also will add to the number of visitors. There also are several new residential developments proposed in different areas of the City. Population in general drives the call-for-service workload for fire departments.

1.5 NEWER LEGAL CHANGES AND CHALLENGES TO THE PROVISION OF FIRE SERVICES

In addition to restrictions on local government finance, there have been a number of new state and federal laws, regulations, and court cases that limit the flexibility of cities in determining their staffing levels, training, and methods of operation. These are given an abbreviated overview below:

1. 1999 OSHA Staffing Policies – Federal OSHA applied the confined space safety regulations for work inside tanks and underground spaces to America’s firefighters. This requires in atmospheres that are “IDLH” (Immediately Dangerous to Life and Health) that there be teams of two inside and two outside in constant communication, and with the outside pair equipped and ready to rescue the inside pair. This situation occurs in building fires where the fire and smoke conditions are serious enough to require the wearing of self-contained breathing apparatus (SCBA). This is commonly called the “2-in/2-out” policy. This policy requires that firefighters enter serious building fires in teams of two, while two more firefighters are outside and immediately ready to rescue them should trouble arise.

While under OSHA policy one of the outside “two-out” personnel can also be the incident commander (typically a chief officer) or fire apparatus operator, this person must be fully suited up in protective clothing, have a breathing apparatus donned except for the face piece, meet all physical requirements to enter IDLH atmospheres and thus be ready to immediately help with the rescue of interior firefighters in trouble.

2. May 2001 National Staffing Guidelines – The National Fire Protection Association (NFPA) Standard on Career Fire Service Deployment was issued five years ago. While *advisory* to local governments, as it starts to become locally adopted and used, it develops momentum, forcing adoption by neighboring communities. NFPA 1710 calls for four-person fire company staffing, arriving on one or two apparatus as a “company.” The initial attack company should arrive at the emergency within four minutes travel time, 90 percent of the time, and the total effective response force (first alarm assignment) shall arrive within eight minutes travel time, 90 percent of the time. These guidelines will be explained and compared to Redlands in the deployment measures section of this document.
3. The on-scene Incident Commanders (battalion chiefs) at Hazardous Materials Incidents must have certification compliant with NFPA 472, Standard for Emergency Response to Hazardous Materials Incidents. This is also now an OSHA requirement.

1.6 NEGATIVE PRESSURES ON VOLUNTEER-BASED FIRE SERVICES

While Redlands does not operate a volunteer firefighter system, a common question for many cities is why not provide some of the city's fire staffing with volunteers? To pre-address this question, here is a brief overview of the state of depending on volunteer firefighters.

All volunteer-based fire departments are under great pressure today to maintain an adequate roster. The reasons for this are not unique to any one type of community and are placing pressure on small community volunteer systems across the state and nation, as itemized below:

1. Economic pressures result in more two-income families and less time to volunteer.
2. In a commuter economy, more jobs are clustered in metropolitan and dense suburban areas. Communities like Redlands increasingly have residents who work elsewhere, and many of the younger age people who would consider volunteering are just too busy.
3. Due to the growth in society of complex systems and technology, the fire service was given more missions, like emergency medical services, hazardous materials response, and technical rescue. This dramatically increased the legally mandated training hours for volunteers, causing many to drop out as the time commitments became unbearable.
4. Early in this decade, due to rising firefighter injuries and deaths, especially in the volunteer ranks, more safety regulations and training minimums were placed on all firefighters:

January 2004 California Volunteer Firefighters – New laws (Assembly Bills 2118 and SB 1207) require volunteer firefighters to receive *the same level of training* that the full-time staff receives. AB 2118 was Chaptered in 2002, and was delayed to 2004. In part it “...provides that the California Occupational Safety and Health Act applies to volunteer firefighters. Equipment and training for volunteers to meet the same requirements as regular firefighters.”

This change, coupled with all the other factors, means that volunteer firefighter programs dry up due to lack of members. Additional training and additional responses mean a significant time commitment for “true” volunteers, who are serving for love of community and to give something back. Most departments feel that it takes 100 to 120 hours of training per year to meet safety minimums, and this time is before a volunteer goes on a single emergency call.

In addition, most employers today are unwilling to allow volunteers to leave their jobs to respond to an emergency dispatch. Across the fire service, volunteer programs have been changing and adapting to a different model. The current model understands the commitment needed, and usually includes two types of volunteers: the first is the usual community-based person; the second is a younger person who desires to be a career firefighter. While the younger person is going through community college fire science classes, after obtaining basic firefighter certification, they work “part-time” for shift stipend or for an hourly wage, without benefits. These personnel are used successfully to increase daily station staffing and are called “reserve” firefighters or part-time firefighters. They do not need to live in the community they serve, as they are often not needed to respond from home with quick travel times. Community-based

volunteers can be used from home for major emergencies, within their limited training as they gain certifications and experience. Once they meet state minimums, they also can be used for per diem shifts.

In Citygate's opinion, the needs of a community the size and complexity of Redlands far outweigh what a small volunteer or per diem apprentice firefighter program could solve. While the volunteer program can be an adjunct to a career department, a volunteer force cannot by itself solve the City's staffing needs.

SECTION 2—STANDARDS OF RESPONSE COVER (DEPLOYMENT) ANALYSIS

Section Intent: This section serves as an analysis of the current Redlands Fire Department's ability to deploy and meet the emergency risks presented. During this analysis, the Redlands Fire Department will be compared and contrasted to fire services best practice thinking for a community of Redlands' size. The response analysis will use prior response statistics and geographic mapping to help the City Council and community visualize what the current or a possible response system can and cannot deliver.

2.1 GENERAL FIRE DEPLOYMENT BACKGROUND INFORMATION

The Commission on Fire Accreditation International recommends a systems approach known as "Standards of Response Coverage" to evaluate deployment as part of the self-assessment process of a fire agency. This approach uses risk and community expectations on outcomes to assist elected officials in making informed decisions on fire and EMS deployment levels. Citygate has adopted this methodology as a comprehensive tool to evaluate fire station location. Depending on the needs of the study, the depth of the components can vary.

Such a systems approach to deployment, rather than a one-size-fits-all prescriptive formula, allows for local determination of the level of deployment to meet the risks presented in each community. In this comprehensive approach, each agency can match local need (risks and expectations) with the costs of various levels of service. In an informed public policy debate, a City Council "purchases" the fire, rescue, and EMS service levels (insurance) the community needs and can afford.

While working with multiple components to conduct a deployment analysis is admittedly more work, it yields a much better result than any singular component can. If we only look to travel time, for instance, and not look at the frequency of multiple and overlapping calls, the analysis could miss over-worked companies. If we do not use risk assessment for deployment, and merely base deployment on travel time, a community could under-deploy to incidents.

The Standard of Response Cover process consists of eight parts:

1. Existing Deployment – each agency has something in place today.
2. Community Outcome Expectations – what does the community expect out of the response agency?
3. Community Risk Assessment – what assets are at risk in the community?
4. Critical Task Time Study – how long does it take firefighters to complete tasks to achieve the expected outcomes?
5. Distribution Study – the locating of first-due resources (typically engines).
6. Concentration Study – first alarm assignment or the effective response force.
7. Reliability and Historical Response Effectiveness Studies – using prior response statistics to determine what percent of compliance the existing system delivers.
8. Overall Evaluation – proposed standard of cover statements by risk type.

Fire department deployment, simply stated, is about the *speed* and *weight* of the attack. Speed calls for first-due, all risk intervention units (engines, trucks and ambulance companies) strategically located across a department. These units are tasked with controlling everyday average emergencies without the incident escalating to second alarm or greater size, which then unnecessarily depletes the department resources as multiple requests for service occur. Weight is about multiple-unit response for significant emergencies like a room and contents structure fire, a multiple-patient incident, a vehicle accident with extrication required, or a heavy rescue incident. In these situations, departments must assemble enough firefighters in a reasonable period in order to control the emergency safely without it escalating to greater alarms.

Thus, small fires and medical emergencies require a single- or two-unit response (engine and ambulance) with a quick response time. Larger incidents require more companies. In either case, if the companies arrive too late or the total personnel sent to the emergency are too few for the emergency type, they are drawn into a losing and more dangerous battle. The art of fire company deployment is to spread companies out across a community for quick response to keep emergencies small with positive outcomes, without spreading the stations so far apart that they cannot amass together quickly enough to be effective in major emergencies.

Given the need for companies to be stationed throughout a community for prompt response instead of all companies responding from a central fire station, communities such as Redlands are faced with neighborhood equity of response issues. When one or more areas grow beyond the reasonable travel distance of the nearest fire station, the choices available to the elected officials are limited: add more neighborhood fire stations, or understand that certain segments of the community will have longer response times, even if the type of fire risk found is the same as other areas.

For the purposes of this fire services study, Citygate used all eight components of the Standards of Response Cover process (at varying levels of detail) to understand the risks in Redlands, how the Redlands Fire Department is staffed and deployed today, and then modeled those parameters using geographic mapping and response statistical analysis tools. The models were then compared to the proposed growth in Redlands so that the study can recommend changes, if any, in fire services to the Department's service area.

Thus, Citygate tailored the deployment recommendations in this report to Redlands' unique needs, and did not use one-size-fits-all national recommendations.

The next few subsections in this section will cover the Redlands-area factors and make findings about each component of the deployment system. From these findings of fact about the Redlands area fire deployment system, the study is then able to make deployment change recommendations.

2.2 REDLANDS COMMUNITY OUTCOME EXPECTATIONS – WHAT IS EXPECTED OF THE FIRE DEPARTMENT?

The next step in the Standards of Response Cover process is to review existing fire and emergency medical outcome expectations. This can be restated as follows: for what purpose does the current response system exist? Has the governing body adopted any response time performance measures? If so, the time measures used by the City need to be understood and good data collected.

Residents in most communities, if asked, would probably expect that fires be confined to the room or nearby area of fire origin, and those medical patients salvageable upon arrival have their injuries stabilized and be transported to the appropriate care location. Thus, the challenge faced by any Department is to maintain an equitable level of fire service deployment across the entire City area without adding significantly more resources as demand for services grows and traffic congestion increases, slowing response times.

The Insurance Services Office (ISO) Fire Department Grading Schedule would like to see fire stations spaced 1.5 miles apart, which, given travel speeds on surface streets, is a 3- to 4-minute travel time. The newer National Fire Protection Association (NFPA) guideline 1710 on fire services deployment suggests a 4-minute travel time for the initial fire apparatus response and 8 minutes travel time maximum for the follow-on units.

More importantly, within the Standards of Response Coverage process, positive outcomes are the goal, and from that company size and response time can be calculated to allow efficient fire station spacing. Emergency medical incidents have situations with the most severe time constraints. In a heart attack that stops the heart, a trauma that causes severe blood loss, or in a respiratory emergency, the brain can only live 8 to 10 minutes maximum without oxygen. Not only heart attacks, but also other events can cause oxygen deprivation to the brain. Heart attacks make up a small percentage; drowning, choking, trauma constrictions, or other similar events have the same effect on the brain and the same time constraints. In a building fire, a small incipient fire can grow to involve the entire room in a 4- to 5-minute time frame. The point in time where the entire room becomes involved in fire is called “flashover” when everything is burning, life is no longer possible, and the fire will shortly leave the room of origin.

If fire service response is to achieve positive outcomes in severe EMS situations and incipient fire situations, *all* the companies must arrive, size up the situation and deploy effective measures before brain death occurs or the fire leaves the room of origin.

Given that the emergency started before or as it was noticed and continues to escalate through the steps of calling 911, dispatch notification of the companies, their response and equipment set-up once on scene, there are three “clocks” that fire and emergency medical companies must work against to achieve successful outcomes:

1. The time it takes an incipient room fire to fully engulf a room is 4 to 5 minutes, thus substantially damaging the building and most probably injuring or killing occupants.
2. When the heart stops in a heart attack, the brain starts to die from lack of oxygen in 4 to 6 minutes and brain damage becomes irreversible at about the 10-minute point.
3. In a trauma patient, severe blood loss and organ damage becomes so great after the first hour that survival is difficult if not impossible. The goal of trauma medicine is to stabilize the patient in the field and get them to the trauma surgeon inside of one hour.

Somewhat coincidentally, in all three situations above, the first responder emergency company must arrive on-scene within 5 to 7 minutes of the 911-phone call to have a chance at a successful resolution. Further, the follow-on (additional) companies for serious emergencies must arrive within the 8- to 11-minute point. These response times need to include the time steps for the

dispatcher to process the caller’s information, alert the stations needed, the companies to then don OSHA mandated safety clothing and drive to the emergency. The sum of these three time steps – dispatch, company turnout and drive time – comprises “total reflex,” or response time. Thus, to get the first firefighters on-scene within only 5 to 7 minutes of the 911 call being answered is very challenging to all parts of the system, as this study will describe later in detail.

The three event timelines above start with the emergency happening. It is important to note the fire or medical emergency continues to deteriorate from the time of inception, not the time the fire engine actually starts to drive the response route. It is hoped that the emergency is noticed immediately and the 911 system is activated. This step of awareness – calling 911 and giving the dispatcher accurate information – takes, in the best of circumstances, 1 minute. Then company notification and travel take additional minutes. Once arrived, the company must walk to the patient or emergency, size up the problem and deploy their skills and tools. Even in easy to access situations, this step can take 2 or more minutes. It is considerably longer up long driveways, apartment buildings with limited access, multi-storied office complexes or shopping center buildings such as those found in parts of the City.

The City of Redlands does not have a City Council adopted policy on fire or emergency medical services deployment. The General Plan contains in the Safety Element non-specific language about being a fire safe community and hazards prevention, but none of these goals are specific and measurable. As such, the current City Council does not have an adopted specific and measurable fire and emergency medical services policy that would guide decisions on the levels of fire service deployment.

Current best practice nationally is to construct outcome-based fire service deployment goals using a percent of desired measure completion (i.e., 90 percent of responses) instead of an average measure. This is because the measure of average just identifies the central or middle point of response time performance for all calls for service in the data set. From an average statement, it is impossible to know how many incidents had response times that were considerably over the average or just over. For example, if a department had an average response time of 5 minutes for 5,000 calls for service, it cannot be determined how many calls past the average point of 5 minutes were answered slightly past the 5th minute in the 6th minute or way beyond at 10 minutes. This is a significant issue if hundreds or thousands of calls are answered much beyond the average point.

Finding #1: The City has not adopted nor uses an informal fire deployment measure that includes a specific time measure definition specifying the beginning and end time measurement points with a goal statement tied to risks and outcome expectations. The deployment measure should also have a second measurement statement to define multiple-unit response coverage for serious emergencies. Making these deployment goal changes will meet the best practice recommendations of the Commission on Fire Accreditation International and provide the City with a continuing measure of its response effectiveness as the community grows.

Absent an adopted city goal, a good beginning reference goal of a 4-minute travel (drive) time is consistent with the recommendations for good outcomes for urban-suburban settings in NFPA 1710 and many Standards of Response Cover studies. Additionally, a well constructed goal will also include the time it takes to process a 911 request in the dispatch center and how long it takes for the fire crew to hear the dispatch, don the required safety equipment and then to get the apparatus moving.

Thus, from the time of 911 *receiving the call*, an effective deployment system is *beginning* to manage the problem within 7 to 8 minutes total reflex time. This is right at the point that brain death is becoming irreversible and the fire has grown to the point to leave the room of origin and become very serious. Therefore, a 7-minute from the time of 911 answer *first-due unit* response goal is within the time range to give the situation hope for a positive outcome, if the goal is designed to include 90 percent of the built-up geography of the City. Yes, sometimes the emergency is too severe even before the Fire Department is called in for the responding company to reverse the outcome; however, given an appropriate response time policy and if the system is well designed, then only issues like bad weather, poor traffic conditions or a significant number of multiple emergencies will slow the response system. Consequently, a properly designed system will give the citizens hope of a positive outcome for their tax dollar expenditure.

2.3 REDLANDS FIRE DEPARTMENT COMMUNITY RISK ASSESSMENT

The City mostly contains a mix of single- and multi-family dwellings, small and larger businesses, and retailers. There is also some light manufacturing. Both newcomers to the community, as well as long-term residents, may not realize the community assets that are at risk today in such a vibrant and diverse community. The Redlands Fire Department is charged with responding to a variety of emergencies, from fires to medical calls to special hazards and cargo transportation emergencies. Here is a partial inventory of the types of risk demographics in addition to the visible homes and business buildings:

- ◆ Some hazardous materials storage, use, and release, including industrial and transportation on the highways;
- ◆ The potential for some additional growth in low-rise buildings in the commercial and industrial zones as well as several types of housing across the City;
- ◆ A modestly sized municipal airport;
- ◆ Wildland fire threats on the outskirts of the City.

The significance of the above information is that Redlands Fire Department must be staffed, equipped and trained to deal with (at least through the first alarm level prior to automatic or mutual aid) most any type of emergency faced by a United States fire department. True, the City does not have multiple, very tall high-rise buildings, an international airport, a port or an oil refinery, but that is about all the Department does not experience in its calls for service.

Building Fire Loss History for the Prior Three Years

	FY 2004/05	05/06	06/07
# of Fires	78 fires	58 fires	75 fires
Amount of Loss	\$3,019,575	\$1,705,255	\$3,082,440

These fire loss figures are subjective fire personnel estimates, not final insurance industry payments. According to the Redlands Finance Department, the assessed valuation of the City in 2007 was \$6,350,304,704. By comparison, even if the above fire loss figures were doubled due to final insurance payments, this level of fire loss, as a percentage of assessed valuation, is modest. Most recent building fires in Redlands have started small and allowed the available on-duty force to catch them. The reasons for this can range from the impact of the City’s strict automatic fire sprinkler requirement to the fire being still small upon being reported, to the fire having occurred close to a fire station or in a newer building built to improved codes. Redlands is to be commended on requiring fire sprinklers in new construction as this will save lives. However, much of the community’s building stock, given its age, does not enjoy fire sprinkler protection, and as such, needs an effective fire department response.

In order to understand the importance of response time in achieving satisfactory outcomes, the deployment of resources must be based upon assessment of the values at risk. There are actually many different *types* of values at risk depending upon the nature of the emergency. At a very basic level, a fire in a structure is among the most frequent event with a measurable outcome. A *single* patient medical emergency is a different event, and while it is the most frequent, it is normally not as threatening to life and property as the structure fire since the structure fire can spread and eventually become a conflagration.

From a hazard, risk and value perspective, the number of structural fires is usually linked to the distribution and concentration of different building types in the community. As is expected in an urban-suburban area, communities have a very specific growth and development pattern consistent with past decisions on land use. As would be anticipated, there are pockets of various densities of housing stock ranging from low-cost, high-density housing to high-cost, medium-density neighborhoods. There is widespread distribution of neighborhood retail and commercial facilities. Along the main transit routes are typical commercial, mixed and public uses. Then, of course, there are clusters of high concentration of values that exist in the traditional “downtown” area. These are the locations of many job providers and sales tax businesses.

Citygate reviewed the Department’s response performance information, its operational plans, community zoning, interviewed Fire Department members and drove through some of the community. As is expected in a California community, much of the City consists of low- and medium-density residential housing. There are some pockets of higher density residential housing and newer commercial development. Retail/commercial/industrial development zones of course, complement housing areas.

2.3.1 Building Fire Risk

In a Standards of Response Coverage study, building fire risk can best be understood by looking at types of zoning and the quantity of different zoning types in a community.

In addition to the various types of zoning that the City is already familiar with, as an additional risk assessment step, Citygate and the Department asked the national Insurance Services Organization (ISO) to provide its data on the City of Redlands. The ISO evaluates fire departments for the insurance underwriting industry. One of their methods is to send an evaluation engineer to assess significant buildings in a community to determine their risk of serious fire. The ISO assessed over 1,020 buildings in all. There are 408 buildings where the calculated required fire flow is 2,000 gallons per minute or greater if the building was heavily involved in fire. There are 56 buildings with a fire flow calculation of more than 4,000 gallons per minute. Even 2,000 gallons per minute is a significant amount of firefighting water to deploy, and a major fire at any one of these buildings would outstrip the on-duty Redlands fire staffing. Using the generally accepted figure of fifty gallons per minute per firefighter on large building fires, a fire in a building requiring 2,000 gallons per minute would require 40 firefighters, more than *double* the on-duty staffing of the Redlands Fire Department.

In Volume 2 of this report, the mapping appendix, Map #4 displays the location of the larger ISO rated fire flow buildings in the City. Most are concentrated in commercial zoning areas along primary streets. As the later mapping evaluation of fire company coverage will discuss, these buildings are where the community needs an effective multiple-unit force to come together in a timely manner to combat serious fires.

An effective response force is the deployment of multiple units (pumpers, ladder trucks and incident commander) so they can arrive close enough together to combat serious *building* fires and keep them to less than greater alarm, mutual aid size. This refers back to the earlier points in this report on speed and weight of attack. The massing of units in a timely manner (weight) must be such that serious fires do not typically become larger. Since Redlands zoning has placed these buildings throughout the City, this places additional pressure to have a multiple-unit effective response force of pumpers and, also importantly, ladder trucks throughout much of the City.

2.3.2 Special Hazard Risks

Redlands has some businesses that use or resell hazardous materials. Examples are gasoline stations and dry cleaners. These businesses are highly regulated by the building, fire and environmental codes. The County handles the enforcement of advanced hazardous materials state regulations. City of Redlands Fire Prevention staff handles hazardous materials regulations as found in the adopted fire code of the City. The Redlands Fire Department participates in a regional, multi-fire department Hazardous Materials Response Team.

2.3.3 Wildland Fire Risk

Redlands has pockets of grass, brush and trees in between developed areas and on the outskirts of the City in the hills. Because of the climate, the threat of wildfire in Redlands is quite high. To combat this risk, the Redlands Fire Department works closely with its mutual aid partner fire departments while training and equipping the firefighters for wildland firefighting in Southern California conditions. Redlands benefits from the yearly contract with Cal-Fire, which provides for aircraft, dozers, and hand crews in the event of a wildfire within the Contract area.

2.3.4 Desired Outcomes

Once policy makers choose outcomes, then the response system can be designed with staffing and station locations to accomplish the desired outcomes. An outcome example is as follows: “confine a residential fire to the room of origin.” That outcome requires a more aggressive response time and staffing plan than “confine the fire to the building of origin, to keep it from spreading to adjoining structures.”

2.4 STAFFING – WHAT MUST BE DONE OVER WHAT TIMEFRAME TO ACHIEVE THE STATED OUTCOME EXPECTATION?

The next step in the Standards of Response Cover process is to take the risk information above and review what the firefighting staffing is, and what it is capable of, over what timeframe.

Fires and complex medical emergencies require a timely, coordinated effort in order to stop the escalation of the emergency. Once the tasks and time to accomplish them to deliver a desired outcome are set, travel time and thus station spacing can be calculated to deliver the requisite number of firefighters over an appropriate timeframe.

2.4.1 Offensive vs. Defensive Strategies in Structure Fires Based on Risk Presented

Most fire departments use a strategy that places emphasis upon the distinction between offensive or defensive methods. These strategies can be summarized:

It is important to have an understanding of the duties required at a structural fire to meet the strategic goals and tactical objectives of the Fire Department response. Firefighting operations fall in one of two strategies – **offensive** or **defensive**.

We may risk our lives a lot to protect savable lives.

We may risk our lives a little to protect savable property.

We will not risk our lives at all to save what is already lost.

Considering the level of risk, the Incident Commander will choose the proper strategy to be used at the fire scene. The Incident Commander must take into consideration the available resources (including firefighters) when determining the appropriate strategy to address any incident. The strategy can also change with conditions or because certain benchmarks are achieved or not achieved. For example, an important benchmark is “all clear,” which means that all savable persons have been removed from danger or placed in a safe refuge area.

Once it has been determined that the structure is safe to enter, an **offensive** fire attack is centered on life safety. When it is safe to do so, departments will initiate offensive operations at the scene of a structure fire. Initial attack efforts will be directed at supporting a primary search – the first attack line will go between the victims and the fire to protect avenues of rescue and escape.

The decision to operate in a **defensive** strategy indicates that the offensive attack strategy, or the potential for one, has been abandoned for reasons of personnel safety, and the involved structure has been conceded as lost (the Incident Commander makes a conscious decision to write the structure off). The

announcement of a change to a defensive strategy means all personnel will withdraw from the structure and maintain a safe distance from the building. Officers will account for their crews. Interior lines will be withdrawn and repositioned. Exposed properties will be identified and protected.

For safety, Federal and State Occupational Health and Safety Regulations (OSHA) mandate that firefighters cannot enter a burning structure past the incipient or small fire stage, without doing so in teams of 2, one team inside and one team outside, ready to rescue them. This totals a minimum of 4 firefighters on the fireground to initiate an interior attack. The only exception is when there is a known life inside to be rescued. This reason, along with the fact that a 4-person company can perform more work simultaneously than a three-person company, is why NFPA Deployment Standard 1710 for career fire departments recommends four-person company staffing on engines (pumpers) as well as on ladder trucks.

Many fire department deployment studies using the Standards of Response Coverage process, as well as NFPA guidelines, arrive at the same fact – that an average (typically defined by the NFPA as a modest single-family dwelling) risk structure fire needs a minimum of 14 to 15 firefighters, plus one on-scene incident commander. The NFPA recommendation is that the first unit should arrive on-scene within 6 minutes of call receipt (1-minute dispatch, 1-minute company turnout, and 4-minute travel), 90 percent of the time. The balance of the units should arrive within 10 minutes of call receipt (8-minute travel), 90 percent of the time, if they hope to keep the fire from substantially destroying the building. (The NFPA recommendation of 1-minute dispatch time is generally attainable; the 1-minute company turnout time is generally unattainable considering the time it takes fire fighters to don the required full personal protective equipment.)

For an extreme example, to confine a fire to one room in a multi-story building requires many more firefighters than in a single-story family home in a suburban zone. The amount of staffing needed can be derived from the desired outcome and risk class. If the community desires to confine a one-room fire in a residence to the room or area of origin, that effort will require a minimum of 14 personnel plus incident commander. This number of firefighters is the minimum needed to safely conduct the *simultaneous* operations of rescue, fire attack, and ventilation plus providing for firefighter accountability and incident command *in a modest, one fire hose line house fire*. A significant fire in a two-story residential building or a one-story commercial or multi-story building would require, at a minimum, an additional two to three engines and an additional truck and chief officer, for upwards of 12 plus additional personnel. As the required fire flow water gallonage increases, concurrently the required number of firefighters increases. Simultaneously, the travel distance for additional personnel increases creating an exponential impact on the fire problem. A typical auto accident requiring multiple-patient extrication or other specialty rescue incidents will require a minimum of 10 firefighters plus the chief for accountability and control.

2.4.2 Staffing in the Redlands Fire Department

Below is the typical minimum unit and staffing assignment on emergencies in the Redlands Fire Department currently:

Units and Staffing Daily Plan

Per Unit		Extended
3 Engines @	3 Firefighters/day	9
1 Medic Engine	4 Firefighters and or paramedics	4
1 Ladder truck/Quint @	3 Firefighters/day	3
1 Medic Squad	2 Firefighter/paramedics	2
Subtotal <i>firefighters</i> :		<u>18</u>
1 Battalion Chief @	1 Per day for command	1
<i>Total 24/hr Personnel:</i>		<u>19</u>

2.4.3 Staffing Discussion

If the City provides fire services at all, safety of the public and firefighters must be the first consideration. Additionally, the chief officers, as on-scene incident commanders, must be well trained and competent, since they are liable for mistakes that violate the law. An under-staffed, under-led token force will not only be unable to stop a fire, it also opens the City up for real liability should the Fire Department fail.

As stated earlier in this section, national norms indicate that 15 or so firefighters, including an incident commander, are needed at significant building fires if the expected outcome is to contain the fire to the room of origin and to be able to simultaneously and safely perform critical tasks. The reason for this is that the clock is still running on the problem after arrival, and too few firefighters on-scene will mean the fire can still grow faster than the efforts to contain it. Chief officers also need to arrive at the scene in a timely manner in order to intervene and provide the necessary leadership to the organization.

The City operates with enough firefighters per day to field one alarm (team) of firefighters to building fires. However, this count assumes all the personnel are available and can be committed to serious building fires. Given the low occurrence of building fires in the City and the strong mutual aid unit support from the County and the neighboring cities, Redlands can typically field enough firefighters at a serious fire, but doing so during periods of medical emergency calls means the City really cannot itself field a force to two major events at once.

2.4.4 Company Critical Task Time Measures

In order to understand the time it takes to complete all the needed tasks on a residential moderate to high-risk fire and a modest emergency medical rescue, fire departments can conduct timed trials using their standard operating procedures to demonstrate how much time the entire operations take. The following tables (*averaged from several agencies similar in size to Redlands Fire Department*) start with the time of fire company notification and finish with the outcome achieved. There are several important themes contained in these tables:

1. These results were obtained under best conditions, in that the day was sunny and moderate in temperature.
2. It is noticeable how much time it takes after arrival or after the event is ordered by command to actually accomplish key tasks to arrive at the actual outcome. This is

because it requires firefighters to carry out the ordered tasks. The fewer the firefighters, the longer some task completion times will be. *Critical steps* are highlighted in **grey** in the table.

3. The time for task completion is usually a function of how many personnel are *simultaneously* available so that firefighters can complete some tasks simultaneously.
4. Some tasks have to be assigned to a minimum of two firefighters to comply with safety regulations. An example is two firefighters would be required for searching a smoke filled room for a victim.

The following tables of unit and individual duties are required at a first alarm fire scene in a moderate risk building. This set of needed duties is entirely consistent with the usual and customary findings of other agencies using the Standards of Response Cover process and that found in NFPA 1710.

The scenario represents a two-story, single-family dwelling fire with difficult access into the rear of the structure on the first floor. Heavy smoke conditions existed on the first and second floors. Fire was on the second floor, with approximately 1000 square feet of involvement. No conditions existed to override the OSHA 2-in/2-out safety policy.

Moderate Risk Structure Fire 3-Engines, 1-Truck, 1-Chief - 14 personnel
First-Due Engine Company <ol style="list-style-type: none"> 1. Stretch a 200-foot 1-3/4 inch pre-connect hoseline to the point of access for the residence. 2. Operate the pump to supply water and hook-up a five-inch hydrant supply line. 3. Assume command of initial operations.
Second-Due Engine Company <ol style="list-style-type: none"> 1. If necessary, lay in a hydrant supply line to the first company. 2. Stretch a second hose line for exposures or safety-line function. 3. Fill out initial rescue team (IRIT), so interior attack can start. 4. Conduct primary search.
Truck Company <ol style="list-style-type: none"> 1. Using tools and methods provide vertical or positive pressure ventilation.
Third-Due Engine Company <ol style="list-style-type: none"> 1. Staff functions not already underway and/or provide a full rapid intervention company to rescue firefighters. 2. Secure utilities. 3. Escape ladder.

Shown below are the critical tasks for the structure fire.

Critical Tasks – Structure Fires

Task Description	Running Clock Time	Elapsed from Time of Call
Time of Call		00:00
Dispatch		01:00
Company Turnout		01:44
Travel to on Scene		03:57
Response time subtotal		06:41
1st engine, lays water supply	00:45	
Report on conditions	01:01	
2nd engine, BC on scene	01:03	
3rd engine on scene	01:41	
Water supply to 1 st engine	01:45	
Truck on scene	02:01	08:42
Size up in “Attack mode”	02:10	
BC takes command	02:10	
Utilities secured	03:19	
Pre-connect line to door	03:50	
Back up line to door	05:11	
Command requests 2 nd alarm	05:14	
Truck personnel on roof	08:01	
Rapid Intervention Company	08:51	
Ventilation	09:49	16:30
Secondary ladder to roof	10:15	
Accountability Report	11:35	
Water on Fire	12:23	19:04
Personnel off roof	12:26	
Primary search complete	13:00	19:41
Fire knock-down	17:26	24:07
Secondary Search complete	24:40	31:21

The above duties grouped together to form an *effective response force or first alarm assignment*. Remember that the above discrete tasks must be performed simultaneously and effectively to achieve the desired outcome. Just arriving on-scene does not stop the escalation of the emergency. Firefighters accomplishing the above tasks do, but as they are being performed, the clock is still running, and has been since the emergency first started.

Fire spread in a structure can double in size during its free burn period. Many studies have shown that a small fire can spread to engulf the entire room in less than 4 to 5 minutes after open burning has started. Once the room is completely superheated and involved in fire (known as flashover) then the fire will spread quickly throughout the structure and into the attic and walls. For this reason, it is imperative that fire attack and search commence before the flashover point occurs, if the outcome goal is to keep the fire damage in or near, the room of origin. In addition, flashover presents a serious danger to both firefighters and any occupants of the building.

Here again is the Redlands daily staffing plan:

Units and Staffing Daily Plan

Per Unit		Extended
3 Engines @	3 Firefighters/day	9
1 Medic Engine	4 Firefighters and or paramedics	4
1 Ladder truck/Quint @	3 Firefighters/day	3
1 Medic Squad	2 Firefighter/paramedics	2
Subtotal <i>firefighters</i> :		<u>18</u>
1 Battalion Chief @	1 Per day for command	1
<i>Total 24/hr Personnel:</i>		<u>19</u>

Fire Department policy in Redlands is to commit all 19 firefighting and command personnel to one building fire, in order to most aggressively combat the fire to keep it small, while providing for resident and firefighter safety. Thus, during building fires, Redlands must rely on mutual aid units requested by the City to provide any additional coverage of emergencies, if they are available.

What this means is that Redlands currently is only fielding the capacity for one serious incident at a time. Multiple fires or a singular large fire will quickly exhaust the City’s resources and draw aid from across the area.

For comparison purposes, the critical task table below reviews the tasks needed on a typical auto accident rescue call that requires multiple units using 10 firefighters total: (*continued on following page*)

Critical Tasks – Auto Incident – 2 Vehicles, 2 Patients

Task Description	Running Clock Time	Elapsed from Time of Call
Time of Call		00:00
Dispatch		01:00
Company Turnout		01:44
Travel to on Scene		03:57
Response time subtotal		06:41
E-1 on scene		

Task Description	Running Clock Time	Elapsed from Time of Call
Size up	00:15	
Extend bumper line	00:56	
E-2 and Ambulance on scene	01:03	07:44
Disable vehicle, E-1	01:22	
Pt. Triage/C spine, E-1	01:25	08:06
Truck 1 on scene	02:01	08:42
Size up	03:28	
Secure battery	04:03	
Prepare for extrication, T-1	04:03	
Assist other pt's, E-2	04:03	10:44
Stabilize vehicle, T-1	05:35	
Remove door, T-1	06:43	
Package pt. #1	09:24	16:05
Establish IV pt. #1	11:28	18:09
Roll roof, T-1	11:39	
Load pt. #1 into ambulance	12:56	19:37
Package pt. #2	15:58	22:39
Load pt. #2 into ambulance	16:30	23:11
Establish IV pt. #2	18:08	
Truck-Clean up, available	20:53	27:34
E-2 Clean up, available	21:00	27:41
Continue care, transport to QVH	26:00	
Transfer care to QVH	29:00	
Paperwork at QVH	44:00	
Total call time		50:41

Thus, the table above shows that while the patients needing care were taken care of in an appropriate time frame, 3 of 6 Redlands Fire Units could be required, which means that more than 50 percent of the on-duty force was committed for almost 30 minutes. If one of the firefighter paramedics were needed to also go with the patients to the hospital, this person was not ready for another call for almost an hour.

Shown below are the typical tasks and time to complete with a single patient in full cardiac arrest, 3 firefighters on scene.

Critical Tasks – Single Patient in Full Cardiac Arrest – In a Home

Task Description	Running Clock Time	Elapsed from Time of Call
Time of Call		00:00
Dispatch		01:00
Company Turnout		01:00
Travel to on Scene		03:30
Response time subtotal		05:30
Personnel/equip to house	01:00	06:30
Assess ABC	01:03	
Reposition patient	01:03	
BLS airway	01:30	
CPR	01:35	07:05
Defibrillate	02:38	08:08
Equipment set up	02:50	
Defibrillate	03:41	
Secure ALS airway	04:30	10:00
IV access	05:01	
Defibrillate	05:35	
Medication IV	05:44	12:14
Defibrillate	06:33	
Medication IV	07:11	
Defibrillate	07:40	
Package patient for transport	09:15	
Load to ambulance	11:05	16:35
Continue care, transport to hospital	16:05	22:35
Transfer care to hospital	19:05	24:35
Paperwork at hospital	39:05	44:35
Total time of call		44:35

In this cardiac arrest example, while only one engine company crew was needed along with one ambulance crew, since the firefighter/paramedic also had to go with the patient to the hospital, the engine was committed and thus unavailable for another call for 45 minutes.

2.4.5 Critical Task Measures Evaluation

What does a deployment study derive from a response time and company task time analysis? The total completion times above to stop the escalation of the emergency have to be compared to outcomes. We know from nationally published fire service “time vs. temperature” tables that after about 4 to 8 minutes of free burning a room fire will grow to the point of flashover where the entire room is engulfed, the structure becomes threatened and human survival near or in the fire room becomes impossible. We know that brain death begins to occur within 4 to 6 minutes of the heart having stopped. Thus, the effective response force must arrive in time to stop these catastrophic events from occurring.

The response and task completion times discussed above show that the citizens of Redlands are able to expect good outcomes and have a better than not chance of survival in a *modest* fire or medical emergency, when the closest responding units are available in 7 minutes or less from the time of receiving the 911 phone call.

The point of the tables above is that mitigating an emergency event is a team effort once the units have arrived. This refers back to the “weight” of response analogy. If too few personnel arrive too slowly, then the emergency will get worse, not better. Control of the structure fire incident still took 25 minutes after the time of receipt of the 911 calls being received. The outcome times, of course, will be longer, with less desirable results, if the arriving force is later or smaller.

In EMS trauma incidents, the patient is initially being assessed within 8 minutes total reflex time and is able to be transported within 19 minutes. These times are good for trauma patients, when all the needed units can arrive by minute 7, which is not always possible at the outer perimeter areas of the Department, or when multiple calls for service occur.

However, each of these incidents, while only being moderate in size, required 3 to 19 personnel, or 100 percent of the entire on-duty force for a modest structure fire. Due to limited staffing, even modest house fires frequently need a 2nd alarm comprised of mutual and/or automatic aid units (if available) to complete the needed functions at the fire.

Fires and complex medical incidents require that the other needed units arrive in time to complete an effective intervention. Time is one factor that comes from *proper station placement*. Good performance also comes from *adequate staffing*. On the fire and rescue events described above, the Redlands Fire Department can do a good job, in terms of time, on modest fires and routine medical calls. This is typical of departments that staff 3-person companies for average, routine emergencies. However, serious fires and medical emergencies where the closest unit is not available to respond will challenge the Redlands Fire Department response system to deliver good outcomes. This factor **must** be taken into account when we look at fire station locations.

Previous critical task studies conducted by Citygate, the Standard of Response Cover documents reviewed from accredited fire departments, and NFPA recommendations all arrive at the need for 15+ firefighters arriving within 11 minutes (from the time of call) at a room and contents structure fire to be able to *simultaneously and effectively* perform the tasks of rescue, fire attack and ventilation.

If fewer firefighters arrive, what from the list of tasks mentioned would not be done? Most likely, the search team will be delayed as will ventilation. The attack lines only have two firefighters, which does not allow for rapid movement above the first floor deployment. Rescue

is done with only two-person teams; thus, when rescue is essential; other tasks are not done in a simultaneous, timely manner. Remember what this report stated in the beginning: effective deployment is about the **speed** (*travel time*) and the **weight** (*firefighters*) of the attack.

Yes, 19 initial (Engines, Truck, Squad & Chief) firefighters (not including command/safety) can handle a low to moderate risk house fire (especially on the first floor), but only if they do *not* need, at the same time, to perform rescue, fire attack and ventilation. An effective response force of even 18 will be seriously slowed if the fire is in a low-rise apartment building or commercial / industrial building.

Thus, today, the Redlands Fire Department has *just* enough on-duty personnel to handle a low to moderate one- to two-room building fire in a single-story building or a few medical incidents occurring at the same time. The Department would be seriously challenged to handle two working building or vegetation fires at the same time it was handling more than one EMS incident. The existing staffing, equipment capabilities and training have adequately served the community where the fire stations were properly spaced, as will be discussed in the mapping section. When the on-duty staffing is stretched thin, the Department can bring in automatic or mutual aid equipment, but from a distance and under the assumption that the aiding department is not already busy. The City does have a very effective working relationship with neighboring fire departments. These units do respond to assist with City calls, if they are available. However, they also have areas for which they are responsible.

2.5 CURRENT STATION LOCATION CONFIGURATIONS

The City of Redlands is served today by four fire stations. As part of this fire services study, it is appropriate to understand what the existing and proposed stations do and do not cover, and if there are any coverage gaps needing one or more stations, what, if anything, to do about them as the City continues to evolve. In brief, there are two geographic perspectives to fire station deployment:

- ◆ Distribution – the spreading out or spacing of first-due fire units to stop routine emergencies.
- ◆ Concentration – the clustering of fire stations close enough together so that building fires can receive enough resources from multiple fire stations quickly enough. This is known as the Effective Response Force or commonly the “first alarm assignment” – the collection of a sufficient number of firefighters on-scene, delivered within the concentration time goal to stop the escalation of the problem.

To analyze first-due and first alarm fire unit travel time coverage for this study, Citygate used a geographic mapping tool from ESRI Mapping Corporation program called *Network Analyst* that can measure travel distance over the street network. Citygate ran several deployment map studies and measured their impact on various parts of the community.

The maps (*found in Volume 2 of this study*) display travel time using prior Redlands incident data to adjust the normal posted speed limits per type of street to those more reflective of slower fire truck travel times. Since there is not a City-adopted response goal, for analysis purposes this study used a 4-minute travel time, which is consistent with NFPA 1710 and good suburban emergency outcomes. The following maps, therefore, are based on 4 minutes travel for the first-due unit and up to 8 minutes travel for the balance of the effective response force (first alarm)

units. When one minute is added for dispatch reflex time and two minutes for company notification times, the maps then effectively show the area covered within 7 minutes for first-due units and 11 minutes for a first alarm assignment from the time the 911 call is made.

An additional measure used was the Insurance Service Office 1.5-mile recommendation for first-due fire companies and 2.5-mile service for second-due companies and ladder trucks. A 1.5 miles driving distance equates to 3.5 to 4 minutes travel time over the road network.

Map #1 – Current Station Locations

The first two maps show the existing Redlands Fire Department fire station locations with City boundaries as well as the single Loma Linda fire station. This map view then is important to remember as later maps in the set display the fire station coverage areas.

Map #2 – Insurance Service Office (ISO) Evaluated Buildings Locations

Displayed here is one type of building fire risk assessment and where these buildings lay in the community. This study received information from the Insurance Service Office (ISO) that sends field engineers into buildings to evaluate them for underwriting risk. One expression of that risk is called fire flow, or the firefighting water in gallons per minute that a major fire in the building would require to be controlled. Plotted here are the locations of the larger fire flow buildings in the City. These areas are where the entire firefighting force must concentrate quickly if serious commercial building fire is to be controlled.

Most of the higher fire flow buildings are in the core area of the City, which receive good multiple-unit coverage due to the overlap from Stations #261 and #264 as will be shown in the following set of maps.

Map Series #3a to #3f – 4 and 8-Minute Travel Time Coverages

This map shows, in green colored street segments, the *distribution* or first-due response time for each station per a response goal of 4 minutes travel time. The time measures of 4 and 8 minutes are from the recommendations of NFPA 1710 on Career Fire Service Deployment for good suburban outcomes.

Thus, the computer shows how far each company travels within 6 to 7 minutes fire department response time from the time of the fire communications center receiving the call. Therefore, the limit of color per station area is the time an engine could reach the 4-minute travel time limit, **assuming** they are in-station and encounter no unusual traffic delays. In addition, the computer uses speed limits per roadway type that are slowed by actual fire unit travel times. Thus, the projection is a very close modeling of the real world.

The results of this series are very close to that of the 1.5 and 2.5-mile distance measurements in the maps series to follow. In some areas, a unit may be able to travel a little more or less than 1.5 miles in 4 minutes travel time, but not much differently.

There are three key points from this series of maps:

1. Redlands is hard to efficiently serve from four fire station sites. While there is a “grid” street network in the core of the City, which is very efficient for fire unit travel coverage, the outer areas are served with more curvilinear and dead-end streets, which are more difficult to serve quickly.

-
2. It is apparent that a first-due fire unit does not serve northeast and east central Redlands out to the City limits within 4 minutes driving time. This is because there is significant overlap of coverage between Stations #261 and #264. Such overlap is desirable as it shortens 2nd due unit travel times to the more built-up areas of the City where there are also more simultaneous calls for service. However, this overlap comes at the coverage expense of the northeast and east central areas.
 3. Also displayed are the coverage limits of the Loma Linda Fire Station. It is too far to be of primary 1.5-mile distance coverage use to western Redlands. Its 2.5-mile coverage distance does extend into Redlands, and as such, a Loma Linda unit can assist on emergencies requiring multiple units.

A goal for many cities is to cover 90 percent of the geography with a first-due unit coverage plan based on a goal measure statement to deliver acceptable outcomes. This would only leave the very hard-to-serve outer perimeter areas or dead-end pockets with coverage in a 4- or 8-minute travel time range. There should be some overlap between station areas so that a second-due unit can have a chance of an adequate response time when it covers a call for another station. The outer perimeter areas are hard to serve and, in many cases, cost prohibitive to serve for a small number of calls for service.

Map #4 – 1.5 Mile and 2.5 Driving Distance Coverage – All Fire Stations

This map series is similar to Map Series #3, except that the coverage distance is measured by calculated driving *distance*. This map exhibit displays the Insurance Service Office (ISO) requirement that stations cover a 1.5-mile distance response area. Depending on the road network in a department, the 1.5-mile measure usually equates to a 3 to 4-minute travel or driving time. However, a 1.5-mile measure is a reasonable indicator of station spacing and overlap. The 2.5-mile coverage distance is for multiple-unit coverage, especially ladder trucks.

This map exhibit shows that the core and more “built-up” area of Redlands is covered by one unit in 1.5 miles (green color) of fire unit driving distance. Almost the entire City is covered by at least one unit in 2.5 miles distance from a fire station.

As such, the two measures correlate each other with the same results. The core area of Redlands receives good coverage while some of the outer areas are outside a 1.5-mile response distance, which is typically used for good suburban area outcomes.

Map #5 – Concentration (First Alarm) at 8 minutes Travel Time Coverage

This map exhibit shows the *concentration* or massing of fire apparatus and crews for serious fire or rescue calls. Building fires, in particular, require 15+ firefighters arriving within a reasonable time frame to work together and effectively to stop the escalation of the emergency. Otherwise, if too few firefighters arrive, or arrive too late in the fire’s progress, the result is a greater alarm fire, which is more dangerous to the public and the firefighters.

The concentration map exhibits look at the Department’s ability to deploy all of its engines, one truck company and one battalion chief to building fires within 8 minutes travel time (11 minutes total fire department response time from the 911 call receipt). This measure ensures that a

minimum of 16 firefighters and one battalion chief deployed can arrive on-scene to work *simultaneously* and effectively to stop the spread of a modest fire.

The colors in the map show the area in **green** color where the Redlands Fire Department's current fire deployment system should deliver the initial effective response force. Streets without the dark green highlights have four-unit or less coverage.

This map shows that the majority of the City is covered by four fire stations within 8 minutes of travel. Again, the outer perimeter areas are not, but most of these are not the higher population density and commercial/industrial areas.

Map #6 – Ladder Truck 8-Minute Travel Time Coverage (First Alarm)

Map #5 showed the concentration coverage for firefighters from all four stations. This map displays just the coverage for the Ladder Truck from Station #261 for 8 minutes driving time, which is consistent with good outcomes on serious building fires. The coverage is very good in the core area of the City where the higher fire flow buildings shown on Map #2 are located. All but the southeast corner of the City will receive ladder truck coverage within 8 minutes travel time and even that area would receive the ladder truck in the 9th or 10th minute, which is not excessive for lighter density residential areas.

Map #7 – All Incident Locations

This is an overlay of the exact location for all fire department incident types for one year. It is apparent that there is a need for fire department services on almost every street segment of the City.

Map #8 – EMS Incident Locations

This map further breaks out only the emergency medical and rescue call locations. Again, with the majority of the calls for service being emergency medical, almost all areas need Fire Department services even in a single calendar year.

Map #9 – All Fire Type Locations

This map set identifies the location of all fires in the Department. All fires include any type of fire call from auto to dumpster to building. There are obviously fewer fires than medical or rescue calls. Even given this, it is evident that all first-due engine districts experience fires.

Map #10 – Structure Fire Locations

This map is similar to the previous map, but only displays structure fires for one year. While the structure fire count is a smaller subset of the total fire count, there are two meaningful findings to this map. There are still structure fires in every first-due fire company district. The location of many of the building fires parallels the higher risk and older building type commercial areas in the core of the City. Fires in the more complicated building types must be controlled quickly or the losses will be very large. As was shown in the multiple-unit/firefighter maps, there is good coverage in the higher quantity structure fire areas.

Map #11 – All Incident Location Hot Spots

This map set examines, by mathematical density, where clusters of incident activity occurred. In this set, all incidents are plotted by high-density workload. For each density measure, the darker the color, the greater the quantity of incidents in a small area. This type of map makes the location of frequent workload more meaningful than just mapping the dots of all locations as done in Map #10.

Why is this perspective important? Overlap of units and ensuring the delivery of a good concentration for the effective response force. When we compare this type of map with the concentration map, we want the best concentration of unit coverage (first alarm) to be where the greatest density of calls for service occurs. For the Redlands Fire Department, this mostly occurs currently in station areas #261 and #264, which also receive timely back-up support from stations #263.

Map #12 – EMS Incident Location Densities

This map set is similar to Map #11, but only the medical and rescue hot spots of activity are plotted. The clusters of activity look very similar to the all-incident set in Map #11 because medical calls are such a large part of the total.

Map #13 – All Fire Location Densities

This map sets shows the hot spot activity for all fires. The call-for-service fire density is highest between Station #261 and #264.

Map #14 – Structure Fire Densities

This map only shows the building fire workload by density. Here, once more, the activity cluster is highest between Station #261 and #264.

2.6 MAPPING MEASURES EVALUATION

Based on the above mapping evaluation, Citygate offers the following findings:

Finding #2: As both the maps of the 4-minute travel time measure and Insurance Service Office requirements for a 1.5-mile travel distance coverage display, the core of the City receives adequate first-due unit coverage. This is not possible to all outer edge neighborhoods, where timely response does not meet nationally recommended goals, which could provide a greater likelihood of a positive outcome in the emergency response.

Finding #3: The City receives adequate ladder truck coverage from Station #261.

Finding #4: With 18 firefighters on duty per day, Redlands has just enough firefighters for one moderate building fire at once or two to three simultaneous medical emergencies.

Finding #5: To increase first-due unit coverage in the northeast and eastern edge areas, will take an additional fire station with an additional crew or the use of re-deployed existing personnel.

After the historical response statistics are analyzed in the next section of this report, then an integrated set of deployment recommendations will be made.

2.7 CURRENT WORKLOAD STATISTICS SUMMARY

In this section of the Standards of Response Cover process, prior response statistics are used to determine what percent of compliance the existing system delivers. In other words, if the geographic map measures say the system will respond with a given travel time, does it actually deliver up to expectations? A detailed analysis of in-depth statistics is provided in Volume 3 of this report. What follows is a summary of those comprehensive measures and findings.

The sections of this report that concentrated on distribution and concentration used geographic mapping tools to estimate travel time over the street network. Thus, the maps show what *should* occur from the station placements. However, in the real world, traffic, weather, and units being out of quarters on other business, such as training or fire prevention duties, affect response times. Further, if a station area has simultaneous calls for service, referred to as “call-stacking,” the cover engine must travel much further. Thus, a complete Standards of Response Coverage study looks at the actual response time performance of the system from incident records. Only when combined with map measures, can the system fully be understood and configured.

As a review of actual performance occurs, there are two perspectives to keep in mind. First, NFPA 1710 only recommends that a *department-wide* performance measure of 90 percent of the historical incidents (not geography) be maintained. This allows the possibility that a few stations with great response time performance can “mask” the performance of stations with poorer travel times.

In the Standards of Response Coverage approach, it is recommended that the performance of each *station area* also be determined to ensure **equity** of coverage. However, even this approach is not perfect – a station area may well have less than 90 percent performance, but serve lower risk open space areas with limited buildings thereby not having an economic justification for better performance. In addition, the study must discuss just what is measured within the under-performing statistic. For example, a station area with a first-due performance of 88 percent with only 50 calls in the 88th to 90th percentile is far different from an area with 500 calls for service in that 88th to 90th percentile.

All measures then must be understood in the complete context of geography, risk, and actual numbers of calls for service that exceed the community’s performance measure. The Department’s response time performance must be compared to outcomes such as fire loss or medical cases and be contrasted to the community’s outcome expectations. A community could

be well deployed and have poor outcomes, or the reverse. A balanced system will avoid such extremes and strive for equity of service within each category of risk.

Fire departments are required to report response statistics in a format published by the U.S. Fire Administration called the National Fire Incident Reporting System (NFIRS). The private sector develops software to do this reporting to state and federal specifications.

Data sets for this section of the study were extracted from the Department’s fire incident records management system (RMS). Total response time in this study is measured from the time of the fire crew being alerted to the unit being on-scene. Due to older computer systems that could not easily export time records from the time of answering 911, it is not possible currently to separately study the dispatch center or crew turnout time performance.

Data sets were “cleaned” to eliminate records without enough time stamps or records with impossible times; such as a 23-hour response. The data sets were modeled in a new fire service analysis tool called NFIRS 5 Alive.

For this review, given the lack of a Redlands-adopted response time performance measure, we are modeling the Department’s prior performance and comparing the data results to the recommendation for good suburban outcomes as found in NFPA 1710 for fire service deployment. Later, this study will integrate all the SOC study elements to propose refined deployment measures that best meet the risk and expectations found in Redlands.

The Redlands Fire Department has furnished NFIRS 5 data for 26,130 incidents dated for the 42-month period from 1/01/2004 through 6/30/2007. 69,464 apparatus responses and 13,981 EMS records were obtained from the same NFIRS 5 data source. For statistical reporting purposes, the 42-months of response data was trimmed down to the 36-months corresponding to three July 1st to June 30th fiscal years; FY 04/05, FY 05/06 and FY 06/07.

Over 36-months, the Redlands Fire Department responded to an average of 20.73 incidents per day. 4.78 percent of incident responses were to fire, 66.91 percent to EMS and 28.31 percent to other types of incidents.

2.7.1 Incident Types

Here is a list of the top incidents by Incident Type over the dates that data was available:

NFIRS Code/Incident Type	Count
321 EMS call, excluding vehicle accident with injury	12,854
322 Vehicle accident with injuries	1,396
463 Vehicle accident, general cleanup	1,303
611 Dispatched & canceled en route	900
553 Public service	889
311 Medical assist, assist EMS crew	859
600 Good intent call, other	383
745 Alarm system sounded, no fire - unintentional	271
700 False alarm or false call, other	234
111 Building fire	211
131 Passenger vehicle fire	194
735 Alarm system sounded due to malfunction	186

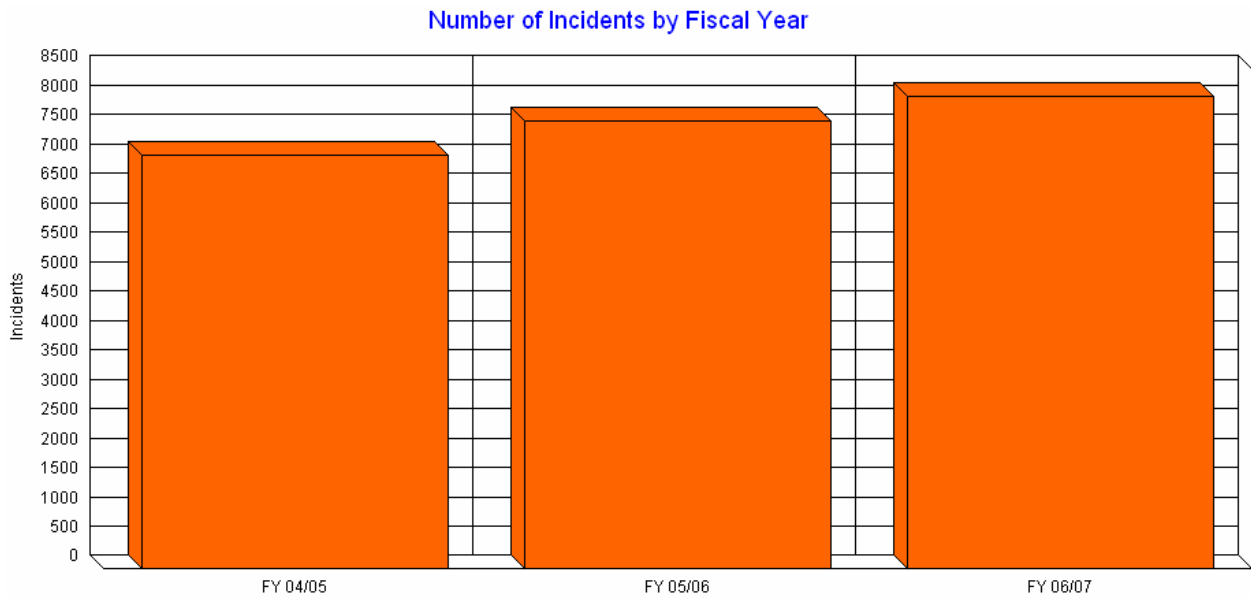
661 EMS call, party transported by non-fire agency	177
651 Smoke scare, odor of smoke	159
743 Smoke detector activation, no fire - unintentional	140
740 Unintentional transmission of alarm, other	119
622 No incident found on arrival of incident address	105
444 Power line down	103
142 Brush, or brush and grass mixture fire	102

Here are the top property types receiving service from the Redlands Fire Department during the 36-month data period. Property types with fewer than 100 responses were eliminated from the list:

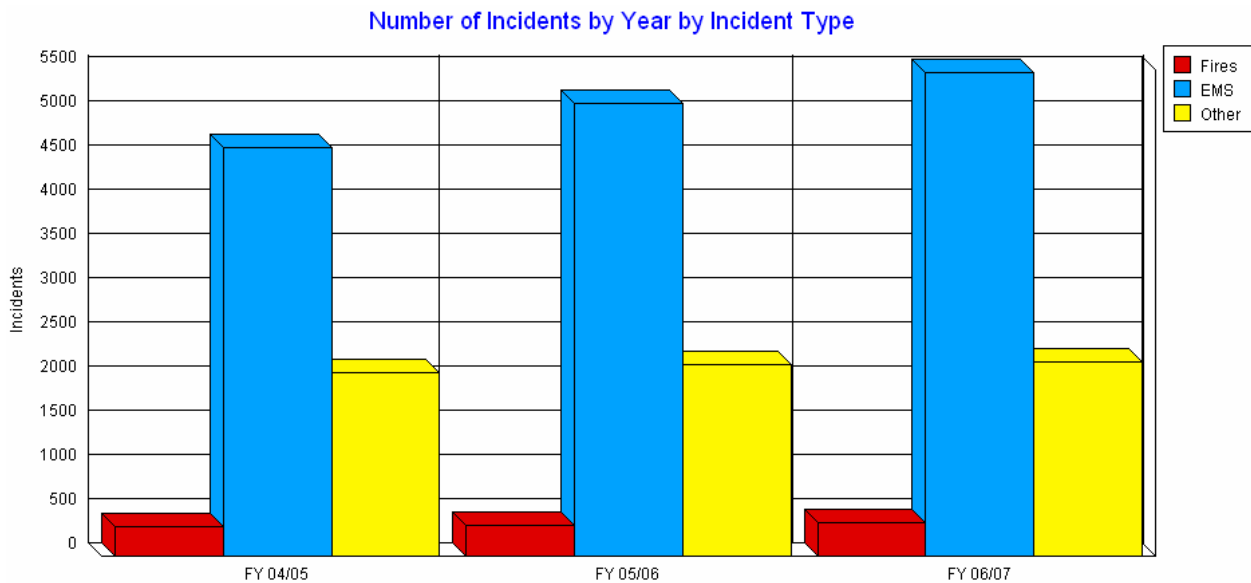
NFIRS Code/Property Type	Count
419 1 or 2 family dwelling	7,837
962 Residential street, road or residential driveway	3,012
429 Multifamily dwellings	2,034
311 24-hour care Nursing homes, 4 or more persons	1,883
961 Highway or divided highway	1,285
965 Vehicle parking area	699
342 Doctor, dentist or oral surgeon's office	223
963 Street or road in commercial area	218
931 Open land or field	215
599 Business office	213
161 Restaurant or cafeteria	202
449 Hotel/motel, commercial	194
519 Food and beverage sales, grocery store	192
331 Hospital - medical or psychiatric	176
215 High school/junior high school/middle school	175
361 Jail, prison (not juvenile)	139
365 Police station	115
571 Service station, gas station	104
459 Residential board and care	103
581 Department or discount store	100

Here is a comparison of the number of incidents by fiscal year. Notice the trend for increasing incident activity year-to-year:

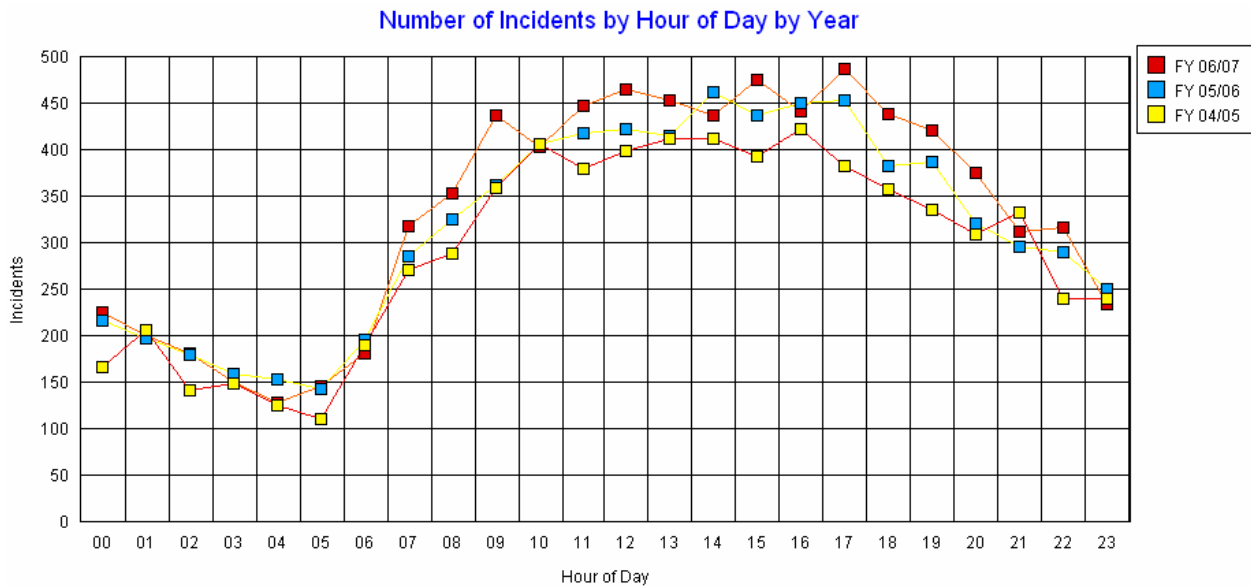
<u>Fiscal Year</u>	<u>Count</u>
FY 04/05	7,038
FY 05/06	7,624
FY 06/07	8,040



The following graph illustrates trends by incident type. Notice increases in fires and “other” incident types are slight while increases in EMS activity are substantial.



This graph compares incident activity by hour of day by fiscal year. Notice recent increases in activity (red) tend to be distributed during morning, afternoon and early evening hours.



2.7.2 Citywide Response Times

This section will review historical response time performance for the prior three fiscal years. While many fire departments track average response time, it is not highly regarded as a performance measurement. One of the most commonly used criteria to measure response effectiveness is fractile analysis of response time. A fractile analysis splits responses into time segments and provides a count and percentage for each progressive time segment.

Here is a fractile breakdown for all Redlands station responses for the 36-month study period. To focus these calculations on Redlands deployment, aid given incidents were *not* included in this calculation.

Time Percent Count

- 1st Apparatus On Scene <= 00:04:00 43.8% (9,663)
- 1st Apparatus On Scene <= 00:05:00 60.3% (13,302)
- 1st Apparatus On Scene <= 00:06:00 73.9% (16,311)
- 1st Apparatus On Scene <= 00:07:00 83.7% (18,476) - Desirable Recommended Goal Point*
- 1st Apparatus On Scene <= 00:08:00 90.1% (19,877) - **Actual 90% Compliance Point***

If the above incidents are reduced to **fire and EMS incidents**, the following fractile results:

- 1st Apparatus On Scene <= 00:04:00 46.9% (7,473)
- 1st Apparatus On Scene <= 00:05:00 64.4% (10,266)
- 1st Apparatus On Scene <= 00:06:00 78.3% (12,477)
- 1st Apparatus On Scene <= 00:07:00 87.7% (13,973) - Desirable Recommended Goal Point*
- 1st Apparatus On Scene <= 00:07:30 90.8% (14,478) - **Actual 90% Compliance Point***

Here is a breakdown of the above incidents when incidents are narrowed down to **structure fires**:

1st Apparatus On Scene <= 00:04:00 18.1% (29)

1st Apparatus On Scene <= 00:05:00 45.6% (73)

1st Apparatus On Scene <= 00:06:00 65.0% (104)

1st Apparatus On Scene <= 00:07:00 76.3% (122) - **Desirable Recommended Goal Point**

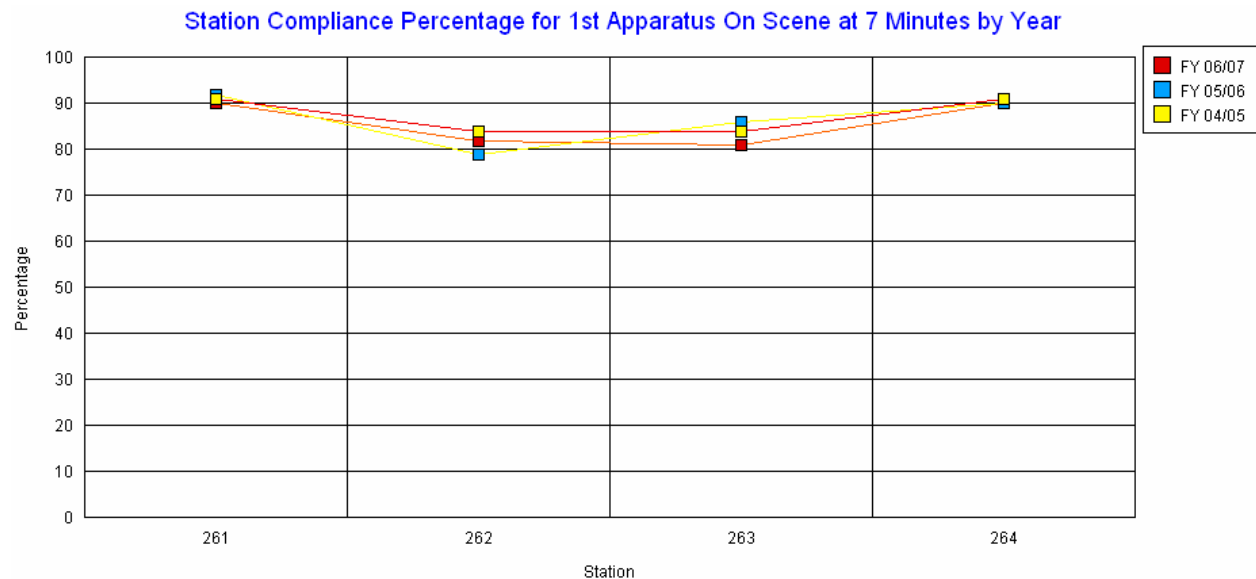
1st Apparatus On Scene <= 00:08:00 90.0% (144) - **Actual 90% Compliance Point**

Given the above information on citywide responses, the response time performance is very good for a four-station system covering the square miles that it does. While 90 percent of the calls are answered within a minute or less of a desirable goal point, two items have to be considered:

1. One reason for the good performance is that as the incident location density maps displayed, many calls occur closer to the three stations in the core of the City;
2. The above times do not take into account dispatch center processing time, which is typically 1-minute at 90 percent in well-operated centers.

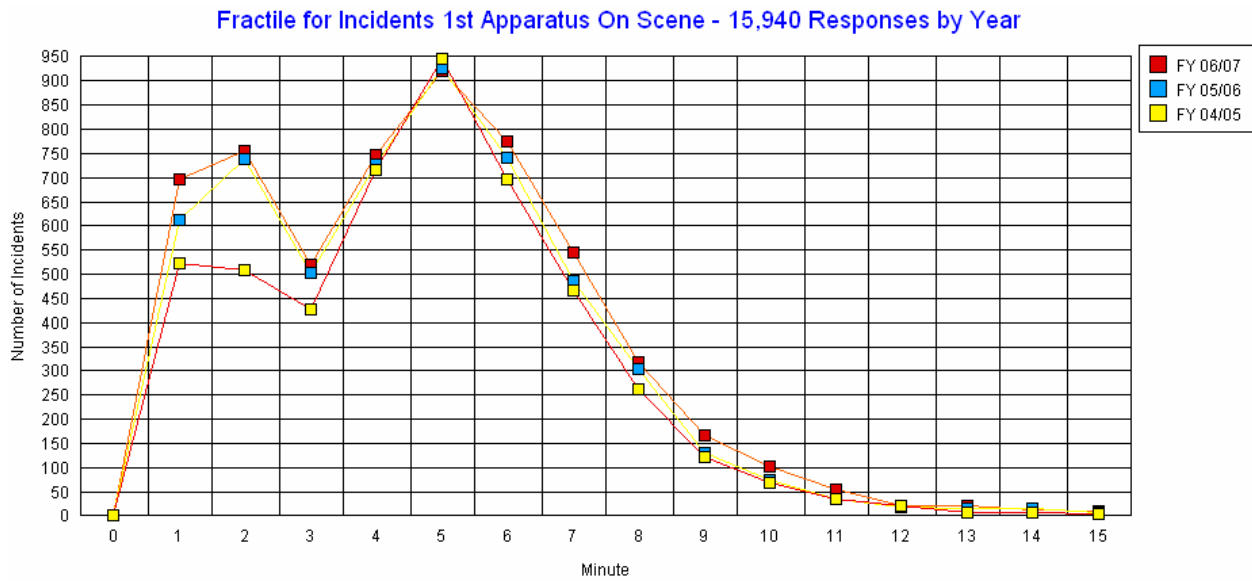
Given the additional time for the dispatch step, the actual 90 percent performance is closer to nine (9) minutes, which reflects that some of the calls are in the outer, harder to serve areas of the City.

Fractile response times can also be viewed graphically. The following is a graph illustrating the number of incidents by response time minute for the three years of data for all type of incidents. Incidents with a zero response time were eliminated from the graph.



From the above graph, it is apparent that Stations #262 and #263 that serve the outer areas of the City respond to larger areas than do the two central area stations.

The graph below illustrates the number of incidents by response time minute by year. This graph is left-shifted indicating a greater number of incidents in the lower minutes of response time.



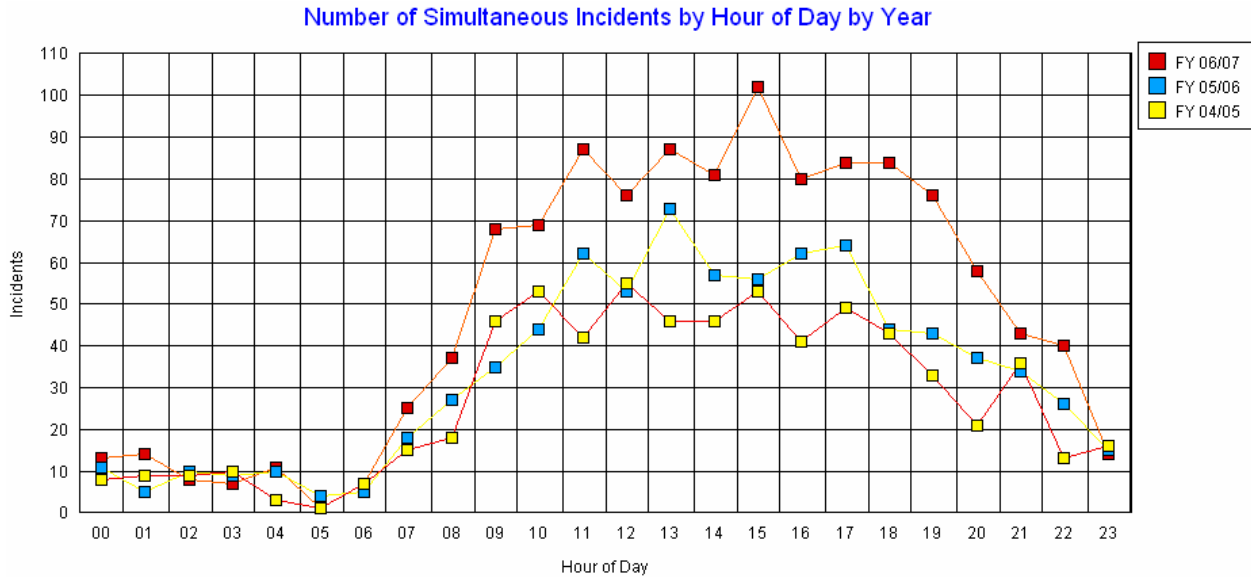
2.7.3 Simultaneous Call Measurements

Obviously, incidents that occur at the same time tax fire department resources more than those occurring when there is no other fire department response activity. Examining incident data for the 36-month period shows **42** percent of incidents occurred when the Redlands Fire Department was already engaged in other response activity.

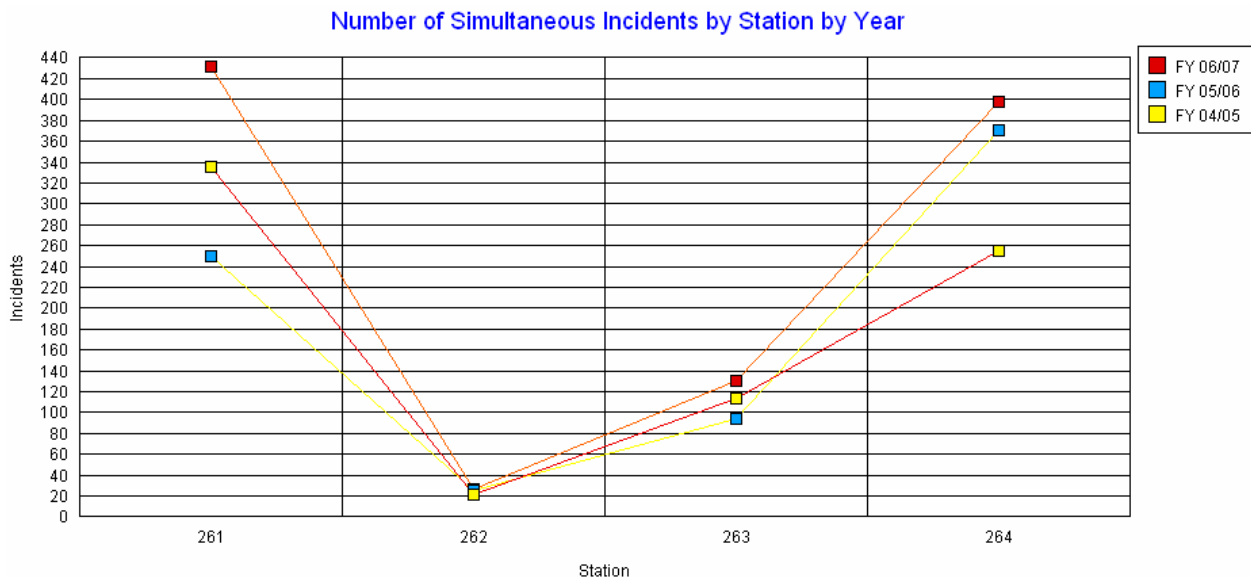
Here is the breakdown by number of incidents:

At least 2 Incidents occurring at the same time	41.81%
At least 3 Incidents occurring at the same time	11.67%
At least 4 Incidents occurring at the same time	02.90%
At least 5 Incidents occurring at the same time	00.98%

The graph below illustrates the hourly distribution of 3 or more (11.67 percent) simultaneous incidents for the 36-month analysis period. This graph roughly follows the distribution frequency of incidents in general, but a trend for increased simultaneous activity is seen in recent fiscal years as the number of simultaneous incidents rises sharply between 09:00 and 20:00.



Another way to measure simultaneous responses is when simultaneous incidents occur within the same station area. Redlands experiences simultaneous incidents within the same station area 10.80 percent of the time. Below is a graph illustrating the station areas experiencing simultaneous incidents. Notice simultaneous incident activity is most likely to occur in the Station #261 and #264 station areas. Both of these station areas are experiencing an increase in simultaneous incident activity.



For a department with only 4 engines, a two incident at once call rate of 42 percent is high and worrisome, given that only two calls at once consume 50 percent of the City’s resources. This does not leave enough for a building fire without the use of mutual aid, assuming the closest other jurisdiction’s stations are even available.

2.7.4 Mutual Aid Measurements

Redlands City is in a beneficial automatic aid relationship with San Bernardino County and its neighboring cities. During 36 months of available data, aid types breakdown as follows:

<u>NFIRS Code/ Aid Type</u>	<u>Count</u>
Received	301
Given	646
None	21,755

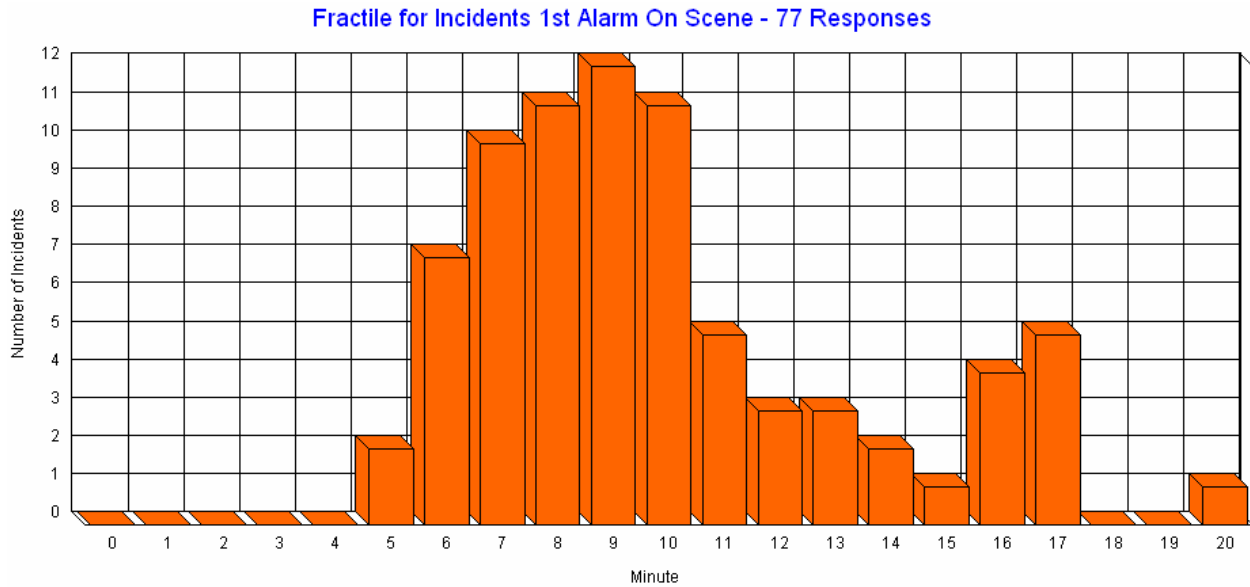
Data suggests incidents involving aid (received or given) account for a low 4.35 percent of incidents in Redlands, which means that giving aid is not slowing response to City of Redlands calls for service.

2.7.5 First Alarm Response Time Compliance

Measuring the time it takes the first apparatus to arrive on the scene is very important. Equally important is the amount of time it takes a full first alarm (multiple companies) assignment to reach the scene of structure fires and emergencies requiring a multi-company response.

In Redlands, a first alarm assignment has been defined as the response of all of the City’s units in order to deliver a significant and safe firefighting force quickly to keep the fires under control. Below is the fractile breakdown for all structure fires. This calculation does not include outside apparatus responding from other departments.

- 1st Alarm On Scene <= 00:05:00 2.6% (2)
- 1st Alarm On Scene <= 00:06:00 11.7% (9)
- 1st Alarm On Scene <= 00:07:00 24.7% (19)
- 1st Alarm On Scene <= 00:08:00 39.0% (30)
- 1st Alarm On Scene <= 00:09:00 54.5% (42)
- 1st Alarm On Scene <= 00:10:00 68.8% (53)
- 1st Alarm On Scene <= 00:11:00 75.3% (58) - **Desirable Recommended Goal Point***
- 1st Alarm On Scene <= 00:12:00 79.2% (61)
- 1st Alarm On Scene <= 00:13:00 83.1% (64)
- 1st Alarm On Scene <= 00:14:00 85.7% (66)
- 1st Alarm On Scene <= 00:15:00 87.0% (67)
- 1st Alarm On Scene <= 00:15:45 90.9% (70) - **Actual 90% Compliance Point***



The reason for the somewhat slow response of multiple units to building fires is that the City is just too large to cover quickly from only four station sites. Thus, when a fire happens in an outer edge area, the 3rd and or 4th due unit must travel considerably farther. More detailed analysis found in the statistical appendix to this study determined that the single ladder truck company was not the unit being last to the incident and thus slowing compliance, but rather it was always one of the engines.

2.7.6 Response Time Statistics Discussion

Given the above summary of Citygate’s response statistics analysis and the detailed data in the comprehensive statistics analysis, we offer the following findings:

- Finding #6:** With a citywide fire and emergency medical response performance of 8:00 minutes/seconds at 90 percent, as the mapping analysis predicted, the City does not have enough primary neighborhood fire stations.

- Finding #7:** While the further reaches of the coverage areas for fire stations #262 and #263 are too far away to serve quickly, the overall citywide response times are statistically still close to a recommended best practice at 90 percent @ 8 minutes because many more calls are located in the core of the City, close to two stations.

Finding #8: Currently, the number of 2 or more simultaneous incidents at 42 percent is a growing problem and the Department should carefully watch this as calls for service grow with the current number of fire stations. Simultaneous calls for a department staffed at the present Redlands staffing level, mean that there could be inadequate resources to provide a sufficient number of people to effectively respond to two large emergencies such as fires or serious vehicle accidents, especially if the mutual aid system could not immediately respond.

Finding #9: The multiple-unit (first alarm) compliance measures are not meeting a best practices goal across the City due to the lack of a northeast to eastern area fire station, or due to the significant response area overlap spacing of the two central area stations.

Finding #10: Calls for service are principally driven by population. Over the last three years, calls for service have grown, and as population grows, so will the demands on the Fire Department. From Fiscal Year 04/05 thru 06/07, total calls for service have grown 14.2 percent to just over 8,000 per year.

2.7.7 Integrated Fire Station Deployment Recommendations

As discussed previously in Section 2.4.2, Redlands is only staffing 18 firefighters plus a supervising chief per day:

Units and Staffing Daily Plan

Per Unit		Extended
3 Engines @	3 Firefighters/day	9
1 Medic Engine	4 Firefighters and or paramedics	4
1 Ladder truck/Quint @	3 Firefighters/day	3
1 Medic Squad	2 Firefighter/paramedics	2
Subtotal <i>firefighters:</i>		<u>18</u>
1 Battalion Chief @	1 Per day for command	1
<i>Total 24/hr Personnel:</i>		<u>19</u>

Currently, Redlands is staffed for one serious fire at a time **or** 2 to 3 medical calls for service. This model has served the community well over its growing years, but going forward will be increasingly strained to handle more than one serious event and to provide equitable coverage in all of the neighborhoods. A city of 71,000 residents plus visitors is no longer a quiet little town. Redlands should consider adapting its fire defenses commensurate with the risk and call-for service-growth.

Summarized, Redlands has two fire deployment issues that warrant improvement:

1. There are not enough primary neighborhood fire stations to provide equitable, first-due unit coverage for all emergency types. This is most evident in the northeast and east outer areas of the City.
2. There are not enough firefighters on-duty to handle more than one moderate building fire at a time or 2 to 3 medical calls when fires occur. At least **42** percent of the time at peak workload hours of the day, Redlands has two simultaneous calls for service open, which take 2 engines or an engine and medic squad out of service. Fortunately, for Redlands the vast majority of calls for service are medical emergencies, which are usually handled in less than one hour. Put this way, two simultaneous medical calls consume 6 firefighters, 33 percent of the total number of firefighters, and 40 percent of the fire attack units.

The City has two choices in changing the deployment of its fire services to meet these two field deployment issues:

1. The City could choose to open a 5th fire station to improve response times in the northeast and eastern sections of the City. This station could be staffed by either:
 - a. Hiring additional staff to operate a 3-person crew engine company, or
 - b. Relocating staff from the two-person medic squad, plus relocating the 4th person on the medic engine, to staff a 3-person engine company at the 5th fire station. This option could require the City to meet and confer with the Redlands Firefighters, given the minimum-staffing clause in their agreement with the City.
2. Or the City could keep the unit staffing as is, and relocate one or both Stations #261 and #264 to spread them out to cover more of the northeast and eastern areas, which would reduce overlapping coverage in the higher call volume core area.

Both of these options have strengths and weakness to be further researched and costed out. By relocating existing staffing to a 5th fire station, the outer neighborhood coverage is improved, but the squad is not available to handle simultaneous calls in the core of the City. In addition, this plan does not increase the total number of firefighters on-duty to better handle more than one serious fire emergency at a time. This plan requires the cost of a 5th fire station, assumes a suitable parcel could be identified and acquired and an additional fire engine has to be purchased.

The option of re-locating one or both of the core area stations (#261 and #264) keeps the staffing per unit the same, but the coverage is increased in the northeast and eastern areas by reducing the travel coverage overlap in the central area. If one or both station moves occurred, some simultaneous calls in the core area might receive longer response times. There are more calls for service in this area, and not as many in the lighter zoning density outer areas. However, this plan does improve response time coverage into the outer areas. This change also requires one or two new station sites be found and the funds to construct the stations become available.

Citygate feels the staff needs to further explore both options with study into how much growth might occur in the eastern areas as well as the age and repair conditions of Stations #261 and #264.

One result of further study might find that significant growth will occur beyond the reach of the two stations, and both will need sooner, rather than later, complete rebuilding. If this were to be the case, then a double re-location could be the best-fit decision.

If both stations are in very good condition, and citywide population growth will be modest, then a re-locating of existing staffing to a 5th eastern area station makes more cost effective and service sense in the near term.

Citygate's near-term recommendations within the scope of this deployment performance review are designed establish a framework within which the City can make a best fit decision on changes to fire service deployment.

As the phasing section of this report explains in detail in Section 4, achieving improved fire station coverage in Redlands will take more time and fiscal resources than the City currently has. However, it must be understood that not all neighborhoods today receive an equal opportunity (not guaranteed, due to prior emergencies, etc.) of a timely fire response. The City should consider whether to address this situation as the City continues to grow.

- | |
|---|
| <p>Recommendation #1: The City should adopt revised performance measures to direct fire station location planning. The measures should be designed to deliver outcomes that will save patients medically salvageable upon arrival and keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:</p> <ul style="list-style-type: none">1.1 <u>Distribution of Fire Stations for Built-up Suburban Areas:</u> To treat medical patients and control small fires, the first-due unit should arrive within 7 minutes, 90 percent of the time from the receipt of the 911 call. This equates to 1-minute dispatch time, 2 minutes company turnout time and 4 minutes drive time spacing for single stations.1.2 <u>Multiple-unit Effective Response Force for Built-up Suburban Areas:</u> To confine fires near the room of origin, to stop wildland fires to under 5 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 15 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1-minute dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units. |
|---|

Recommendation #2: Staff needs to carefully analyze the availability of funds and both the capital and operating costs involved in building and operating a 5th new fire station with existing or additional personnel, versus the costs of relocating existing Stations #261 and #264.

SECTION 3—REDLANDS FIRE DEPARTMENT REVIEW: NON-DEPLOYMENT FUNCTIONS

The first two sections of this report and planning effort described background information and station/company deployment material on fire services in Redlands. These sections described in detail the current response system and needs for a fire and emergency medical response in the Redlands community. The other aspect to fire services is the administrative functions that support and facilitate the emergency response system.

Section 3 reviews these administrative functions, such as supervision, labor agreement issues and resident perceptions, and the Memorandum of Understanding, in order to complete the strategic review of fire services and allow an integrated set of recommendations. This is important because any deployment change recommendations need to be properly supported by adequate administrative functions.

Citygate reviewed the administrative/headquarters functions by reviewing agency records and interviewing fire management staff. This helps to form a composite picture of how well the administrative functions perform, and where they should go in the future.

3.1 *WHAT HAS BEEN DONE RIGHT*

Over the years, the City of Redlands has shown leadership in developing its fire services using leading techniques to improve the safety of its citizens. Some of these are:

- ◆ Paramedics
 - 1982 - Paramedic Assessment is passed to fund an initial program of 6 personnel for 1 Paramedic Squad (2 personnel on each shift)
 - 1986 - Station #263 is opened with a paramedic Engine with 6 additional personnel (2 on each shift) funded from the General Fund
 - 2004 - Station #264 is opened
- ◆ Fire Prevention
 - Typically meets and exceeds turn around times for new construction plan check services
 - Most businesses receive an annual fire inspections
 - Quick response to special requests for fire code services
- ◆ Residential Automatic Fire Sprinklers
 - The City has for years required automatic fire sprinklers in all buildings larger than 200 square feet in size
- ◆ Public Education and Disaster Preparedness
 - The Department coordinates City disaster preparedness
 - The Department offers a variety of public education programs

-
- ◆ Training and Safety
 - Up-to-Date firefighter protective clothing
 - A Training Chief, program and funding for training and safety
 - A trained Battalion Chief as Incident Commander for each duty shift 24/7/365
 - ◆ Apparatus Replacement Fund
 - A program exists to plan and save the funds to replace expensive fire apparatus in a timely manner
 - ◆ Succession Planning
 - The Department leadership has reviewed their likely turnover and started a program of succession planning and education for future officers
 - ◆ Better radio and dispatch systems – regional dispatch center
 - ◆ Open door approach to management and problem solving.

In the context of this performance review, the above leading edge strategies mean that Redlands is already doing what it can and should to cost effectively improve services and control the risk of serious emergencies. The City should be commended for being so proactive in the requirement of automatic fire sprinklers and participation in a JPA, which provides for regional fire dispatch.

3.2 HEADQUARTERS SUPPORT FUNCTIONS

The current headquarters organization consists of:

- ◆ 1 Fire Chief
- ◆ 1 Deputy Fire Chief
 - 3 Battalion Chiefs – one per duty platoon
- ◆ 1 Fire Marshal
 - 1 Asst. Fire Marshal
 - 1 Fire Investigator/Inspector/Cost Recovery
- ◆ 1 Battalion Chief – Emergency Medical Program & Citywide Disaster Preparedness
- ◆ 1 Battalion Chief – Citywide Training and Safety Programs
- ◆ 1 Administrative Analyst
- ◆ 2 Administrative Assistants (clerical support).

The above management and line positions support 54 firefighters on six units 24/7/365. The programs that must be managed by the headquarters team include at least the following:

- ◆ Budget and expenditure of the budgeted funds
- ◆ Department level personnel functions

-
- ◆ Department level Information Systems functions
 - ◆ Logistical support services to the stations and apparatus
 - ◆ Paramedic program oversight, continuing education and quality assurance programs, all mandated and audited by the State and County EMS Agencies
 - ◆ Citywide Disaster Preparedness
 - ◆ Grant application and management
 - ◆ Volunteer programs
 - ◆ Fire Code plan checking, enforcement, inspections and fire investigations
 - ◆ Training
 - ◆ Safety programs and record keeping
 - ◆ Equipment/assets management
 - ◆ Dispatch liaison and communications equipment
 - ◆ Public Education
 - ◆ Community Affairs and general outreach.

Many of the above training, safety and fire code regulation programs are now regulated by the Federal and State governments, and if done, they must be done to meet these regulations. Some, like the paramedic program, are audited by the EMS oversight agencies. The Fire Service has become increasingly technical and complex, requiring program managers or specialists to spend considerable time in them in order to be adequately trained and competent.

National Fire Protection Association (NFPA) Recommended Standard 1201 - *Standard for Providing Emergency Services to the Public* states in part, “the [department] shall have a leader and organizational structure that facilitates efficient and effective management of its resources to carry out its mandate as required [in its mission statement].”

A fire department Redlands’ size needs to have a management team that is the proper size, and adequately trained and supported. There are increasing regulations to be dealt with in operating fire services, and the proper hiring, training and supervision of line employees requires an equally serious commitment to leadership and general management functions.

The current organization chart shows a headquarters team that will generally meet the needs of a department the size of Redlands.’ However, due to the fiscal pressures on the City, there has been greater emphasis on staffing fire companies to provide emergency response than on the needs of the management team to coordinate and lead the organization. As the City struggled with its shrinking finances, it could not increase some staff positions in the essential fire headquarters support positions.

As examples, the Fire Chief and other managers have very limited secretarial support, which means managers spend precious time doing routine chores such as typing letters, researching files and editing reports. The Department currently is down to 2 clerical positions. The City’s disaster preparedness program and citizen education programs are managed on a shared time basis.

Redlands Fire Department, like many suburban agencies, has its managers supervise several program areas, doing the essential elements of each. While this is cost effective, it also means that the most regulated and audited functions are done first, and then the others receive some attention. As a result, programs like public education and disaster preparedness are never done to the complete degree possible, due to lack of resources. Even a volunteer-staffed public education program still requires coordination, budgeting, scheduling, the training/auditing of the volunteers etc.

Finding #11: In Citygate’s experience, we find the headquarters-staffing amount is entirely consistent and appropriate for the needs of a career fire department the size of Redlands. Redlands is providing a full services fire department, and as such, its firefighting, emergency medical and fire prevention programs are complex, regulated by the federal and state governments and should be properly supervised.

Finding #12: In reviewing the amount of programs delivered and the size of some of them, like fire prevention, the staffing dedicated to fire prevention, public education, disaster preparedness and clerical support is on the low side for a city of Redlands’ size.

3.2.1 Fire Prevention and Fire Investigation

Fire prevention includes any activity that decreases the incidence and severity of uncontrolled fire. Usually, the methods used by the fire service focus on inspection, which includes engineering, code enforcement, public information, public education, and fire investigation. Preliminary and subsequent fire investigations of all fires are essential to understand the sources of the community’s fire problems. Accidental fires may reveal weaknesses in the codes, in the building inspection process, or in other aspects of processes. Suspicious fires may reveal an arson problem.

Issue:

- ◆ Is there an adopted fire code and staffing plan to meet the needs of new construction, existing commercial occupancy inspection and public education?
- ◆ Are inspections made for new construction and existing non-residential occupancies?
- ◆ Are fires investigated?

Observations:

- ◆ The Department and City have adopted and continue to update the appropriate Model Building and Fire Codes.
- ◆ The Department has a fire prevention program managed by a fire marshal and staffed with Assistant Fire Marshal and Fire Investigator/Cost Recovery positions.

- ◆ Annually fire prevention has been responsible for:
 - New commercial building additions
 - New commercial buildings
 - On-going occupied commercial building inspections
 - Fire Investigations
 - Weed Abatement
 - Public Education
 - In Calendar 2006 Fire Prevention conducted these activities:

Service	Count
Certificate of Occupancy Inspections	265
Demonstration Garden Visits	5
Development Review Committee	22
Engine Company Follow-Up	23
Environmental Review Committee	21
Final Inspections	435
Fire Alarm Inspection	41
Fire Drills	4
Fire Extinguisher Demonstration	16
Fire Prevention Inspections	372
Fire Sprinkler Plan Checks	267
Fireworks Standby	4
Hydro Inspection	111
Knox Box Inspections	9
Meetings Attended	116
Plan Checks	962
Public Education/Safety Trailer	8
Pump Test	9
Re-Inspection	286
Rough Inspections	279
Smoke Exhaust Test	5
State Fire Marshal Inspections	179
Tent Inspections	2
Thrust Block Inspections	8
Underground Pipe Flush	82
Weld Inspection	37

-
- ◆ The Fire Marshal feels they are “at capacity” now, given the pace of new construction. Major commercial projects such as large multi-story buildings or retail uses will result in a reduced ability to quickly process new development projects.
 - ◆ The fire prevention positions are very technical and increasingly complicated. Given the current state of fire and building codes, part-time rotation personnel without specialty certifications will not be able to perform all the needed duties to the required level of competency.

Commendations:

- ◆ The Division accomplishes a lot with a small staff for the size of the City and assigned duties.
- ◆ The commitment to training and quality service is excellent, but must continue to be funded.
- ◆ The commitment to pursue arson fires to closure is excellent.

3.2.2 Emergency Medical Programs (Paramedics)

The Department attempts to staff all companies with a minimum of one paramedic to provide first responder treatment before the arrival of an ambulance. The separate paramedic squad is staffed with two paramedics.

Issue:

- ◆ Does the Redlands Fire Department provide adequate training for the level of emergency medical services it provides?
- ◆ Is there an adequate quality assurance program?
- ◆ Does an adequate documentation system exist?

Observations:

- ◆ This program is given oversight by 1-Battalion Chief on a 40-hr per week schedule.
- ◆ The Fire Department operates paramedic non-transport companies.
- ◆ The medical supplies were adequate and controlled substances were secure. The paramedics maintain proper inventories. Drugs are locked and coded; at shift change the paramedics inspect and sign-off for complete inventory.
- ◆ The residents of the City of Redlands pay a paramedic assessment through their property tax bill to help offset the cost of the 18 trained paramedics. The assessment currently generates approximately \$1.1 million to offset the cost of 9 of the 18 trained paramedics.
- ◆ Given the regional nature of the private ambulance system under contract to the County, the City paramedic program provides a timely and high quality of paramedic care to the citizens of the City of Redlands.

-
- ◆ On average per year the EMS program must train and maintain state certifications for:
 - 57 – Emergency Medical Technicians @ 40 hours each
 - Paramedic Advanced Life Support training:
 - 24 received Advanced training @ 52 hours each;
 - 12 received specialized training @ 24 hours

Finding #13: EMS is the majority of the Department’s emergency workload and creates significant occupational health and safety exposure. In order to deliver high quality medical emergency service and to meet the mandated oversight requirements of the County and State, the Department needs to retain its present training and EMS quality assurance programs.

Recommendation #3: The Department needs to ensure the EMS program has the personnel and resources to properly train, monitor, coordinate and provide quality assurance for the EMS programs.

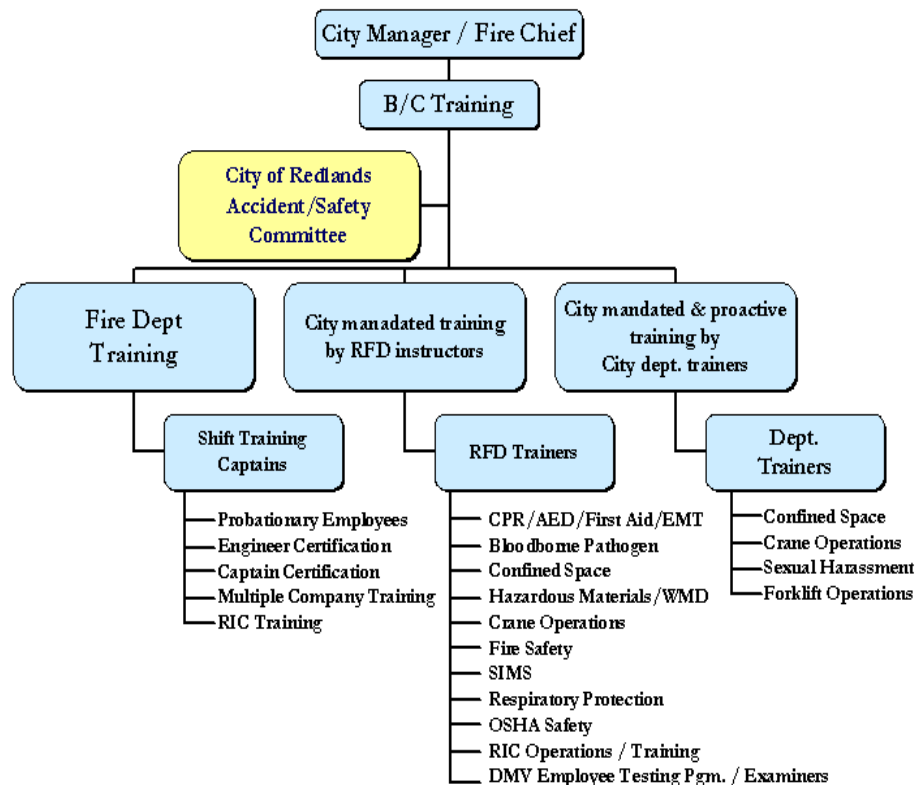
3.2.3 Citywide Emergency Management Program

- ◆ This program is co-managed by the Battalion Chief who also handles Emergency Medical Services
- ◆ This manager is responsible for:
 - Maintaining the City Disaster Preparedness Plan and Annexes
 - Delivering education and training to City employees
 - Delivering education to community groups
 - In 2006 the program delivered:
 - City Staff
 - 2 Tabletop Exercises
 - 1 Functional Exercise
 - 348 employees received – National Incident Management System (NIMS) basic training
 - 36 employees were trained in higher level Incident Command Classes – Series 200/300/700/800
 - School District

- 1 Full Scale exercise at a school
- 1 Functional exercise for the District Command group
- Retirement facilities
- 1 Full Scale exercise
- 1 Table top exercise
- Disaster training/Presentations
 - 4 Service groups
 - 2 Schools
 - 6 Neighborhood groups
 - 2 Volunteer communications group.

3.2.4 Department and Citywide Training Programs

- ◆ 1 Battalion Chief on a 40-hour per week work schedule manages these programs.
- ◆ This manager has to design, schedule and ensure instructor delivery for not just Fire Department employees but also City employees in certain subjects.
- ◆ This position also oversees the training of new probationary firefighters and manages with City personnel promotional examinations.
- ◆ This training is delivered by Fire Department and City employees organized as follows:



-
- ◆ The subjects delivered to City employees are:
 - CPR
 - Hazmat – Hazard communications, Right to know
 - Confined space
 - Electrical Safety / Lock Out Tag Out
 - First Aid / Environmental emergencies
 - Blood borne Pathogens
 - Fire Prevention & worksite safety
 - Evacuation Plans
 - Respiratory Protection training & testing
 - Incident Command / SIMS
 - Crane Operator Training / Testing
 - Additional related – Back injuries, ergonomics, OSHA record keeping
 - Forklift Operator Training
 - Coordinated City Hall/ Fire Administration restoration project.
 - ◆ In 2007 this program delivered to City employees:
 - Approximately 26 regulatory compliance classes totaling 6,782 employee training hours
 - Total classroom training Hours - 760 hours
 - PowerPoint Development/ Class Preparation time - 280 hours
 - Employee Safety Complaints/ Regulatory Compliance issues follow-up- 520 hours.
 - ◆ Additionally in 2007:
 - 10 firefighters received new and upgraded skills training in hazardous materials
 - 12 employees were trained as CPR instructors
 - All City supervisors received re-training in Workplace Harassment Prevention.

3.2.5 Citywide Hazardous Materials Household Waste Collection Program

- ◆ This program collects household hazardous waste at a City drop-off point and is managed by the Training Battalion Chief.
- ◆ This program also manages medical “sharps” or needles for which patients need a safe disposal method. In 2006, there were 328 residents who used this program.

- ◆ In 2006, the household hazardous waste program collected and successfully diverted from the environment:

Item	County
Total Participants	2,085
Amount of Waste Oil (gallons)	10,440
Oil base paint (5-gallon drums)	18
Latex Paint (5-gallon drums)	68
5 gallon buckets	746
Lead acid batteries (ea)	510
Pounds dry cell batteries	2391
Antifreeze (gallons)	315
Gasoline (gallons)	41
Fertilizer (gallons)	78
Fertilizer (pounds)	545
Propane (≥ 5 gallons)	103
Propane (< 5 gallons)	143
Unknowns	389
Orphan containers	1
Other (crates household materials)	167
Aerosol (drums)	25
Corrosive Acid (drums)	15
Corrosive Base (15 gallon tub)	2
Flammable liquids (drums)	51
Flammable Solids (drums)	26
Oil Filters (drums)	6
Oxidizer (15-gallon drums)	6
Toxic (drums)	13
Annual Item Total	16,099

3.2.6 Overall Support Programs Opinions

Finding #14: Citygate finds that the Redlands Fire Department is doing what most contemporary suburban fire departments are doing to cost-effectively deliver fire and paramedic services while controlling risks with education, code enforcement and automatic fire sprinklers. Where other agencies will partner to control costs, such as fire dispatching, Redlands is willing and part of a regional solution. Redlands has shown early leadership in requiring residential automatic fire sprinklers and keeping the City staff up to date on disaster preparedness issues. Redlands demonstrated this leadership again in its study of possible fire services consolidation with the City of Loma Linda.

Given the support programs overview and the findings regarding the leading edge risk management programs that Redlands is already doing, there is really not much else new in the fire service today that Redlands could explore that would offset its risks and costs of suppression and paramedic program oversight.

If more funding were to become available over the years, Citygate would recommend increasing civilian staffing and program expenditures in fire prevention and public education to really deliver a, preventative outreach program effort.

3.3 MEMORANDUM OF UNDERSTANDING OPERATIONAL REVIEW

Citygate was asked to review the current Memorandum of Understanding between the City and the Redlands Association of Fire Management Employees and between the City and Redlands Professional Firefighters Association, Union Local no. 1354, I.A.F.F. to advise the City whether any changes can be made in the operational provisions of the MOU that might save significant money without a significant reduction in service level to any portion of the City.

3.3.1 Summary of Key MOU Provisions

Both agreements expire June 30, 2010.

Management MOU

The MOU contains a very clear clause in Article 29 that prohibits any change in terms and conditions of employment during the term of the MOU, unless mutually agreed to by both parties. This phrase would encompass operational provisions.

The MOU operationally requires a Battalion Chief to be assigned to each 24-hour shift.

Firefighters MOU

The Firefighters MOU contains language in Article 7 that provides a narrower protection than the Management Article 29 clause, stating, “employee benefits...shall remain in full force and effect during the term of the MOU unless changed by mutual consent.”

Articles 6 and 11 of the Firefighters MOU appear to effectively expand the coverage of Article 7 to be as inclusive as the Management MOU Article 29 by providing that all rules and regulations in effect on September 2005 are incorporated by referenced into the MOU and can only be changed subject to meet and confer and then to provide that grievances can be taken to binding arbitration. A grievance is defined in the MOU as an alleged violation of the MOU, Personnel Rules, or written City policy. Practically speaking, then, both written and unwritten rules and regulations cannot be changed without meet and confer, and an alleged violation of them by the City can be carried by the employee to binding arbitration.

Further amplifying the above coverage in the MOU is a provision in Article 17 that the City must meet and discuss the impact of any planned consolidation of fire services, but then provides that, *“notwithstanding the commitment to meet and discuss any proposed changes in the fire service that would impact Unit members, the City agrees to meet and confer on any proposed changes in the fire service required by the Meyers-Milias-Brown Act.”* This latter clause essentially requires meet and confer on any proposed changes that might come out of any level of fire service consolidation pursued by the City with some other fire department.

With the above provisions in mind, the following operational provisions in the Firefighter MOU are important:

- ◆ The City is required to maintain a minimum daily staffing of 18 firefighters
- ◆ In meeting the 18 minimum staffing requirement, the City is required to staff squad, engine and ladder companies as follows:
 - 2 on each Squad
 - 3 on each Basic Life Support Engine
 - 4 on each Advanced Life Support Engine
 - 3 on each Ladder Company
- ◆ Two on each Advanced Life Support Engine staff shall be paramedics
- ◆ Each engine or ladder company shall have a minimum of 1 Captain, 1 Engineer, and 1 Firefighter.

In meeting the above minimum staffing requirements, the MOU specifically says in the vacation section that there is no limit to the number of personnel who can be off at any one time. It is not clear whether this applies to the number off for any reason or simply applies to the number who can be off on vacation. There are also no provisions allowing the City the right to schedule vacation leave unless the City were to “extrapolate” that right from language in Article 4, Management Rights.

3.3.2 Ability of the City to Make Operational Changes through June 10, 2010

Citygate believes that the City does not have the ability to make operational changes that affect the firefighters during the current term of the MOU without meeting and conferring and that the binding arbitration provision effectively prevents the City from unilaterally making such changes. This means that operational changes that might save funds for the City will apparently require the agreement of the Management and Firefighters Associations.

3.3.3 Are There Cost Saving Changes That Would Minimally Affect Service Levels?

Given the provisions in the MOU that clearly spell out the operational staffing standards of the Fire Department, there were only two areas to effectively examine for cost savings in the MOUs: overall staffing levels and daily vacancies creating overtime costs.

Can Staffing Levels be Reduced?

Often there is a focus on reducing or eliminating the minimum manning provisions in order to avoid bringing staff in on overtime in order to fill positions vacant due to vacation, sick leave, injury etc. However, in a department serving a suburban city such as Redlands and in which the present number of staff is not able to handle several large incidents simultaneously, reducing the number of daily staff would reduce service levels and increase the likelihood that serious medical emergencies would not have a positive outcome and small fires would not be contained to the room of origin.

For example, reducing engine staffing from the present minimum would limit the set up that a crew could do at an emergency prior to the arrival of additional engines, and it would slow down critical tasks needing to be completed at the scene, further reducing the likelihood of a positive outcome. Reducing staff from 4 down to 3 on an Advanced Life Support Engine also limits the capability of the engine staff to handle multiple tasks and/or patients at a major medical emergency until additional units arrive on scene.

Finding 15: Both the number of staff and the staff rankings specified in the MOU are reasonable operational standards and varying from them in Redlands would reduce service levels.

However, a change in the present practice would require the City to meet and confer on the change in rules, regulations and long time practice.

Can Overtime Costs Be Reduced?

The Firefighter MOU does not give the City control over the number of vacancies per day that must be filled by calling back fire staff on overtime. Since the City is required in the MOU to maintain 18 line personnel on duty each day and since the City has budgeted just the bare minimum necessary (54 positions) to staff 18 per day on 3 shifts, any vacancy results in overtime expenses. If the City were to require scheduling vacations and compensatory time off to minimize vacancies resulting from this discretionary time off, there might be some reduction in overtime costs. However, a change in the present practice may require the City to meet and confer on the change in rules, regulations and long time practice.

Some Fire Departments have budgeted extra positions on each shift to provide full-time regular staff to fill in for vacancies. While in the past this was a cost effective approach in lieu of calling staff back in on overtime, presently the high cost of employee benefits in most California fire departments, makes it now more cost effective to use overtime.

3.4 SURVEY REVIEW

As part of this fire department review, the City wanted to conduct a survey of its residents as to their opinions on Redlands fire services. City staff and Citygate designed questions, which were then made available via an Internet-based survey tool, as well as hard copies when requested. The Fire Department mailed out 300 survey invitation cards to residents throughout the City. Additionally, the Department handed out survey invitations at the Household Hazardous Waste collection center on a Saturday.

The survey was available on-line for one month. In all 53 responses were received or about 18 percent of the total invitations sent out. The complete survey, questions and responses are attached to this report as Appendix 1.

In summary, the survey responses are almost uniformly excellent across all dimensions of service, quality and responsiveness. In the last two years, just over half of the respondents had used services from the Fire Department of one or more types.

Overall, these survey results, in Citygate's experience, is typical of the attitude and experience in most communities. Residents see their firefighters positively and when the services are used, the clients report very high levels of customer service and satisfaction. Even though this survey sample size is small and not statistically significant, given the zero quantity of poor ratings, Redlands appears to be providing trained employees who are meeting the service needs of their clients.

One section of the survey dealt with the issue of public education programs. This is an area where a department can help its residents to help themselves and lower risks citywide. When asked if they had taken a CPR class, 83 percent said "no." Additionally, 64 percent said they would attend a disaster preparedness class. Responses were split as to the best time for training – weeknights or Saturday daytime.

As resources allow, the City could follow-up on the apparent willingness to take City-sponsored emergency preparedness classes.

SECTION 4—RECOMMENDED SOLUTIONS AND PHASING PLAN

4.1 INTEGRATED DEPLOYMENT PLAN FINDINGS AND RECOMMENDATIONS

As this study has identified and measured, the Redlands Fire Department is staffed with enough firefighters to address no more than one moderate fire or 2 to 3 EMS incidents at the same time. The City has a distribution of fire stations issue, in that there are not enough fire stations to equitably cover all the developed neighborhoods in a timely manner. If there were more fire stations, the resultant increase in the number of firefighters per day would also help to control serious fires more quickly, or to handle two serious fires at once, plus medical incidents, all with less dependence on automatic aid response being quickly available. While automatic aid is very beneficial to Redlands and its partner cities and the County, Redlands' partners are also very busy departments that find their fire station spacing and increasing call volumes being challenged by growth. Redlands should not assume that automatic and mutual aid would always be available when needed.

Citygate's Deployment findings and recommendations for Redlands as noted in Section 2 are:

- Finding #1:** The City has not adopted nor uses an informal fire deployment measure that includes a specific time measure definition specifying the beginning and end time measurement points with a goal statement tied to risks and outcome expectations. The deployment measure should also have a second measurement statement to define multiple-unit response coverage for serious emergencies. Making these deployment goal changes will meet the best practice recommendations of the Commission on Fire Accreditation International and provide the City with a continuing measure of its response effectiveness as the community grows.
- Finding #2:** As both the maps of the 4-minute travel time measure and Insurance Service Office requirements for a 1.5-mile travel distance coverage display, the core of the City receives adequate first-due unit coverage. This is not possible to all outer edge neighborhoods, where timely response does not meet nationally recommended goals, which could provide a greater likelihood of a positive outcome in the emergency response.
- Finding #3:** The City receives adequate ladder truck coverage from Station #261.
- Finding #4:** With 18 firefighters on duty per day, Redlands has just enough firefighters for one moderate building fire at once or two to three simultaneous medical emergencies.
- Finding #5:** To increase first-due unit coverage in the northeast and eastern edge areas will take an additional fire station with an additional crew or the use of re-deployed existing personnel.
- Finding #6:** With a citywide fire and emergency medical response performance of 8:00 minutes/seconds at 90 percent, as the mapping analysis predicted, the City does not have enough primary neighborhood fire stations.

Finding #7: While the further reaches of the coverage areas for fire stations #262 and #263 are too far away to serve quickly, the overall citywide response times are statistically still close to a recommended best practice at 90 percent @ 8 minutes because many more calls are located in the core of the City, close to two stations.

Finding #8: Currently, the number of 2 or more simultaneous incidents at 42 percent is a growing problem and the Department should carefully watch this as calls for service grow with the current number of fire stations. Simultaneous calls for a department staffed at the present Redlands staffing level, mean that there could be inadequate resources to provide a sufficient number of people to effectively respond to two large emergencies, such as fires or serious vehicle accidents, especially if the mutual aid system could not immediately respond.

Finding #9: The multiple-unit (first alarm) compliance measures are not meeting a best practices goal across the City due to the lack of a northeast to eastern area fire station, or due to the significant response area overlap spacing of the two central area stations.

Finding #10: Calls for service are principally driven by population. Over the last three years, calls for service have grown, and as population grows, so will the demands on the Fire Department. From Fiscal Year 04/05 thru 06/07, total calls for service have grown 14.2 percent to just over 8,000 per year.

4.2 DEPLOYMENT RECOMMENDATIONS

Citygate's near term recommendations within the scope of this deployment performance review are designed establish a framework within which the City can make a best fit decision on changes to fire service deployment.

Recommendation #1: The City should adopt revised performance measures to direct fire station location planning. The measures should be designed to deliver outcomes that will save patients medically salvageable upon arrival and keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:

1.1 Distribution of Fire Stations for Built-up Suburban Areas: To treat medical patients and control small fires, the first-due unit should arrive within 7 minutes, 90 percent of the time from the receipt of the 911 call. This equates to 1-minute dispatch time, 2 minutes company turnout time and 4 minutes drive time spacing for single stations.

1.2 Multiple-unit Effective Response Force for Built-up Suburban Areas: To confine fires near the room of origin, to stop wildland fires to under 5 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 15 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1-minute

dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units.

Recommendation #2: Staff needs to carefully analyze the availability of funds and both the capital and operating costs involved in building and operating a 5th new fire station with existing or additional personnel, versus the costs of re-locating existing Stations #261 and #264.

4.3 NON-DEPLOYMENT FUNCTIONS

Finding #11: In Citygate’s experience, we find the headquarters-staffing amount is entirely consistent and appropriate for the needs of a career fire department the size of Redlands. Redlands is providing a full services fire department and as such its firefighting, emergency medical and fire prevention programs are complex, regulated by the federal and state governments and should be properly supervised.

Finding #12: In reviewing the amount of programs delivered and the size of some of them, like fire prevention, the staffing dedicated to fire prevention, public education, disaster preparedness and clerical support is on the low side for a city of Redlands’ size.

Finding #13: EMS is the majority of the Department’s emergency workload and creates significant occupational health and safety exposure. In order to deliver high quality medical emergency service and to meet the mandated oversight requirements of the County and State, the Department needs to retain its present training and EMS quality assurance programs.

Finding #14: Citygate finds that the Redlands Fire Department is doing what most contemporary suburban fire departments are doing to cost-effectively deliver fire and paramedic services while controlling risks with education, code enforcement and automatic fire sprinklers. Where other agencies will partner to control costs, such as fire dispatching, Redlands is willing and part of a regional solution. Redlands has shown early leadership in requiring residential automatic fire sprinklers and keeping the City staff up to date on disaster preparedness issues. Redlands demonstrated this leadership again in its study of possible fire services consolidation with the City of Loma Linda.

Recommendation #3: The Department needs to ensure the EMS program has the personnel and resources to properly train, monitor, coordinate and provide quality assurance for the EMS programs.

Given the support programs overview and the findings regarding the leading edge risk management programs that Redlands is already doing, there is really not much else new in the fire service today that Redlands could explore that would significantly offset its risks and costs of suppression and paramedic programs.

If more funding were to become available over the years, Citygate would recommend increasing civilian staffing and program expenditures in fire prevention and public education to really deliver a large preventative outreach program effort.

4.4 MEMORANDUM OF UNDERSTANDING OPERATIONAL REVIEW

Finding 15: Both the number of staff and the staff rankings specified in the MOU are reasonable operational standards and varying from them in Redlands would reduce service levels.

The Firefighter MOU does not give the City control over the number of vacancies per day that must be filled by calling back fire staff on overtime. If the City were to require scheduling vacations and compensatory time off to minimize vacancies resulting from this discretionary time off, there might be some reduction in overtime costs. However, a change in the present practice would require the City to meet and confer on the change in rules, regulations and long time practice.

4.5 RESIDENT SURVEY REVIEW

The positive findings of the limited survey indicate that the services provided are done so with competent and caring City staff. Redlands' residents are interested in receiving disaster preparedness training and as City resources allow, more classes could be offered.

4.6 PRIORITIES AND TIMING

While all the recommendations can be worked on in parallel and some will take several fiscal years both in time and funding, Citygate recommends the following short-term priorities:

4.6.1 Phase One

- ◆ Absorb the policy recommendations of this master plan and adopt revised fire department performance measures to drive the future location and timing of fire stations.

4.6.2 Phase Two

- ◆ Review in depth the issues and costs associated with either:
- ◆ Re-distributing existing staff to open a 5th fire station, or
- ◆ Re-locate both Stations #261 and #264 farther apart to increase coverage to the east and northeast sections of the City.

APPENDIX 1

RESIDENT SURVEY RESULTS

REDLANDS FIRE RESIDENT SURVEY RESULTS

The results from the Redlands Fire Department Resident Survey are disclosed below:

1. Have you received service from Redlands Fire Department in the last two years?		
Yes	29	55%
No	24	45%
Total	53	100%

2. If you received service during the past two years, was it (please check all that apply)		
Emergency Services	20	69%
Inspection Services	5	17%
Education / Training	2	7%
Household Hazardous Waste	8	28%
Sharps Exchange Program	3	10%
Other, please specify	0	0%

3. For “Emergency Services”, please answer the following five questions using a scale of 1 to 5 to rate your level of satisfaction:					
	Excellent	Good	Adequate	Poor	Unsatisfactory
If you contacted 911, was the operator courteous and helpful?	17 94%	1 6%	0 0%	0 0%	0 0%
Did the response time meet your expectations?	20 100%	0 0%	0 0%	0 0%	0 0%
How did our firefighter/paramedic personnel treat you?	20 100%	0 0%	0 0%	0 0%	0 0%
Did our staff keep you informed of what was happening?	20 100%	0 0%	0 0%	0 0%	0 0%
Were our firefighter/paramedic personnel knowledgeable and competent?	20 100%	0 0%	0 0%	0 0%	0 0%

Note: The top number is the count of respondents selecting the option. The bottom % is the percent of the total respondents selecting the option.

4. Overall, how would you rate the service that you received?						
	Excellent	Good	Adequate	Poor	Unsatisfactory	N/A
Emergency Services	20 91%	0 0%	0 0%	0 0%	0 0%	2 9%
Inspection Services	4 21%	1 5%	0 0%	0 0%	0 0%	14 74%
Education / Training	2 11%	0 0%	0 0%	0 0%	0 0%	16 89%
Household Hazardous Waste	8 35%	0 0%	0 0%	0 0%	0 0%	15 65%
Sharps Exchange Program	3 17%	0 0%	0 0%	0 0%	0 0%	15 83%
Other (as you indicated earlier)	0 0%	0 0%	0 0%	0 0%	0 0%	17 100%

Note: The top number is the count of respondents selecting the option. The bottom % is the percent of the total respondents selecting the option.

The Fire Department provides education and disaster preparedness training.

5. Have you taken a CPR class in the last two years?		
Yes	9	17%
No	44	83%
Total	53	100%

6. Would you attend a disaster preparedness training?		
Yes	34	64%
No	19	36%
Total	53	100%

7. What is the best time for you to attend a disaster preparedness training?		
Weeknights (Monday - Thursday)	16	47%
Saturday daytime	18	53%
Total	34	100%

8. Please rate the following on a scale from 1 to 5:					
	Excellent	Good	Adequate	Poor	Unsatisfactory
Rate the overall professionalism of the Redlands Fire Department.	48 92%	4 8%	0 0%	0 0%	0 0%
What is your overall satisfaction with the Redlands Fire Department?	47 90%	5 10%	0 0%	0 0%	0 0%

Note: The top number is the count of respondents selecting the option. The bottom % is the percent of the total respondents selecting the option.