CITYGATE ASSOCIATES, LLC
FOLSOM (SACRAMENTO), CA MANAGEMENT CONSULTANTS

FIRE SERVICE DEPLOYMENT AND DEPARTMENTAL PERFORMANCE AUDIT FOR THE COUNTY OF SANTA BARBARA

VOLUME 1 OF 2—MAIN REPORT

February 2, 2012

2250 East Bidwell St., Ste #100 Folsom, CA 95630
(916) 458-5100 Fax: (916) 983-2090

This page was intentionally left blank

TABLE OF CONTENTS

Section **Page**

VOLUME 1 of 2 – (this volume)

Table of Tables:

Table of Exhibits:

VOLUME 2 of 2 – Map Appendix (separately bound)

This page was intentionally left blank

EXECUTIVE SUMMARY

The County of Santa Barbara (the County) retained Citygate Associates, LLC to conduct a deployment analysis and departmental performance audit assessment of the County Fire Department (the Department). The objective of this analysis was to identify both the current service level and services desired, and then to assess the Department's ability to provide them. After understanding gaps—if any—in operations and resources, Citygate has provided recommendations to maximize and improve Department operations and resources over time. Further, due to the current fiscal condition of the County, Citygate was to offer opinions on how to maximize current Fire Department operations and resources to offset the Fire District projected FY 2012-13 deficit of approximately $1.8 million.

This comprehensive study is presented in several sections including: this Executive Summary outlining the most important findings and recommendations; the fire station/crew deployment analysis supported by maps and response statistics; the assessment of non-deployment headquarters functions; and the fiscal restraints and costs associated with the proposed recommendations. The final section on page 127 integrates all of the findings and recommendations presented throughout the report and concludes with suggested priorities. Overall, there are 38 key findings and 29 specific action item recommendations.

POLICY CHOICES FRAMEWORK

As a starting point, County leadership needs to remember that there are no mandatory federal or state regulations directing the level of fire service staffing, response times and outcomes. Thus, communities have the level of fire services that they *can afford*, which is not always what they would desire. However, 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.*

OVERALL CITYGATE PERSPECTIVE ON THE STATE OF COUNTY FIRE SERVICES

In summary, Citygate finds that that limited fiscal resources restrict the Santa Barbara County Fire Department in its capacity to serve a very large area with diverse emergency response needs. As is stated in this report's deployment Section 2 on page 17, the fire station locations are not deployed in a way that creates overlapped service areas, since the stations are located in separated population clusters. As such, in Citygate's opinion, the resource use in fire crews is already at maximum utilization. There are not economies that can be achieved by reducing daily fire crew staffing without reducing customer service response times.

As for headquarters staffing and services, Citygate finds in Section 3 on page 71 that the recent staffing reductions in headquarters have reduced programs to, or in the case of safety/training, below the best practice minimums for a fire department the size and complexity of Santa Barbara

County's. As such, further reductions in headquarters services will greatly reduce or eliminate services in the affected areas.

Therefore, Citygate finds that the challenge of providing fire services in Santa Barbara County is similar to that found in many California communities. That is, providing an adequate level of fire services within the context of limited fiscal resources, competing needs, growing populations and the uncertainty that surrounds the exact timing and location of future development.

Specifically in Santa Barbara County, present Fire Department revenue sources are not projected to rise fast enough to keep up with the rising cost of providing the current level of fire services. Unless new sources of revenue are developed for the Department, fire service levels will need to be reduced further, because expenditures are expected to exceed revenue by an aggregate of $14.8 million by FY 2015-16. This is an annual deficit that will start at $1.8 million in this coming year and then average $4 million over each of the next three years.

Given the current structural deficit of $1.8 million in the coming fiscal year in the Fire District budget, if the County is unable to 1) find or develop a revenue source to solve this structural deficit in FY 2012-13 or 2) extend the salary and benefit concessions agreed to by the employees for the current year and only partway through next year, then it is recommended 3) the County limit the use of overtime by approximately half its current usage rate and then temporarily close a fire station on a rotating basis when daily staffing is not sufficient to staff all stations. Overtime is presently used to fill in vacancies when line personnel are on leave or a position is vacant.

As the projected deficit grows to an average of $4 million in the succeeding three years, the County will need to consider again the alternatives of 1) finding or developing a revenue source to close the deficit, 2) adjusting employee compensation levels, or 3) closing one or more fire stations. The annual savings from reducing the number of fire crews on duty each day is between $2.2 and $2.5 million per fire crew (9 line FTEs). The County's policy choices, of course, also include a combination of these three basic alternatives.

In the current economy, many agencies have been forced to make this choice to balance budgets. Citygate and our clients, when considering where to reduce daily firefighter staffing, use the following strategies:

1. Where there are two units, such as a ladder and engine in the same station, close one of the units, which leaves at least one first responder in that station area;
2. Where single fire stations have to be closed, consider stations that:
    a. Have the lowest call volumes;
    b. Have lower population densities;
    c. Have responding "backfill" stations that are the normal station spacing distance away;

d. Have a low rate of simultaneous calls for service;

e. Are not directly adjoining the border of a mutual aid partner agency, where that agency might feel they are being asked to subsidize the closed area without compensation.

Even if some headquarters programs were to be reduced further, this would either impact the safety and training of firefighters, or in the case of fire prevention, such efforts would reduce revenues from permit programs and over the long-term could affect the size or severity of fires.

Even as the County has already reduced some fire service staffing and programs back to the same level they were seven years ago, the County has continued to recognize the value of fire prevention and the need to prevent or limit the severity of fires, given the type of housing stock, commercial buildings, younger and elderly residents, and the threat of wildland fires. To meet these challenges, the County has adopted safety codes more strenuous than those mandated by state minimums. Examples include the automatic fire sprinkler ordinance, fireworks prohibition ordinance, and wildland fuel management programs.

MAIN CHALLENGES

One can summarize the fire service challenges that face the County in three themes: *(1) quantity of staffing on many of the units in rural areas; (2) the impacts of staffing reductions in headquarters programs the last three years which are negatively affecting many programs; and (3) the need for annual operating funds to at least retain current service levels and hopefully to improve services and to provide the capital funds to repair and replace aged fire stations and fire apparatus.*

Challenge 1: Field Operations Deployment (Fire Stations and Staffing)

In Section 2 of this study, Standards of Response Coverage Analysis (Station Deployment and Staffing), Citygate's analysis of prior response statistics and use of geographic mapping tools reveals that the County has *a modest fire station staffing issue to rectify as fiscal resources allow*. The County's fire stations are correctly located and there is a limited need for additional stations.

As funding allows, the County should strongly consider staffing a fourth firefighter on units that protect very high population densities or are located too far from other units for quick support when interior fire attack is needed. These stations are: Truck 11, Stations 12, 17 and 18 in the south battalion; Stations 21, 23, 24, 30, 41, and 51 in the north battalion. This will require an additional 10 firefighters per day, or 30 total for coverage on three shifts.

Challenge 2: Headquarters Program Functions

A fire department of the County's size needs to have a management team that is the proper size and adequately trained and supported. There are increasing regulations to be considered 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 organization chart shows an organization that does not currently meet the needs of a department the size of the County's. Current Department headquarters staffing is 11.25 positions lower than at its peak between FY 2007-08 and 2009-10. Due to the fiscal pressures on the County, there has been an appropriate and greater emphasis on retaining staffing for fire companies to provide emergency response. This resulted in reductions in the headquarters team needed to coordinate and lead the organization. These reductions are not sustainable for much longer.

Citygate understands the County's fiscal situation and finds the headquarters functions insufficient in Training, Command, and Safety/clinical oversight positions. Even without new, long-range revenue sources, at least three (3) of the eleven (11) reduced headquarters positions (Finance Manager, Safety & Standards and Information Technology) have to be restored as soon as funding allows. Citygate recommends restoring the remaining eight (8) positions also as funding is available. This will bring the Department's headquarters staff to an appropriate size for the County.

Challenge 3: Funding for Annual Operations and Capital Replacement

The Fiscal Impacts section of this report identifies two fundamental fiscal challenges facing the County. The size of the problem can appear overwhelming, and so it is more practical to think of solving these challenges in a phased manner, as additional revenue is available.

The immediate problem is that present Fire Department revenue sources are not projected to rise fast enough to keep up with the rising cost of providing the current level of fire services. Unless additional revenue resources are available to the fire services, there will be a further reduction in fire station staffing levels.

The next challenge is to develop the revenue resources to restore at least some of the headquarters reductions that have occurred over the past few years and begin implementation of the Capital Improvement Program.

In summary, the immediate and long-term needs of the Fire Department are:

- Immediate: $1.8 million in FY 2012-13, increasing to an average of $4 million per year over the next three years just to maintain current services
- Near Term: $12.1 million per year to implement the operational and support recommendations
- Longer Term: $6 million per year in cumulative annual debt to implement the CIP program.

There is not enough revenue flow in the current or near-term economy to address these fiscal needs without serious adjustment in other County priorities. Given this constraint, the County could explore several types of revenue changes that would support improved fire services. Each has its pros and cons, any one of which will require in-depth research, policy direction and public support.

Since the establishment of the Santa Barbara County Fire District[1] revenue structure in 1957, the property tax share allocated to the Fire District was lower than other southern California fire districts. As urbanized areas developed in the County driving the need for more suburban and then urban levels of fire services, especially with more homes abutting wildland-prone fire areas, there were no increases to the Fire District tax rate. In Ventura County, for example, the Fire District is allocated 15.07 percent of the property tax while in Santa Barbara County it is 11.97 percent. Given a low tax rate and many areas with fewer taxable parcels, the overall Fire District revenues cannot keep up with current and future fire services demands.

In Section 4, Fiscal Impacts, several revenue options are presented. However, only three revenue measures described there can begin to provide even a portion of on-going operating funds needed:

- Voter approval of an Oil Production Tax would generate $1.8 to $3.0 million annually.
- Increasing the property tax allocation to the Fire District, which would provide an additional $2.5 million per year for each 1 percent of increase above the present 11.97 percent, depending upon changing assessed valuation in the next few years.
- Voter approval of a parcel tax dedicated to fire services might generate between $1.5 and $2.5 million, depending upon the parcel tax rate used.

No one revenue measure above can meet all of the operating needs, nor can just one provide room for the estimated $6 million in cumulative annual debt service needed to address Fire Department Capital Improvement needs. The County will need to make priority choices regarding revenue sources and fire services to restore and enhance.

Fire Plan Phasing and Costs

Some of the recommendations in this planning effort requiring minimal additional resources and can be implemented in parallel. Others will take several fiscal years, both in time and funding. Given these two realities, Citygate recommends the following short- and long-term steps:

[1] The first County Fire District area was established in October 1925. By 1966, the County had five fire protection districts and four fire protection zones.

Step One

- Receive the policy recommendations of this fire services study and adopt revised Fire Department performance measures to drive the effective and efficient deployment of firefighting and emergency medical resources;
- Research and design how to provide the funds necessary to retain the current level of service, or absent new revenue, make the service and other compensation reductions to eliminate the structural deficit in the Fire District budget;
- Provide funding to add back critical command, training, and safety personnel;
- Begin the discussion to research and design how to provide funding to restore and enhance services in order to provide at least a suburban level of service to the most populated areas.

Step Two

- Seek approval for the desired funding plans.

Step Three

- After ensuring funding for the present level of service, restore headquarters positions where staffing was cut back;
- Add a third duty battalion chief per day in the mid-county;
- Begin a phased plan to increase staffing from three to four firefighters per engine for higher population/risk areas and at the more remote fire stations;
- Commence a capital design, funding and construction plan for fire facility improvements plus new and replacement fire apparatus not already funded in the fleet replacement plan.

SECTION 1—INTRODUCTION AND BACKGROUND

1.1 REPORT ORGANIZATION

This report 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 the County's current Fire Services.

Section 2 Standards of Response Coverage (Station/Staffing) Analysis: An in-depth examination of the Fire Department's deployment ability to meet the community's risks, expectations and emergency needs.

Section 3 Fire Department Review of Headquarters Program Functions: A review of the Fire Department's non-emergency operations and headquarters programs.

Section 4 Fiscal Impacts: An outline of the costs to implement this plan's recommendations.

Section 5 Recommended Solutions and Phasing Plan: An integrated recommendations and conclusions section.

Separately attached:

Volume 2 Response Coverage Geographic Map Atlas

1.1.1 Goals of Report

As each of the sections mentioned above imparts 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 Sections 2 through 4 of this report. To provide a comprehensive summary, a complete listing of all these same findings and recommendations, in order, is found in Section 5. Finally, the report brings attention to the highest priority needs and possible timing for implementation.

This document provides technical information about how fire services are provided, legally regulated, and how the County's Fire Department currently operates. This information is presented in the form of recommendations and policy choices for the County leadership and community to discuss.

The result is a solid technical foundation upon which to understand the advantages and disadvantages of the choices facing County leadership and community on how best to provide fire services, and more specifically, at what level of desired outcome and expense.

1.1.2 Limitations of Report

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 providing the service and the public.

While this report and technical explanation can provide a framework for the discussion of fire services for Santa Barbara County, neither this report nor the Citygate consulting team can make the final decisions or cost out in detail every possible alternative. Once final strategic choices are given policy approval, County staff can conduct any final costing and fiscal analysis as normally done in the operating and capital budget preparation cycle.

1.1.3 General Observations and Project Approach

The objective of this project was to identify both the current service level and services desired, and then to assess the Department's ability to provide them. After understanding gaps—if any—in operations and resources, Citygate has provided recommendations to maximize and improve Department operations and resources over time. Further, due to the current fiscal condition of the County, Citygate was to offer opinions on how to maximize current fire department operations and resources to offset the Fire District projected FY 2012-13 deficit of approximately $1.8 million.

It needs to be stated at the front of this study that Citygate Associates team members who spent time in the County found the Department staff at all levels very cooperative, professional and technically competent. They are committed to their county, agency, and mission. Given the struggle to keep up while coping with an ever-tightening economy, there is pride and ongoing effort to deliver the best customer service with the currently available resources. Fires are being attended to and medical calls are being answered with excellent patient care by the firefighters.

To gain an understanding of Santa Barbara County and its fire service needs, the Citygate team:

- Reviewed agency provided documents and conducted stakeholder listening interviews within and outside of the Department.
- Used a geographic mapping software program called *Fireview*™ to model fire station travel time coverages.
- Used an incident response time analysis program called *NFIRS 5 Alive*™ to review the statistics of prior incident performance. The results were plotted not

only on graphs and charts, but also "live" using 3D tools over Google Earth images.

- Assessed stakeholder perceptions and expectations of Fire Services – by issuing SWOT questionnaires to fire department employees (**S**trengths, **W**eaknesses, **O**pportunities & **T**hreats) to listen to what the perceptions of the Department are and how it is or is not meeting needs.

- For the headquarters systems review, Citygate used the Commission on Fire Accreditation International self-assessment criteria and National Fire Protection Association Standard 1201, *Standard for Providing Emergency Services to the Public,* as performance indicators and other NFPA standards as the basis for evaluating non-response related services, such as fire prevention, training and administration.

- It is important that the reader of this study understands that while there are issues to be planned for and improved upon in the Department, there is not a problematic, "won't do it, can't do it" culture to be overcome. The employees of the Department are eager for a plan that gives direction and *triages the existing resources* to do an even better job for the citizens of Santa Barbara County within the current economic constraints.

1.2 COUNTY AND FIRE DEPARTMENT BACKGROUND

This project involved the development of deployment analysis and departmental performance audit assessment. This effort involved the study of the fire services risk within the County. In this report, the term "Department" will be used when referring to the fire agency itself, and the term "County" will be used when referring to the County of Santa Barbara.

The County is world renowned; it has expansive tourist destinations including the waterfront and wineries. This uniqueness places some unusual burdens on the Fire Department.

Santa Barbara County is basically bordered on the north by San Luis Obispo County, east by Ventura County, and south and west by the Pacific Ocean. The County includes eight incorporated cities with a population totaling 290,478 people. The unincorporated portion of Santa Barbara County has a population of 133,417. The County is readily divided east and west by Highway 101, the main thoroughfare in the County. The topography of the streets in the flatter part of the area is on a grid pattern; in conjunction with the main arterials, this permits rapid access and short emergency response times. In the eastern hilly areas of the County, the streets are in a more dendrite pattern and this hampers efficient fire station spacing for emergency access.

Demographically, according to the 2010 census, the unincorporated county population is about 47 percent white, 4.6 percent Asian, 42.9 percent Latino or Hispanic, 1.7 percent African American, and the remainder, other races. The average household is 2.86 people.

The County is governed by a five-member Board of Supervisors elected by the District; yearly, one member of the Board is chosen by the Board to serve as chairperson and one as vice chairperson.

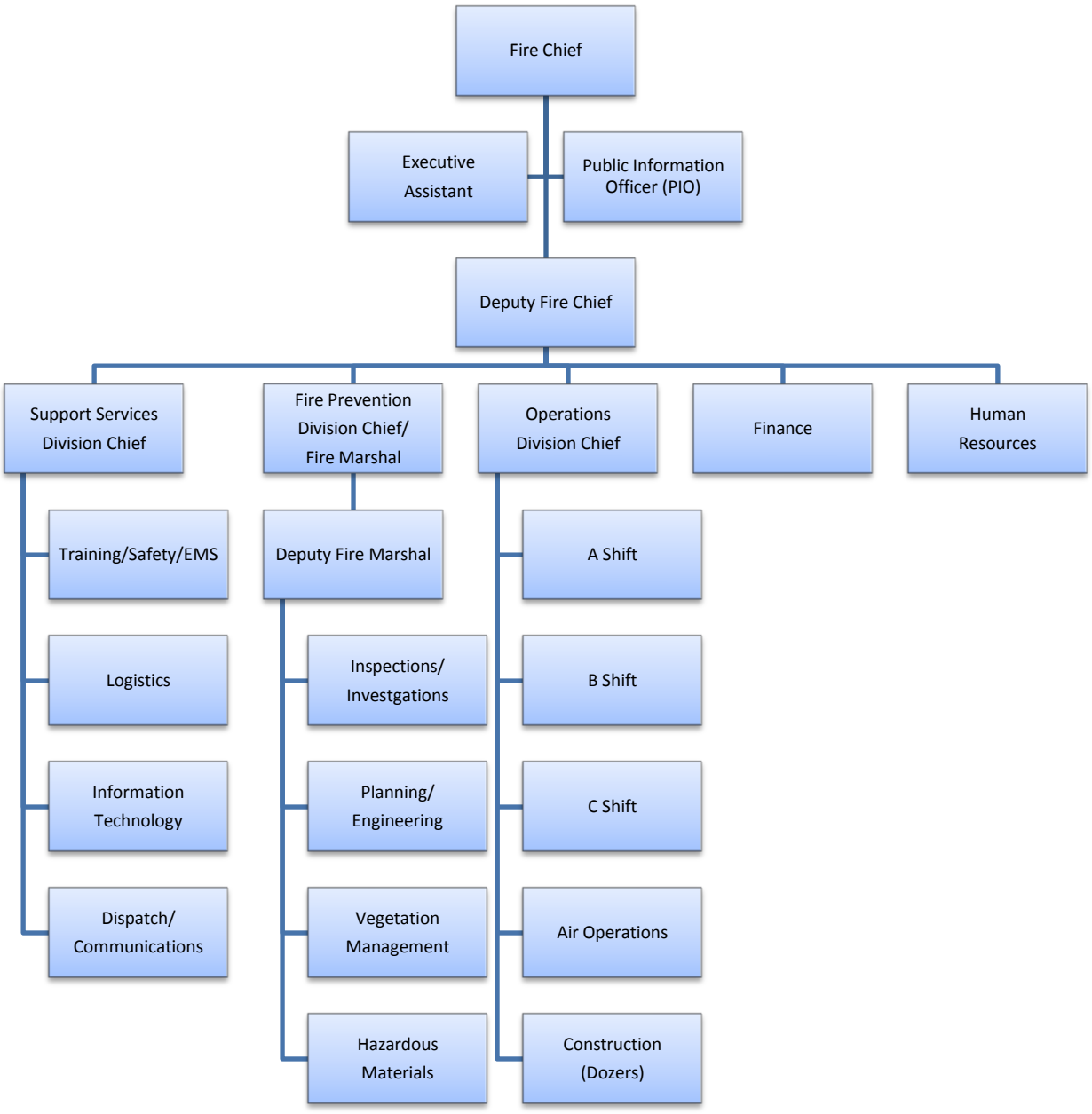
Santa Barbara County enjoys a Mediterranean climate, as does the rest of Southern California. In the foothill area of the eastern part of the County, this can be a problem in late summer and early fall when the Sundowner winds blow, bringing in hot dry air and high winds from the desert, creating a potential wildland fire problem.

The Santa Barbara County Fire Department operates out of sixteen (16) strategically located fire stations. All fire stations deliver fire and emergency medical services (EMS) and a specialty station at the airport for Air Operations is located adjacent to Station 32 in Santa Ynez. The Department has a daily constant (minimum/maximum) staffing of 59 firefighting personnel on duty operating 16 fire engines (three or four firefighters each), one ladder truck (three firefighters), three paramedic rescue-ambulances (each with two firefighter/paramedics), two rural water tenders (one firefighter each) and two Battalion Chiefs (one person for each battalion). In addition, Santa Barbara County also cross staffs (using fire engine staff) units for wildland responses, water tenders (large capacity vehicles carrying water for fire suppression) in areas where fire hydrants are not available, and one ambulance in the Cuyama Valley.

Headquarters staffing consists of the Fire Chief, Deputy Fire Chief, Human Resources and Finance Managers, and three Division Chiefs. One Division Chief manages the Support Services Division (Training, EMS, Logistics, IT), one manages the Fire Prevention Division (Inspections, Investigation, Plans Examination, Hazardous Materials regulation), and one manages the Operations Division. In addition, Santa Barbara County Fire Department provides an aerial operations unit consisting of one on-duty helicopter with a pilot and crew chief, with paramedics available from Station 32. This unit is available for wildland firefighting, search and rescue, medical evacuation (medevac), and ocean water rescue. This unit is staffed 10 hours per day, every day of the week and backfilled at night by on-call personnel. The Dispatching function is handled by the Santa Barbara County Sheriff's Office. Communications and Fleet services are handled and coordinated by the County General Services Department.

The current headquarters configuration came about as a result of the reductions in staff since the Fiscal Year 2008-09 budget cycle. For a department of this size with the unique challenges that it faces on a regular basis, it has a very lean command, safety and training staff.

Santa Barbara County Fire Department Current Organization Chart



In Citygate's experience with fire services, the above organization chart shows the appropriate functions and reporting relationships for a fire department the size of Santa Barbara County's. The span of control is consistent with other large fire departments and published fire service best practices.

Citygate does not benchmark a fire agency to only the Insurance Service Office (ISO) Public Protection Classification system. There are other best practice benchmarks from the National Fire Protection Association (NFPA), the Commission on Fire Accreditation, and the Emergency Medical Care community to allow an agency to assess its risks, desired outcomes, ability to fund

and then design a firefighting and emergency medical deployment system to balance these variables. Given the divergence of communities in the United States and these multiple factors being present in different amounts per community, it is impossible to prescript a one-size-fits-all formula for fire service deployment levels.

1.3 Project Approach and Research Methods

Citygate used several tools to gather, understand, and model information about the County and its 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. We asked the Department to have each of the members responsible for a program or segment to complete a SWOT questionnaire, and 13 of these were received.[2]

In subsequent site visits, Citygate team members followed up on this information by conducting focused interviews of fire management team members and other appropriate County staff. We reviewed demographic information about the County, proposed developments, and managed growth projections. As we collected and understood information about the County and the 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 crew quantities required to serve the County as it currently exists and to plan for future development.

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 both address current needs with effective and efficient use of existing resources as well as long range needs as the County continues to evolve. The result is a framework for improving fire services in the Department while meeting reasonable expectations and the fiscal realities of the County.

1.4 Fire Department Background Information

Santa Barbara County Fire Department has a rich history beginning in 1926. Because of Santa Barbara County's diverse culture, history, and geographic setting, the County attracts thousands of tourists year round. The County contains 2,735 square miles including developed areas and open spaces. The County has eight (8) incorporated municipalities, three of which are in the Santa Barbara County Fire Protection District and receive fire protection services from the County Fire Department. The other five (5) jurisdictions have their own departments, which have

[2] SWOT – acronym for **S**trengths, **W**eaknesses, **O**pportunities, **T**hreats; a commonly used management tool for evaluating organizations, which allows insiders to report on their perspective of an organization.

automatic and mutual aid agreements with the County Fire Department. The January 2010 population, according to the United States Census Bureau for the Santa Barbara County Fire Protection District is approximately 172,211. This includes a population of 40,073 for the Cities of Goleta, Solvang and Buellton, which lie within the Fire District and receive fire protection services from the Department. Also within the District and served by the Department are the campus of the University of California, Santa Barbara, which has approximately 22,000 students on campus and 629,563 acres of the Los Padres National Forest. The entire county population including all incorporated cities is 423,895 people. Santa Barbara County Fire Protection District area encompasses 40 percent of the entire County population. This population figure, of course, does not account for the daily influx of employees and visitors. The Net Assessed Valuation of the County in 2010 was $61,600,000,000.

In addition to protecting the above risks, Santa Barbara County additionally contains:

- High-value retail sales businesses
- World class hotels and entertainment venues
- Open space areas containing vegetation prone to wildfires
- Many larger than average residential properties, some containing high-value and/or rare personal possessions
- 3,963 business properties that have been evaluated by the Insurance Service Office (ISO) for underwriting purposes.

1.5 Regulation Affecting the Fire Service

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

- 1999 OSHA Staffing Policies – Federal Occupational Health and Safety Administration (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.

- May 2001 National Staffing Guidelines – The National Fire Protection Association (NFPA) Standard on Career Fire Service Deployment was issued ten 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 crew staffing, arriving on one or two apparatus as a "company." The initial attack crew 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.

- Incident Commanders at Hazardous Materials Incidents – 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.

- Cal/OSHA Requirements – Among the elements required is a safety orientation for new employees, a hazard communications system for employees to communicate hazards to supervisors, the Cal/OSHA process for post injury reviews, the required annual report of injuries, and a standard for safety work plans. Employers have many different responsibilities under the Occupational Safety and Health Act of 1970 and the Code of Federal Regulations (CFR). Initially, OSHA focused its efforts on the private sector, more recently, it has turned its attention to the public sector and specifically the fire service.

1.6 Negative Pressures on Volunteer-based Fire Services

A common question is, "Why not solve some of a county'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:

- Economic pressures result in more two-income families and less time to volunteer.

- In a commuter economy, more jobs are clustered in metropolitan and dense suburban areas. Communities that formerly were small towns increasingly have residents who work elsewhere, and many of the younger age people who would consider volunteering are just too busy.
- 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.

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 the community and to give something back. Most departments feel that it takes 100-120 hours of training per year to meet safety minimums, and this time is expended before a volunteer goes on a single incident.

As this report will explain in detail, County fire services are already spread thin for headquarters functions. Even if a small volunteer cadre could be found to assist with non-emergency work, volunteer programs take design, supervision, and some fiscal support. In Citygate's opinion, the needs of the Department far outweigh what a small volunteer or per diem apprentice firefighter program could solve. More importantly, just creating and operating such a program would drain the already thin headquarters staffing from managing critical day-to-day operations.

This page was intentionally left blank

SECTION 2—STANDARDS OF RESPONSE COVERAGE (STATION/STAFFING) ANALYSIS

Section Intent: This section serves as an in-depth analysis of the County's current ability to deploy and meet the emergency risks presented in the County. The response analysis will use prior response statistics and geographic mapping to help the Board of Supervisors and the community to visualize what the current 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 County Board of Supervisors "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 do 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 Standards of Response Coverage 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 standards of response coverage statements by risk type. The evaluation includes neighboring fire agencies in the countywide mutual aid system.

Fire department deployment, simply stated, is about the ***speed*** and ***weight*** of the attack. Speed calls for first-due, all risk intervention units (engines and trucks) 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 quickly amass enough companies 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, counties such as Santa Barbara 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 tell certain segments of the community that they 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 Coverage process (at varying levels of detail) to understand the risks in the County, how the 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 the County 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 the County's unique needs, and did not use one-size-fits-all national recommendations.

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

2.2 Community Outcome Expectations – What is Expected of the Fire Department?

The next step in the Standards of Response Coverage 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 County need to be understood and good data collected.

Most urban and suburban communities, if asked, would probably expect that fires be confined to the room or nearby area of fire origin, and that medical patients have their injuries stabilized and be transported to the appropriate care location. Thus, the challenge faced by the County is to maintain an equitable level of fire service deployment across similar population density service 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 in urban/suburban areas would like to see first-due fire engine's stations spaced 1.5 miles apart and ladder trucks spaced 2.5 miles apart, which, given travel speeds on surface streets, is a 3- to 4-minute travel time for first-due engines and a 7- to 8-minute travel time for first-due ladder trucks. For rural areas, the ISO grading schedule ranges from a Class Five to Ten, based on distance and water supply availability, such as from fire department tankers. Areas more than five miles from a fire station (career or volunteer) are considered also Class Ten, and thus not protected.

The newer National Fire Protection Association (NFPA) guideline 1710 on career staffed fire services deployment in urban/suburban areas suggests a 4-minute travel time for the initial fire apparatus response and 8 minutes travel time maximum for the follow-on units.

The ISO grades community fire defenses on a 10-point scale, with Class 1 being the best. Historically, the County has been evaluated as a Class 4/7 department, meaning the fire engine and ladder truck coverage is provide at the suburban and rural level with the goal being to reduce the risk of serious fire spread – generating conflagrations in the community. For many reasons, it is not necessary for an agency to deploy only to meet the ISO measures. For underwriting purposes, the ISO criteria are designed to evaluate the department's ability to stop a building fire *conflagration*. The ISO system does not address small fires, auto fires, outdoor fires and emergency medical incidents. In addition, underwriters today can issue fire premiums in Grading Schedule "bands" such as 3-5 and give safer buildings a single rating of Class 1, for example.

Thus, if an agency only tries to meet the ISO or NFPA station placement criteria, they do not necessarily deliver better outcomes, given the diversity of risk across American communities. 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 begins to die in 4 to 6 minutes without oxygen.

Not only heart attacks, but also other emergencies 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 spread beyond 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 damage or death occurs, or the fire spreads beyond 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:

- The time it takes an incipient room fire to engulf a room fully is 4 to 5 minutes, thus substantially damaging the building and most probably injuring or killing occupants.
- 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.
- 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 as soon as possible after the injury, and to transport them to a trauma center were appropriate medical intervention can be initiated within one hour of the injury.

Somewhat coincidently, 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, and the companies to

then don OSHA mandated safety clothing and drive safely to the emergency. The sum of these three time steps – dispatch, company turnout and drive time – comprises "total reflex," or total 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 buildings or shopping center buildings such as those found in parts of the County service area.

2.2.1 Existing Santa Barbara County Policy

The County's General Plan Safety element does not contain a response time goal policy. It does contain considerable best practice detail on the prevention of wildfires and for new development being wildfire resistant.

While there is not a County adopted specific emergency response time goal, Santa Barbara County has been very aggressive in setting building safety standards to lessen risks in the County. In multiple locations, the County's General Plan, codes and ordinances require best practices building construction, automatic fire sprinklers and wildland vegetation management to control the spread of wildfires. For example, the 2010 adoption of Building and Fire Codes by the County mandated aggressive use of automatic fire sprinklers in new construction by:

- All new one- and two-family dwellings and townhouses (R-3 Occupancies).
- New buildings and structures with a final floor area of 5,000 square feet or more.
- New buildings and structures located outside the Urban Limit Line.
- Modification to existing buildings and structures with a final floor area of 5,000 square feet or more.
- Modification to existing buildings and structures located outside the Urban Limit Line.

While the Board of Supervisors has not adopted General Plan or other Board fire service deployment goals for the Fire Department, the Fire Department itself has used the following goals in their annual budget performance measures and annual reports:

- Arrive at 90 percent of Code 3 (emergency) responses in rural areas under 10 minutes from time of dispatch.
- Arrive at 90 percent of Code 3 responses in suburban areas under 8 minutes from time of dispatch.
- Arrive at 90 percent of Code 3 responses in urban areas under 5 minutes from time of dispatch.
- Battalion Chiefs, when dispatched, to arrive at 90 percent of 500 incidents within ten minutes for command/control of operational resources.
- Arrive on scene at 90 percent of 700 first alarm incidents with a second engine within 10 minutes of dispatch.
- Respond bulldozers to 100 percent of 60 vegetation fires within three minutes of dispatch.
- When in service, arrive at 80 percent of 80 calls for helicopter service within 25 minutes from time of dispatch.

The above fire department performance measures do contain some best practice elements such as the use of percent of goal measurement and different response time by population density area. However, when this study asked for the foundation work that the goals were based upon, there was very little rigorous risk to outcome assessment work done in the preparation of these goals. They were generally believed to be consistent with other national advisory publications.

Lastly, the goals do not define the begin time by stating, "when dispatched," nor does the goal state when the time measurement ends, such as the arrival of the first unit on scene. If in fact "when dispatched" means the point the dispatcher first alerts the fire crew, then the total response time from the 911 call being answered to the first arriving unit being on scene, is not being measured.

Finding #1:	The County does not have a complete and current best practices designed fire deployment measure adopted by the Board of Supervisors that includes a beginning time measure starting from the point of dispatch receiving the 911 phone call, and a goal statement tied to risks and outcome expectations. The deployment measure should 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 Center for Public Safety Excellence (formerly the Commission on Fire Accreditation International).
Finding #2:	The County has adopted best practices building and fire safety codes to lessen building and wildland fire risks, along with structural code requirements to improve earthquake safety. Considered as a total package, the County is one of the more progressive counties for fire safety regulations that Citygate has observed.

For response time goals, current best practice nationally is to measure percent completion of a goal (i.e., 90 percent of responses) instead of an average measure, as many fire departments did in the past. Response goal measures should start with the time of fire dispatch receiving the 911 call to the arrival of the first unit at the emergency, and the measure should state what is delivered and what the expected outcome is desired to be.

Percent of completed goal measures are better than the measure of average, because 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 fifth minute, in the sixth 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.

When considering response time measures over the years, it was thought to take 1 minute for the communications center to process the call and alert the fire company and 1 minute to get the fire apparatus moving. However, as will be discussed later, even 1 minute for company turnout is unrealistic, given the need to don mandated protective safety clothing and to be seated and belted in before the apparatus begins to move. Some best practice recommendations for travel time in *urban* areas suggest a 4-minute driving time.

Thus, from the time of 911 *receiving the call*, an effective deployment system is ***beginning*** to manage the problem within 6 to 7 minutes total reflex time in an *urban* area. Rural areas are very hard to cost effectively provide short response times to and as such, some emergency outcomes are worse than is desirable in more urban areas.

Seven minutes from the time of the 911 being answered is right at the point that brain death is becoming irreversible and the fire has grown to the point of leaving the room of origin and becoming very serious. 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 Santa Barbara County Fire Department Risk Assessment

Both newcomers to the County, 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 Santa Barbara County Fire Department is charged with responding to a variety of emergencies, from fires to medical calls, to special hazards and cargo transportation emergencies on the streets and rail lines.

As already mentioned, the unincorporated portion of the County mostly contains a mix of single- and multi-family dwellings, small and larger businesses, and open space. An extreme risk for wildland fires migrating into the community is prevalent. In previous years there have been several devastating fires in the County. In addition, there are the streets, utility lines, lakes and a large oceanfront to protect. As for people, the resident population count in no way reflects the tourists, daytime employment count, hotel guests and a "mobile" population in cars on the streets. At peak times of the day, it is not inconceivable that the population is double the resident count.

The significance of the above information is that the Santa Barbara County 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 County does not have an international airport in its jurisdictional area; there is an airport within the County, located in the City of Santa Barbara. The County also operates a modest general aviation airport. The potential for an aircraft crash does occur within the County area. There are numerous operational and capped oil wells and one asphalt refinery within the County. The County does have a waterfront port and pier, but it too lies within the City of Santa Barbara. The County Fire Department responds to ocean rescues, cliff rescues and urban stream and street flooding outside the City limits.

Santa Barbara County is also home to the University of California, Santa Barbara (UCSB). The student population is around 22,000 students. The campus entails 1,022 acres of classrooms,

research facilities and ancillary structures. Off campus there are numerous multi-unit apartments and structures for student and faculty housing. The Fire Department provides supplemental staffing to special events in support of the campus and/or international media events that have to have life safety protection, special inspections and highly trained and equipped crews on stand-by. The Santa Barbara County Fire Department also provides fire protection and advanced life support (paramedic) transport services to UCSB for its students, faculty and visitors, as well as, remote areas of the north county.

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 events 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 from building to building and eventually become a conflagration.

The fire incident reporting system indicates a wide variety of events that can result in a call for service, but it is a reported fire in a building that is the essence of a fire department's deployment plan.

2.3.1 Building Fire Risk

In addition to the building and community demographics cited above, in a Standards of Response Coverage study, building fire risk can also be understood by looking at larger classes of buildings as well as the wildfire potential in the County.

The Insurance Service Office (ISO) sends underwriters into commercial buildings to evaluate and collect demographic data for fire insurance underwriting purposes. This study obtained the current ISO data set for Santa Barbara County, and it contains approximately 3,963 businesses and institutions that range in size from a few hundred square feet up to 249,000 square feet under one roof.

One of the measures the ISO collects is called fire flow, or the amount of water that would need to be applied if the building were seriously involved in fire. The measure of fire flow is expressed in gallons per minute (gpm). In the County, the ISO has data on 3,963 commercial buildings, not including UCSB properties. Of these, 354 buildings in unincorporated and contract city areas have required fire flows of 2,500 gpm or higher. Of these, 60 are larger buildings (flows over 4,000 gpm), 23 of which have required fire flows in excess of 5,000 gpm. Having 354 buildings with larger fire flows in a county is somewhat unusual and typifies how Santa Barbara County has become diverse in types of buildings in the urbanized areas, yet at 1,587,323 acres or 2,480 square miles, is still predominantly a wildland county with interspersed residential and commercial areas.

Fire flows above 2,500 gpm are a significant amount of firefighting water to deploy, and a major fire at any one of these buildings would outstrip the on-duty County fire staffing. Using the generally accepted figure of fifty gallons per minute per firefighter on large building fires, a fire in a building requiring 2,500 gpm would require 50 firefighters, just under the entire on duty force of 57 County funded firefighters plus command chiefs. Just as in a wildland fire, a serious building fire would require the commitment of the entire County force *and most of the nearby city-based forces*. The following table with fire flows, number of personnel and apparatus illustrates the Effective Response Force to flow water on a fire.

Table 1—Highest Fire Flow Buildings in Santa Barbara County with Required Staffing and Pumpers to Meet Fire Flow Demand

Number of Buildings	Required Fire Flow in Gallons per minute (GPM)	Number of Firefighters @ 50 GPM (57 on-duty)	Number of Pumpers @ 500 GPM
1	7,000	140	14
1	6,500	130	13
6	6,000	120	12
5	5,500	110	11
11	5,000	100	10
21	4,500	90	9
16	4,000	80	8
83	3,500	70	7
85	3,000	60	6
120	2,500	50	5
133	2,250	45	5
155	2,000	40	4
637 total			

For a comparison, the quantity of buildings in the table above that have calculated fire flows at or greater than 2,500 gpm is 41 percent of the same building quantity as found in the City of Oakland, a metropolitan city.

Finding #3:	Based on the quantity of higher required fire flow buildings in the County, the Santa Barbara County Fire Department is just as challenged for building fire risk as are many urban cities, but in the County, the risks are much more spread out and thus harder to cost effectively field a deployment force to mitigate them.

An effective response force is the deployment of multiple units (pumpers, ladder trucks and an incident commander) so they can arrive close enough together to combat serious fires and keep them to less than greater-alarm 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 County zoning has placed these buildings throughout the County, this places additional pressure to have a multiple-unit effective response force of pumpers, and importantly, ladder trucks throughout the more built-up areas of the County.

2.3.2 Special Hazard Risks

The County has dozens of businesses that use or resell hazardous materials. Examples are commercial processes, research facilities, laboratories, oil exploration, gasoline stations and dry cleaners. To allow for better coordination of California Environmental Protection Agency (EPA) regulations on businesses, along with the Fire and Health Codes, the Santa Barbara County Fire Department years ago took responsibility for six environmental programs to provide single-point customer service to local businesses. This is called the **C**ertified **U**niform **P**ermit **A**gency or CUPA program. The Santa Barbara County Fire Department Hazardous Materials Unit staffs this program and is responsible for approximately 2,000 inspections annually. These businesses are highly regulated by the building, fire and environmental codes. These are businesses that use larger quantities of hazardous materials and consequently receive a higher level of inspection activities. Moreover, these programs provide the responding firefighters with plans for the businesses and their technical inventories. The Department participates in a countywide, regional Hazardous Materials Response Team for serious incidents.

In addition to the CUPA program, the Department also conducts the State-mandated **L**eaking **U**nderground **F**uel **T**ank (LUFT) Program, with over 210 sites, and the voluntary **S**ite **M**itigation (SMU) program, with over 414 open sites. Both of these programs utilize specialized Department staff to oversee the cleanup of chemicals that have been illegally or accidentally released into the environment.

Then there are special hazards, such as larger apartment/condo buildings, hotels and the University of California Santa Barbara campus. These sites have "pre-plans" prepared for them so that the fire crews immediately have a pre-built tactical plan matching each site's unique set of risks. In the County, there are 1,112 of these sites. Again, this is a large quantity for an otherwise "suburban-feeling" county. Most of the facilities in this category lie within the proximity of UCSB and in the developed areas of Buellton, Goleta and Orcutt.

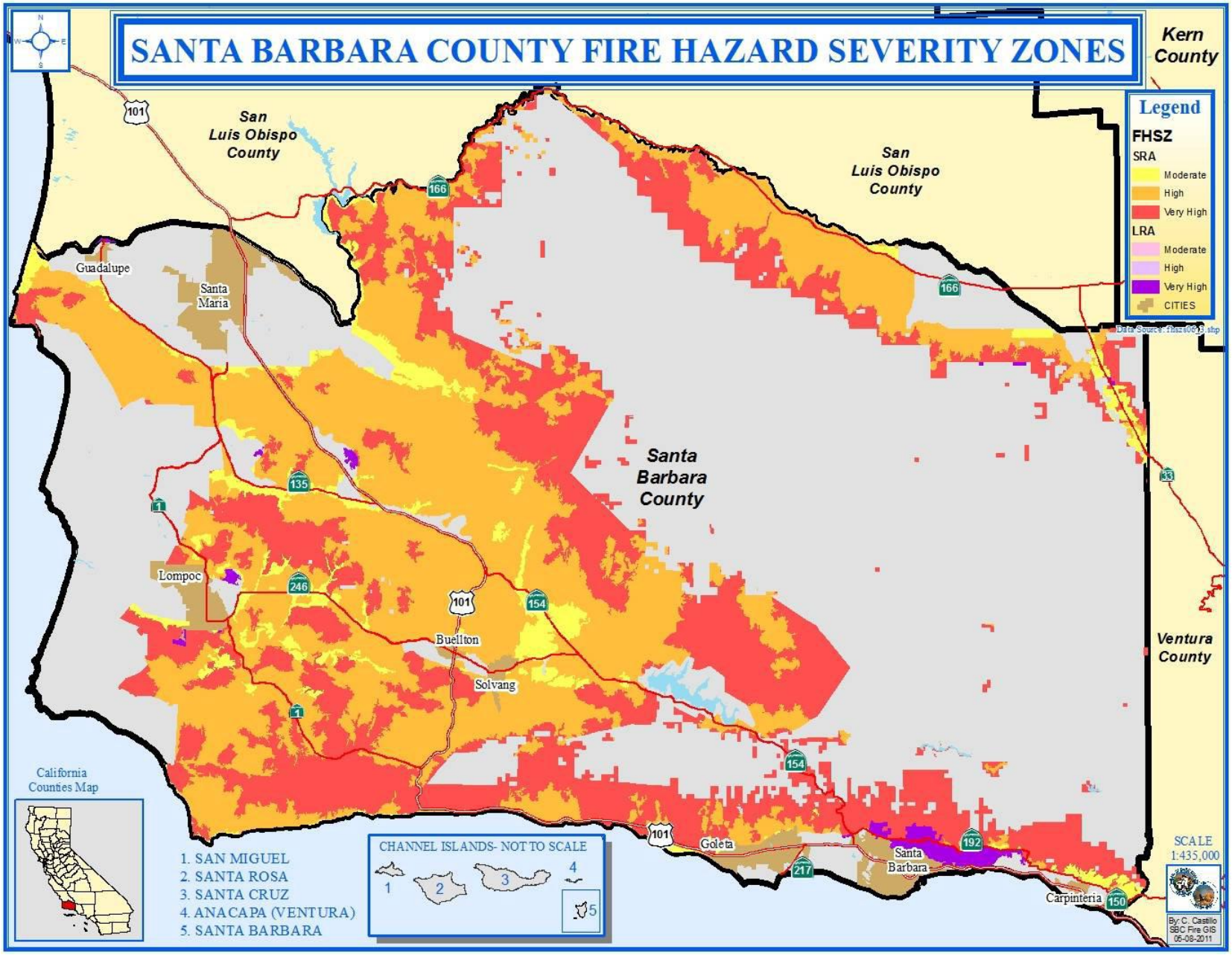
Then there are special risks unique to only a college-type of community – research facilities for the United States Government, medical research facilities and involvement with the scientific community.

Landslides and mass earth movements not associated with earthquakes have damaged structures and caused other problems in the County, notably in the heavily developed southern foothills. Slope erosion has caused trouble throughout the County, notably along the south coastal bluffs, where combined with bedding-plane landslides, erosion has damaged or threatened structures built adjacent to the bluffs.

2.3.3 Wildland Fire Risk

The wildfire threat in Santa Barbara County is significant, as many of the County's edge neighborhoods are exposed to wildland fuels and upslope terrain, all of which combine to pose a real danger. Over the history of the Santa Barbara County Fire Department there have been numerous large wildland fires that migrated into the community surrounding the Wildland Urban Interface (WUI). Just in the past 35 years, Santa Barbara County has had numerous devastating wildland fires destroying homes and killing civilians and fire department personnel. In 1977, the Sycamore Fire only burned 805 acres but destroyed more than 200 homes, and tragically killed a cameraman and his pilot, the famous Francis Gary Powers. Again in 1977, four firefighters lost their lives on Vandenberg Air Force Base. In 1990 the famous Paint Fire destroyed 5,000 acres and 427 homes and a tragic loss of one person's life.

A large portion of the incorporated cities lie within very close proximity of wildland located in the unincorporated County or the Los Padres National Forest. The Department has an excellent working relationship with CAL FIRE and the Los Padres National Forest fire team members. To combat the wildfire risk, the Department works closely with its mutual aid partner fire departments while training and equipping its firefighters to combat wildland fires under the local conditions. The Department has also adopted a prevention strategy to inspect and require best practices fuel reduction measures for parcels with or next to significant wildfire hazards. The map on the next page illustrates the fire hazard severity for the County.


SANTA BARBARA COUNTY FIRE HAZARD SEVERITY ZONES
Kern County
San Luis Obispo County
San Luis Obispo County
Santa Barbara County
Ventura County
Legend
FHSZ
SRA
Moderate
High
Very High
LRA
Moderate
High
Very High
CITIES
Guadalupe
Santa Maria
Lompoc
Buellton
Solvang
Goleta
Santa Barbara
Carpinteria
101
166
135
246
154
192
217
150
33
1
California Counties Map
CHANNEL ISLANDS- NOT TO SCALE
1. SAN MIGUEL
2. SANTA ROSA
3. SANTA CRUZ
4. ANACAPA (VENTURA)
5. SANTA BARBARA
SCALE 1:435,000
By: C. Castillo SBC Fire GIS 05-06-2011

2.3.4 Flooding Risk

When floods occur, a community's fire service is typically the first responder to provide rescue and initial water diversion efforts along with Public Works. Where wildland fire crews exist, the crews make very effective sand bagging teams. As can be expected, hazardous flood events commonly occur in close proximity to rivers, creeks, and other smaller drainage corridors. Within the County, localized drainage problems result from increased flow as well as ponding, which cause flash flooding, inundation, and other flooding problems. Other high-hazard flood zones are concentrated in coastal areas, including bays, coastal inlets and estuaries, and in watershed areas connecting local mountain ranges to the coastal region where flash floods may occur.

Flooding hazards along the south coast are primarily due to storm surge or a potential for a tsunami and high water flows in the numerous smaller streams which discharge directly to the Pacific Ocean. These streams are subject to high flows following periods of intense precipitation, and the floodwaters resulting from these high flows can impair the suitability of certain lands for various uses.

Other possible locations for flood events include areas downstream from the County's various dams. The inundation or outright failure of a dam could produce a brief but devastating flood event. Failure of these dams could pose a danger to populated areas, roads and highways, public facilities, agricultural crops, and other land uses.

2.3.5 Desired Outcomes

A response system can be designed with staffing and station locations to accomplish desired outcomes. An outcome example is, "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." As such, fire deployment planning takes direction from policy makers as to the outcomes desired by the community.

In a diverse service area such as Santa Barbara County, there should be policy goals for each of the major risk types the fire department is charged with protecting, such as building fires, wildland fires, technical rescues (water or rough terrain based), and special hazards such as hazardous materials. Citygate and national best practice publications also recommend goals be tied to population density and risk severity, so that staffing (and resultant costs) relate to the actual risk exposure and tax base ability to pay. Thus rural areas with widely scattered homes and outbuildings have a different response force over time than does an urban city with high rise buildings and 25,000 per square mile.

Given there are no Board of Supervisors policy statements, the next section of this study will look at what the provided staffing can and cannot do, and then compare the staffing plan to national best practice advice, Santa Barbara County's risks, and Citygate's experience to propose revised deployment standards for the Board of Supervisors to consider adopting.

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

The next step in the Standards of Response Coverage process is to take the risk information above and review what the firefighting staffing 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 the time required to accomplish them in order 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 as follows:

- It is important to have an understanding of the duties and tasks 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.**
- Offensive strategy is characterized primarily by firefighters working **inside** the structure on fire. This strategy is riskier to firefighters but much more effective for performing rescues and attacking the fire at its seat.
- Defensive strategy is characterized by firefighters working **outside** the structure on fire. This strategy is generally safer for firefighters; however, it also means no rescues can be performed and the building on fire is a total loss.
  - We will take great risk to protect savable lives.
  - We will take calculated risks to protect savable property.
  - We will not risk lives 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 persons who can be saved 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 of the occupants. 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 four-person company can perform more tasks 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 15 firefighters, *plus* one on-scene Incident Commander. The NFPA 1710 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 firefighters 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 at such an incident 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 15 personnel plus an Incident Commander. This number of firefighters is the minimum needed to safely conduct the *simultaneous* operational tasks 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 Incident Commander for accountability and control.

2.4.2 Daily Unit Staffing in the County

Below is the typical minimum daily unit staffing assignment in the County currently:

Table 2—Units and Daily Staffing Plan

Minimum Per Unit			Extended
15 Engines @	3	Firefighters/day	45
1 Engine @	4	Firefighters/day	4
1 Ladder Truck @	3	Firefighters/day	3
2 Rural Area Water Tenders	1	Firefighter/day	2
1 Paramedic Rescue Ambulance @	2	Firefighter/paramedics	2
1 Paramedic Rescue Ambulance	1	Firefighter/paramedic	1
2 Battalion Chiefs	2	Per day for command	2
		Total 24/hour Personnel:	*59*
Wildland Fire (14), Ambulance (1), Heavy Rescue (1), Water Rescue, (2) Hazardous Materials (1), Water Tender (2) and Breathing Air Refill Unit (1)		Specialty units cross staffed by personnel assigned to fire engines	
2 UH-1H Huey Type Two Helicopters	3	Pilot, Crew Chief and Mechanic	5
4 Bull Dozers	4	Operators assigned as needed	
Wildland Fire Crew (Hand Work)		Two 12-person crews. Budget cut in July 2011	0

In addition to the County provided daily staffing listed above, the County, the cities, fire districts and the U.S. Forrest Service fire departments operate closely together under a mutual aid or closest unit "auto aid" agreement. This policy means that many County area serious fires receive a mix of County, City and partner agencies. For modest fires in the more outlaying sections of the County, this system not only helps by providing the units in the least time without regard to jurisdiction, but also leaves other County units available for back-to-back or simultaneous calls for service.

The County of Santa Barbara is a "contract county" to CAL FIRE where the County receives funds annually to protect the State Responsibility Area lands (SRA) from wildfire. There are no CAL FIRE response units in the County. The County also has cooperative written agreements with the following agencies:

- Cooperative Fire Protection Agreement between Santa Barbara County Fire Department and the Los Padres National Forest
- Memorandum of Agreement, Mutual Aid between Santa Barbara County Fire Department and the 30th Space Wing, Vandenberg Air Force Base
- The County has Mutual Aid Agreements with:
  - Ventura County
  - Kern County
  - City of Santa Barbara
  - City of Santa Maria
  - City of Guadalupe
  - Carpentaria/Summerland Fire Protection District
  - Montecito Fire Protection District
  - Automatic Aid Agreement with the City of Lompoc.

2.4.3 Specialty Responses

The County Fire Department has personnel on duty each day assigned to engine companies that hold advanced certifications for other than firefighting responses. These are:

- Hazardous Materials Incident Response
- Urban Search and Rescue
- Water Rescue (swift water and ocean/surf)
- Helicopter (fire suppression, rescue hoist and medevac)

- Dozers
- Breathing Air and lighting unit.

For Emergency Medical response (EMS) the County uses a mix of private and fire department ambulances. The Fire Department operates 3 ambulances in areas where the County EMS system does not place a private vendor ambulance. Then the Fire Department operates 6 dedicated Paramedic engine companies to provide a first responder paramedic before the regional ambulance can arrive in these areas:

- Station 11 – Goleta
- Station 21 – Orcutt
- Station 22 – Orcutt
- Station 24 – Los Alamos
- Station 31 – Buellton
- Station 32 – Santa Ynez

In the remaining fire station areas there are 7 basic life support (not paramedic) engine companies. Some of these 7 could be paramedic on some dates based on the daily staffing amount of paramedics available.

The Santa Barbara County Fire Department ambulance locations are Station 51 in Lompoc, Station 41 in the Cuyama Valley and Station 17 at UCSB. These stations have a blue half circle location symbol on all the attached maps in this study.

Stations 51 and 41 are staffed with Medic ambulances due to the long response times and low call volumes within the County EMS System private provider agreement with American Medical Response (AMR). Medic Ambulance 51 also covers behind AMR in the City of Lompoc when AMR is unavailable and also provides long-distance transfers from the Lompoc District Hospital to Santa Barbara and Goleta hospitals when basic life support (BLS) units are not available or if ALS service is needed. Otherwise AMR is the private provider for all ambulance and ALS services in Santa Barbara County.

Wildland Fire Hand Crew and Dozer Operations

The Wildland Fire Crew was disbanded in July 2011 due to budget shortfalls. The crew had been categorized as a Type 1 response asset and consisted of 2, 12-person crews with the ability to work independently or in a full 24-person configuration.

The Construction section is the Bull Dozer group. County Fire operates 4 dozers with 2 available on a daily basis for initial attack through high wildland fire season. The dozer group is partially funded by CAL FIRE through contract funds. There are 5 personnel assigned to the unit. The

Construction section provides daily initial wildfire attack capability and has the ability to do pre-fire suppression work by opening rural roadways. The crews have been have been instrumental in flood control projects and moving debris on heavy rescue incidents.

Technical Rescues, Including Water

All County engine companies are equipped and trained to **U**rban **S**earch and **R**escue (US&R) light levels. The Fire Department does have US&R Medium capabilities with its US&R apparatus/tools and is a participating member of Federal Santa Barbara/Ventura Regional Task Force -7, which can be deployed nationally or internationally to disaster rescue events.

Water Rescue: County Fire has an active water rescue program. On a daily basis there are a minimum of 6 water rescue personnel on duty between 4 stations. Stations 11 and 17 have trained personnel that can respond initially with 3 **P**ersonal **W**ater **C**raft (PWC). Additionally, Fire Station 17 houses an **I**nflatable **R**ubber **B**oat (IRB). Water rescue personnel are trained to Ocean/ Surf standards as well as swift water for inland river, creek and flooding situations. Additionally, the air operations unit is utilized to insert rescue swimmers offshore and work in concert with the PWCs.

2.4.4 Staffing Discussion

If a jurisdiction 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, poorly-led, token force will not only be unable to stop a fire, it also opens the jurisdiction 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 all the critical tasks needed. 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 incident command leadership and critical decision making to the organization.

The current Department response plan for a building fire in the south county is initially to send 3 engines, 1 ladder truck, and 1 Paramedic Rescue Ambulance and the Battalion Chief/Safety Officer to a serious residential building fire. In the north county where there is no County ladder truck, a fourth fire engine is sent to provide the same staffing. Thus, the County in the south sends 14 firefighters and a Battalion Chief, or 25 percent of its on-duty force. In the northern area, there is no firefighter/paramedic ambulance to send, so the force is only 12 firefighters and the chief. When one of these multi-unit responses occurs, it leaves three more equally sized response forces in reserve for other emergencies – on paper. However, many of the on-duty units

are spread across huge areas and would not normally be called into a second-or third-alarm event, being too far away or leaving rural areas with no protection. Thus in the western and southwestern county areas, mutual aid is used for greater alarm fires. Given the occurrence of building fires in the County at approximately 55 per year, or about 4.6 per month, the County can typically field enough firefighters at a modest residential building fire as these fires do not typically occur at the same time.

2.4.5 Company Critical Task Time Measures

In order to understand the time it takes to complete all the needed tasks on a moderate residential fire and a modest emergency medical rescue, the Department staff provided information using their standard operating procedures at a simulated house fire to demonstrate how much time the entire operation takes. The following tables start with the time of 911-call receipt and finish with the outcome achieved. There are several important themes contained in these tables:

- These results were obtained under actual conditions. The structure fire pre-arrival response times are from actual events, showing how units arrive at staggered intervals.
- 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.
- The time for task completion is usually a function of how many personnel are ***simultaneously*** available so that firefighters can complete some tasks simultaneously.
- Some tasks have to be assigned to a minimum of two firefighters to comply with safety regulations. An example is that two firefighters would be required for searching a smoke-filled room for a victim.

The following tables of unit and individual duties are typical for a single-story, single-family dwelling fire. Smoke and fire are visible on the rear side of structure, with one exposed home nearby.

This set of duties is taken from Department operational procedures. This set of needed duties is entirely consistent with the usual and customary findings of other agencies using the Standards of Response Coverage process and that are found in NFPA 1710 or in CAL-OSHA regulations on firefighter safety. No conditions existed to override the OSHA 2-in/2-out safety policy.

The response force in the south county area with the highest population densities is three engines, one ladder truck, one rescue ambulance and one Battalion Chief responding for a total of 15 personnel.

Table 3—Critical Tasks – Structure Fires – Urban Area Response

Structure Fire Incident Tasks	Time From Arrival 1st Engine	Total Reflex Time
Pre-arrival time of dispatch, turnout and travel for the 1st due unit to the structure fire call		7:00
E31 on scene, report on conditions	0:00	7:00
Establish water supply	0:20	7:20
Truck 11 on scene	0:30	
Forcible entry at front door	1:50	
E17 and rescue ambulance 17 on scene	2:00	9:00
Charged hose line at front entrance	2:30	9:30
E18 on scene and begin primary search	3:00	
Hose line charged, 2 firefighters enter	3:50	10:30
Primary and secondary search "all clear"	4:00	11:00
Fire attack started, fire knocked down	5:00	12:00
Utilities shut off	5:30	
Battalion Chief on scene	6:00	
Salvage and overhaul commences	7:00	
Fire out / **Incident under control**	9:00	**16:00**

The above duties grouped together 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 required technical tasks do, but as these tasks are being performed, the clock is still running, as it 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), 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.

For comparison purposes, the critical task table below reviews the tasks needed on a typical auto accident rescue. The situation modeled was a two-car collision with two patients. One driver required moderate extrication with power tools and the vehicles were upright with no fuel

hazards. One engine, one ladder truck, one AMR Ambulance and one Battalion Chief responded for a total of nine (9) personnel.

Table 4—Critical Tasks – Auto Incident – 2 Vehicle, 2 Patients

Vehicle Extrication Critical Tasks	Time From Arrival 1st Engine	Total Reflex Time
Pre-arrival time of dispatch, turnout and travel for the 1st due unit		7:00
Engine 12 on-scene, report on conditions	0:00	
Vehicle stabilized	0:30	
Patient contact	1:50	7:50
Protective actions (hose-line, extinguisher, cut power)	2:30	9:30
Extrication operation (remove door or door and roof)	3:10	10:10
Patient disentanglement and removal (full c-spine)	5:30	12:30
First patient loaded into ambulance	6:00	**13:00**

The table above shows excellent task times for good patient care outcomes. These patient care times and steps are consistent with Santa Barbara County patient care protocols and would provide positive outcomes where medically possible.

2.4.6 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 actual outcomes. We know from nationally published fire service "time vs. temperature" tables that after about 4 to 5 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 residents of Santa Barbara County are able to expect positive outcomes and have a better chance than not of survival in a *moderately severe* fire or medical emergency, when the first responding units *are* available in 7 minutes or less total response time.

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 9:00 minutes/sec after the time of the first unit's arrival, or 16:00 minutes/sec from fire

dispatch notification, with 15 total personnel. The outcome times, of course, will be longer, with less desirable results, if the arriving force is later or smaller.

The quantity of staffing and the time frame it arrives in can be critical in a serious fire. As the risk assessment portion of this study identified, the developed area's building stock is diverse and includes homes and multi-story buildings, any of which can slow the firefighting times as personnel and tools have to be walked to upper floors. Fires in these buildings could well require the initial firefighters needed to rescue trapped, or immobile (the very young or elderly) occupants. If a lightly-staffed force arrives, they cannot simultaneously conduct rescue and firefighting operations.

In EMS trauma incidents, the patient is initially being assessed within 7:50 minutes/seconds total reflex time and is able to be transported within 13:00 minutes. These times are good for trauma patients, when the first-due unit can arrive by minute 7, which is not always possible at the outer perimeter areas of the County, or when multiple calls for service occur.

The auto accident, while only being moderate in size, required 9 personnel. If a building fire occurred at the same time as two medical incidents, then over 56 percent of the entire on-duty force would be committed to three incidents and immediate mutual aid would be required in many parts of the County.

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 time measures above, the County fire teams can do a good job, in terms of time, on one moderate building fire and one-or two-routine medical calls at once, if the events are not all in the same area of the County. This is typical of departments that staff fewer companies, with three firefighters, for average routine emergencies. However, major fires and medical emergencies where the closest unit is not available to respond ***will*** challenge the County's response system to deliver good outcomes, so the County is co-dependent for severe emergency coverage with its neighbors. This factor **must** be taken into account when we look at fire station locations. Operating as a "single" regional system is a great, cost-effective idea, as long as all of the partners maintain their levels of service.

Previous critical task studies conducted by Citygate, the Standards of Response Coverage documents reviewed from accredited fire departments, and NFPA recommendations all arrive at the need for 15+ firefighters plus a Command Chief 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.

At its existing staffing of 3 firefighters per engine and 3 firefighters on the one ladder truck, the Department could deliver an effective response force of 15 firefighters from 3 engines, 1 ladder truck, 1 rescue ambulance and 1 Battalion Chief.

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, 15 or so initial firefighters (3 engines, 1 ladder truck, 1 rescue ambulance and 1 Battalion Chief) *could* handle a moderately severe risk house fire, on the first floor. An effective response force of only 15 will be seriously slowed if the fire is above the first floor in a low-rise apartment building or in a very large home or commercial/industrial building.

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.

Finding #4: The Department's current daily firefighter staffing at 59 provides the County a response to handle one or two serious events without being immediately dependent on mutual aid. However, this is only in parts of the County with multiple fire stations close enough together to assist each other in a timely manner.

2.5 CURRENT STATION LOCATION CONFIGURATIONS

The County is served today by sixteen fire stations. As part of this fire services study, it is appropriate to understand what the existing stations do and do not cover, if there are any coverage gaps needing one or more stations, and what, if anything, to do about them as the County 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 called *FireView* that can measure travel time distance over the street network. To validate the mapping model predications of coverage, Citygate further used a

response statistics mapping tool called *NFIRS 5 Alive* that can model prior response time performance over a map of the County in Google Earth. Citygate ran several deployment map studies and measured their impact on various parts of the community. The actual response time and type of incident measures will be in the following section.

The mapping model is very complex and allows the user to see in 3D where and how much workload occurs through the County. The statistics model can be tilted and rotated to better see both the location of the workload, and by using bar height, the volume of incidents in an area. The complete model was delivered to the Fire Department staff for on-going, interactive use as part of this study's deliverables.

The maps (found in Volume 2 of this study) display travel time using prior Department incident data to adjust the normal posted speed limits per type of street to those more reflective of slower fire truck travel times. Since the County does not currently have a Board of Supervisors adopted travel time measure, the initial map measures in this study for urban/suburban population density areas are 4 minutes travel time for first-due units for good suburban outcomes as suggested by NFPA 1710. For a first alarm, multiple-unit coverage, the "concentration" of units measure in this mapping study for urban/suburban areas is based on an 8-minute travel time as suggested in NFPA 1710. 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.

In rural areas, a 12-minute travel time as suggested in NFPA 1720 for combination staffed (paid-call or volunteer) departments in rural areas was used. When three minutes are added for dispatch and crew turnout times, then a rural situation receives the first unit within 15 minutes of 911 being answered.

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 in urban/suburban areas. 1.5 miles driving distance equates to 3.5 to 4 minutes travel time over the road network.

The map images described below show County Fire units, plus mutual aid units, so the distribution of all fire stations can be measured. The first goal is to determine if the County can substantially cover itself with its fire stations in appropriate response times. If so, then the mutual aid coverage is useful to fill in edge area gaps and be able to provide back-up unit response when County units are on other incidents.

Note – given the size of the County, and to allow for greater local area detail, each map theme is done three or more times to show the coverage detail at a useable map scale. Map sets #1 through #16 are a view of the baseline or "as is" situation.

Map #1 – Existing Fire Station Locations

This first map shows the County and its current fire stations. This map view is important to remember as later maps in the set display the fire station coverage areas. The different station symbols show the type of primary apparatus assigned to each station.

Map #2 – Risk Assessment

Map set #2a displays the locations of the higher fire flow buildings as calculated by the Insurance Service Office (ISO). Most of these buildings are along the major road corridors in commercial and industrial areas due to zoning. These higher fire flow sites are the buildings that must receive a timely effective first alarm force to serious fires.

Also shown is a different measure of risk – wildland fire hazard severity zones. Displayed are the "very high," and "high and moderate" wildfire risk zones as determined by County Fire and CAL FIRE staffs. This view demonstrates that the wildfire threat to be protected against is not just a danger to homes, but also businesses and business parks in several areas throughout the entire County, not to mention watershed, tourism and environmentally sensitive areas.

Map #2b shows the distribution of population in the County. People, for the most part, drive the rate of emergency incident responses. The higher the population density, the higher the emergency calls volume. These population density zones will also be displayed in the fire engine travel time maps, to relate travel time coverage to population densities.

Map #3 – First-Due Unit Distribution – Existing Stations (4, 5, and 12-Minute Travel)

These maps show in green, colored street segments on top of population densities, the *distribution* or first-due response time for each current County and mutual aid partner fire station per a desirable response goal of 4 minutes travel time in an urban area, 5 minutes in a suburban area and 12 minutes in rural or remote areas. Thus, the computer shows how far each company can reach within 7, 8 or 15 minutes fire department *total* response time from the time of the County communications center receiving the call. Therefore, the limit of color per station area is the time an engine could reach the 4, 5, or 12-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.

A goal for a county as developed as Santa Barbara could be to cover 90 percent of the geography containing the highest population densities 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 edge areas with longer coverage times, and depending on the emergency, with less effective outcomes. 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.

As can be seen in this measure, the shape of the County with its disconnected population clusters is very hard to serve, especially since a grid type road network does not exist in all areas. However, due to very challenging topography and the resultant non-grid street network in much of the County, only areas close to the fire stations have 4 to 5 minutes of travel coverage. Many, but not all outer areas and roads between population centers, receive 12-minute travel coverage. However, once off-road into rugged areas, travel times would increase significantly.

The message to be taken from this map is that it would be very challenging for the County to improve travel time coverage without adding fire stations.

Map #4 – ISO Engine Coverage Areas – Existing City Stations

These map exhibits display the 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 time. However, a 1.5-mile measure is a reasonable indicator of station spacing and overlap. As with the 4-minute drive time map, many, but not all of the urban/suburban developed road areas of the County are served within a 1.5-mile distance from the existing fire stations. The 1.5-mile distance measure also illustrates that areas with difficult to serve street network design or hilly topography areas challenge efficient spacing of fire stations.

Stated this way, the two models of 4-minute and 1.5-mile travel represent the best and least coverages likely at the higher population densities, and both state that some of the developed areas are just beyond these measures and would receive the first-due unit in most cases in 5 to 7 minutes travel time.

Map #5 – Concentration (Effective Response Force)

These map exhibits show the *concentration* or massing of fire companies 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 a minimum of three of its engines, one ladder truck (or a fourth engine in the north county) and one battalion chief to building fires within 8 minutes travel time (11:30 minutes/seconds total Fire Department response time from the 911-call receipt). This measure ensures that a minimum of 14 firefighters and one battalion chief can be deployed at the incident to work ***simultaneously*** and effectively to stop the spread of a modest fire in a house or small commercial building.

The green color in the map shows the area where the County and mutual aid partner stations current fire deployment system should deliver the initial effective response force. Streets without

the green highlights do not have three engines, one ladder truck or the battalion chief in 8 minutes travel time.

As can be seen, due to the spacing of the County fire stations, an effective response force can only be gathered in the highest population density areas. For example, the County area south of Santa Maria cannot receive 4 units in 8 minutes. The area south of the city is too large for even all four fire stations to deliver the desirable 4 units in 8 minutes travel time.

More significantly, for Isla Vista and Goleta, a 3-engine, 1-ladder truck, 1-battalion chief force cannot reach the high population density areas in and near UCSB. While the engine/ladder coverage is good, the Battalion Chief from headquarters is too far away. The next few maps will "take apart" the full first alarm Map #5 and show the coverages of the different types of units, which make up an effective response force.

Map #6 – Multiple-Engine Coverage

In Map set #6, the coverage for the three needed engines is displayed at 8 minutes travel. As can be seen, this coverage is better than in Map set #5. This occurs because the County and mutual aid partners have more primary fire engines than ladder trucks and chief officers. The lack of these specialty units in some areas limits the coverage area of the first alarm team as seen in Map set #5.

This is especially apparent on Map #6 where Isla Vista and Goleta do receive three engines, and as the Battalion Chief map will show, the chief coming from a distant location is the limiting factor.

However, the outer County areas, such as Santa Ynez, only receive three-engine coverage at 8 minutes in much smaller areas, if at all. This is not as critical though as the population density is far less in these areas at 50 to 1,000 people per square mile where Goleta is 1,000 to 7,000 per square mile.

Map #7 – Ladder Truck Coverage

Map set #7a measures the ladder truck coverage at an 8-minute urban/suburban travel time goal. As can be seen in the southern views, the ladder truck at Station 11 can cover all of Isla Vista and Goleta.

Map set #7b measures the ISO 2.5-mile driving *distance* measure for ladder trucks. The result is similar and correlates with the 8-minute time that the highest population density areas are covered, except for the area around County Fire Station 12, which by the more restrictive ISO measure is in between the County and City ladder truck locations.

Map #8 – Battalion Chief Coverage

Measured here is the battalion chief coverage for the first alarm at 8 minutes travel for urban/suburban areas. As with ladder trucks, outside of the urban core, battalion chief coverage is incomplete in several developed areas.

As for Isla Vista and Goleta, this map shows why the full first alarm measure in Map #5 cannot be delivered – the Battalion Chief coming from County Fire Headquarters is too far away.

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

Map #9 – All Incident Locations

This is an overlay of the exact location for all Fire Department incident types for three years from July 2008 through June 2011. It is apparent that there is a need for Fire Department services in all of the station areas of the County. It also should be noted that call-for-service volumes are higher where the population densities and human activity are the highest. This is normal, as people drive calls for service more than do open space areas. Also shown on this map are incidents on freeways and to neighboring fire departments. Wildfire responses are plotted to the nearest paved road address location.

Map #10 – 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 streets need fire department services in one year's time.

Map #11 – All Fire Type Locations

This map identifies the location of all fires in the County service area. All fires include any type of fire call from auto, to rubbish, to building. There are obviously fewer fires than medical or rescue calls. Even given few fires, it is evident that all first-due station areas experience fires with areas having the greatest population density having the most fires. Of particular concern is Isla Vista, given the dense number of people per building because of the high quantity or student-rental housing.

Map #12 – Structure Fire Locations

This map is similar to the previous map. 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 area. The location of many of the building fires parallels the higher risk and older building type commercial areas in the more built-up areas of the County. Fires in the more complicated building types must be controlled quickly or the losses will be very large.

Map #13 – 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 set #9.

Why is this perspective important? Because of an 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 County, this mostly occurs in the highest population density areas in Isla Vista and the Station 12 areas.

Map #14 – EMS Incident Location Densities

This map set is similar to Map set #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 #13 because medical calls are such a large part of the total.

Map #15 – All Fire Location Densities

This map set shows the hot spot activity for all types of fires. While again the call-for-service density is highest where there is more population density, there are also fire incidents of some type in every populated area and on the roads connecting clusters of population activity. Even auto fires at the side of a freeway need to be suppressed quickly or the risk of the fire spreading to and causing a serious wildfire is very real.

Map #16 – Structure Fire Densities

This map only shows the structure fire workload by density. Here, the activity clusters are smaller given the lower number of incidents, but are still spread across many areas of the County.

2.6 MAPPING MEASURES EVALUATION

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

Finding #5:	The County is <u>not</u> developed enough in terms of population density and building development to desire an urban level of first-due fire unit coverage countywide, which is 4 minutes of travel time for the best possible outcomes.

Finding #6:	The existing fire stations have been located in the major population clusters.
Finding #7:	All populated areas are within 12 minutes travel or less of a fire station, which in the lightly populated areas is an acceptable rural level of service.
Finding #8:	Adding more fire stations would only slightly increase coverage given the outer suburban and rural areas road network. In many cases, more stations would not cover very many incidents given the low population densities.

2.7 CURRENT WORKLOAD STATISTICS SUMMARY

In this section of the Standards of Response Coverage 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 was separately provided to the Department senior staff. What follows is a summary of those comprehensive measures and findings.

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 farther. Thus, a complete Standards of Response Coverage study looks at the actual response time performance of the system from incident records. As a review of actual performance occurs, there are two perspectives to keep in mind. First, the recommendations of NFPA 1710 only require 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, especially across a large, diverse county.

In the Accreditation philosophy for 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 – it may also 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 according to state and federal specifications.

Data sets for this section of the study were extracted from the County 911 Communications Center that provides dispatching and NFIRS records from the Santa Barbara County Fire Department.

Total response time in this study is measured from the time of receiving the call at the County Communications Center to the unit being on scene. For urban and suburban population density areas, NFPA 1710 recommends a 4-minute fire unit travel time, which when a more realistic 2 minutes is added for turnout time and 1 minute for dispatch processing, aggregates to a 7-minute total reflex (customer) measure. For multiple-unit calls, in urban/suburban areas, the outer NFPA 1710 recommended measurement is 8 travel minutes, plus two for turnout and 1 minute for dispatch, which is an 11-minute total reflex measure. These measures are also consistent with good outcomes for urban/suburban risks as identified in the Standards of Response Coverage process.

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 the NFIRS 5 Alive fire service analysis tool for fire service deployment statistics.

For this statistics review, we are modeling the Department's prior performance and comparing the data results to the "ideal" per NFPA 1710 and 1720 for fire service deployment, since the County by policy has not adopted specific measures. Later, this study will integrate all the SOC study elements to propose refined deployment measures that best meet the risk and expectations found in the County.

The Santa Barbara County Fire Department provided NFIRS 5 transaction files and dispatch computer data for three years from 7/1/2008 to 6/30/2011. The dataset consists of 33,416 incidents and 48,217 apparatus records.

This report summarizes the key response statistics findings. The Department was provided separately in-depth analysis of the response statistics in tables, graphs and Excel worksheets.

2.7.1 Incident Types and Distribution Over Time

Below is a list of "Nature of Call" counts for three recent years. These counts are based on first apparatus arrivals, so they represent incidents as opposed to apparatus responses. Only call categories of 100 or more were included. *(Note: Table continues on following page.)*

Table 5—Incident Count by Year and Incident Type

Incident Type	FY 08/09	FY 09/10	FY 10/11	Totals
321 EMS call, excluding vehicle accident with injury	6,322	6,499	6,892	19,713
611 Dispatched & canceled en route	1,280	1,352	1,327	3,959
554 Assist invalid	427	403	442	1,272
322 Vehicle accident with injuries	385	317	292	994
622 No incident found on arrival of incident address	113	164	171	448
510 Person in distress, other	98	126	157	381
324 Motor vehicle accident no injuries	95	147	115	357
553 Public service	90	83	118	291
733 Smoke detector activation due to malfunction	93	87	77	257
743 Smoke detector activation, no fire - unintentional	74	86	90	250
444 Power line down	65	82	81	228
445 Arcing, shorted electrical equipment	86	81	54	221
500 Service Call, other	76	55	86	217
142 Brush, or brush and grass mixture fire	70	64	70	204
740 Unintentional transmission of alarm, other	70	64	57	191
745 Alarm system sounded, no fire - unintentional	69	59	62	190
531 Smoke or odor removal	72	67	51	190
151 Outside rubbish, trash or waste fire	58	33	85	176
111 Building fire	56	65	46	167
651 Smoke scare, odor of smoke	69	56	35	160
463 Vehicle accident, general cleanup	77	41	40	158
412 Gas leak (natural gas or LPG)	61	46	51	158
131 Passenger vehicle fire	61	48	47	156
735 Alarm system sounded due to malfunction	52	42	54	148
522 Water or steam leak	43	50	44	137
561 Unauthorized burning	44	50	42	136

Incident Type	FY 08/09	FY 09/10	FY 10/11	Totals
323 Motor vehicle/pedestrian accident (MV Ped)	41	51	39	131
730 System malfunction, other	42	36	38	116
744 Detector activation, no fire - unintentional	35	32	39	106

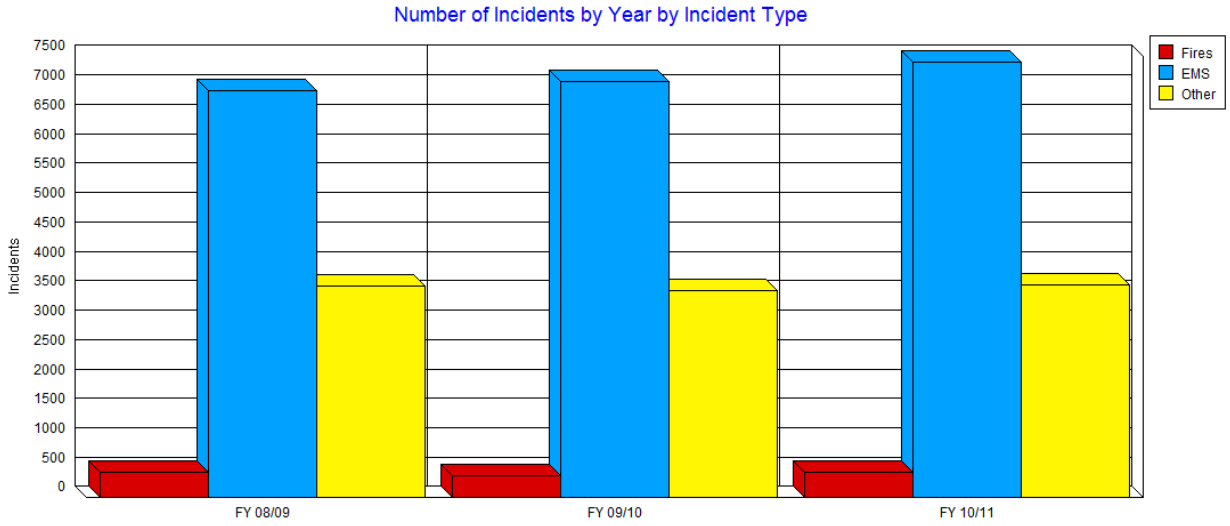
This chart shows the top types of property receiving services from the Department in the past three years. Property types with fewer than 100 responses were eliminated from the list. *(Note: Table continues on following page.)*

Table 6—Incident Count by Year and Property Use

Property Use	FY 08/09	FY 09/10	FY 10/11	Totals
419 1 or 2 family dwelling	4,348	4,356	4,514	13,218
429 Multifamily dwellings	563	658	836	2,057
961 Highway or divided highway	590	619	529	1,738
962 Residential street, road or residential driveway	456	407	486	1,349
311 24-hour care nursing homes, 4 or more persons	334	438	395	1,167
400 Residential, other	299	322	415	1,036
439 Boarding/rooming house, residential hotels	285	364	330	979
960 Street, other	250	284	282	816
449 Hotel/motel, commercial	261	172	171	604
931 Open land or field	213	199	185	597
460 Dormitory type residence, other	190	182	164	536
963 Street or road in commercial area	188	176	152	516
144 Casino, gambling clubs	54	152	219	425
361 Jail, prison (not juvenile)	123	127	144	394
459 Residential board and care	177	101	87	365
965 Vehicle parking area	137	98	102	337
215 High school/junior high school/middle school	122	101	102	325
900 Outside or special property, other	91	115	92	298
519 Food and beverage sales, grocery store	99	87	102	288
599 Business office	60	66	137	263
213 Elementary school, including kindergarten	91	67	103	261

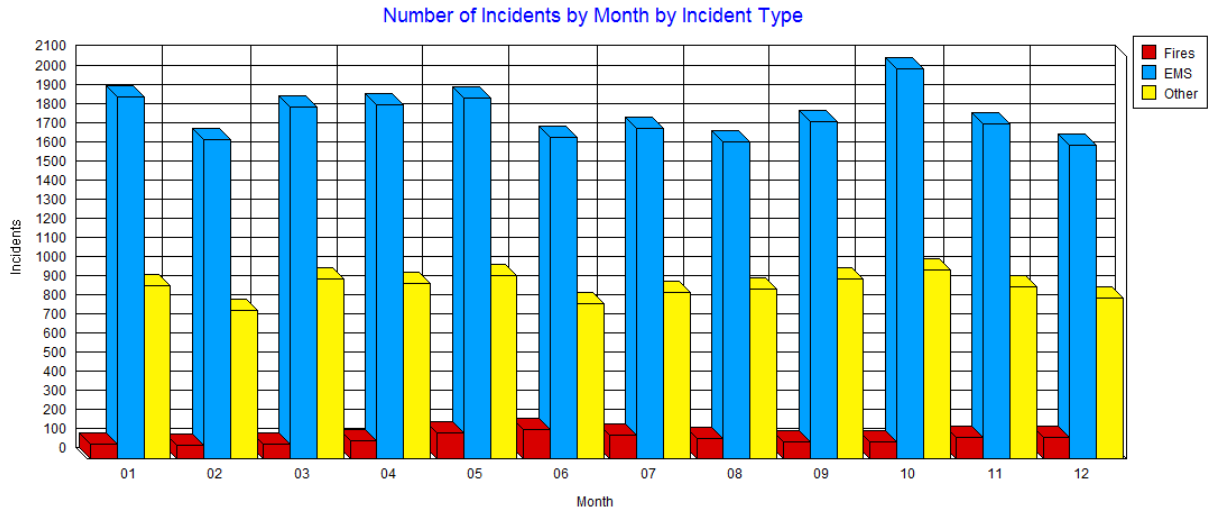
Property Use	FY 08/09	FY 09/10	FY 10/11	Totals
241 Adult education center, college classroom	85	85	88	258
500 Mercantile, business, other	78	58	64	200
340 Clinics, doctors offices, hemodialysis centers	91	60	41	192
937 Beach	64	41	43	148
935 Campsite with utilities	42	43	59	144
161 Restaurant or cafeteria	32	44	60	136
321 Mental retardation/development disability facility	39	50	42	131
100 Assembly, other	5	37	86	128
131 Church, mosque, synagogue, temple, chapel	48	35	37	120
331 Hospital - medical or psychiatric	17	52	49	118
571 Service station, gas station	32	38	45	115
982 Oil or gas field	37	43	25	105
629 Laboratory or science laboratory	39	37	29	105

The above information describes where the bulk of the demand for service occurs – emergency medical issues and in the predominant building type – homes. The graph below illustrates the same record set broken down by Fire, EMS and Other incident types. Notice EMS incidents are increasing each year:



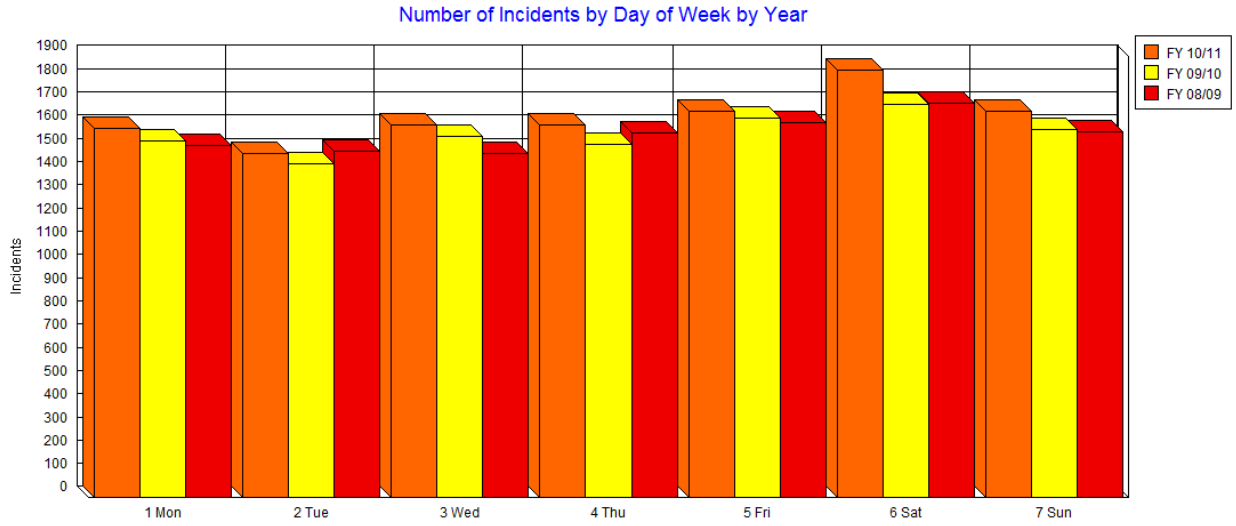
Distribution by Month

The graph below illustrates the number of incidents by month for the 3-year dataset. Monthly incident numbers are not highly volatile.



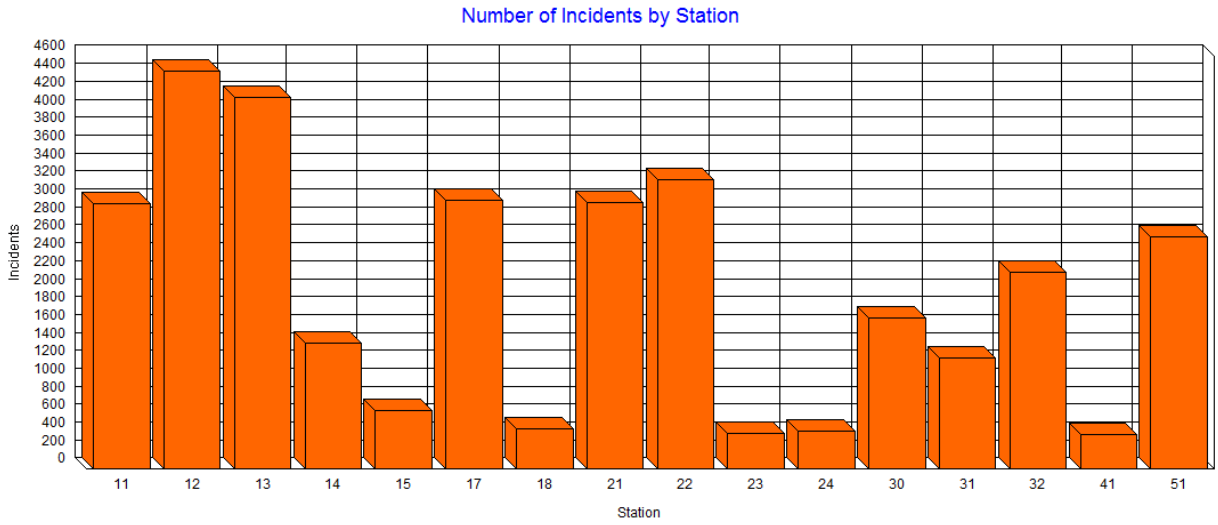
Distribution by Day of Week

Incident activity by day of week remains fairly consistent with a slight peak on Saturday and lows on Tuesdays.



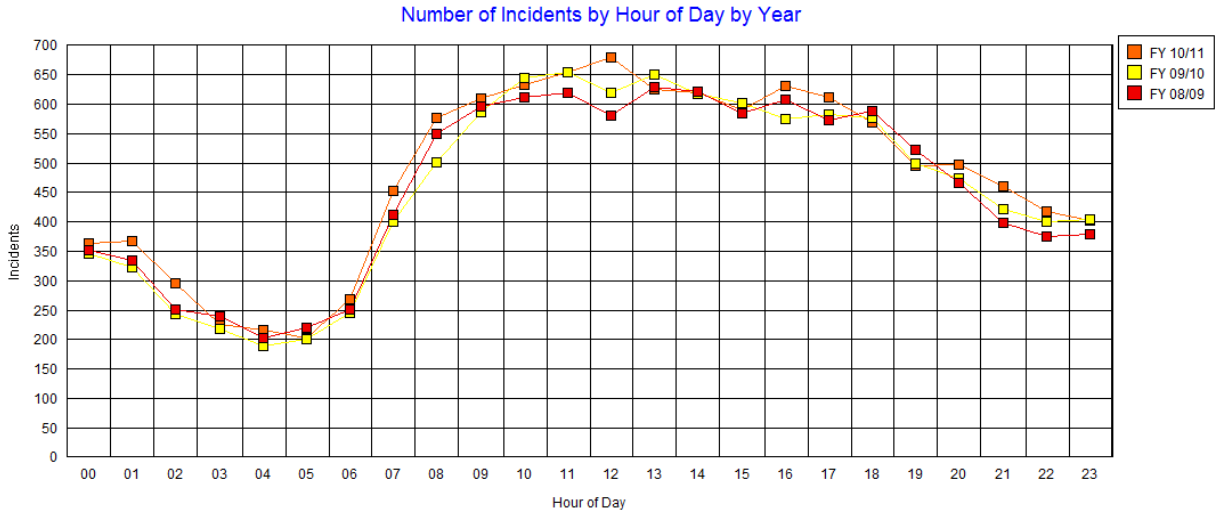
Distribution by Station

The graph below illustrates the number of incidents by station. Mutual Aid given incidents are not represented in this graph. Stations 12 and 13 have the highest number of incidents:



Hourly Demand Trends

This graph compares incident activity by hour of day. The graph follows traditional fire department activity hours except early morning incident counts tend to be higher than usual.



Finding #9: Emergency incident requests are fairly evenly distributed over the months, week of the year and day of week. This means that the deployment model should not have widely different staffing patterns. The Department needs a constant baseline of response resources.

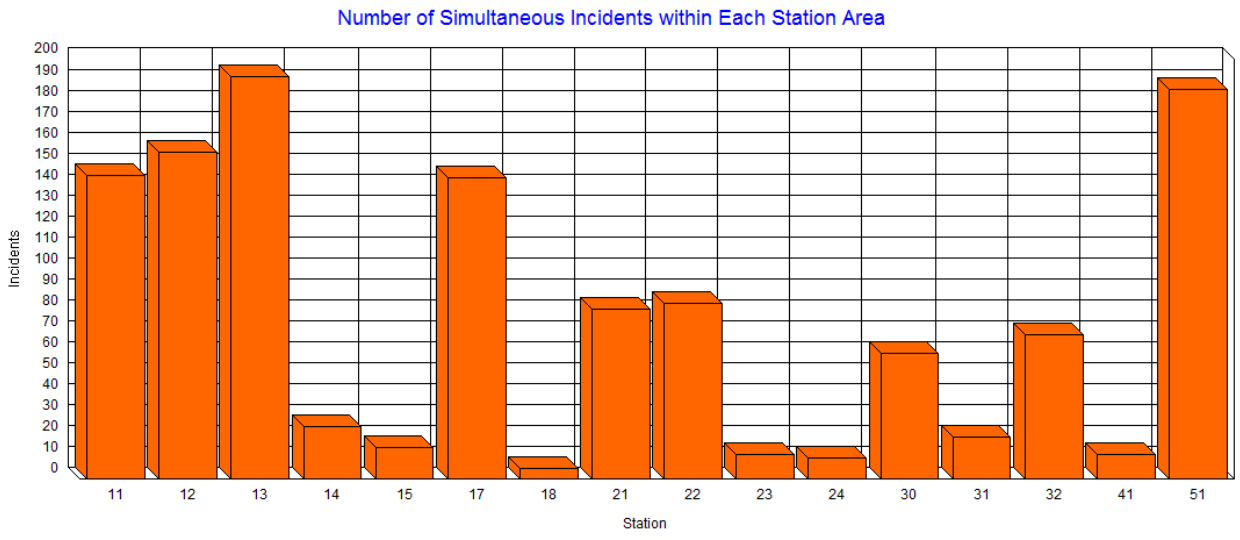
Finding #10: The demand for incidents is at the lowest from 2AM to 6AM, but even at these hours there are emergency requests. If a station closure (Brownout) plan was economically necessary, even reducing staffing only half a 24-hour period at night in a few stations would increase response times, in some cases significantly, where the County's fire companies are not closely spaced.

Simultaneous Analysis

Simultaneous incidents occur when other incidents are underway at the time the incident occurs. In Santa Barbara County, 49.99 percent of incidents occur while other incidents are underway. Over the 3-year dataset, the percentage of time multiple simultaneous incidents occur is summarized below:

- 1 or more simultaneous incidents 49.99%
- 2 or more simultaneous incidents 16.51%
- 3 or more simultaneous incidents 4.16%
- 4 or more simultaneous incidents .98%

Simultaneous incidents in different station areas have very little operational consequence. However, when simultaneous incidents occur within a single station area there can be significant delays in response times. The graph below illustrates the number of single-station simultaneous incident by station area. Here we see Station 13 and Station 51 are the most likely to have simultaneous incidents within their station area.



2.7.2 Santa Barbara County Response Times

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.

People requesting help via the 911 system measure the speed of fire department response from their request for assistance until assistance arrives. Here, Call to Arrival measures the total of Call Processing (60 second goal), Turnout Time (120 second goal) and Travel Time (240 second goal). A 420 second goal is used to measure compliance percentage for Call to Arrival.

For Fire and EMS incidents, the following fractile results for total response time are:

Table 7—Results for Total Response Time

Department-wide Measure	90% Minute Goal or Actual	Measure Source	Actual Performance
Crew Dispatch to Arrival	<= 06:00	SBCFD Policy of 5-min + 1-min dispatch	63.4%
Crew Dispatch to Arrival	<= 07:00	Citygate Urban Recommendation	77.2%
Actual Dispatch to Arrival	09:51	SBCFD Countywide Compliance	90.0%

2.7.3 Response Time Component Measurements

The next step is to evaluate all response time components by breaking down "Total Reflex Time" into its three component parts of:

- Call-handling time – time of call until time of dispatch. Only dispatch records showing a call-handling time greater than 0 seconds and less than 3 minutes were used in this analysis.
- Turnout time – time of dispatch until time unit is responding. Only dispatch records showing a turnout time greater than 0 seconds and less than 4 minutes were used in this analysis.
- Travel time – time of unit response until time the unit arrives on the scene. Only dispatch records showing a travel time greater than 0 seconds and less than 10 minutes were used in this analysis.

Call-handling time – the national recommendations are that 90 percent of the calls should be processed to dispatch within 1 minute, 90 percent of the time. In the Santa Barbara County, the dispatch center triages the call to send the right resource. While this is done in many metro

centers across the County to save scarce resources, it does slow call processing past a best practice goal.

During Citygate's initial analysis of Santa Barbara County Fire Department response times, we have identified very slow dispatch center call-processing times. We discovered County dispatch procedures require the 911 phone-line-answering dispatcher to perform medical response call prioritizing work, which is slowing critical fire dispatches by an unacceptable amount of 2:34 minutes/seconds to 90 percent of residential *building* fires, when the initial answer should take 15 seconds or less. Then the fire dispatcher needs to identify the units and alert the crew. In sum, these two steps in the dispatch center are taking 3:08 minutes/seconds for **residential** building fires when national best practice expectations are that they take 1:00 minute/seconds or less for 90 percent of the emergencies.

This time loss is 75 percent of a fire station 4-minute travel time area in an urban/suburban population density setting. The County cannot afford to add the number of fire stations it would take to recover 2:08 minutes/seconds of driving time (allowing for a normal 1-minute dispatch).

The table below illustrates "911 answer" to fire crew notification performance. Stated this way, the time from 911 "hello" to the time the fire crew is notified.

Table 8—Call Breakdown by Incident Type

CAD Call Type	911 Answer to Fire Crew Notify	
	90%	**Incidents**
C2 Medical	04:15	1,663
Code 3 Echo	03:50	5,761
Hazardous Condition	03:12	744
Hazmat Single	05:22	93
Lines / Electrical	04:40	108
Public Assist	03:56	789
Single Engine	04:30	276
Smoke Check	05:26	145
Structure Fire	03:29	23
Structure Fire - Com.	02:40	32
Structure Fire - Res.	**03:08**	170
Vegetation Fire	04:21	70
Vehicle Accident Code 3	03:43	551
Vehicle Fire - Passenger	03:08	76

Current best practice advice (NFPA 1710) and Citygate's recommendations to our clients that use *career* staff in urban and suburban populated areas, are that the time from 911 answer to first unit on-scene be 7:00 minutes/seconds to 90 percent of the serious emergencies. In the table below, we show the first unit response times as currently measured beginning from only the *fire* dispatcher alerting the fire crew and then with the now identified 911 "off-hook" to fire dispatch console processing time added.

Table 9—First Unit Response Times

Ranking	Title	Number of Incidents	90% Fire Crew Notify to Arrival – Current SBCFD Measure	With 3:08 min/sec added for House Fire 911 Answer to Fire Crew Notify
1	Station 17	774	06:32	09:40
2	Station 12	1,087	07:31	10:39
3	Station 14	323	07:31	10:39
4	Station 30	408	08:06	11:14
5	Station 22	680	09:00	12:08
6	Station 21	702	08:58	12:06
7	Station 11	715	09:28	12:36
8	Station 13	1,001	09:31	12:39
9	Station 15	115	09:31	12:39
10	Station 51	661	10:46	13:54
11	Station 31	324	11:13	14:21
12	Station 32	555	12:24	15:32
13	Station 23	83	12:40	15:48
14	Station 24	86	13:45	16:53
15	Station 18	103	16:14	19:22
16	Station 41	93	19:12	22:20

No station area complies with the 7:00 minute 911 receipt to arrival goal when the additional 3:08 minutes/seconds for a typical residential building fire are considered. However, most of the station areas do not have urban or even high suburban population densities. As such, applying a one size fits all response time goal for all of the unincorporated area would not be appropriate. This study will recommend tiered response time goals tied to population density.

NFPA Standard 1720 for *volunteer* staffed departments in rural areas where population density is 500 people per square mile or less recommends total response time to be 15 minutes from 911 call receipt. In suburban areas of 500-1,000 people per square mile, NFPA 1720 recommends an 11-minute total response time. As can be seen above, five station areas are past 15 minutes,

thirteen stations are past 11 minutes and only one station is under 10 minutes, due in large part not to station locations, but in dispatch and crew turnout time delays.

While many high-volume (40,000 + annual incidents) emergency medical response systems need to triage resources to send ambulances to only where necessary, Santa Barbara County Fire Department only responded to 11,467 total incidents in 2010. To have EMS pre-arrival or ambulance triage take over 3:00 minutes and delay the response to fire and other critical incident calls is well beyond the norms of good customer service.

Finding #11:	Santa Barbara County Communication Center 911 call processing times are overly delaying the dispatch of fire units to serious emergencies. The dispatch operation needs to place greater emphasis on procedures to get the first-due engine dispatched in 60 seconds time. There has to be a way to restructure human and software procedures.

Recommendation #1:	County staff should immediately form a task force to deeply study the Communication Center's 911 call processing times and design and test new dispatcher and/or software procedures that will, in parallel with EMS incident screening issues, dispatch the closest fire unit crew within 60 seconds to 90 percent of the incidents.

When the data on dispatch time was first processed for this study, the dispatch time lag was brought to the County's attention. The CEO's office, Fire Chief and Sheriff committed to make improvements, studied the issue and formed a task force to implement changes. By late 2011, there were already improvements noted in dispatch processing times.

Company turnout time – the time from company notification and donning protective clothing to beginning travel to the incident. Older national recommendations were for turnout time to take 1 minute. Over the last five plus years of increasing protective clothing regulations by OSHA and the NFPA, complete data studies have shown this to be a near impossible goal to accomplish safely. The NFPA for structure fires now recommends 80 seconds, but Citygate finds a more realistic goal is to complete the company notification and turnout process in 2:00 minutes or less, 90 percent of the time. Attention to this critical time element can help reduce the time.

In Santa Barbara County, the overall turnout time is **2:12** minutes/seconds to 90 percent of the incidents. The fractile summary below measures turnout compliance for each station. Ninety percent turnout compliance is generally reached at the 120-second (2-minute) goal:

Table 10—Summary Turnout Compliance By Station

Station	% @ 120 secs	Secs. to 90%
12	85.99%	130
13	94.16%	110
17	87.65%	125
21	90.31%	120
11	75.34%	150
22	79.34%	140
51	79.80%	150
32	81.83%	140
30	86.49%	130
14	91.77%	115
31	86.04%	135
15	88.54%	130
18	84.88%	135
24	78.37%	140
41	69.86%	165
23	86.95%	130

Finding #12: For crew turnout time performance, most stations are close to achieving a maximum of 2 minutes (120 seconds). Focus on this area will easily bring the times down to serious emergencies.

Travel time – here are the countywide travel time measures for 2010/11 to Fire and EMS incidents:

Table 11—Countywide Travel Time Measures for 2010/11

Measure	Urban/Suburban 90% Minute Goal or Actual	Goal Source	Actual Performance
Travel	<= 04:00	Desired Goal Point in NFPA 1710 & SBCFD Goal	53.2%
Travel	<= 08:00	SBCFD Countywide Compliance	90.0%

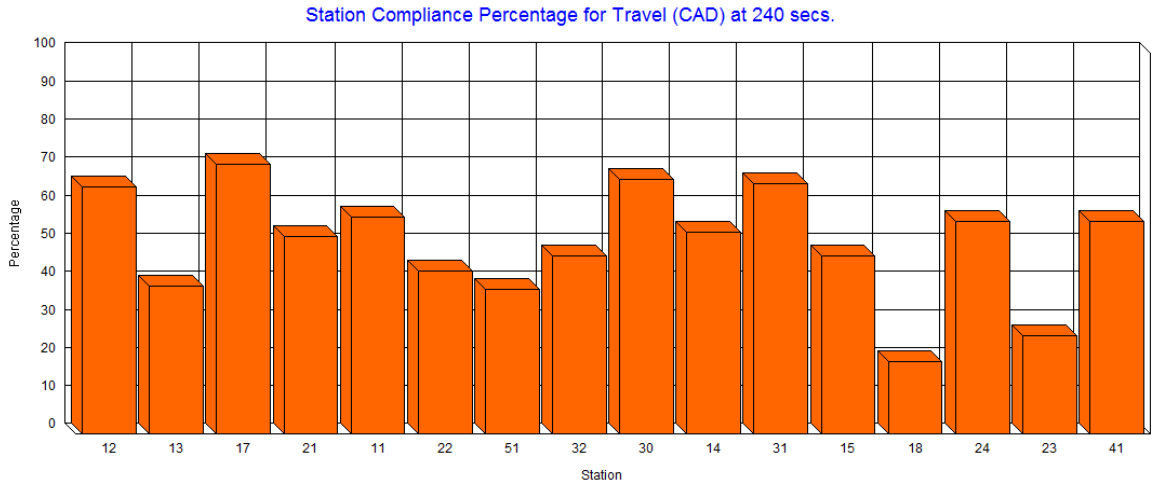
The fairly urbanized southern Battalion 1 area stations reach 90 percent travel time compliance at 07:00 while the more rural northern Battalion 2 area stations reach 90 percent travel time compliance at 08:12.

This table shows the travel time performance as a percent of a 4-minute urban/suburban travel time goal:

Table 12—Travel Time Performance (At Urban/Suburban 4-Minute Travel Time Goal)

Station	% @ 4-min	Minutes/seconds to 90%
12	64.80%	6:00
13	39.01%	8:00
17	71.17%	5:00
21	52.38%	7:27
11	56.78%	7:33
22	43.45%	7:21
51	38.18%	8:44
32	47.43%	9:55
30	67.08%	6:44
14	52.61%	6:05
31	66.44%	8:22
15	46.80%	8:12
18	19.23%	11:44
24	55.55%	10:27
23	26.08%	10:33
41	56.45%	8:52

The graph below illustrates travel time compliance by station area at 4 minutes (240 seconds). Highest call-volume stations are listed first:



Finding #13: All of the station areas are too large to deliver 4-minute urban/suburban travel time. However, not all station areas have high population densities. All of the station locations can reach 90 percent of the incidents in less than a rural response travel time of 12 minutes, but a rural response time is not desirable in the most populated areas.

2.7.4 First Alarm Compliance

This report section focuses on concentration or massing of units for the first alarm arrival units.

Most Standards of Response Coverage studies along with NFPA 1710 recommend that for urban/suburban areas, all of the necessary fire units for an effective response force (first alarm) arrive on scene within 8:00 minutes travel time, and when 3:00 minutes are added for dispatch and turnout time, this equals 11:00 minutes, 90 percent of the time. A normal first alarm response for Santa Barbara County Fire Department is 3 engines, 1 ladder truck, 1 rescue ambulance and 1 battalion chief in the south Battalion. In the north Battalion, a fourth engine is used since there are no County ladders trucks in the north.

In this data set, the travel time performance by station area for all four (4) units arriving was:

Table 13—Travel Time Performance By Station Area

	Unit Arrival Sequence			
Station	**1st**	**2nd**	**3rd**	**4th**
11	08:00	10:18	***08:42***	***08:38***
12	06:05	10:27	***07:15***	***08:56***
13	08:38	16:14	19:35	24:03
14	06:08	07:44	09:28	12:54
15	08:12	23:34	23:59	28:33
17	05:06	06:48	14:51	18:37
18	15:16	18:15	22:58	27:52
21	07:36	11:39	19:00	
22	07:23	12:35	17:23	16:09
23	11:13	19:13	12:29	
24	12:39	15:44	22:33	13:36
30	06:51	10:01	24:51	
31	10:29	19:00	17:00	23:00
32	11:27	15:49	23:52	19:33
41	18:02	13:51		
51	08:47	19:10	20:55	16:38

Finding #14: The incident response measures for a Full Effective Response Force (first alarm) show that only two of the fire station areas can deliver 4 units to 90 percent of building fires within a desired goal point of 11:00 minutes total response time, of which 8 minutes is travel time. The other fire station areas are just too large and some units are busy and unavailable at peak hours of the day. The positive coverage from Stations 11 and 12 is in Goleta and Isla Vista where the highest population densities are.

2.7.5 Battalion Chief Coverage

On serious incidents, a command chief is necessary for command and safety functions. There are two Battalion Chiefs, one in North County and one in south county. Using a desired urban area structure fire total response time goal of 11 minutes from 911 answering, here is the performance of the two units. However, in the data table below, the dispatch lag of 2 to 3 minutes is not reflected, but the data suggests the coverage possible if dispatch lag time was normal:

Table 14—Battalion Chief Response Time Performance

	Batt 1	Batt 2
Dispatch to Arrival (CAD) at 5 Minutes	45.6%	38.9%
Dispatch to Arrival (CAD) at 6 Minutes	64.4%	54.3%
Dispatch to Arrival (CAD) at 7 Minutes	77.7%	67.6%
Dispatch to Arrival (CAD) at 8 Minutes	85.2%	76.8%
Dispatch to Arrival (CAD) at **9** Minutes	**90.2%**	83.0%
Dispatch to Arrival (CAD) at 10 Minutes	93.2%	87.5%
Dispatch to Arrival (CAD) at **11** Minutes	95.0%	**90.5%**

Given the large area that each Battalion Chief covers, the above response time performance is acceptable. However, the response time statistic does not tell the entire story. The north Battalion Chief covers a huge area. If the north Battalion Chief is on one incident, or have to visit headquarters, the south Battalion Chief cannot get to northern incidents in a reasonable time. Battalion Chiefs serve important safety and command functions that have to be done by properly trained officers. Even if an engine captain has to perform this function, then a three person crew that is already small is reduced to two, which is not effective at serious situitions. Also, the north Battalion Chief has a large span of control with nine stations and simply traveling to some stations for crew supervision check in meetings or training supervision can consume half a day.

Finding #15: The County is too large for only two, on-duty Battalion Chiefs. A third Battalion Chief should be added into the mid-county area to support command, safety and personnel management functions. There is a hit and miss designation of an on-scene safety officer for structure fires. Providing a third Battalion Chief will help by providing a second Chief at serious incidents to perform the Safety Officer Functions. Personnel at the Captain level and above should receive training in Incident Safety Officer Certification that will significantly improve firefighter safety.

2.7.6 Interdepartmental Aid

In 3 years. 2,258 incidents have involved aid with another jurisdiction. Aid was received for 769 incidents and given for 1,008 incidents. This figure represents just over 6.76 percent of incidents involving some type of aid with other fire departments. Here is a breakdown by year; 33,416 incident records were analyzed.

Table 15—Incidents Needing Interdepartmental Aid By Year

	Year			
Aid Type	**FY 08/09**	**FY 09/10**	**FY 10/11**	**Totals**
Mutual Aid Received	60	82	62	204
Automatic Aid Received	212	201	152	565
Mutual Aid Given	86	74	104	264
Automatic Aid Given	249	265	201	715
Other Aid Given	10	10	9	29
None	10,184	10,203	10,771	31,158

Over three years, Santa Barbara County Fire Department gave aid 210 times more than it received. This is not a lopsided split given the large county areas intertwined with other fire agencies, as well as the CAL FIRE contract that requires aid to the U.S. Forrest Service. Also, given the interdependence of some rural county stations with rural cities, all parties need each other.

2.7.7 Integrated Fire Station Deployment Recommendations

While no one agency (even a metropolitan one) can stand by itself and handle everything and any possibility without help, a desirable goal is to field enough of a response force to handle a community's day-to-day responses for primary single-unit response needs equitably to all similar neighborhoods, as well as be able to provide an effective initial response force (first alarm) to moderately serious building fires.

As the mapping coverage and response statistics analysis in this study have shown, deploying a best practice mix of fire crews across the challenging topography of Santa Barbara County cost-effectively is *very difficult* to achieve. Citygate used the comprehensive data sets built for this study to identify patterns in the deployment system of:

- High density call-for-service areas;
- Overuse of resources;

- Where response time gaps are as large or larger than an entire typical fire station area;
- Trying to balance the push-pull of improving neighborhood equity of service availability versus the need to handle multiple incidents per hour in more populated areas.

Given these factors, Citygate observes that the "weight" of attack is very thin in areas with very high risk and population densities (Isla Vista) and many other fire station areas where the second through fourth-due travel times and simultaneous call-for-service rates, mean that a second or even third-due crew is more than just 2 to 4 more minutes away. In a building fire, requiring compliance with the OSHA 2-in/2-out rule, the fire will get substantially larger if it cannot be suppressed quickly due to lack of personnel on scene in a timely manner. For this reason, Citygate believes the most effective deployment change the County should consider is increasing the crew size to four firefighters from three firefighters on units with significant population densities to protect or where the other units are too far away to provide a fourth crew member for interior fire attack.

2.7.8 Deployment Reduction Strategies

Given the current structural deficit of $1.8 million in the coming fiscal year in the Fire District budget, if the County is unable to 1) find or develop a revenue source to solve this structural deficit in FY 2012-13 or 2) extend the salary and benefit concessions agreed to by the employees for the current year and only partway through next year, then it is recommended 3) the County limit the use of overtime by approximately half its current usage rate and then temporarily closing a fire station on a rotating basis when daily staffing is not sufficient to staff all stations. Overtime is presently used to fill in vacancies when line personnel are on leave or a position is vacant.

As the projected deficit grows to an average of $4 million in the succeeding three years, the County will need to consider again the alternatives of 1) finding or developing a revenue source to close the deficit, 2) adjusting employee compensation levels, or 3) closing one or more fire stations. The annual savings from reducing the number of fire crews on duty each day is between $2.2 and $2.5 million per fire crew (9 line FTEs). The County's policy choices, of course, also include a combination of these three basic alternatives.

In the current economy, many agencies have been forced to make this choice to balance budgets. Citygate and our clients, when considering where to reduce daily firefighter staffing, use the following strategies:

1. Where there are two units, such as a ladder and engine in the same station, close one of the units, which leaves at least one first responder in that station area;
2. Where single fire stations have to be closed, consider stations that:

a. Have the lowest call volumes;

b. Have lower population densities;

c. Have responding "backfill" stations that are the normal station spacing distance away;

d. Have a low rate of simultaneous calls for service;

e. Are not directly adjoining the border of a mutual aid partner agency, where that agency might feel they are being asked to subsidize the closed area without compensation.

2.7.9 Integrated Deployment Recommendations

Based on our deployment analysis, Citygate offers the following recommendations:

Recommendation #2: **Adopt Fire Station Location Measures:** To direct fire station location timing and crew size planning as the community grows, adopt fire unit deployment performance measures based on population density zones in the table below. The more specific, measurable and consistent the policy is, the more it can be applied fairly to all uses and easily understood by a non-fire service user.

Table 16—Proposed Deployment Measures By Population Density Per Square Mile

	Structure Fire Urban Area	Structure Fire Suburban Area	Structure Fire Rural Area	Structure Fire Remote Area	Wildfires Populated Areas	Wildfires Remote Areas
	>7,000 people/sq. mi.	1,000-7,000 people/sq. mi.	500 to 1000 people/sq. mi.	0 to 500 people/sq. mi. **	Permanent open space areas	
1st Due Travel Time	4	5	12	20	10	20
Total Reflex Time	7	8	15	23	13	23
1st Alarm Travel Time	8	10	16	24	15	24
1st Alarm Total Reflex	11	13	19	27	18	27

2.1 Distribution of Fire Stations for Initial Response to Built-up Suburban Areas of Greater than 7,000 People per Square Mile: To treat and transport medical patients and confine small fires to the room of origin, the first-due unit staffed with a minimum of 3 firefighters 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 crew turnout time and 4 minutes travel time spacing for single units.

2.2 Effective Response Force (First Alarm) for Built-up Suburban Areas of Greater than 7,000 People per Square Mile: To treat and transport medical patients and to confine fires near the room of origin, a multiple-unit response of at least 15 firefighters 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 crew turnout time and 8 minutes travel time spacing for multiple units.

2.3 Suburban Areas of 1,000 to 7,000 people per square mile should have first-due fire unit travel time coverage of 5 minutes, 90 percent of the time, and the effective response force of at least 15 firefighters should have a travel time of 10 minutes with a resultant 13-minute total response time, 90 percent of the time. Fires will be contained to the building of origin to prevent a wildland fire. Medical patients salvageable upon arrival will receive appropriate care for their condition.

2.4 Rural Areas of 500 to 1,000 people per square mile should have first-due unit travel times of 12 minutes, 90 percent of the time. Rural areas should receive the effective response force of at least 9 firefighters within 16 minutes travel time with a resultant 19-minute total response time, 90 percent of the time. Fires will be contained to the building of origin to prevent a wildland fire from escaping assuming adequate defensible space and built-in construction features are provided. Medical patients salvageable upon arrival will receive appropriate care for their condition.

2.5 Structure Fires in Remote Area of less than 500 people per square mile should have first-due unit travel times of 20 minutes, 90 percent of the time. Remote areas should receive the effective response force of at least 6 firefighters within 24 minutes travel time with a resultant 27-minute total response time, 90 percent of the time. Fires will be contained to the property of origin to prevent a wildland fire from escaping assuming adequate defensible space and built-in construction features are provided. Medical patients salvageable upon arrival will receive appropriate care for their condition.

2.6 Wildland Fires in or Near Populated Areas should have first-due unit travel times of 10 minutes, 90 percent of the time; and the effective response force of at least 15 firefighters should have a travel time of 15 minutes with a resultant 18-minute total response time, 90 percent of the time. Fires will be contained to less than 5 acres to prevent a more serious wildfire.

2.7 Wildland Fires in Remote Areas should have first-due unit travel times of 20 minutes, 90 percent of the time; and the effective response force of at least 9 firefighters should have a travel time of 24 minutes with a resultant 27-minute total response time, 90 percent of the time; fires will be contained to less than 10 acres to prevent a more serious wildfire.

2.8 Rescues and Specialty Responses should receive an effective response force trained and equipped to deal appropriately with the emergency from water rescue to hazardous materials, rugged-area medical, or technical rescue problems. The initial unit to such emergencies should arrive within 13 minutes and the follow-up units within 27 minutes.

Recommendation #3:	As funding allows, the County should strongly consider staffing a fourth firefighter on units that protect very high population densities or are located too far from other units for quick support when interior fire attack is needed. These stations are: Truck 11, Stations 12, 17 and 18 in the south battalion; Stations 21, 23, 24, 30, 41, and 51 in the north battalion. This will require an additional 10 firefighters per day, or 30 total for coverage on three shifts.
Recommendation #4:	**Third Battalion Chief:** As soon as funding permits, the Department should establish a third Battalion Chief position 24/7/365 in the central county area to increase command and safety chief functions at serious incidents. These chiefs can also assist with departmental safety program management functions.

SECTION 3—FIRE DEPARTMENT REVIEW OF HEADQUARTERS PROGRAM FUNCTIONS

Section Intent: This section serves as an analysis of the Department's headquarters and support service programs.

The "headquarters" system of a fire department covers a multitude of activities. For the purposes of this plan, Citygate Associates evaluated headquarters programs of the Department by interviewing key personnel, by examining facilities and equipment, and obtaining 13 SWOT[3] analysis questionnaires on every aspect of Department operations.

We reviewed the daily reports of activities and fire reports, examined the readiness of fire apparatus and equipment, evaluated the standard response plan and pre-fire planning program, and appraised the training program and prevention programs. All of these are important components of a fire department operation and critical to ensuring that needed resources can respond quickly and effectively. A number of main themes emerged, some of which deserve particular consideration while others only require the regular attention they currently receive.

3.1 OVERALL IMPRESSIONS

As will be described in the sub-sections to follow, Citygate finds that the recent staffing reductions in headquarters have reduced programs to, or in the case of safety/training, below the best practice minimums for a fire department the size and complexity of Santa Barbara County's. As such, further reductions in headquarters services will greatly reduce or eliminate services in the affected areas.

The County's Fire Department is a well managed fire department functioning within the current fiscal limitations. Santa Barbara County Fire Department is a large-sized county with similar issues as other counties are going through such as budget, economic issues, and looming retirements of key personnel.

Santa Barbara County Fire Department is struggling to fund essential headquarters and logistics needs given budget reductions. As described below in Table 17, staffing reductions have occurred in headquarters over the last three years. Citygate found, and will discuss in depth in the next sections needs to be addressed in three major themes – Training/EMS/Safety, administrative support positions, and technology support.

The Department has also struggled to develop a career development program for line personnel to grow chief officer/management skills. There are multiple upcoming retirements and it has

[3] SWOT **S**trengths, **W**eaknesses, **O**pportunities, **T**hreats Analysis.

been hard historically to get line personnel promoted into management. There is no real mentoring or inside training program for managers.

3.1.1 Management Team Organization and Duties

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 of Santa Barbara County's size needs to have a management team that is the proper size, and is 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.

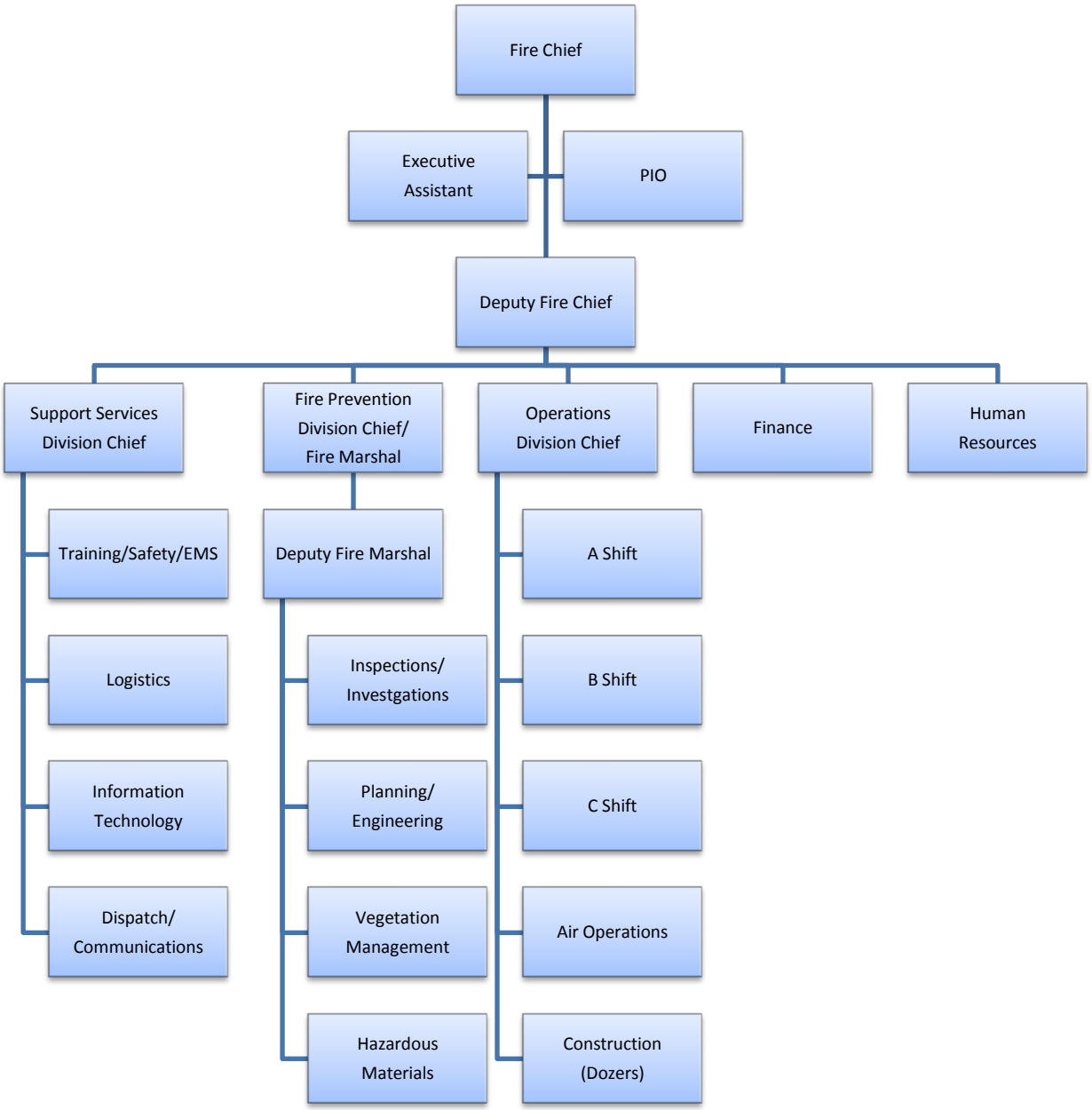
Three years of recessionary-driven reductions have taken a toll on the Department in many areas. The following table summarizes the total full-time equivalent (FTE) reductions to date:

Table 17—Total Full-Time Equivalent Reductions to Date

	Budgeted FTE Reductions			
Area of Reduction	**FY 09/10**	**FY 10/11**	**FY 11/12**	**Total Reductions**
Field Operations – *Largest reduction was Hand Crew*	219.52	216.52	193.50	**26**
Headquarters - Badge	22.00	22.05	19.05	**3**
Headquarters - Non-Badge	43.75	40.20	35.45	**8**
			Total Reductions:	**37**

Even if the field service reductions were not restored, as the next sections of this report will discuss, the headquarters reductions should not be maintained for very much longer. A department of Santa Barbara's size needs to be effectively led, trained and supervised. The organization chart shows an organization that is barely sufficient to meet the needs of the Department:

Santa Barbara County Fire Department Current Organization Chart – *54 FTEs Assigned to Headquarters and Field Command*



General Considerations

- Are there an adequate number of management and support staff members?
- Is there an effective distribution and assignment of duties to accomplish the management needs of the Department?
- Are the proper administrative procedures in place to operate the Department?

- Does the Department have enough managers to maintain an emergency management span of control ratio of one supervisor for every three to seven subordinates as suggested by the National Incident Management System (NIMS) and NFPA 1006 *Standard for Rescue Technical Professional Qualifications*?

- Do the managers have rank level consistent with the International Association of Fire Chiefs (IAFC) Officer Development Handbook to carry out their duties? The IAFC recommends four levels of officer development: Supervising Fire Officer (Company Officer, Captain); Managing Fire Officer (Battalion Chief); Administrative Fire Officer (Division or Deputy Chief); and Executive Fire Officer (Fire Chief). Within each level, the handbook recommends specific training, education, and experience, which, if followed, should develop well-rounded and prepared fire officers.

In Citygate's experience with fire services, the above organization chart shows the appropriate functions and reporting relationships for a fire department the size of Santa Barbara County's. The span of control is consistent with other large fire departments and published fire service best practices.

One of the difficulties in analyzing the non-deployment programs at Santa Barbara County Fire Department is the lack of headquarters staff to oversee the programs. The Training Program is a case in point. Much of what firefighters do on emergencies falls into the relatively routine category; the routine training programs such as Continuing Education for paramedics along with the Quality Improvement program addresses this need. As long as everything goes well, there is no need for any specialized training. It is when the High Risk-Low Frequency, *No-Decision - Time* incident comes along that the routine training is not sufficient. The after-action findings of the tragic furniture store fire in Charleston, South Carolina where nine firefighters lost their lives, along with preventable multiple wildland firefighter fatalities, demonstrates the need for specialized training.

Adequate, supervised, verified training is needed to prevent these types of tragedies, which have enormous long-term emotional and fiscal impacts on not only the firefighters and their families, but the agency and the community as well. Charleston had to completely replace its fire department executive leadership, bring in an outside training and leadership team, and totally revamp its entire training and incident management processes. Had Charleston maintained currency with the best practices of the fire service and required standardized, verifiable, ongoing, and realistic training, it is likely those nine firefighters would be alive today and firefighting in Charleston would be business as usual.

Having said that, it is critical to remember that Santa Barbara County firefighters are neither cavalier nor casual about the way they conduct themselves during emergencies. They have good basic training; many come from other departments with ongoing training programs and bring

what they learned elsewhere with them. Santa Barbara County firefighters attend some ongoing and in-service training courses. That is not the issue.

The issue is that there is no ongoing programmatic approach to ensure that current best practices in safety and training are taught, practiced, and instilled in the daily operations of the Fire Department. This takes leadership devoted to that assignment. Simply stated, the headquarters staff is too thinly spread. With only one dedicated training officer in a firefighting organization of 253 personnel, any expectation of uniform and consistent success in that function will be more by chance than design.

3.2 TRAINING AND SAFETY ADMINISTRATION

Robust training programs teach and reinforce the safety practices of firefighters, and coupled with vigorous safety and health programs, communities find many benefits including:

- Lower injury rates followed on by lower workers compensation costs.
- Reduced vicarious liability for injuries and property damage due to errors in practice.
- More efficient procedures, more effective use of resources, and reduced damage to apparatus and equipment.

The Training/EMS/Safety Division comes under the Support Services Division Chief. A Battalion Chief acting as project lead fills the Training component. Under his supervision are an administrative assistant, a Captain for EMS oversight and a Captain for Training. An unfunded position for Safety Standards Coordinator is also in the chain of command. The Battalion Chief and Captain in training are responsible for all training activities, scheduling, recruit training and improvement for 177 line personnel, plus as needed, headquarters staff. The EMS Captain manages EMS training and recertification; Department safety and quality assurance; and monitors the Health and Wellness portion of the Department. The Department contracts with a local Occupational Medical Physician to provide those services.

The Safety and Standards Coordinator position is unfunded and was eliminated in 2010. This position, filled by a registered nurse, was responsible for Continuous Quality Improvement (CQI) of medical service delivery including paramedic services. This responsibility has now been assumed by the EMS Captain. This can be a problem because of the workload and the CQI clinical review requirements by a higher clinical professional if a member's certification should expire and they continue to give treatment in the field.

The training and oversight of 54 paramedics and 145 EMTs, running over 8,000 medical emergencies a year from 16 locations, is too much for one EMS Captain to manage. Other fire departments and ambulance companies with similar numbers of employees may have as many as

2 to 5 people overseeing daily operations which include state EMS plan quality assurance, training, and equipment issues, to name a few.

The loss of the nurse assigned to the division has exposed the Department to a possibility of not assuring certifications Quality Assurance and controlled drug oversight. The EMS coordinator is relying on the Local Area EMS agency to track those certifications. There are no assurances this is being done or monitored, and the Department is liable if one lapses.

Finding #16: The Department is very understaffed in Training and EMS oversight and is at risk without a Safety and Standards Coordinator position. Relying on a Fire Captain and an outside agency to monitor the Department's EMS and other certifications is risky. Certifications for personnel providing advanced life support require constant tracking and monitoring to assure compliance.

Citygate did not find a pattern of firefighters discounting the value of training; however, given the lack of oversight staffing, program planning, and management, the training program has and will continue to exist only at the most basic levels and is greatly dependent on each crew's fire captain to ensure time spent on training and the quality of it. It is like deferred maintenance: the longer this issue is ignored, the greater will be the cost of the repair work that has been deferred.

While some training does occur and performance currently reflects well on what was learned in the past, there is no organized training program in the Santa Barbara County Fire Department except for the very basic skills. There is not any career development guide for employees to determine what is necessary to promote, all the way through fire chief. A review of the Department training records indicates that many certifications and training activities are not inputted into the training records management system, because of staffing. The fact that training records and certifications are not easily accessed diminishes the ability of staff to track currency of training of employees.

Santa Barbara County Fire Department has begun to address the issues of career development at the Captain and Chief Officer level with the Acting Captain Program and Task Book and the Acting Battalion Chief program and Task Book. These are well considered programs; however, they currently are neither completely implemented nor approved. The requirements for promotion to both Captain and Battalion Chief focus more on wildland requirements than on officer development and leadership traits. There needs to be a blending of all pieces to make a whole officer.

The Department has a Training **R**ecords **M**anagement **S**ystem (RMS) to document and maintain all training records, certifications and classes. The lack of training staffing does not permit the data to be tracked and retrieved. There is a potential for loss of records and a violation of

Cal/OSHA requirements for certifications, and mandatory training requirements not being accomplished by all members.

Although Citygate did not observe drills being conducted, the Captains (company officers) are conducting drills at the stations to maintain basic skill levels. However, the topics are not organized, given priority and delivered consistently Department-wide. The core competencies topics are sent out monthly and annually for the membership, but there is no follow-up to assure all members received the training

In the mid 1990s, a study conducted for a major fire department of the knowledge, skills and abilities (KSAs) required of a firefighter found that a firefighter has over 200 essential KSAs while a captain paramedic has over 500 essential KSAs. The group conducting the study stated that by comparison, most government employees are required to have about 100 knowledge, skills and abilities. Many of these KSAs are very complex and performed under extremes of emergency stress.

The other significant weakness is lack of a training facility. Although the Department has space available in stations for classroom training; it is small and limited, they also have no adequate drill site or any place to conduct live fire training. There is a proposal to partner with Alan Hancock Community College for a joint facility. Hose and ladder drills have to occur on "borrowed" public and private property. Live fire training and auto or technical rescue skills have to be done outside in a small area next to Station 11.

The Department has an agreement allowing them to use the fire training center in Santa Barbara City, but due to the location of companies and limited staffing, the use is typically limited to one company at a time, sent on-duty, to that facility. Any County Fire multi-company drills at that site would require significant hire-back overtime expense to backfill County Stations, or leaving the station districts vacant during training. The County cannot really currently afford either of these impacts, as fire station districts outside of the urban area are too far apart to leave empty during training. Overtime is very expensive for all hands on training in the basic skills.

The Department is going to have to increase training inside station areas by using more technology and "roving trainers" along with establishing smaller training sites spaced in different areas of the County.

A department's focus on safety is paramount in firefighter safety. OSHA requires that before any entry by firefighters into an area considered to be **I**mmediately **D**angerous to **L**ife and **H**ealth (IDLH), two firefighters must be standing by outside the structure to come to their aid, if needed. Citygate could not find any indication this is done on all structure fires before entry is accomplished. Use of the on-scene Incident Commander does not meet the requirement. The Department does a good job with establishing a safety officer at its hazardous materials incidents and technical rescues. Best practices indicate a dedicated person on the incident scene be assigned to the safety officer position for all structure fires. Currently, this is done by the on-

scene Incident Commander, or if large enough, a second arriving Battalion Chief. There are no established guidelines for the person assigned to the safety officer position as well.

Finding #17: The Department lacks a dedicated Safety Officer and centralized focus on safety. Without a designated Safety Officer, the training/safety programs will not be able to succeed or meet best practice recommendations, or essential requirements on the fire service by Cal/OSHA. Tracking of fit testing and SCBA monthly donning and doffing is an example where the Department could be in non-compliance.

Finding #18: The Department does not have an adequate training center with the classroom and outdoor spaces and props to support its necessary training.

Recommendation #5: **Training/Safety/EMS Program:** The Department and the County need to work together to ensure that a robust and effective training and safety program exists. The Department performs many of the following components, but they need adequate staffing, supplies, and facilities. A quality training program should include the following ten major components:

5.1 The Training/EMS Oversight and Safety programs need at least two positions added, one Fire Captain and the EMS Nurse. Also, the Administrative Assistant should be increased to full-time.

5.2 Drills should be regularly scheduled where firefighters practice the essential knowledge, skills and abilities they need to do their jobs safely and effectively. This drill schedule needs to include in-station practice on the apparatus, tools and equipment they use, practice at a training facility coordinating with other companies, and a walk-through of major facilities to familiarize firefighters with the risks in those structures.

5.3 The Department should assure that adequate staffing is available to input and retrieve all training records of personnel assuring that mandatory training and drills are accomplished in accordance with policy. Training the company officers to use the Department's RMS and retrieve reports is essential. Training the Administrative Office Professional (AOP) to run reports and input data would help as well.

5.4 Career development training should be implemented where firefighters develop the mental knowledge, skills and abilities associated with advancement as driver/operators, company officers, chief officers and finally, fire chiefs. This is achieved through a combination of fire service training courses at each level and higher education available through community colleges and universities.

5.5 Specialized training for firefighters assigned as paramedics, prevention officers, hazardous materials responders and technical rescuers should be implemented. Training in much of this arena is governed by statute and cannot be ignored for very long or the Department could find itself out of compliance with statutes while it is attending to these emergencies. This is also a training arena that is constantly evolving as new techniques, new equipment and tools, and new challenges are addressed.

5.6 Mentoring for firefighters by senior members in the Department to ensure their development in those areas where training is needed. The International Association of Fire Chiefs, in their Officer Development Handbook, calls it "the pursuit of the planned, progressive life-long process of education, training, self-development and experience."

5.7 The Department should review and evaluate the affect the loss of the nurse had on QA/QI, certification, and continuing education requirements, and replace that position. Review the assumed fact that the Local EMS Agency is in fact tracking the certifications and continuing education requirements for the firefighters.

5.8 The Department and County should continue conversation with Alan Hancock College to develop a joint-use fire training facility for the members.

5.9 The Department should discuss and clarify how the OSHA requirement for 2-in/2-out is handled in accordance with the rules and OSHA interpretations.

5.10 The Department should establish training and certification requirements based on national best practices for a safety officer to be on scene or available at every incident for structure fires.

Recommendation #6: The County's capital facility funding program should find the funds to site and build an adequate training center.

Below is a partial list of best practice recommendations for a training program and training officer:

- NFPA 1201 *Standard for Providing Emergency Services to the Public* recommends in Section 4.11.3: "A training officer shall be designated and responsible for supervising the work of the organization personnel assigned as instructors or assistants. The training officer leader shall meet the requirements of applicable professional qualification standards."
- NFPA 1500 *Standard for Fire Department Occupational Safety and Health Program* in Section 4.7 recommends the appointment of a departmental Safety Officer who meets the applicable qualifications and has authority to administer the programs.
- NFPA 1041 *Standard for Fire Service Instructor Professional Qualifications* describes the competencies of the fire service instructor. This standard provides the fire department training program with three levels of progressive development: Instructor I, II, and III. Each of these levels outlines the requirements for managing the training program, developing instructors and

instructional material, and evaluating and testing personnel. This is essential for a robust training program.

The job of a firefighter is extremely complex and the tasks they perform must be delivered correctly every time. This is particularly critical for those tasks that are very hazardous do not occur very often, and for which there is no decision time. Training in the fire service has two parts: vocational training, which teaches the skill sets necessary to do the "hands-on" type work that firefighters do, and education, which teaches the knowledge necessary to do the "mental" work that firefighters do.

An effective training program is the keystone to effective emergency response. During emergency operations, time is always of the essence and an effective training program can mean the difference between a fire contained to the area of origin and one that causes great damage or the difference between effective cardio pulmonary resuscitation (CPR) that starts on time and a patient who dies. The NFPA and Federal and Cal/OSHA have many recommended standards that cover the training arena. As an abbreviated overview:

- NFPA 1001 *Standard for Fire Fighter Professional Qualifications*.
- NFPA 1002 *Standard for Fire Apparatus Driver Operator/Professional Qualifications*.
- NFPA 1006 *Standard for Rescue Technician Professional Qualifications*.
- NFPA 1021 *Standard for Fire Officer Professional Qualifications*—This standard covers the four levels of fire officer progression; Fire Officer I, Fire Officer II, Fire Officer III, and Fire Officer IV. The International Association of Fire Chiefs developed the Officer Development Handbook, which coordinates Fire Officer I with Supervising Fire Officer; Fire Officer II with Managing Fire Officer; Fire Officer III with Administrative Fire Officer; and Fire Officer IV with Executive Fire Officer. Each of these four levels of officer development has a complete training, education, experience, and self-development component. This handbook endorses Fire and Emergency Services Higher Education, the national model of training and education development.
- NFPA 1031 *Standard for Professional Qualifications for Fire Inspector and Plan Examiner*.
- NFPA 1401 *Recommended Practice for Fire Service Training Reports and Records*.
- NFPA 1403 *Standard on Live Fire Training Evolutions*.
- NFPA 1404 *Standard for Fire Service Respiratory Protection Training.*

- OSHA *requirements in the Code of Federal Regulation 29* covering self-contained breathing apparatus.
- NFPA 1451 *Standard for a Fire Service Vehicle Operations Training Program.*

The issue is whether the Department adheres to these standards by adoption or by reference in training documents. Citygate reviewed the various operations Standard Operating Procedure (SOP) documents provided by the Department and found no reference to these best practices. However, that is not to say that the SOPs are poorly written or do not meet the general conditions normally found in compliant documents. They are clearly written and appear to be similar to SOPs in use throughout the fire service. However, they have not been reviewed for accuracy in many years and have not been updated to meet the current standards.

The County should strive to continue funding for participation in training programs that are sponsored by the Office of State Fire Marshal and/or the National Fire Academy to ensure that departments are receiving top quality certified training that keeps them current with the state of the art. Within the parameters of its limited training budget, Santa Barbara County Fire Department has members attending State Fire Marshal and National Wildland Coordinating Group training. This is probably not at the numbers that would be desirable, but it is evidence of a commitment to training.

Another large coordination job for a training officer is to maintain and coordinate the Department's new and best practice succession plan. Someone has to publish and advertise training opportunities, schedule evaluations and training, and assign mentors. A healthy succession plan does not happen by accident, or on its own. Numerous high-level chief officers will be retiring within the next 2 to 5 years. Losing that institutional knowledge is going to be difficult to fill and retain.

Finding #19: While the Department has a set of operating procedures and guiding documents, they are very old and outdated. These documents assure how personnel will normally perform during their course of duty.

Recommendation #7: **Succession Plan:** There will be a significant turnover in the administrative chief officers in the next 2 to 5 years. During that delayed time, the Department could conduct a review and fund the development of a mentoring and training program for fire captains and battalion chiefs to take the places of those leaving, not allowing a void in leadership of the organization.

Recommendation #8:	**SOP Review:** As time and resources permit, review the Department's emergency operations Standard Operating Procedure (SOP) documents and compare them with the appropriate best practices. Edit them, as needed, to ensure compliance. Notate in the documents that they are compliant with the particular edition of the appropriate best practice. As these best practices are revised and updated, update the Department's SOPs.

3.3 Fiscal and Administrative Support Organization and Positions

Every type of service that is delivered by field personnel ("the line") depends on logistical support to have the materials they need to perform their jobs for the public. This is especially true in fire departments for administrative support specialists, or clerical positions.

Even in a highly automated agency, someone has to:

- Answer citizen inquires
- Process requests for non-emergency services, such as inspections
- Process paperwork from supply requests, purchases, and budgeting
- Support managerial staff with record keeping and generating reports
- Process workflow for permit, inspection, billing and fire prevention
- Provide a myriad of other "back office" functions.

The loss of the Safety and Standards position is just part of the problem with regard to headquarters staffing and functionality in the Santa Barbara County Fire Department. There have been three major shifts in the organization chart since 2008 due to downward budget pressure and the need to take advantage of retirements to generate savings. Initially, these were appropriate moves, especially in a small agency where any significant reductions in line staffing almost immediately reduce emergency service responsiveness. Early in the current recession, no one could know how deep and profound the recession would be. However, as the recession continues, the reductions in headquarters oversight, such as training, should not be sustained forever.

In addition to the two major support elements identified above, there needs to be a consideration of the differences between line functions and staff functions. Line functions involve those elements of the organization that respond to emergency incidents, while staff functions are the non-emergency functions such as training, communications, research and development, fire prevention, fleet management and logistical support. In large departments, these staff functions

are divided into separate sections; in Santa Barbara County's department, often more than one individual fulfills a function. As a stopgap measure, line personnel will fulfill some of these functions, particularly for field personnel, Battalion Chiefs and special projects.

In FY 2010-11, the Santa Barbara County Fire Department is an agency with an operating budget of $53.9 million dollars and 253 full-time equivalent positions (FTEs). This entire Department and its emergency services, fire prevention, and public education programs are supported by *only* 11.5 (FTE) Administrative Support positions. These are organized as follows:

- 1.0 – Executive Secretary (Fire Administration)
- 1.0 – Administrative Office Professional (Human Resources)
- 1.0 – Administrative Office Professional (Fire Training)
- 2.0 – Administrative Office Professional (Logistics)
- 1.0 – Administrative Office Professional (Code Regulation)
- 1.0 – Administrative Office Professional (LUFT)
- 3.5 – Administrative Office Professionals (CUPA)
- 0.5 – Administrative Office Professional (VMP/GIS)
- 0.5 – Administrative Office Personnel (Public Education).

The 2 employees in the Logistics Section actually perform warehouse duties and do not perform administrative office functions. The part-time employee in the Public Information Section performs limited Public Education duties for programs such as the Community Emergency Response Training (CERT) program.

Key Citygate Observations

- The reality is that all of the mid-managers do routine office support work themselves, which, at their cost per hour is clearly inefficient. Every manager in the agency pointed out duties that they were not getting to in a timely manner, if at all, due to the low level of support. Most of the office support capacity goes to critical issues, such as office of the Fire Chief, budget, purchasing, key fire prevention permit/revenue processes and citizen inquiries.
- The next set of priorities to get minimal support are EMS oversight and line operations. The field Battalion Chiefs and station personnel wait for what little support remains, depending on the critical nature of the request.
- There is a general sense of always being significantly behind on routine records, reports and proactive filing. The quantity of office support staff is clearly

inadequate; there is no depth for vacation or sick relief. Increasingly, some programs will slip or not be done at all.

- The Department business processes are not fully automated, nor completely tied into other County systems, resulting in manual reporting and duplication of entry.
- While worthy new programs were created for fire prevention and community safety and were designed to be revenue neutral with fees, there has not been enough of an organizational realization and emphasis that these programs generate data that has to be handled for the revenue to be realized. At the current pace, the fire prevention permit handling and billing programs are a long way from being completed on even a stand-alone database. They are not linked to pass data to County systems. There is no funded Fire Department technology master plan to include implementing single point-of-entry handheld data devices in the field that can collect information, update the billing and business inspection databases all at once. For now, it is a human-dependent operation and not adequately staffed.
- The Finance Manager does not have an assistant, which means she has to do operational processing in addition to budgeting, strategic issues and personnel supervision. The workload on this position has become a choke point with routine processing of purchasing requests, accounts receivable, and accounts payable taking far too long.
- Good financial controls exist and the Department's budget and expenditure records are meeting the agency needs.
- The Department has a good Workers Compensation Third Party Claims manager. The Department has a light-duty policy and appropriate controls on sick leave. The amount and usage of overtime is completely within the norms for the quantity of personnel in the agency given normal vacation and sick leave usage.

Discussion

The Department and County management team should review the workload and duties for fire department general administrative support, and if necessary, augment the administration through an even distribution of tasks and responsibilities to achieve greater efficiency and quality of customer service.

The needs of the Department would be better served by eventually *slightly* increasing the permanent support staff that can be cross-trained in all Departmental systems. When an employee is absent due to illness or vacation that position goes unfilled and the workload backs up even further.

Finding #20:	While a Fire Department Organizational Audit is not set-up to do a detailed desk and workload audit of office support needs, in Citygate's experience, we have found the office support capacity out of sync with what we have seen in other fire departments of Santa Barbara County's size.

Recommendation #9:	**Finance Manager:** The Department needs a new position to provide strategic budget planning and to supervise daily operations in departmental finance operations. This position would also increase internal controls by adding another check and balance position over cash and purchasing/contracts administrations. The existing position would do daily operations and the Finance Manager would exercise oversight.
Recommendation #10:	**Office Support and Logistics Positions:** The County should undertake an analysis of the administrative support needs of the Support Services Division, Prevention Division, Fire Administration, and Fire Operations support functions as soon as possible.

3.3.1 Technology

Fire departments today run on technology and not simply desktop computers for email and simple operations via the county's network. Field units perform fire inspections and report writing directly on scene. Mobile mapping configurations and emergency preplanning information needs to be available to field personnel in a timely and accurate fashion. These necessary functions are available in a minuscule fashion and are unfortunately not updated and maintained due to lack of IT staffing. However, fire departments have radios to program, dispatch and fire incident databases to operate and from which to generate management data, and they need to maintain and service electronic EMS and field service instruments. The electronic patient care records are mandated by the Local EMS Agency (LEMSA). They have added custom fields that are not nationally recognized and add to the computer development cost for these customizations. LEMSA's current data program is an ambulance billing model that is not user-friendly and retrieving data for analysis is difficult because the data is administered through the local ambulance transport provider. There are only two personnel in the IT section for the entire fire department. The lack of staffing has resulted in the two Captains assigned to the dispatch center being assigned to deal with IT and computer related issues for operational issues

and for the lack of assistance with the existing RMS reports and data of which they have no expertise.

A highlight of the issues reveals:

- The "*Firehouse*" fire department records management system is seriously underutilized.
- The transition to a more in-depth mobile data solution will place a tremendous workload on the very limited fire administrative staff.
- The Department budget cut its internal technology support position and increased the use of its two dispatch captains to undertake short-term tech work to bring the new mobile data system on line, which is not cost effective on a cost-per-hour basis and takes the captains away from their primary dispatch oversight duties.
- The daily operation of the Department depends on technology. This is specialist work that should be done by a non-sworn position to guarantee systems reliability.

Finding #21: The Fire Department is not staffed to adequately use, maintain or implement office and emergency service electronic data systems. What little gets done will be slow or completely stall the timely implementation of key systems such as inspection permit revenue systems, records recall and retention.

Recommendation #11: **Technology Plan:** The Fire Department needs a technology master plan to:

- Automate end-to-end the inspection, permitting and revenue collection programs.
- Improve the dispatch and fire records systems to meet the need for and provide management information and metrics with which to manage the Department's programs.
- Maintain and keep technology replacement programs current for radios and field service technologies.
- Appropriately staff the agency's needs.

Recommendation #12: **Technology Position:** The Department needs a dedicated, non-sworn technology support position. As funding permits, replace the vacant Systems and Program analyst position. This position is to plan, direct and provide Quality Assurance for all computer systems, e-records, fire radios, and station alerting systems. This should include adding back additional support personnel in technology to assist with all technology issues including mobile computers, dispatch and mapping.

3.3.2 Public Education

Public education for Santa Barbara County Fire Department is handled by a part-time person. The areas where public education is occurring are using the fire safety house at public events, some Community Emergency Response Team (CERT) training and handing out informational brochures at events.

As the economics permit, the County needs to consider placing renewed emphasis on public fire education. The programs need a re-design with a cost-effective or cost-recovery delivery. Some of these programs can be done via the County Office of Emergency Services for general preparedness issues. This can include the use of civilian, non-sworn positions. Since the events of 9/11, a considerable, trained talent pool has developed that can manage these programs without using fire officers. The County should consider the expanded use of cadets and older, retired volunteers for program delivery to residents and guests. The County should consider expanding the special events outreach to all the hospitality industry with a disaster training/preparedness program for their staffs to self-help guests. The County should also consider a small training effort for the firefighters who assist at special events to make them more effective as ad hoc fire educators. The County could possibly use cost-recovery fees to fund such a program.

Finding #22: Budget reductions have reduced public education media handout materials. This cannot continue for very much longer when public information and training is critical to enable the public to share the burden of self-help and having a fire-safe community.

Recommendation #13:	**Public Education:** The County, as funds permit, needs to redesign and fund the delivery of fire prevention education. This program does not have to be done by a Fire Department sworn officer position. The public education programs deserve emphasis as a key Fire Department service to the community, to include the requisite staffing hours and media material resources for public outreach.

3.3.3 Logistics

Logistical support for any fire department is essential. A county as spread out as much as Santa Barbara County creates challenges. The Logistics Section has four employees, a Fire Captain Supervisor, one Storekeeper, and two Administrative Office Professionals. The Logistics Section is located in a former fire station below the headquarters facility. It is a small location, not centrally located for all stations, and has outgrown its space. There are many requirements in the fire service nowadays that take logistical support. Protective equipment firefighters wear requires cleaning and inspection every six months. Santa Barbara County Fire Department has experienced and will continue to experience large devastating wildland fires. These fires take a huge amount of resources and equipment logistics.

The current building is too small to store enough of an inventory to fully support the Department in a timely manner, there is insufficient computer automation, and no use of bar codes for inventory control to name a few issues. Thus, the facility and its procedures are generally behind the needs of the Department and perceived by many as a choke point in acquiring supplies replacement.

In order to establish adequate delivery of services and supplies, as well as provide for the needs of the capital facilities, the Logistics Section could easily have an additional two full-time personnel, as non-sworn personnel trained in current logistics methods and best practices.

Finding #23:	Logistics: The Fire Department logistics section is understaffed and working in a very small and not centrally located area, creating large time delays and commutes to outlying stations for delivery of goods and supplies. In the short-term, battalion chiefs are shuttling material and supplies or on-duty crews are coming to the location, both are inefficient and degrade service delivery.

Recommendation #14:	**Logistics Facility:** The Department, in conjunction with County facilities, should review existing County facilities or vacant warehouse property to relocate the logistic section to a more centrally located, larger facility. If a cost-effective site, meeting the business needs of the Department is not available, then the County should plan on replacing and expanding as necessary the Department's logistics facility. As revenues permit, the logistics unit should have two more non-sworn personnel trained in logistics added.

3.4 Fire Prevention – Fire Investigation – Wildland Fuel Management Programs

Santa Barbara County Fire Department has several life safety sections in the Fire Prevention Division. These include: an Enforcement/Investigations Section, a Planning and Engineering Section, and a Vegetation Management Section. Additionally, the Division is also responsible for all Hazardous Materials inspection, permitting and enforcement for the Leaking Underground Storage Tanks, Site Mitigation Unit (SMU), and the Certified Unified Program Agency (CUPA). Staff reductions in the CUPA and SMU have affected service delivery and inspections.

Fire prevention includes any activity that decreases the incidence and severity of uncontrolled fire. Once a building has completed construction and taken occupancy, the responsibility for oversight of its use and maintenance throughout the remainder of its life switches from the Building Official to the Fire Marshal. The fire code is then used as the document that ensures that a proper level of fire and life safety exists in the building throughout the remainder of its use. All businesses that are not required to be inspected on an annual basis should be inspected every two to three years. 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.

General Needs

- Is there an adopted fire code and staffing plan to meet the needs of new construction, existing commercial occupancy inspection, and public education?
- Are inspectors trained?
- Are fires investigated?

- Does the fire investigation system coordinate with law enforcement to bring about the appropriate arrests and convictions in arson cases?
- How are on-going fire code safety inspections managed?
- How does the Department handle hazardous materials code enforcement?
- Is there an appropriate fee schedule for fire prevention activities to the business community?

Observations

- The Fire Prevention Division and the Operations Division share the fire inspection and permit issuance load together. The two Divisions work collaboratively with inspections and follow up as needed.
- The Department and County have adopted and continue to update the appropriate Model Fire and Building Codes. The County has adopted a stricter Fire Code complete with an automatic fire sprinkler requirement for new buildings, substantially remodeled buildings, and new buildings in very rural areas of the County.
- The Department has a Fire Prevention program staffed with:
  - 1 – Fire Marshal (Division Chief)
  - 1 – Deputy Fire Marshal (Battalion Chief)
  - 2 – Fire Captain supervisors, one in Enforcement/Investigation and one in Planning/Engineering
  - 1 – Fire Inspector in Planning/Engineering (Engineer rank)
  - 2 – Fire Inspector/Fire Investigators in Enforcement/Investigations (Engineer rank)
  - 6 – Administrative Office Professionals for the division
  - Vegetation management is staffed by two (2) Fire Captains and 1 GIS Mapping technician.
- In 2011, staffing cuts of up to 50 percent occurred in Planning and Engineering, and cuts were also made in the Inspection and Investigation Section.
- The CUPA program has not kept fees in alignment with costs and the Department presented a fee update to the Board of Supervisors in December 2011, which the Board approved. The CUPA has major staffing shortages and most of the staff are inexperienced and will require extensive training.

- The Site Mitigation Unit (SMU) lost its focus over the last few years due to weak supervision and is currently being overseen at a closer level by a sworn manager. The number of alleged/suspected hazardous materials release sites that have been accumulated by program staff is staggering. Inventory reduction must become a priority. The credibility and validity of the program has been jeopardized and consideration should be given to the actual need for the program when State agencies are ultimately responsible.

- New requirements for inspection and administration of CUPA responsibilities at UCSB and Vandenberg Air Force Base are being added to the hazardous materials program without increases in staffing. (Potential workload and hazard identification at both facilities has not been determined and is uncertain at this point.)

- Lompoc Fire Department has given their Business Plan Program responsibilities back to the CUPA, which means an increase of 75 inspections for Department staff. Additionally, there are other jurisdictions that may do the same thing, further increasing the Department's inspection load.

- There is already insufficient staffing to meet the State's mandated CUPA Program element inspection frequencies. (There are approximately 700 overdue facility inspections.)

- Two of the three current CUPA field staff inspectors have 1 year or less related CUPA experience. A fourth specialist has been hired and is scheduled to begin in January 2012.

- Division staff have compiled an inventory of sites, most of which do not belong in the County's program due to either not being valid sites or they are the responsibility of a state agency to provide clean-up oversight for. For sites to be mitigated (cleaned/remediated) an audit of the SMU sites was conducted in 2011 and direction was given to focus on site closures. An additional commitment of personnel or outside contractors will probably be needed to address and solve the problem.

While the CUPA has had staffing reductions, the State of California found no serious deficiencies in their last audit. However, the audit was retrospective and did not cover the most recent periods of challenged staffing. The County has to keep staffing in the environmental programs consistent with the regulatory requirements.

Along with fire prevention and hazardous materials, the Division has a vegetation management program. This program is critical, given the severe risk of wildland fires and the history of devastating wildland fires in the County. This section is staffed by two (2) Fire Captains and one GIS Technician. The Department just completed their Area Fire Plan in June, 2011. This plan

details the risk and severity of wildland fires in the County. Additionally, the community of Mission Hills just completed a Community Wildfire Protection Plan.

Another large and important component of the fire prevention program that cannot be overlooked is the engine company inspection program. The companies perform all inspections for buildings except R-3.1 Occupancies (Residential Care Facilities) and R-4 Occupancies (Residential Care Facilities, Title 24). The companies do the majority of fire inspection work for all other occupancies and permit issuance.

The Department also has a self-inspection program for selected small businesses such as Group B (Business) and M (Mercantile). The Business Safety and Fire Education Program (B-Safe) is an excellent program and is under some very restrictive guidelines to be eligible. The Fire Marshal could consider expanding the program to include more of the sites that generate very few inspection findings when checked by fire personnel. To assure quality of the inspections by the owner, the engine company performs a 10 percent check of participating businesses. To date, the compliance and performance has been good.

Operations personnel performing inspections enter the data into the *Firehouse* Records Management System. The Administrative Office Professional maintains the reports and records for the bureau, inputs data into Excel spreadsheets, and is currently switching some records management to the *Firehouse* records management system. The eventual goal is to have a single data-entry point.

The Fire Prevention Division faces a number of challenges, some of which can only be solved with additional staffing; some require changes in processes and relationships:

- There is a gap in the public's understanding of the Prevention Division functions and importance. There is a serious need to establish an organized system to follow fire protection systems maintenance and certification in businesses;
- Engine companies perform all building inspections in their area, as well as issue permits. Completion of all of their annually assigned inspections in a year is not always occurring.

Finding #24: The Fire Prevention Division and Operations Division share the Fire Prevention load for the Department. The Fire Prevention Division has responsibility for hazardous materials regulation and enforcement. This is a highly technical field and requires qualified personnel. The turnover rate in the CUPA has been high in the last three years. There is no dedicated public education program in the Fire Prevention Division. Public Education is a shared function under the Department's Public Information Officer (PIO) assisted by a limited-funded extra-help employee.

Recommendation #15:	**CUPA/Hazardous Materials:** The County should consider doing a staffing and economic analysis of the CUPA, LUFT and SMU hours, costs, and revenues. The December 2011 fee increase report to the Board of Supervisors indicated that up to 4 additional inspectors might be needed in the near term to handle the workloads. These programs should be self-sustaining under a fee system.
Recommendation #16:	**Administrative Support:** There are currently 5.5 FTEs assigned Administrative Office Professional duties in the Fire Prevention Division. The workload for the Division should be reviewed and determine if there needs to be more staffing.

3.5 FIELD OPERATIONS SYSTEMS

The field operations system covers a multitude of activities. For the purposes of this plan, the consultant interviewed staff; inspected the apparatus, equipment and facilities; examined some documents; and conducted "listening sessions" with chief officers. The consultant reviewed the daily maintenance reports, training records and other reports and records provided by the Fire Department for this study. The consultant examined the readiness of fire apparatus and equipment, the pre-fire planning program, and conducted a thorough appraisal of the training program and apparatus maintenance programs. All of these are important components of a fire department operation and are critical to ensuring that needed resources can respond quickly and effectively.

3.5.1 Apparatus and Equipment Readiness

Fire apparatus need to be properly maintained in order to arrive at incidents safely, operate effectively and return to quarters ready for another assignment. Considering that a fire engineer is entrusted with a 35,000-pound vehicle at 45 miles per hour on city streets and occasionally through red lights, this should cause County and Department officials to make doubly sure that the maintenance, as well as the training program, meets all applicable legal and best practice standards.

The fire service generally groups fire apparatus into two categories: (1) engine companies, whose primary functions are to pump and deliver water and perform basic firefighting functions, including search and rescue; and (2) truck companies, whose primary functions are forcible entry, ventilation, search and rescue, aerial operations for water delivery and rescue, utility

control, illumination, overhaul and salvage work. Other types of apparatus include water tenders, whose main function is to carry large quantities of water, squads or rescue companies that carry a variety of rescue and emergency medical equipment, medic units or ambulances, command vehicles, and other auxiliary apparatus.

There are two basic standards that the National Fire Protection Association has disseminated that apply to fire apparatus: NFPA 1901 *Standard for Automotive Fire Apparatus*, and NFPA 1906 *Standard for Wildland Fire Apparatus*. In addition to these standards having application for the development of purchase specifications, they have performance standards that are useful for evaluating in-service apparatus. The federal government has issued motor vehicle safety standards that are applicable to fire apparatus. The Federal Department of Transportation enforces these standards.

To be effective, fire apparatus must be of proper design and well equipped with the proper hose, appliances, tools, ladders, and paraphernalia necessary to perform the complex work of firefighting, rescue, emergency medical, and public service type assignments.

There should also be a system of testing, maintenance, and repair to ensure a high state of readiness of apparatus and critical equipment. In 2000, NFPA issued NFPA 1915 *Standard for Fire Apparatus Preventative Maintenance Program*, which defines the minimum requirements for a fire department preventative maintenance program. Under this standard, the personnel who conduct the preventative maintenance program should meet NFPA 1071 *Standard for Emergency Vehicle Technician Professional Qualifications*. This standard defines the minimum job requirements an emergency vehicle technician should possess. These include the ability to diagnose, maintain, repair, and test the functions of the apparatus.

NFPA issued a Tentative Interim Amendment (TIA 09-1) to NFPA 1901 *Standard for Automotive Fire Apparatus*, 2009 Edition, which slightly changed the wording for the annual pump testing required of all fire department pumping apparatus. *(Note: Table continues on following page.)*

Table 18—Current County of Santa Barbara Apparatus Inventory

Radio Number	County Equipment Number	Build Up Manufacture	In-service Year	Capacity (GPM)	Status	Replacement Cost
FRONTLINE TYPE 1 ENGINES						
E-11	4335	KME	2003	1500	In service	587,000
E-12	4785	KME	2007	1500	In service	732,516
E-13	4781	KME	2007	1500	In service	732,516

Radio Number	County Equipment Number	Build Up Manufacture	In-service Year	Capacity (GPM)	Status	Replacement Cost
E-14	4782	KME	2007	1500	In service	732,516
E-15	3755	KME	2000	1500	In service	490,000
E-17	4336	KME	2003	1500	In service	587,000
E-18	4485	KME	2004	1500	In service	634,812
E-21	4784	KME	2007	1500	In service	732,516
E-22	4778	KME	2007	1500	In service	732,516
E-23	4337	KME	2003	1500	In service	587,000
E-24	4779	KME	2007	1500	In service	732,516
E-30	4780	KME	2007	1500	In service	732,516
E-31	4486	KME	2004	1500	In service	634,812
E-32	4783	KME	2007	1500	In service	732,516
E-41	4338	KME	2003	1500	In service	587,000
E-51	3804	KME	1998	1500	In service	490,000
FRONTLINE TYPE 3 ENGINES						
E-312	5088	INTERNTL	2009	500	In service	587,012
E-313	4450	INTERNTL	2004	500	In service	418,610
E-314	3468	INTERNTL	1997	500	In service	325,000
E-315	4640	INTERNTL	2006	500	In service	513,376
E-318	4451	INTERNTL	2003	500	In service	418,610
E-321	5030	INTERNTL	1997	500	In service	325,000
E-322	4641	INTERNTL	2006	500	In service	513,375

Radio Number	County Equipment Number	Build Up Manufacture	In-service Year	Capacity (GPM)	Status	Replacement Cost
E-323	3197	INTERNTL	1995	500	In service	325,000
E-324	4144	INTERNTL	2001	500	In service	390,000
E-330	5039	INTERNTL	2009	500	In service	587,012
E-331	4487	INTERNTL	2004	500	In service	428,310
E-332	3469	INTERNTL	1997	500	In service	325,000
E-341	3196	INTERNTL	1995	500	In service	325,000
E-351	3607	INTRNTL	1998	500	In service	390,000
AUXILLIARY ENGINES						
AE-12	3803	KME	1998	1500	In service	490,000
AE-13	3754	KME	2000	1500	In service	490,000
AE-17	3572	KME	1998	1500	In service	475,000
E-19	4903	PIERCE	1991	1500	In service	Not replaced
AE-21	5076	PIERCE	1994	1500	In service	Not replaced
AE-32	3571	KME	1998	1500	In service	475,000
AE-51	3805	KME	1999	1500	In service	490,000
AE-324	3195	INTERNTL	1995	500	In service	325,000
AE-330	4904	INTERNTL	1991	500	In service	325,000

Radio Number	County Equipment Number	Build Up Manufacture	In-service Year	Capacity (GPM)	Status	Replacement Cost
AMBULANCES						
R-41	4276	FORD	2002	n/a	In service	152,000
R-17	5320	FORD	1999	n/a	In service	152,000
R-51	4932	FORD	2008	n/a	In service	185,000
AR-41	3576	FORD	1997	n/a	In service	152,000
AR-51	3625	FORD	1998	n/a	In service	152,000
WATER TENDERS						
WT-18	8302	SPARTAN	1991	1500	In service	450,000
WT-22	5042	INTERNTL	2009	350	In service	670,000
WT-32	5041	INTERNTL	2009	350	In service	670,000
WT-41	8309	MACK	1989	1500	In service	450,000
MISCELLANEOUS APPARATUS						
T-11	4043	KME	2001	1500	In service	1,283,438
T-17	4902	PIERCE	1991	1500	In service	1,100,000
BS-18	5040	INTERNTL	2009	n/a	In service	702,168
HM-31	3577	INTERNTL	1997	n/a	In service	750,000

The inventory of fleet for the County is much larger than the table above. In addition to response apparatus such as engines, trucks and water tenders, there are 25 command vehicles, 22 sedans, 5 vans, 37 pickup trucks, 11 wildland transport vehicles, a swift water rescue boat and personal watercraft, 4 dozers and 2 helicopters. The fleet is vast and different for each emergency.

Citygate completed a thorough review of the program and learned the Department has a large and well maintained fleet. On average, engines are fully depreciated after 15 years front line

service and replaced after 5 additional years in reserve status. The vehicles have large mileage numbers, typical for the layout of a large county.

Fire staff estimates that the following replacements are needed as soon as possible due to changing standards, age and wear on existing units:

- Structure Fire Type 1 Engines – need to replace 2 engines (E15 and E51) which are not fully depreciated to upgrade to current NFPA 1901 safety standards and to meet and comply with current EPA and CARB emission 2010 standards.
- Type 3 Engines – need to replace 3 engines (E323, E341, AE324), all of which are fully depreciated but do not have enough funds built up in the system for replacement. The current engines are Type 2/3 engines and were purchased in 1995 with the hope that they would meet both structural and wildland firefighting needs. This did not prove to be the case and the Department now needs to replace these with Type 3 engines.
- Rescue Ambulances – need to replace 3 ambulances (R41, R241, R251), 2 of which are fully depreciated but do not have enough funds built up in the system for replacement with new box type ambulances that provide greater storage capacity for equipment and PPE. The third ambulance has no depreciation funds built up in the system as this is an operating cost vehicle. Replacement ambulances will comply with Health and Safety standards prohibiting storage of structural and/or wildland PPE in the patient treatment/compartment area.
- Truck Company – the Department does not have a Reserve 100 foot tillered ladder truck available. The current reserve ladder truck length cannot reach areas within Santa Barbara County's jurisdictional responsibility, nor can the unit carry the entire compliment of rescue equipment needed to deliver the highest level of service that a truck company needs to provide.
- Hazardous Material Emergency Response vehicle – the Department needs a larger unit that can carry the Type 2 and/or Type 1 Hazmat standard equipment list (SEL) and the mass decontamination inventory. The current Hazmat unit cannot carry the mass decontamination unit and must be delivered separately in the fire station utility vehicle. If the Department's future goals are to provide a Type 1 Hazardous Materials Response Team, then this vehicle will need to meet the FIRESCOPE Type 1 Hazmat standard equipment list (SEL).

Finding #25: The Santa Barbara County Fire Department's vehicle fleet is maintained by the County's fleet services and outside agencies as needed. And it is maintained very well. However, the fleet is aging due to numerous miles and hours placed on them for responses. The County has established depreciation and replacement guidelines for its fleet. The Type 3 engines for wildland firefighting and long-range strike team deployment are the most aged in the fleet. The replacement of higher mileage front line structural engines and wildland units should be considered prior to the current 20-year County policy.

Recommendation #17: The Department, in conjunction with the County, should review the fleet, the existing depreciation limits and how or if it is affecting ongoing maintenance costs and emergency responses due to breakdowns. In addition, deployment patterns should be reviewed to validate mileage usage.

Recommendation #18: The Fire apparatus replacement fund needs to provide the funds to replace at least, in the very near term, the identified 8 engines and ambulances. The fund should be re-evaluated to be sure all apparatus are included and that the expected replacement costs are consistent with inflation and safety changes mandated on fire apparatus.

The California Vehicle Code requires in the Employer Pull Notice Program that all who operate motor vehicles with a commercial license, including a Class B Firefighter license, participate in the program. The employer obtains the driving record of new employees 30 days before they start to operate and all employees every 12 months. (CVC Section 1808.1 Employer Notifications.) The Training Division monitors this program.

The preventative maintenance program consists of daily inspections (The Federal Motor Carrier Safety Regulations [49 CFR, Part 396.13] state "Before driving a motor vehicle, the driver shall be satisfied that the motor vehicle is in safe operating condition…") and weekly inspections in the station, done by the operator. The mechanics perform the other inspections in the shop. The daily operator inspections appear to satisfy that requirement.

The formal program is that every four months and annually, the apparatus comes into the shop for inspection and any deferred repair items such as non-safety or cosmetic issues. The station personnel assist with these inspections. While the Department does a thorough inspection every four months, it is unclear if this is compliant with the required motor carrier 90-day inspections. According to the Vehicle Code 34505.5a, which in part states, "Every motor carrier operating any vehicle described in subdivision (a), (b), (e), (f), or (g) of Section 34500, except those vehicles exempted under Section 34501.12, shall, as a part of the systematic inspection, maintenance, and lubrication services required of all motor carriers, require the vehicle or vehicles for which it is responsible pursuant to Section 34501.12 to be inspected at least every **90 days**, or more often if necessary to ensure safe operation. Vehicles, which are out of service for periods greater than 90 calendar days, do not require an inspection at 90-day intervals if they are inspected before operation on the highway."

The Fire Department and the County have an established apparatus replacement program. This program is incorporated into the County's capital equipment. Replacement funds are based on the estimated net replacement cost of the allocated asset over the estimated useful life, and are appropriately utilized by the County to reduce budgetary swings in the user's department for periodic capital replacement. In addition to replacement of worn out fire apparatus and equipment, some become obsolete as updated and improved equipment becomes available. Having such a replacement fund is considered a best practice as the fire apparatus alone in the current plan have a purchase cost value over $13 million dollars. The County has to save and plan for these replacements in a timely manner. Another issue is the lack of a reserve ladder truck capable of meeting the height and elevation requirements of the County. The front line ladder unit is a 100 foot tillered ladder. The current reserve ladder truck has a significantly shorter ladder and does not meet the need.

The County fleet maintenance shop manages Santa Barbara County Fire Department fleet maintenance program. When large items and highly technical issues arise, the unit is sent to a fire equipment repair shop for the specific make of apparatus.

Finding #26: Santa Barbara County Fire Department fire apparatus maintenance program meets most of the requirements. The County purchases first class apparatus as a starting point. Based on a cursory review of the apparatus, the apparatus appeared to be well cared for yet many are past the depreciation standard. This is by design to ensure that replacement funds are available when the unit is at the end of its life (i.e., if the apparatus lasts only 17 years instead of 20 years, the replacement funds are available in the system due to the 15-year depreciation schedule). The units are properly equipped for their tasks.

Finding #27:	All fleet maintenance is done at County shops, which takes the fire unit out of Department for exchange time and increases the use of older reserve equipment. A mobile mechanic position could be established to do minor repairs and preventative maintenance in fire stations. This is very commonly done in fire departments covering large areas such as the County.

Recommendation #19:	**Vehicle Maintenance Review:** The Department should complete a side-by-side review of the NFPA best practices and the Vehicle Code requirements to ensure that the Santa Barbara County Fire Department Apparatus Maintenance Program is consistent and 100 percent in compliance.
Recommendation #20:	The County could consider adding a mobile mechanic position to handle minor repairs and maintenance in the fire stations, to decrease downtime and keep fire engines in their assigned areas.

3.5.2 Safety and Risk Management Programs

Firefighting and emergency medical service is a risky business. The goal of the risk management program is to get firefighters home safely at the end of each shift.

Among the necessary elements for a fire department is a safety orientation for new employees, a hazard communications system for employees to communicate hazards to supervisors, the Cal-OSHA process for post injury reviews, the required annual report of injuries, and a standard for safety work plans.

While NFPA has a number of Standards that focus to one degree or another on safety issues, NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program* and NFPA 1501 *Standard for Fire Department Safety Officer* are the umbrella documents and they model the kind of umbrella approach that every fire department should take in regards to the safety and health of firefighters, which in turn, impacts the safety and health of the public they serve.

NFPA 1500 states, "There must be a fundamental behavioral change in how fire fighters and fire departments address fire service occupational safety. In turn, they must continue to educate their members and, most importantly, the administration and citizens to what the hazards are of the fire fighting profession. The utilization and implementation of this standard can go a long way in

reducing the staggering statistics involving fire fighter fatalities and injuries, *but only if given the training and resources to do so*." [Emphasis added]

The NFPA 1500 Component Analysis Chart recommends the fire department's risk management plan contain the following elements:

- Fire department organizational statement
- Risk management plan
- Safety and health policy
- Roles and responsibilities
- Occupational safety and health committee
- Record keeping
- Incident safety and health officer
- Laws, codes and standards
- Training and education
- Accident prevention
- Accident investigation, procedures and review
- Record management and data analysis
- Apparatus and equipment
- Facility inspection
- Health maintenance
- Liaison to other agencies such as human resources
- Occupational safety and health officer
- Infection control
- Critical incident stress management
- Post-incident analysis.

Finding #28: In Santa Barbara County, safety is mentioned and emphasized throughout the Fire Operations Manual and other operational documents. One means or another covers many of the items listed above. What is missing is a comprehensive approach to Fire Department safety as envisioned in NFPA 1500 and the accountability reporting measures and tools to verify compliance, which are essential documents should an employee injury occur, especially when Cal/OSHA has primary investigatory responsibility.

Safety Programs are another example of where the lack of a designated Safety and Training Officer is being felt. In Santa Barbara County's case, the Safety and Training Officer would have to re-start building an NFPA 1500 compliant program. Many of the pieces are there already and in some instances, it is a matter of organization.

Recommendation #21: **Safety Program:** The Department needs to start by developing an action plan and a resource request to comply with NFPA 1500 Annex B Fire Service Program Occupational Safety and Health Program Worksheet. This twenty-five-page document lists every component of a top-notch program and guides the Department through an analysis of compliance and the steps necessary to achieve compliance where it is lacking. This first step will lead to eventual full compliance.

3.5.3 Technical – Special Responses

In addition to responding to fires and medical emergencies, fire departments are normally first responders to other types of emergencies that require immediate response, technical training and specialized equipment. These services include Technical Rescues (high-angle and low-angle rescue, water rescues, confined space and trench rescues), hazardous materials operations and air operations. There are a number of requirements for training and certification governing departments that engage in these activities. Each of these operations involves special kinds of risks and some are very dangerous if not performed correctly. On the other hand, with proper training and following proper procedures, they can all be performed competently and safely. The key is that the Department must follow the correct protocols every time.

The Federal Government, Cal/OSHA and the National Fire Protection Association have all developed standards that apply in various circumstances. These standards form the basis upon which the training program in these specialties is built.

Among them are the Code of Federal Regulations (CFR); NFPA 1006 *Standard for Rescue Professional Qualifications;* NFPA 1670 *Standard on Operations and Training for Technical Search and Rescue Incidents*; NFPA 471 *Recommended Practice for Responding to Hazardous Materials Incidents;* and NFPA 472 *Standard for Professional Competencies of Responders to Hazardous Materials Incidents.*

The most basic standard is NFPA 1006 *Standard for Rescue Technician Professional Qualifications.* This standard forms the basis for the qualifications of an individual assigned to perform certain technical rescue functions. The companion to this standard is NFPA 1670 *Standard on Operations and Training for Technical Search and Rescue Incidents*, which forms the basis of a training program for firefighters who are called upon to perform technical rescue or who are part of a technical rescue team.

A code set similar to that for technical rescue applies to hazardous materials response. NFPA 471 *Recommended Practice for Responding to Hazardous Materials Incidents* delineates how a department will respond to a hazardous material release. NFPA 472 *Standard for Professional Competencies of Responders to Hazardous Materials Incidents* provides the basis for the training program for hazardous materials first responders.

Technical rescue training in all its forms provides a higher level of basic firefighter core skills. Additionally, these skills are cross-trained among all suppression personnel, which allows for "first on scene" initial assessment and initial actions that can be performed prior to the arrival of the complete certified team.

There is no specific manual on high-angle/low-angle rescue (rope rescue involving other specialized gear).

With the delivery of Technical – Special responses comes different requirements for training, certifications and annual refresher training. For example, a member trained in confined space rescue must perform an entry into a confined space annually to maintain their certification. This must be documented and retained in the employee's training file. This record retention applies to all these types of responses and is critical in assuring personnel safety and ability.

Finding #29: During the review for training records and certifications, it was discovered that records and certifications are not entered into the *Firehouse* RMS software 100 percent of the time and being able to determine if a person is certified to perform the tasks is not readily available or current.

Technical Rescue

Technical rescue has several disciplines associated with the broad term. Technical rescue includes water operations (swift water and ocean/lake), confined spaces, trench rescue, and high- and low-angle rope rescue. Each requires a different skill set to perform, while there is some commonality as well. The most common training between the disciplines is rope work: knots, hitches, etc. There are three levels of training and expertise for each discipline: Awareness is when personnel cannot take any unnecessary risks but can secure the area and call for additional, trained resources. The second level is known as the Operational level where the firefighter can assist in the rescue but typically not make an entry into the hazard area (trench, confined space or in the water). The last level is that of a technician/specialist level. This person is fully trained to make entries into hazardous environments, trenches, and confined spaces and high-and low-angle rescues (Rope Rescues). It is important that those entering and attempting rescue have completed all three levels. Each level has a set number of hours required for personnel to attend. Typically, the awareness level is four hours, operations is eight hours, and technician a minimum of forty hours, if not more. Annual refresher training is also required. All types of technical rescues for Santa Barbara County Fire Department are handled by the on-duty minimum staffing of five (5) personnel trained in confined space, trench rescue and low-angle rescue. On-duty units are also trained to the operational level to assist the technicians.

All County engine companies are equipped and trained to **U**rban **S**earch and **R**escue (US&R) light levels. The Fire Department does have US&R Medium capabilities with its US&R Rescue apparatus/tools and is a participating member of the Federal Santa Barbara/Ventura Regional Task Force-7, which can be deployed nationally or internationally to disaster rescue events. In addition, the County Fire Department teams up with Santa Maria Fire Department, which staffs a Type I Heavy Rescue component for additional capability in the County and the region.

All Santa Barbara County Fire Department personnel are trained to the Operational level for trench rescue, confined space rescue and high-and low-angle rope rescue. Each piece of Santa Barbara County Fire Department apparatus is equipped with the basic tools for vehicle extrication.

Santa Barbara County Fire Department has an active water rescue program. On a daily basis there are a minimum of 6 water rescue personnel on duty that can respond initially with 3 **P**ersonal **W**ater **C**raft (PWC). Additionally, Fire Station 17 houses an **I**nflatable **R**ubber **B**oat (IRB). Water rescue personnel are trained to Ocean/Surf standards as well as swift water for inland river, creek, and flooding situations. The air operations unit also is instrumental in inserting rescue swimmers offshore and working in concert with the PWCs. All on-duty Fire Department staffing is trained in Shore-Based Water Rescue operations.

Finding #30: During Citygate's review of the Technical Rescue SOPs, we found occasional reference to best practices, but they are lacking consistent reference to many of the best practices. However, that is not to say that the SOPs are poorly written or do not meet the general conditions normally found in compliant documents. They are clearly written and appear to be similar to SOPs in use throughout the fire service, but need to be tied to published standards and best practice references.

Recommendation #22: **SOP Review:** This is another example of where the lack of a designated Safety and Training Officer is being felt. Making sure that operations guidelines meet current best practices and legal requirements is one of the important tasks assigned to Training Officers. As time and resources permit, review the SOPs and compare them with the appropriate best practices. Edit them, as needed to ensure compliance. Notate in the documents that they are compliant with the particular edition of the appropriate best practice. As these best practices are revised and updated, update the Department's SOPs.

Hazardous Materials

The hazardous materials response program for the Santa Barbara County Fire Department began in the early 1980s. The program has changed over the years to a semi-regional approach. Unfortunately, it has not grown to the extent needed for a large, diverse county.

Hazardous materials responses and mitigation efforts are also regulated by skill level. All Santa Barbara County Fire Department members are trained to the **F**irst **R**esponder **O**perational level (FRO). This means that all personnel cannot only determine if hazardous materials are involved but they may also participate in decontamination of personnel and responders.

Santa Barbara County Fire Department staffs a minimum of 5 personnel daily for hazardous material incidents at three separate fire stations. Equipment for responses is also shared between the three stations. In addition, there are other members of the Department trained to the technician/specialist level, yet they may not be currently certified due to lack of skill maintenance and refresher training.

The Department is capable and equipped to respond to all types of hazardous materials incidents from a gasoline spill to a major release of toxic vapors or fumes. However, the Department would have to rely on mutual and automatic aid from surrounding jurisdictions for additional staffing. This is not unheard of and is an economically-sound idea. The assurance of training together and credentialing is important.

There are other hazardous materials teams throughout the County available for mutual aid response as needed. However, these members do not always train together and are not available at all times. If a large, time-consuming and staffing-intense operation was necessary, these regional partners would be required to participate.

Finding #31: The Department is responsible to provide hazardous materials responses to the unincorporated County areas as well as other local jurisdictions. The limited staffing and training regionally is a hindrance to the program.

Recommendation #23: The Department should reinvigorate and enthusiastically support the program to include regional partners, training and personnel commitments.

Air Operations

The County Fire Department obtained a helicopter and established a fire/rescue aviation program in September 1999. Throughout Santa Barbara County's history, wildfire and the effects of wildfire have been a fact of life.

The County's wildland areas and beaches present many recreation opportunities for outdoor enthusiasts, such as hikers, off-road vehicle owners, swimmers and surfers. These activities sometimes result in various types of emergencies other than fires. As a result, the Fire Department has found itself not only suppressing fire, but also responding to incidents involving vehicles over the side, medical emergencies, and water rescues in rivers and the ocean. The outcome of these types of calls can be greatly enhanced by the use of helicopters with highly trained crews.

The Department operates two multi-mission helicopters. Both helicopters, Copter 308 and Copter 309, are Bell UH-1H Huey medium, multi-function helicopters. They are identically set up with 360-gallon water dropping belly tanks and a Goodrich internal rescue hoist with 240 feet of cable. Each aircraft contains a complete advanced life support (ALS) drug and equipment inventory for "Rescue Aircraft" per Santa Barbara County EMSA policy #404A. Aircraft

inventories also include patient immobilization equipment as well as hoist rescue, cliff rescue, and water rescue gear.

The Air Operations Unit can be credited with saving numerous lives in backcountry areas where vehicles cannot reach a victim. Within the federal regulations for the types of uses permitted, since 2008 the unit has flown 84 medical evacuation missions, 91 rescue missions, 22 water rescue missions and 140 fires, predominantly wildland responses. This averages to a little over two responses per week.

MULTI-MISSION DESCRIPTION

Fire

Water-dropping helicopters are an essential component of the total resources needed to suppress wildland fires. The growing number of people living in the rural and urban interface areas has created an increase in the potential for life and property loss due to fire. It takes more than just ground-based fire personnel to respond to a wildland fire. A rapid, aggressive, and directed response with a well-coordinated attack by all fire department resources is what is needed to suppress a vegetation fire, and the helicopter has become an integral part of that response.

Rescue

The Department helicopter rescue program is now looked upon as one of the finest throughout the State. Firefighter/Paramedics can be delivered to inaccessible and remote locations quickly, even where helicopters cannot land. Department aircraft and crews are often requested for large fire incidents in the state to provide rescue services for firefighters working in the wilderness and inaccessible areas. These services are usually compensated for by the agency of jurisdiction. The depth of the program allows this to occur without abnormally compromising County coverage. Along with Fire Station 32, a pool of qualified personnel has been maintained throughout the Fire Department in order to provide continual coverage and depth in the program.

Water Rescue

In 2008, the Air Operations Unit initiated a Helicopter Rescue Swimmer program based on the United States Coast Guard (USCG) operations. Swimmer candidates are selected from among the most experienced crewmembers. Water rescue operations involve direct hoist deployment of swimmer, free-fall swimmer deployment from skid, use of a hoist rescue basket, various rescue-strap techniques and deployment of a survivor raft during multi-victim rescues. In addition to expanding the units rescue capabilities, this program has created a more efficient environment with improved interaction and coordination between the U.S. Coast Guard and the Air Operations Unit.

Medical

The helicopter, combined with fire paramedics, is one of the greatest tools for quick, efficient treatment and transport of critically sick or injured persons in a rural setting. Whether it is trauma from a fall or traffic collision, or a heart attack, which meets the new STEMI criteria, Fire Department aircraft are fully equipped and ready to deliver advanced life support to our County's rural communities and recreational areas.

Both helicopters carry the advanced life support equipment much like an ambulance and can provide the same care. The Fire Department, in collaboration with the Emergency Medical Services Agency, has developed the inventory for our EMS aircraft.

Regional Resource

The Department's aircraft and crews are available as a regional resource to the multiple agencies and jurisdictions within Santa Barbara County. The Air Operations Unit can assist with fire, rescue, and medical and even law enforcement. The unit has transported personnel and equipment on various incidents, e.g., the Sheriff's SWAT team on the La Brea incident.

Personnel Training and Requirements

Pilots

The Department currently has a pilot staff comprised of two full-time and four part-time helicopter pilots. To be considered for employment, the Fire Department requires a minimum of 3,000 hours as pilot in command in helicopters and a number of other requirements directly related to the Fire/Rescue mission. The two full-time pilots employed by the Fire Department are both military trained aviators with many years of military and civilian experience and exceed the minimum hiring requirements by large margins.

Captains/Crew Chiefs

Six seasoned Fire Department Captains make up the cadre of Crew Chiefs for the Air Operations Unit. Two are assigned regular duty in the unit and four are collateral duty. The Captains, in conjunction with pilot and crew input, determine the course of action for a mission, much like a fire engine. These individuals are chosen based on their commitment to the program as well as their knowledge of the County geography. These Captains are also chosen for their experience in fire, rescue and scene management.

Firefighters and Paramedics

The rescue personnel for the Air Operations Section are primarily stationed at Fire Station 32 located adjacent to where the helicopters are parked. These crewmembers train

continuously in paramedic and EMT skills, helicopter rescue operations, and helicopter fire support functions.

Finding #32: The Department Air Operations Section is a best practices, robust, multi-mission operation. They operate with a lean flight and maintenance staff in a building already shared with the Sheriff's operation.

Finding #33: Given the unique nature of firefighting operations and the huge countywide need for almost 12-month aviation support, it makes sense for the Fire Aviation Unit to also handle all other types of technical rescues. It is a rare best practice to site the aviation assets close to a fire station to share the firefighter crew costs.

3.5.4 Advanced Life Support Services

For Emergency Medical Services response (EMS), the County uses a mix of private and Fire Department ambulances. The Fire Department has 3 fire stations that operate in areas where the County EMS Agency does not station a contractor private ambulance. Then the Fire Department has 6 fire stations that operate dedicated Paramedic engine companies to provide a first responder paramedic before the regional ambulance can arrive. The remaining 7 fire stations operate basic life support (not paramedic) engine companies. Some of these 7 could be paramedic on some dates based on the daily staffing amount of paramedics available. Each engine company carries an intermediate ALS kit for those instances.

The Santa Barbara County Fire Department paramedic program was established in 1974 and has continued to evolve. Currently, the Santa Barbara County Fire Department has 54 Paramedics including the Fire Chief. These paramedics provide **A**dvanced **L**ife **S**upport (ALS) to the community on a full-time basis, including ambulance transport, for UCSB, Cuyama and the unincorporated areas around the City of Lompoc for ALS and ambulance transport to a hospital. UCSB contracts with the Fire Department to provide those services to the UCSB campus. ALS is provided by trained and certified paramedic where advanced medical treatment for the sick or injured is given in the field under a medical physician's direction.

The Santa Barbara County Fire Department also has three fire stations that provide Advanced Life Support services and ambulance transportation. These are Station 51 in Lompoc, Station 41 in the Cuyama Valley and Station 17 at UCSB. Stations 51 and 41 are staffed with Medic ambulances due to the long response times and inadequate coverage from the County EMS System private provider, American Medical Response (AMR). Station 51 also covers behind AMR in the City of Lompoc when AMR is unavailable. Medic 51 also provides long-distance emergency, non-scheduled transfers from the Lompoc District Hospital to Santa Barbara and

Goleta hospitals when AMR units are not available or if ALS service is needed. AMR is the private provider for all ambulance and ALS services in Santa Barbara County.

Over the decades as the County Emergency Medical Services System evolved, the County EMS Agency decided to limit the number of paramedic fire stations in areas where it was felt that the ambulance coverage was timely enough. In the most recent agreement with AMR and the County, AMR reimburses the Fire Department for the additional, incremental cost to train and maintain an existing firefighter at the higher paramedic level.

Currently, the Department receives $380,000 per year for ALS costs offset. With fire ambulance transport revenues and the new UCSB ambulance contract, the Department receives another $450,000 for a revenue total of $830,000. The Department currently expends for all additional paramedic costs (personnel certification differential, training and specialty equipment) a total of $836,768. The program deficit is $6,768, or easily within the margin of error on estimating ambulance collections; thus the program is revenue neutral.

However, not all fire station areas are covered by a fire engine paramedic and when the closest ambulance is delayed, advanced medical care is delayed, even though a fire crew is at the emergency. Fire Stations 12, 13, 14, 15, 18, 23 and 30 (seven in all) could use the addition of one paramedic per crew. At a blended cost average of approximately $10,000 per firefighter paramedic, the additional cost increase would be approximately $210,000, plus ALS equipment and supplies.

Such paramedic first response engine companies are the norm in much of urban California. There is no reason that the Ambulance Exclusive Operating Agreement between the County and AMR cannot find the revenue to place a paramedic on each neighborhood fire engine.

Recommendation #24: The County could develop a plan to fund the complete deployment of paramedics on each County fire engine, one per engine, per day within the next generation agreement with its ambulance contractor.

3.6 COMMUNICATIONS AND DISPATCH

Fire apparatus, technical rescue, hazardous materials and emergency medical units must be dispatched to a location and maintain constant communication between each other and the dispatch center. Communications and dispatch for the Fire Department is provided from the Sheriff's 911 Communications Center. The Center's shared operations do not use multi-year written agreements to administrate oversight, protocols, performance measures and training, specific to fire deployment models within Santa Barbara County. The Fire Department pays $1,200,000 per year or $109 per call for those services. The current Fire Department cost share of this shared center is based on a CEO's budget office understanding dating from 2001.

Currently, there exists a dispatch/communications task force as directed by the CEO, Fire Chief, and Sheriff to address the extended time between call answering and the dispatching of units. There needs to be a shared governance model implemented for addressing performance of the dispatch staff.

Finding #34: Citygate finds the dispatch cost per call the highest it has ever seen. The norm for a regional center is to charge from $35 to $50 per call depending on how capital equipment replacement is amortized into the annual operating cost rate. We could not be provided with a rationale for the charge rate other than it was set years ago during County staff budget discussions.

Recommendation #25: The County should review the appropriateness of the per-call dispatch charge to the Fire Department to bring into balance the charge with the true cost of the service, given that the fire call load in the center is a fraction of all the other agency communications combined.

In addition to the communications contract, the Fire Department has assigned two Fire Captains to coordinate with dispatch and to staff the expanded dispatch center during a major emergency. The two Captains also assist the Department with its mobile data computers and ensure the computers function correctly.

During Citygate's on-site visit, the team investigated the dispatch sequencing and delivery to understand what the true call processing time was from 9-1-1 pick up to dispatching the first arriving Fire Department unit. The communications system process begins when a call taker picks up the emergency call and determines the type of incident such as fire or medical emergency. If it is a fire, after all the information is gathered and entered into the Computer Aided Dispatch (CAD) system, it is routed to the fire dispatcher for company alerting. If it is an emergency medical aid call, the call taker goes through a process called Emergency Medical Dispatch (EMD). The process used in the County Communications Center is a national process called ProQA. This program and process has been shown to save lives. The system is designed for telecommunicators (dispatch personnel) to give life saving instructions over the phone to the caller. These instructions include Cardiopulmonary Resuscitation (CPR). During the review of dispatch procedures, talking with personnel and reviewing dispatch data, Citygate determined that the delay in call processing time was over three minutes. The nationally accepted standard is one minute to dispatch fire apparatus to serious fire emergencies.

In both fires and severe EMS calls, the time factors are critical to survival of the patient. Death and injury occur in a short amount of time and some damage is irreversible. Therefore, time is of the essence. The three-minute processing time is attributed to the fact that dispatchers go through the entire EMD protocols before forwarding the call to the fire dispatcher. (See Finding #11 and Recommendation #1 on page 59.)

The Dispatch Center has one dedicated fire dispatcher to all fire emergencies. Other consoles and positions are able to assist as needed. The sequence of dispatch is that all calls are dispatched on Channel 1 and instructed to move to a tactical channel (Channel 2 or 3) for scene use. Fire ground communications are established in the Communications Manual for the Department. The channels can be operated in repeater mode or direct for communications. Usually, on the incident scene, to reduce impact on the communications center, the units are on direct channels. Once the incident has been dispatched to the field and units have gone to the tactical frequency, the dispatch console operator *does **not** monitor the channel any longer*. Although this certainly reduces the workload of the communications center employees, it creates a safety hazard for field personnel. During a major fire or incident, communications are usually flowing fast and furious. At some instances, the communications can overlap each other. During a major incident or one where the Incident Commander is very busy with communications, there is potential for the IC to miss an emergency traffic message from a firefighter. This can be devastating.

Finding #35: Dispatchers do not monitor fire scene communications and if the Incident Commander does not hear a firefighter mayday request, a severe injury or death could occur.

Recommendation #26: The Communications Center and Department should review their policies on how fire ground communications are monitored and how firefighter safety is accomplished during an emergency traffic incident towards ensuring that two personnel are monitoring the radio traffic, one of which is in the communications center.

SECTION 4—FISCAL IMPACTS

Section Intent: This section first provides a picture of the financing sources and current expenditures of the County Fire Department and forecasts the additional revenue needed over the next five years just to maintain the current level of service. Then this section presents order-of-magnitude costs to implement the recommendations contained in this study. These order-of-magnitude costs are sufficient to permit long-range fiscal planning for needed improvements in fire services. Illustrative priority and general timelines for implementing improvements are provided and potential additional sources of revenue are summarized to both retain the current service level as well as improve fire services when the County determines this is appropriate.

Detailed costing and revenue forecasts are not possible until County leadership approves the master plan recommendations and sees enough of an economic recovery to actually establish a plan and feasible timeline for fire service improvements. The priority of fire service improvements will need to be established in the context of other County service needs that also will draw on improving revenue as the economy recovers. The Board of Supervisors will have to understand the entire County's under-met needs and make the appropriate fiscal allocation decisions.

4.1 FINANCING SOURCES AND CURRENT AND HISTORIC EXPENDITURES AND STAFFING

The Fire Department Budget for FY 2011-12 is summarized in the tables below. Four things are important to note in the tables.

1. Property Tax permanently allocated to the Fire District only provides 52 percent of its revenue and the County General Fund only provides 7 percent of Department revenue as an annual discretionary contribution. An additional 17 percent is from the state in return for contracted wildfire services provided by the Fire District.

2. Fire Emergency Operating costs makeup 81 percent of the expenditures while Administrative and Support Services only represent 10 percent of the expenditures.

3. Related to this expenditure distribution is the number of full-time equivalent (FTE) positions in the budget. For FY 2011-12, the Department plans to operate with 253 FTEs in the Recommended Budget. This is down from 270 Adopted FTEs in FY 2006-07 and the reduction in these positions has come from support services and the wildfire hand crew elimination. Elsewhere in this report, Citygate has expressed concern about the impact on the quality of fire services resulting from the present minimally staffed Administrative and Support Services in the Department. One of the tables below illustrates the change in Department staffing over the past ten years.

4. While staffing has decreased from 270 FTEs in FY 2006-07 to 253 in FY 2011-12, the actual Department expenditures have increased from $46.8 to a currently projected $54.9 million based on the recently approved "adjusted" FY 2011-12 budget. This increase is a result of both labor cost increases and the impact of inflating costs on materials and supplies. As importantly, they also increase as a product of changing safety regulations, increasingly sophisticated and costly equipment, and fuel and vehicle related costs.

Table 19—FY 2011-12 Recommended Budget & Positions (FTEs)

Budget Divison	Amount
Operating	53,899,786
Capital	314,200
Positions	253.0 FTEs

Exhibit 1—Source of Funds

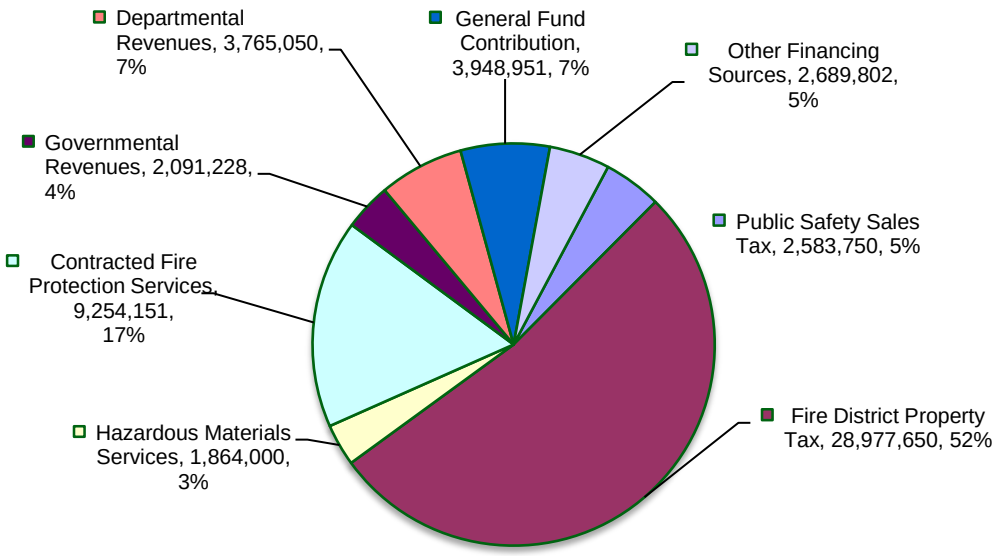


Exhibit 2—Use of Funds

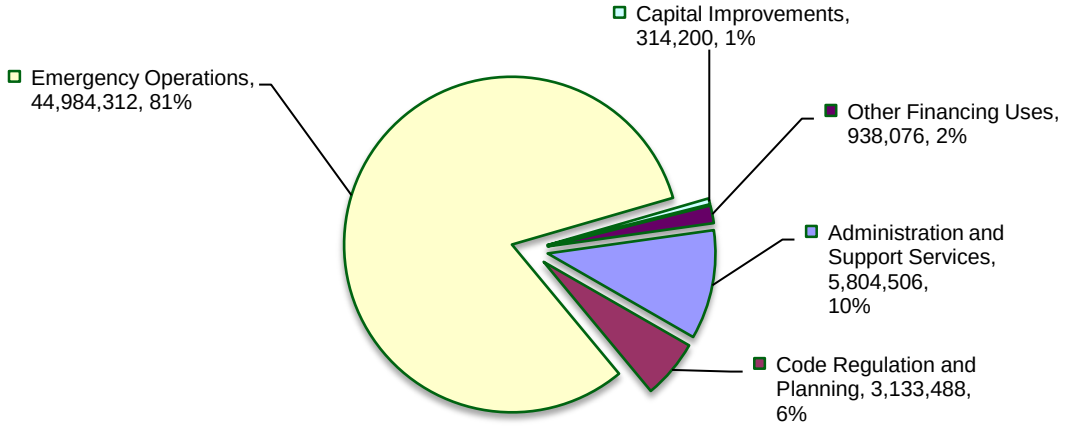
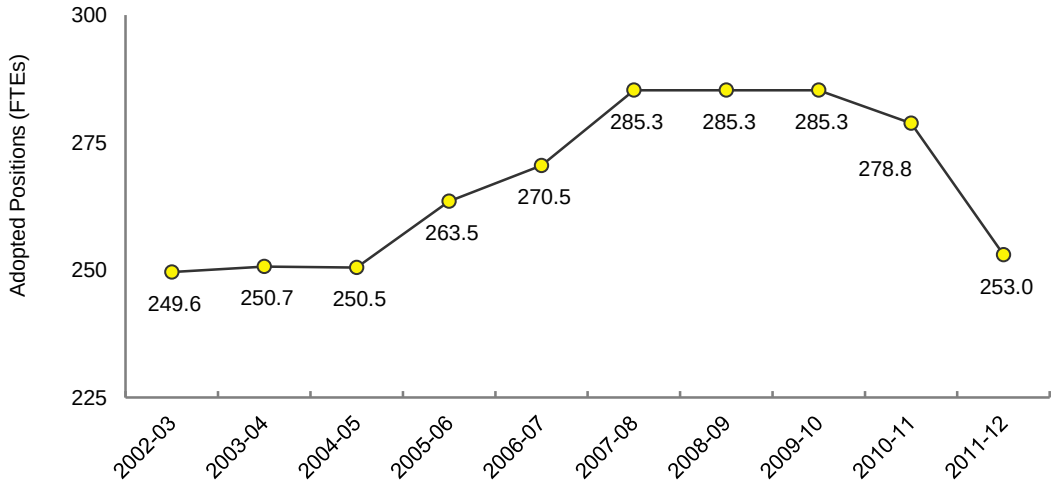


Exhibit 3—Staffing Trend



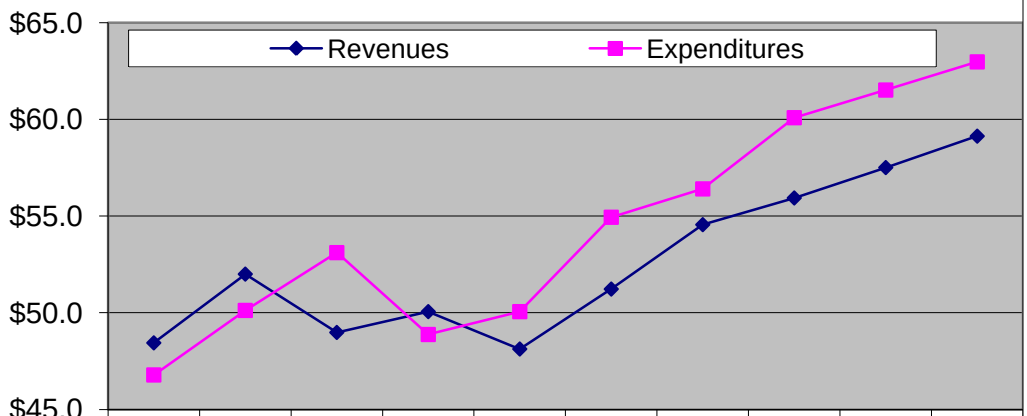
4.2 FORECAST OF FUTURE COSTS

With the cost impact of both existing personnel Memorandum of Understanding (MOU) provisions as well as the general impact of inflation and mandated safety regulations, the table below, provided by the County, reflects an estimate of the rising expenditures that will be needed *just to maintain* the present staffing and service level in the Fire Department. Additionally, it is important to place this in the context of Citygate's assessment that the recent staffing reductions

have noticeably reduced service levels while calls for service have risen approximately 40 percent over the past ten years.

Just to maintain current services, annual expenditures can be expected to rise to about $63.0 million by FY 2015-16 while current Department revenue sources will rise much more slowly. This will create an aggregate deficit of about $14.8 million dollars in the Fire Department funding picture.

Exhibit 4—Santa Barbara County Fire Department/District Revenues and Expenditures (In Millions)



	FY 06/07	FY 07/08	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16
Revenues	$48.4	$52.0	$49.0	$50.1	$48.1	$51.2	$54.6	$55.9	$57.5	$59.1
Expenditures	$46.8	$50.1	$53.1	$48.9	$50.1	$54.9	$56.4	$60.1	$61.5	$63.0
Net Financial Impact	$1.7	$1.9	-$4.1	$1.2	-$1.9	-$3.7	-$1.8	-$4.2	-$4.0	-$3.8
Year End Fund Balance	$8.2	$10.1	$6.0	$7.3	$5.2	$1.4	-$0.4	-$4.6	-$8.6	-$12.4
Restricted for Capital	-$3.1	-$4.6	-$4.7	-$4.6	-$1.8	-$1.1	-$1.4	-$1.7	-$2.0	-$2.4
Operating Fund Balance	$5.1	$5.5	$1.2	$2.6	$3.3	$0.4	-$1.8	-$6.2	-$10.6	-$14.8

Finding #36: Present Fire Department revenue sources are not projected to rise fast enough to keep up with the rising cost of providing the *current level* of fire services. Unless new sources of revenue are developed for the Department, fire service levels will need to be reduced further because expenditures are expected to exceed revenue by an aggregate of $14.8 million by FY 2015-16. This is an annual deficit that will grow from an estimated $1.8 million next year to $3.8 million in FY 2015-16.

Finding #37: Without an increased County General Fund subsidy and/or new revenue sources, further reductions in fire services will need to come from fire station staffing, because additional reductions in Administrative and Support Services will seriously affect the safety and adequacy of training of fire line personnel.

Recommendation #27: If the County is unable to 1) find or develop a revenue source to solve the structural deficit in FY 2012-13 or 2) extend the salary and benefit concessions agreed to by the employees for the current year and only part way through next year, then it is recommended 3) the County take the actions as discussed in the deployment section of this report on page 17 by limiting the use of overtime and then temporarily closing a fire station on a rotating basis when daily staffing is not sufficient to staff all stations.

4.3 PROJECTED COST TO IMPROVE CURRENT SERVICE LEVELS

While the equivalent of an additional average of $3.7 million in annual revenue is needed each year between FY 2012-13 and FY 2015-16 just to maintain the current service level, improving the current level of service will represent an even greater fiscal challenge for the County.

The following table shows in current dollars the individual item costs of Citygate recommendations for improving the fire service level.

In a second table, the aggregate costs will be displayed along with priority and timing over several phases.

Table 20—Component Costs

Position (Salary, Benefits and Relief Costs)	Annual Cost $
Firefighter	190,000
Firefighter/Paramedic	204,000
Battalion Chief	289,000
Finance Manager, non-sworn (Program/Business LDR-CFO)	188,000
Safety Program Coordinator, non-sworn	178,000
Administrative Office Professional II	92,000
Information Technology Technician	161,000
40-hour Fire Inspectors, Fire Engineer-sworn	183,500
40-hour Fire Captain, sworn	209,000
Logistics Support - Administrative Office Professional Expert	140,000

If the County decides to add enhancements as recommended by Citygate, the table below provides an *illustration* or sample of how this might be phased in over several years and the associated annual estimated cost in FY 2011-12 dollars:

Table 21—Sample Phasing and Additional Cost Plan

Phase	FTE Count	Item	Ongoing Operating Cost $*	One Time
One	24	4th Firefighter or Firefighter-Medic staffing for Ladder 11, Engines 12, 17, 41	2,364,000	90,000
	3	3rd Daily Battalion Chief – Command and Safety ***	867,000	82,500
	1	Finance Manager – CFO**	188,000	
	1	Safety and Standards Coordinator**	178,000	18,000
	3	Administrative Office Professional II (*Exec Mgmt., Support Services, Prevention*)	276,000	
		Annual Debt Financing Cost for Recommended Capital Improvements/Equipment, for this phase only	1,464,337	
		Phase 1 subtotal	***5,337,337***	***190,500***
Two	24	4th Firefighter or Firefighter -Medic staffing for Ladder 30, Engines 18, 21, 24 and new Engine 10 crew (Capt., Eng., FF/PM, FF)	4,914,000	180,000
	1	Information Technology Technician**	161,000	
	2	Fire Inspectors	367,000	
		Annual Debt Financing Cost for Recommended Capital Improvements/Equipment for this phase only	3,243,930	
		Phase 2 subtotal	***8,685,930***	***180,000***
Three	3	4th Firefighter-Medic staffing for Engine 23	612,000	22,500
	1	Fire Prevention Captain	209,000	
	1	Logistics Support	140,000	
	1	Fire Captain Safety/Training	209,000	26,500
	24	Fuel Reduction/Firefighting Hand Crew	1,352,000	60,000
	****	Career Development/Succession Planning Programs	250,000	
		Annual Debt Financing Cost for Recommended Capital Improvements/Equipment for this phase only	740,721	
		Phase 3 subtotal	***3,512,721***	***109,000***
		Total All Phases	**17,535,988**	**479,500**

** 10 percent estimate for on-going services/supply costs added to safety positions and Safety/Standards Coordinator.*
*** Priority add-back positions.*
**** Priority new positions.*
***** Contracted assistance and internal costs.*

Finding #38: The County Fire Department has a growing backlog of building and equipment replacement/relocation needs. The County currently estimates that the cumulative annual debt payment is approximately $6,000,000, in current dollars, to meet all of these capital improvement needs.

Recommendation #28: If the County is interested in pursuing implementation of their Capital Improvement Plan items for the Fire Department, the plan should be referred to the County staff to develop a priority listing that is integrated with whatever operational recommendations are adopted and then a refined cost estimate and debt financing plan developed based on interest rates available at the time.

4.4 CAPITAL PROGRAM COSTS

In addition to the annual operating deficit in the Fire Department, the recession has led to a growing backlog of need to replace/relocate buildings and equipment.

The following capital facility needs are taken from the County's current Capital Improvement Plan (CIP) and match the needs of the Fire Department described in this study. The costs below provide an *illustration* or sample of how the CIP needs might be phased in over several years and the associated annual estimated cost in FY 2011-12 dollars:

Table 22—Sample Phasing and Additional Cost Plan

Phase	Item	New and Replacement Cost $	New or Replacement Facility or Asset
One	Training Offices and Classrooms	$6,450,000	New
	Training Facility with Props – North*	$3,000,000	New
	Fire Station 41 (Cuyama) – Age 60	$4,690,000	Replacement
	Facility for Dozers and Heavy Equipment (Los Alamos) – Age 54	$4,387,000	Replacement
	Apparatus (outside of the vehicle replacement fund – 2 water tenders, HazMat unit, USAR unit, Helo fuel tender)	$2,313,000	New and Replacement
	Phase 1 subtotal	***$22,003,000***	
Two	Training Facility with Props – South*	$3,000,000	New
	Replace & enlarge Headquarters Building (Near Santa Barbara) – Age 44	$7,100,000	Replacement
	Fire Station 10 & land acquisition costs	$5,940,000	New
	Fire Station 10 Pumper	$1,200,000	New
	Fire Station 11 (Goleta) – Age 45. Replacement station larger due to two crews.	$5,853,000	Replacement
	Fire Station 13 (Near Santa Barbara) – Age 54	$4,690,000	Replacement
	Fire Station 14 (Goleta) – Age 42. Includes added space for Battalion Chief.	$5,800,000	Replacement
	Fire Station 15 (Mission Canyon) – Age 42	$4,690,000	Replacement
	Fire Station 21 (Orcutt) – Age 23	$5,140,000	Replacement
	Fire Station 22 (Orcutt) – Age 31. Smaller building due to parcel size.	$3,050,000	Replacement
	Fire Station 24 (Los Alamos) – Age 54	$4,690,000	Replacement
	Fire Station 31 (Buellton) – Age 47	$4,690,000	Replacement
	Phase 2 subtotal	***$55,843,000***	
Three	Fire Station 23 (Sisquoc) – Age, new modular	$4,990,000	Replacement
	Fire Station 25 & Apparatus	$5,565,000	New
	Logistics Warehouse & land acquisition est.	$1,000,000	New
	Phase 3 subtotal	***$11,130,000***	
	Total All Phases	**$88,976,000**	

* Items not in current CIP Budget.

4.5 FINANCING FIRE SERVICE IMPROVEMENTS

There is not enough revenue flow in the current or near-term economy to provide the amount of fiscal resources needed to add back the personnel positions that have been reduced over the past several years and to enhance services to meet the fire service risks in the County. Given this constraint, the County is exploring several types of revenue changes that would support improved fire services. Each has its pros and cons, any one of which will require in-depth research, policy direction and public support. It is most probable that any combination of the potential revenue sources will still be inadequate to fully implement all of the recommendations in this report. The County will clearly need to make priority choices. The purpose of this report section is to introduce the most viable options.

Since the establishment of the Santa Barbara County Fire District, well before Proposition 13 was enacted, the share of the property tax revenue allocated to the District has been lower than other large southern California fire districts, of which the closest comparable fire district is the nearby Ventura County Fire Department. As urbanized areas developed in Santa Barbara County driving the need for more suburban and urban levels of fire services, especially with more homes abutting wildland-prone fire areas, there was not an accompanying increase to the Fire District tax rate. Given a historically low tax rate combined with many areas of the County having fewer taxable parcel densities, the overall Fire District revenues cannot keep up with current and future fire services demands. This is reflected clearly in the table in Section 4.2 above.

The County staff compared the characteristics of its fire service tax rates to Ventura County, where its fire district is allocated 15.07 percent of the property tax as compared to the 11.97 percent allocation in Santa Barbara County.

To enhance Fire District revenues, the County has few choices:

1. Do nothing and provide lower levels of fire services as costs continue to outstrip current revenue sources;
2. Provide a higher subsidy to the Fire District budget from the General Fund through either increased direct annual contributions or permanently allocating a greater share of the property tax to the Fire District;
3. Identify, design and ask the voters to pass additional revenue sources.

4.5.1 Oil Production Tax

Every other oil producing state and country assess a severance tax on oil taken out of the ground. California does not. A local tax on production of crude oil within Santa Barbara County is estimated to generate between $1.8 to $3 million dollars annually at current production levels, depending upon the tax rate adopted. The public must approve any local tax measures, including an oil production tax, after being placed on the ballot by the Board of Supervisors.

In research done by County staff, it was found that in 2008, the voters in the City of Long Beach approved a rate increase to $0.40 per barrel to their existing crude oil production. The Cities of Huntington Beach, Inglewood, Santa Fe Springs, Seal Beach and Signal Hill also have crude oil production taxes in place ranging from $0.20 to $0.60 per barrel. Any crude oil production tax in the range adopted by other jurisdictions would have virtually no impact on the price of gasoline at the pump since overall consumer prices are set by regional and global markets.

4.5.2 Property Tax Exchange

Acting in its capacity as the Board of Directors of the Santa Barbara County Fire Protection District and as the Board of Supervisors of the County of Santa Barbara, the Board could chose to approve a Property Tax Exchange agreement beginning July 1, 2012, where a percentage of the property tax now allocated to the County General Fund would be transferred in all Tax Rate Areas (TRAs) from the County General Fund to the Santa Barbara County Fire Protection District. The exchange to the Fire District would occur over time, as the property tax base grows incrementally, not from the current tax base. Allocation percentage amounts may vary in each Tax Rate Area. For each 1 percent increase in the percentage of property tax allocated to the Fire District, this would permanently reallocate $2.5 million annually from the General Fund to the Fire District. This amount would grow as the assessed valuation amounts in the County grow. If the total amount transferred to the Fire District were increased to the same level as the allocation in Ventura County, the increase of 3.1 percent would transfer approximately $7.75 million in current dollars to the Fire District based on presently forecasted assessed valuations.

The result of increasing the property tax allocation to the Fire District is that no additional taxes will be assessed to Santa Barbara County taxpayers. However, the impact of this fiscal restructuring of the property tax would result in fewer property tax incremental growth dollars being available for other County General Fund needs. One phased approach to a property tax transfer would be to transfer half of the County's "property tax growth" incrementally until the full annual amount had been reached.

Recommendation #29:	If the County Board of Supervisors is interested in increasing the amount of Property Tax permanently allocated to the Fire District, they could request the CAO's Office to provide a detailed plan that would phase in the transfer over the number of years specified by the Board.

4.5.3 Other Revenue Sources

- Increase Transient Occupancy Tax (TOT) from current 10 percent to 12 percent. This option would not be as stable for year-to-year fire protection needs and is estimated by County staff to only generate an additional $200,000+ per year. If

this were proposed as a "general tax" it would require a majority voter approval. If the revenue were limited to use in the fire services, it would require a two-thirds voter approval.

- Ask for voter approval of a parcel tax. The amount of the parcel tax would determine the service level increase that can be afforded. A parcel tax in line with what is being approved elsewhere in the state by voters might generate between $1.5 and $2.5 million dollars annually. It is fairly common for agencies to conduct voter surveys to determine the level of parcel tax that might be supported. As a special tax dedicated to the fire service, this would require a two-thirds voter approval.

- Increase fees for fire related services. State law requires that the fee level not be in excess of the cost of providing the service. Currently, fees in departments are monitored and adjusted every one or two years, or when necessary to match the cost of providing the service. As discussed earlier in this report, CUPA fees were just adjusted by the Board of Supervisors in December 2011 to match the cost of the regulatory activity.

4.5.4 Wildland Fire Protection Contract with CAL FIRE

The County Fire District is one of six counties where the State pays the local regional fire agency to provide initial fire suppression response to wildfires on what are designated State Responsibility lands, in lieu of the State staffing CAL FIRE stations in these counties. The current contract to Santa Barbara County is for $9.2 million per year for 3 years. While the contract is for wildfire suppression, the dollars are for year-round resources that the six counties can use for local emergency response events. As such, the contract values add several fire stations and response resources to the County's system. Stated this way, $9.2 million is equivalent to the annual operating cost of approximately four of the County's 16 fire crews on a 24/7/365 basis.

The state calculates the amount paid to the County based on an allocation formula to all the contract counties. There is no annual time for formal review of the allocations. If the County wants something changed it has to submit a request in writing and work it out with the State. The current contract is for three years and expires in June 2014. The contract amount is a "not to exceed" amount.

SECTION 5—RECOMMENDED SOLUTIONS AND PHASING PLAN

5.1 DEPLOYMENT PLAN FINDINGS AND RECOMMENDATIONS

The County of Santa Barbara has adequate fire station locations, but is also co-dependent in some areas in the upper county on neighboring fire departments for day-to-day, first alarm needs to fill out all of the needed forces to serious emergencies. Citygate's primary deployment study findings recommend the staffing per fire crew should be increased to provide a more timely total staffing to serious emergencies.

Citygate's deployment findings for the County as noted in Section 2 are:

Finding #1: The County does not have a complete and current best practices designed fire deployment measure adopted by the Board of Supervisors that includes a beginning time measure starting from the point of dispatch receiving the 911 phone call, and a goal statement tied to risks and outcome expectations. The deployment measure should 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 Center for Public Safety Excellence (formerly the Commission on Fire Accreditation International).

Finding #2: The County has adopted best practices building and fire safety codes to lessen building and wildland fire risks, along with structural code requirements to improve earthquake safety. Considered as a total package, the County is one of the more progressive counties for fire safety regulations that Citygate has observed.

Finding #3: Based on the quantity of higher required fire flow buildings in the County, the Santa Barbara County Fire Department is just as challenged for building fire risk as are many urban cities, but in the County, the risks are much more spread out and thus harder to cost effectively field a deployment force to mitigate them.

Finding #4: The Department's current daily firefighter staffing at 59 provides the County a response to handle one or two serious events without being immediately dependent on mutual aid. However, this is only in parts of the County with multiple fire stations close enough together to assist each other in a timely manner.

Finding #5: The County is not developed enough in terms of population density and building development to desire an urban level of first-due fire unit coverage countywide, which is 4 minutes of travel time for the best possible outcomes.

Finding #6: The existing fire stations have been located in the major population clusters.

Finding #7: All populated areas are within 12 minutes travel or less of a fire station, which in the lightly populated areas is an acceptable rural level of service.

Finding #8: Adding more fire stations would only slightly increase coverage given the outer suburban and rural areas road network. In many cases, more stations would not cover very many incidents given the low population densities.

Finding #9: Emergency incident requests are fairly evenly distributed over the months, week of the year and day of week. This means that the deployment model should not have widely different staffing patterns. The Department needs a constant baseline of response resources.

Finding #10: The demand for incidents is at the lowest from 2AM to 6AM, but even at these hours there are emergency requests. If a station closure (Brownout) plan was economically necessary, even reducing staffing only half a 24-hour period at night in a few stations would increase response times, in some cases significantly, where the County's fire companies are not closely spaced.

Finding #11: Santa Barbara County Communication Center 911 call processing times are overly delaying the dispatch of fire units to serious emergencies. The dispatch operation needs to place greater emphasis on procedures to get the first-due engine dispatched in 60 seconds time. There has to be a way to restructure human and software procedures.

Finding #12: For crew turnout time performance, most stations are close to achieving a maximum of 2 minutes (120 seconds). Focus on this area will easily bring the times down to serious emergencies.

Finding #13: All of the station areas are too large to deliver 4-minute urban/suburban travel time. However, not all station areas have high population densities. All of the station locations can reach 90 percent of the incidents in less than a rural response travel time of 12 minutes, but a rural response time is not desirable in the most populated areas.

Finding #14: The incident response measures for a Full Effective Response Force (first alarm) show that only two of the fire station areas can deliver 4 units to 90 percent of building fires within a desired goal point of 11:00 minutes total response time, of which 8 minutes is travel time. The other fire station areas are just too large and some units are busy and unavailable at peak hours of the day. The positive coverage from Stations 11 and 12 is in Goleta and Isla Vista where the highest population densities are.

Finding #15: The County is too large for only two, on-duty Battalion Chiefs. A third Battalion Chief should be added into the mid-county area to support command, safety and personnel management functions. There is a hit and miss designation of an on-scene safety officer for structure fires. Providing a third Battalion Chief will help by providing a second Chief at serious incidents to perform the Safety Officer Functions. Personnel at the Captain level and above should receive training in Incident Safety Officer Certification that will significantly improve firefighter safety.

Citygate's recommendations are designed to improve these issues *as fiscal resources* allow. Based on Citygate's above findings and the national best practices outlined in this study, Citygate makes the following recommendations regarding fire station and crew deployment:

Recommendation #1: County staff should immediately form a task force to deeply study the Communication Center's 911 call processing times and design and test new dispatcher and/or software procedures that will, in parallel with EMS incident screening issues, dispatch the closest fire unit crew within 60 seconds to 90 percent of the incidents.

Recommendation #2: **Adopt Fire Station Location Measures:** To direct fire station location timing and crew size planning as the community grows, adopt fire unit deployment performance measures based on population density zones in the table below. The more specific, measurable and consistent the policy is, the more it can be applied fairly to all uses and easily understood by a non-fire service user.

Table 23—Proposed Deployment Measures By Population Density Per Square Mile

	Structure Fire Urban Area	Structure Fire Suburban Area	Structure Fire Rural Area	Structure Fire Remote Area	Wildfires Populated Areas	Wildfires Remote Areas
	>7,000 people/sq. mi.	1,000-7,000 people/sq. mi.	500 to 1000 people/sq. mi.	0 to 500 people/sq. mi.	Permanent open space areas	
1st Due Travel Time	4	5	12	20	10	20
Total Reflex Time	7	8	15	23	13	23
1st Alarm Travel Time	8	10	16	24	15	24
1st Alarm Total Reflex	11	13	19	27	18	27

2.1 Distribution of Fire Stations for Initial Response to Built-up Suburban Areas of Greater than 7,000 People per Square Mile: To treat and transport medical patients and confine small fires *to* the room of origin, the first-due unit staffed with a minimum of 3 firefighters 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 crew turnout time and 4 minutes travel time spacing for single units.

2.2 Effective Response Force (First Alarm) for Built-up Suburban Areas of Greater than 7,000 People per Square Mile: To treat and transport medical patients and to confine fires *near* the room of origin, a multiple-unit response of at least 15 firefighters 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 crew turnout time and 8 minutes travel time spacing for multiple units.

2.3 Suburban Areas of 1,000 to 7,000 people per square mile should have first-due fire unit *travel* time coverage of 5 minutes, 90 percent of the time, and the effective response force of at least 15 firefighters should have a *travel* time of 10 minutes with a resultant 13-minute total response time, 90 percent of the time. Fires will be contained to the building of origin to prevent a wildland fire. Medical patients salvageable upon arrival will receive appropriate care for their condition.

2.4 Rural Areas of 500 to 1,000 people per square mile should have first-due unit *travel* times of 12 minutes, 90 percent of the time. Rural areas should receive the effective response force of at least 9 firefighters within 16 minutes *travel* time with a resultant 19-minute total response time, 90 percent of the time. Fires will be contained to the building of origin to prevent a wildland fire from escaping assuming adequate defensible space and built-in construction features are provided. Medical patients salvageable upon arrival will receive appropriate care for their condition.

2.5 Structure Fire Remote Area of less than 500 people per square mile should have first-due unit *travel* times of 20 minutes, 90 percent of the time. Remote areas should receive the effective response force of at least 6 firefighters within 24 minutes *travel* time with a resultant 27-minute total response time, 90 percent of the time. Fires will be contained to the property of origin to

prevent a wildland fire from escaping assuming adequate defensible space and built-in construction features are provided. Medical patients salvageable upon arrival will receive appropriate care for their condition.

2.6 Wildland Fires in or near populated areas should have first-due unit *travel* times of 10 minutes, 90 percent of the time; and the effective response force of at least 15 firefighters should have a *travel* time of 15 minutes with a resultant 18-minute total response time, 90 percent of the time. Fires will be contained to less than 5 acres to prevent a more serious wildfire.

2.7 Wildland Fires in remote areas should have first-due unit *travel* times of 20 minutes, 90 percent of the time; and the effective response force of at least 9 firefighters should have a *travel* time of 24 minutes with a resultant 27-minute total response time, 90 percent of the time; fires will be contained to less than 10 acres to prevent a more serious wildfire.

2.8 Rescues and Specialty Responses should receive an effective response force trained and equipped to deal appropriately with the emergency from water rescue to hazardous materials, rugged-area medical, or technical rescue problems. The initial unit to such emergencies should arrive within 13 minutes and the follow-up units within 27 minutes.

Recommendation #3: As funding allows, the County should strongly consider staffing a fourth firefighter on units that protect very high population densities or are located too far from other units for quick support when interior fire attack is needed. These stations are: Truck 11, Stations 12, 17 and 18 in the south battalion; Stations 21, 23, 24, 30, 41, and 51 in the north battalion. This will require an additional 10 firefighters per day, or 30 total for coverage on three shifts.

Recommendation #4: **Third Battalion Chief:** As soon as funding permits, the Department should establish a third Battalion Chief position 24/7/365 in the central county area to increase command and safety chief functions at serious incidents. These chiefs can also assist with departmental safety program management functions.

5.2 NON-DEPLOYMENT HEADQUARTERS FUNCTIONS FINDINGS AND RECOMMENDATIONS

A fire department of the County's 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 organization chart shows a headquarters organization that does not currently meet the needs of a department the size of Santa Barbara County. However, due to the fiscal pressures on the County, there has been greater emphasis on keeping fire companies open to provide emergency response than on the needs of the management team to coordinate and lead the organization.

Citygate understands the County's fiscal situation but finds some headquarters functions *critically* insufficient. The following findings and recommendations provide a road map from which to better handle current workloads and to request additional resources as the County finds the ability to provide them. When all the following recommendations are implemented, the Department's headquarters staff will be the appropriate size for Santa Barbara County.

Citygate's deployment findings for the County as noted in Section 3 are:

Finding #16: The Department is very understaffed in Training and EMS oversight and is at risk without a Safety and Standards Coordinator position. Relying on a Fire Captain and an outside agency to monitor the Department's EMS and other certifications is risky. Certifications for personnel providing advanced life support require constant tracking and monitoring to assure compliance.

Finding #17: The Department lacks a dedicated Safety Officer and centralized focus on safety. Without a designated Safety Officer, the training/safety programs will not be able to succeed or meet best practice recommendations, or essential requirements on the fire service by Cal/OSHA. Tracking of fit testing and SCBA monthly donning and doffing is an example where the Department could be in non-compliance.

Finding #18: The Department does not have an adequate training center with the classroom and outdoor spaces and props to support its necessary training.

Finding #19: While the Department has a set of operating procedures and guiding documents, they are very old and outdated. These documents assure how personnel will normally perform during their course of duty.

Finding #20: While a Fire Department Organizational Audit is not set-up to do a detailed desk and workload audit of office support needs, in Citygate's experience, we have found the office support capacity out of sync with what we have seen in other fire departments of Santa Barbara County's size.

Finding #21: The Fire Department is not staffed to adequately use, maintain or implement office and emergency service electronic data systems. What little gets done will be slow or completely stall the timely implementation of key systems such as inspection permit revenue systems, records recall and retention.

Finding #22: Budget reductions have reduced public education media handout materials. This cannot continue for very much longer when public information and training is critical to enable the public to share the burden of self-help and having a fire-safe community.

Finding #23: Logistics: The Fire Department logistics section is understaffed and working in a very small and not centrally located area, creating large time delays and commutes to outlying stations for delivery of goods and supplies. In the short-term, battalion chiefs are shuttling material and supplies or on-duty crews are coming to the location, both are inefficient and degrade service delivery.

Finding #24: The Fire Prevention Division and Operations Division share the Fire Prevention load for the Department. The Fire Prevention Division has responsibility for hazardous materials regulation and enforcement. This is a highly technical field and requires qualified personnel. The turnover rate in the CUPA has been high in the last three years. There is no dedicated public education program in the Fire Prevention Division. Public Education is a shared function under the Department's Public Information Officer (PIO) assisted by a limited-funded extra-help employee.

Finding #25: The Santa Barbara County Fire Department's vehicle fleet is maintained by the County's fleet services and outside agencies as needed. And it is maintained very well. However, the fleet is aging due to numerous miles and hours placed on them for responses. The County has established depreciation and replacement guidelines for its fleet. The Type 3 engines for wildland firefighting and long-range strike team deployment are the most aged in the fleet. The replacement of higher mileage front line structural engines and wildland units should be considered prior to the current 20-year County policy.

Finding #26: Santa Barbara County Fire Department fire apparatus maintenance program meets most of the requirements. The County purchases first class apparatus as a starting point. Based on a cursory review of the apparatus, the apparatus appeared to be well cared for yet many are past the depreciation standard. This is by design to ensure that replacement funds are available when the unit is at the end of its life (i.e., if the apparatus lasts only 17 years instead of 20 years, the replacement funds are available in the system due to the 15-year depreciation schedule). The units are properly equipped for their tasks.

Finding #27: All fleet maintenance is done at County shops, which takes the fire unit out of Department for exchange time and increases the use of older reserve equipment. A mobile mechanic position could be established to do minor repairs and preventative maintenance in fire stations. This is very commonly done in fire departments covering large areas such as the County.

Finding #28: In Santa Barbara County, safety is mentioned and emphasized throughout the Fire Operations Manual and other operational documents. One means or another covers many of the items listed above. What is missing is a comprehensive approach to Fire Department safety as envisioned in NFPA 1500 and the accountability reporting measures and tools to verify compliance, which are essential documents should an employee injury occur, especially when Cal/OSHA has primary investigatory responsibility.

Safety Programs are another example of where the lack of a designated Safety and Training Officer is being felt. In Santa Barbara County's case, the Safety and Training Officer would have to re-start building an NFPA 1500 compliant program. Many of the pieces are there already and in some instances, it is a matter of organization.

Finding #29: During the review for training records and certifications, it was discovered that records and certifications are not entered into the *Firehouse* RMS software 100 percent of the time and being able to determine if a person is certified to perform the tasks is not readily available or current.

Finding #30: During Citygate's review of the Technical Rescue SOPs, we found occasional reference to best practices, but they are lacking consistent reference to many of the best practices. However, that is not to say that the SOPs are poorly written or do not meet the general conditions normally found in compliant documents. They are clearly written and appear to be similar to SOPs in use throughout the fire service, but need to be tied to published standards and best practice references.

Finding #31: The Department is responsible to provide hazardous materials responses to the unincorporated County areas as well as other local jurisdictions. The limited staffing and training regionally is a hindrance to the program.

Finding #32: The Department Air Operations Section is a best practices, robust, multi-mission operation. They operate with a lean flight and maintenance staff in a building already shared with the Sheriff's operation.

Finding #33: Given the unique nature of firefighting operations and the huge countywide need for almost 12-month aviation support, it makes sense for the Fire Aviation Unit to

also handle all other types of technical rescues. It is a rare best practice to site the aviation assets close to a fire station to share the firefighter crew costs.

Finding #34: Citygate finds the dispatch cost per call the highest it has ever seen. The norm for a regional center is to charge from $35 to $50 per call depending on how capital equipment replacement is amortized into the annual operating cost rate. We could not be provided with a rationale for the charge rate other than it was set years ago during County staff budget discussions.

Finding #35: Dispatchers do not monitor fire scene communications and if the Incident Commander does not hear a firefighter mayday request, a severe injury or death could occur.

Citygate's findings for the County as noted in Section 4 Fiscal Analysis are:

Finding #36: Present Fire Department revenue sources are not projected to rise fast enough to keep up with the rising cost of providing the *current level* of fire services. Unless new sources of revenue are developed for the Department, fire service levels will need to be reduced further because expenditures are expected to exceed revenue by an aggregate of $14.8 million by FY 2015-16. This is an annual deficit that will grow from an estimated $1.8 million next year to $3.8 million in FY 2015-16.

Finding #37: Without an increased County General Fund subsidy and/or new revenue sources, further reductions in fire services will need to come from fire station staffing, because additional reductions in Administrative and Support Services will seriously affect the safety and adequacy of training of fire line personnel.

Finding #38: The County Fire Department has a growing backlog of building and equipment replacement/relocation needs. The County currently estimates that the cumulative annual debt payment is approximately $6,000,000, in current dollars, to meet all of these capital improvement needs.

The following recommendations for the headquarters and support functions for the County's Fire Department can be accomplished over time as County fiscal resources allow. These recommendations also provide the command staff the information from which to prioritize the resources, both in staff and funding that they do have.

Recommendation #5: **Training/Safety/EMS Program:** The Department and the County need to work together to ensure that a robust and effective training and safety program exists. The Department does many of the following components, but they need adequate staffing, supplies, and facilities. A quality training program should include the following ten major components:

5.1 The Training/EMS Oversight and Safety programs need at least two positions added, one Fire Captain and the EMS Nurse. Also, the Administrative Assistant should be increased to full-time.

5.2 Drills should be regularly scheduled where firefighters practice the essential knowledge, skills and abilities they need to do their jobs safely and effectively. This drill schedule needs to include in-station practice on the apparatus, tools and equipment they use, practice at a training facility coordinating with other companies, and a walk-through of major facilities to familiarize firefighters with the risks in those structures.

5.3 The Department should assure that adequate staffing is available to input and retrieve all training records of personnel assuring that mandatory training and drills are accomplished in accordance with policy. Training the company officers to use the Department's RMS and retrieve reports is essential. Training the Administrative Office Professional (AOP) to run reports and input data would help as well.

5.4 Career development training should be implemented where firefighters develop the mental knowledge, skills and abilities associated with advancement as driver/operators, company officers, chief officers and finally, fire chiefs. This is achieved through a combination of fire service training courses at each level and higher education available through community colleges and universities.

5.5 Specialized training for firefighters assigned as paramedics, prevention officers, hazardous materials responders and technical rescuers should be implemented. Training in much of this arena is governed by statute and cannot be ignored for very long or the Department could find itself out of compliance with statutes while it is attending to these emergencies. This is also a training arena that is constantly evolving as new techniques, new equipment and tools, and new challenges are addressed.

5.6 Mentoring for firefighters by senior members in the Department to ensure their development in those areas where training is needed. The International Association of Fire Chiefs, in their Officer Development Handbook, calls it "the pursuit of the

planned, progressive life-long process of education, training, self-development and experience."

5.7 The Department should review and evaluate the affect the loss of the nurse had on QA/QI, certification, and continuing education requirements, and replace that position. Review the assumed fact that the Local EMS Agency is in fact tracking the certifications and continuing education requirements for the firefighters.

5.8 The Department and County should continue conversation with Alan Hancock College to develop a joint-use fire training facility for the members.

5.9 The Department should discuss and clarify how the OSHA requirement for 2-in/2-out is handled in accordance with the rules and OSHA interpretations.

5.10 The Department should establish training and certification requirements based on national best practices for a safety officer to be on scene or available at every incident for structure fires.

Recommendation #6: The County's capital facility funding program should find the funds to site and build an adequate training center.

Recommendation #7: **Succession Plan:** There will be a significant turnover in the administrative chief officers in the next 2 to 5 years. During that delayed time, the Department could conduct a review and fund the development of a mentoring and training program for fire captains and battalion chiefs to take the places of those leaving, not allowing a void in leadership of the organization.

Recommendation #8: **SOP Review:** As time and resources permit, review the Department's emergency operations Standard Operating Procedure (SOP) documents and compare them with the appropriate best practices. Edit them, as needed, to ensure compliance. Notate in the documents that they are compliant with the particular edition of the appropriate best practice. As these best practices are revised and updated, update the Department's SOPs.

Recommendation #9: **Finance Manager:** The Department needs a new position to provide strategic budget planning and to supervise daily operations in departmental finance operations. This position would also increase internal controls by adding another check and balance position over

cash and purchasing/contracts administrations. The existing position would do daily operations and the Finance Manager would exercise oversight.

Recommendation #10: **Office Support and Logistics Positions:** The County should undertake an analysis of the administrative support needs of the Support Services Division, Prevention Division, Fire Administration, and Fire Operations support functions as soon as possible.

Recommendation #11: **Technology Plan:** The Fire Department needs a technology master plan to:

- Automate end-to-end the inspection, permitting and revenue collection programs.
- Improve the dispatch and fire records systems to meet the need for and provide management information and metrics with which to manage the Department's programs.
- Maintain and keep technology replacement programs current for radios and field service technologies.
- Appropriately staff the agency's needs.

Recommendation #12: **Technology Position:** The Department needs a dedicated, non-sworn technology support position. As funding permits, replace the vacant Systems and Program analyst position. This position is to plan, direct and provide Quality Assurance for all computer systems, e-records, fire radios, and station alerting systems. This should include adding back additional support personnel in technology to assist with all technology issues including mobile computers, dispatch and mapping.

Recommendation #13: **Public Education:** The County, as funds permit, needs to redesign and fund the delivery of fire prevention education. This program does not have to be done by a Fire Department sworn officer position. The public education programs deserve emphasis as a key Fire Department service to the community, to include the requisite staffing hours and media material resources for public outreach.

Recommendation #14: **Logistics Facility:** The Department, in conjunction with County facilities, should review existing County facilities or vacant warehouse property to relocate the logistic section to a more centrally located, larger facility. If a cost-effective site, meeting the business needs of the Department is not available, then the County should plan

on replacing and expanding as necessary the Department's logistics facility.

As revenues permit, the logistics unit should have two more non-sworn personnel trained in logistics added.

Recommendation #15: **CUPA/Hazardous Materials:** The County should consider doing a staffing and economic analysis of the CUPA, LUFT and SMU hours, costs, and revenues. The December 2011 fee increase report to the Board of Supervisors indicated that up to 4 additional inspectors might be needed in the near term to handle the workloads. These programs should be self-sustaining under a fee system.

Recommendation #16: **Administrative Support:** There are currently 5.5 FTEs assigned Administrative Office Professional duties in the Fire Prevention Division. The workload for the Division should be reviewed and determine if there needs to be more staffing.

Recommendation #17: The Department, in conjunction with the County, should review the fleet, the existing depreciation limits and how or if it is affecting ongoing maintenance costs and emergency responses due to breakdowns. In addition, deployment patterns should be reviewed to validate mileage usage.

Recommendation #18: The Fire apparatus replacement fund needs to provide the funds to replace at least, in the very near term, the identified 8 engines and ambulances. The fund should be re-evaluated to be sure all apparatus are included and that the expected replacement costs are consistent with inflation and safety changes mandated on fire apparatus.

Recommendation #19: **Vehicle Maintenance Review:** The Department should complete a side-by-side review of the NFPA best practices and the Vehicle Code requirements to ensure that the Santa Barbara County Fire Department Apparatus Maintenance Program is consistent and 100 percent in compliance.

Recommendation #20: The County could consider adding a mobile mechanic position to handle minor repairs and maintenance in the fire stations, to decrease downtime and keep fire engines in their assigned areas.

Recommendation #21: **Safety Program:** The Department needs to start by developing an action plan and a resource request to comply with NFPA 1500 Annex B Fire Service Program Occupational Safety and Health Program

Worksheet. This twenty-five-page document lists every component of a top-notch program and guides the Department through an analysis of compliance and the steps necessary to achieve compliance where it is lacking. This first step will lead to eventual full compliance.

Recommendation #22: **SOP Review:** This is another example of where the lack of a designated Safety and Training Officer is being felt. Making sure that operations guidelines meet current best practices and legal requirements is one of the important tasks assigned to Training Officers. As time and resources permit, review the SOPs and compare them with the appropriate best practices. Edit them, as needed to ensure compliance. Notate in the documents that they are compliant with the particular edition of the appropriate best practice. As these best practices are revised and updated, update the Department's SOPs.

Recommendation #23: The Department should reinvigorate and enthusiastically support the program to include regional partners, training and personnel commitments.

Recommendation #24: The County could develop a plan to fund the complete deployment of paramedics on each County fire engine, one per engine, per day within the next generation agreement with its ambulance contractor.

Recommendation #25: The County should review the appropriateness of the per-call dispatch charge to the Fire Department to bring into balance the charge with the true cost of the service, given that the fire call load in the center is a fraction of all the other agency communications combined.

Recommendation #26: The Communications Center and Department should review their policies on how fire ground communications are monitored and how firefighter safety is accomplished during an emergency traffic incident towards ensuring that two personnel are monitoring the radio traffic, one of which is in the communications center.

Citygate's recommendations for the County as noted in Section 4 Fiscal Analysis are:

Recommendation #27: If the County is unable to 1) find or develop a revenue source to solve the structural deficit in FY 2012-13 or 2) extend the salary and benefit concessions agreed to by the employees for the current year and only part way through next year, then it is recommended 3) the County take the actions as discussed in the deployment section of this report on page 17 by limiting the use of overtime and then temporarily

closing a fire station on a rotating basis when daily staffing is not sufficient to staff all stations.

Recommendation #28: If the County is interested in pursuing implementation of their Capital Improvement Plan items for the Fire Department, the plan should be referred to the County staff to develop a priority listing that is integrated with whatever operational recommendations are adopted and then a refined cost estimate and debt financing plan developed based on interest rates available at the time.

Recommendation #29: If the County Board of Supervisors is interested in increasing the amount of Property Tax permanently allocated to the Fire District, they could request the CAO's Office to provide a detailed plan that would phase in the transfer over the number of years specified by the Board.

5.3 PRIORITIES AND TIMING

Some of the recommendations in this planning effort requiring minimal additional resources and can be implemented in parallel. Others will take several fiscal years, both in time and funding. Given these two realities, Citygate recommends the following short- and long-term steps:

5.3.1 Step One

- Receive the policy recommendations of this fire services study and adopt revised Fire Department performance measures to drive the effective and efficient deployment of firefighting and emergency medical resources;
- Research and design how to provide the funds necessary to retain the current level of service, or absent new revenue, make the service and other compensation reductions to eliminate the structural deficit in the Fire District budget;
- Provide funding to add back critical command, training, and safety personnel;
- Begin the discussion to research and design how to provide funding to restore and enhance services in order to provide at least a suburban level of service to the most populated areas.

5.3.2 Step Two

- Seek approval for the desired funding plans.

5.3.3 Step Three

- After ensuring funding for the present level of service, then restore headquarters positions where staffing was cut back;

- Add a third Duty Battalion Chief per day in the mid-county;
- Begin a phased plan to increase staffing from three to four firefighters per engine for higher population/risk areas and at the more remote fire stations;
- Commence a capital design, funding and construction plan for fire facility improvements plus new and replacement fire apparatus not already funded in the fleet replacement plan.