

CITYGATE ASSOCIATES, LLC

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MANAGEMENT CONSULTANTS ■

■ ■

FIRE DEPARTMENT MASTER PLAN FOR THE CITY OF SAN LUIS OBISPO, CA

VOLUME 1 OF 3 – MAIN REPORT

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FIRE & EMERGENCY SERVICES



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EXECUTIVE SUMMARY

The City of San Luis Obispo retained Citygate Associates, LLC to conduct a fire department planning study to include:

- ◆ A Standard of Response Cover planning analysis (fire station and crew deployment) to examine the levels of fire department service by occupancy type and land use classification;
- ◆ Fire station and staffing infrastructure triggers for additional resources, if needed;
- ◆ An analysis of headquarters and prevention systems;
- ◆ Order of magnitude costs and possible financing strategies for changes to the Fire Department.

This comprehensive study is presented in several sections including: this Executive Summary summarizing the most important findings and recommendations; the fire station/crew deployment analysis supported by maps and response statistics; the assessment of headquarters functions; and the fiscal costs and financing options associated with the proposed recommendations. The final section integrates all of the findings and recommendations presented throughout the report and concludes with suggested priorities.

It needs to be stated at the front of this study that Citygate Associates team members who spent time in City of San Luis Obispo found the fire staff at all levels very cooperative and helpful. They are committed to their city, agency, and mission. Given the struggle to keep up while coping with tight revenues, there is pride and on-going 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. We find even with the suggested improvements needed over time, that the City of San Luis Obispo Fire Department is one of the best suburban agencies we have had the pleasure to work with. This study needs to be taken in the context of a “best practices tune-up” for a good agency, not a set of fixes for an agency that is behind the times.

POLICY CHOICES FRAMEWORK

As a starting point, San Luis Obispo 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* (see regulatory discussion on page 14). Given this situation, the overall challenge for the City is to design fire services within the fiscal constraints that limit the City’s ability to staff, train and equip a safe and effective fire/medical response force.

OVERALL CITYGATE PERSPECTIVE ON THE STATE OF SAN LUIS OBISPO’S FIRE SERVICES

In brief, Citygate finds that the challenge of providing fire services in the City is similar to that found in many California cities: 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.

The City has recognized 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 or elderly residents and the threat of wildland fires on the City's edges. To meet these challenges, the City has adopted safety codes and inspection programs more strenuous than those mandated by state minimums. Examples include the automatic fire sprinkler ordinance, hazardous materials code enforcement, and the newer multi-dwelling property inspection program.

For the risks present in San Luis Obispo, which are more often found in much larger communities, and given the modest quantity of on-duty firefighters, the City's commitment to fire prevention programs **must** be continued and not seen as "nice-to-have" in tough economic times.

As much as San Luis Obispo Fire Department as a "full service agency" wants to do all of the programs that an "all risk" fire department does, it does not *currently* have the resources in terms of funds, time and personnel to fulfill this varied mission effectively in every area. This is not a unique circumstance. Many moderate-sized departments, one to four stations in size, have this difficulty. This Master Plan will offer advice on giving priority to high frequency, high impact programs during the economic downturn. Over time, as resources increase, so can fire department programs.

Citygate evaluated all aspects of the Fire Department during the preparation of this deployment study and fire prevention systems review including fiscal recommendations, and *three critical* challenges for the City emerged. To address each of these challenges, there are findings and recommendations that deserve specific and particular consideration.

Throughout this report, Citygate makes observations, key findings and, where appropriate, specific action item recommendations. Starting in Section 5 on page 93, all the findings and recommendations are presented together, in order. Overall, there are 21 key findings and 20 specific action item recommendations.

It is imperative 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 for the resources to do an even better job for the citizens of San Luis Obispo.

In this Executive Summary, instead of citing all the findings and recommendations, Citygate will *only highlight the most critical ones* across three challenges:

MAIN CHALLENGES

One can summarize the fire service challenges that face the City in three themes: (1) *insufficient firefighter staffing in the existing system along with the need for an additional station in the annexation growth area*; (2) *the modest need to increase headquarters program functions*; and (3) *the need for a set of fiscal policies to fund improvements in fire services in conjunction with new development*.

Because of slow growth of revenue over the past decade due to recessions and state revenue policies towards the cities, the City has not been able to increase career staffed field resources;

while at the same time, it had to limit the headquarters support personnel and supply needs. While City Measure “Y” has helped in recent years by restoring two positions to the fire headquarters team, the measure was designed before the recent and severe national economic downturn. As such, the City currently still has insufficient resources for all of its annual operating needs.

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

Fire department deployment, simply stated, is about the *speed* and *weight* of the attack. Speed calls for first-due, all risk intervention units (engines, ladder trucks and specialty companies) strategically located across a department. These units are tasked with controlling everyday average emergencies without the incident escalating to second alarm or greater size, which then unnecessarily depletes the department’s resources as multiple requests for service occur. Weight is about multiple-unit response for significant emergencies like a “room and contents structure fire,” a multiple-patient incident, a vehicle accident with extrication required, or a complex rescue or wildland fire 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.

In Section 2 of this study, Standards of Response Cover (Station/Staffing) Analysis, Citygate’s analysis of prior response statistics and use of geographic mapping tools reveals that the City has a speed and weight of attack problem. There are currently not enough on-duty firefighters citywide to handle more than one modest building fire emergency or 1 to 3 less serious emergencies at once. To fill out an appropriate initial attack force on serious fires, the City must send all of its four fire station crews, plus at least one County fire crew, if the County is even immediately available and close by to respond.

The current City fire service deployment system has served the community well in the past before but is now increasingly strained to handle more than one serious event and to provide equitable coverage in all of the emerging suburban population density neighborhoods that could develop in the southern annexation areas. The City can consider growing its fire defenses commensurate with the risk and call for service growth; however, that will not occur until there is a significant economic recovery in *local* revenues.

While no one city (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 neighborhoods, as well as be able to provide an effective initial response force (first alarm) to moderately serious building fires.

Due to the local economy, the City has struggled over the decades to increase the daily firefighter staffing as the population and calls for service have significantly increased. As the following table shows, the daily firefighter (not counting the Battalion Chief) count of 13 is only two more than was provided *30 years ago* in 1978:

Historical Daily Firefighter Staffing in the City

Year	Population	Minimum Staffing	Calls for Service
1978	34,050	11	1,095
2002	44,399	12	3,952
2004	44,163	13	4,263
2008	44,489	13	4,154

The City is close to a desirable goal of being self-sufficient for usual and customary emergencies by fielding four fire companies per day. However, there are two gaps that, over time, could be improved as fiscal resources allow:

1. The lack of 4-minute primary unit coverage by a City unit in the southern annexation areas;
2. Not enough total firefighters on duty to field an effective initial force to serious fires without help from the County Fire Department.

While the City could staff each of the three existing fire engines with 4 firefighters per day minimum, up from three, replacing the staffing reliance on the County for one additional 3-firefighter engine on a first alarm fire, it does not address response times in the southern annexation area or allow simultaneous calls to be covered by a 5th unit in the event a County unit is not available.

Over time, as fiscal resources further allow, if the City added a 5th fire station and crew in the southern annexation area, and staffed the engine with a minimum of three personnel, then the daily staffing increases to 16 per day (plus the Battalion Chief) would improve the response times in the southern part of the City. Moreover, the increase also would improve City-based staffing to serious multiple-unit emergencies in alignment with national best practice recommendations. Therefore, adding a 5th fire station and crew improves all the response system deficits identified in this study.

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

Finding #1: The City does not have a fire deployment measure adopted by the City Council 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 #3: Given the travel distances in the existing southwest and southern annexation areas, a 5th fire station is desirable, when the annexation areas fully develop.

Finding #4: If an additional fire company location could be funded, effective first-due unit coverage can be obtained at the build-out of the City from five (5) fire station sites, at 4 minutes travel time.

Finding #5: While multiple-unit coverage is currently adequate in the core of the City, it depends on successful, timely, mutual aid from either of the two County stations, which are not always available. A future 5th City fire station will increase multiple-unit coverage in the southwest and southern areas, as well as lessen dependence on the two County fire stations.

Finding #10: The City benefits from the mutual aid regional response system. While this system cannot replace existing City stations or units, the City should continue to participate in this valuable support system for simultaneous calls for service and multiple-unit serious emergencies.

Recommendation #1: The City should adopt revised performance measures to direct fire station location planning and to monitor the operation of the Department. The measures should take into account a realistic company turnout time of 2 minutes and be designed to deliver outcomes that will save patients medically salvageable upon arrival; and to keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:

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

1.2 Multiple-Unit Effective Response Force for Serious Emergencies: To confine fires near the room of origin, to stop wildland fires to under 3 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 14 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1 minute dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units.

Recommendation #2: As fiscal resources allow, the most beneficial next improvement in fire services the City could make would be to add a fire station in the southern City area equipped with one fire engine and a 3-person crew.

Recommendation #3: The City should adopt fire deployment measures for the emerging southern annexation areas, ranging from rural to emerging suburban

to suburban based on population, along the lines of this table modeled after the recommendations in NFPA 1720 on combination (volunteer) fire services. These measures would allow the City to define the services that can be cost effectively delivered in the early annexation period and then set the trigger point for adding fire services.

Proposed Deployment Measures Based on Population Densities

	Suburban	Emerging Suburban	Rural
	>1,000 people/sq. mi.	250-1,000 people/sq. mi.	<250 people/sq. mi.
1 st Due Travel Time	4	8	12
Total Reflex Time	7	11	15
1st Alarm Travel Time	8	12	16
1st Alarm Total Reflex	11	15	19

Recommendation #4: The City needs to fund a fire records system that is National Fire Incident Reporting System (NFIRS) version 5 compliant.

Recommendation #5: If, prior to the funding being available to operate a 5th fire station, the City had partial funding to increase the number of daily firefighters, it could do so by increasing Station 1 from 4 firefighters to 5 firefighters per day. This would allow either:

- ◆ A 3-person engine company to respond to medical emergencies and small fires, while the other two personnel would still cover a dedicated ladder truck and be able to respond to structure fires and technical rescue calls citywide where the crew could combine with an engine crew(s).
- ◆ Or, three personnel would staff an engine/ladder “quint” apparatus and two personnel would respond in a squad to downtown area medical emergencies.

Both of these staffing options require additional discussion with the firefighters’ representatives and making the decision on if the current “quint” should be replaced with a dedicated ladder truck.

When the City can add a 6th firefighter per day to Station 1, then split the crews into two 3-firefighter crews and open the 5th station.

In a last phase, as funding allows at the build-out of the City, the City can increase the staffing at Station 1 on the pumper/ladder unit to 4 firefighters per day, which is a much more effective team to operate a ladder truck at a serious building fire.

Challenge 2: Headquarters Program Functions

A fire department San Luis Obispo'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 an organization that should generally meet the needs of a department the size of San Luis Obispo's. However, due to the fiscal pressures on the City, there has been greater emphasis on staffing fire companies to provide emergency response than on the needs of the management team to coordinate and lead the organization. As the City struggled with its shrinking finances, it froze some staff positions in some of the essential fire headquarters support positions. This situation developed as an interim solution until the budget situation would improve.

Given the on-going revenue challenge situation, the role of the San Luis Obispo Fire Department services in the community needs to be re-assessed for some programs. The Department does not, and will not for some time, have the size nor depth to be all things to all people and must prudently choose what emergency and prevention responsibilities it can successfully carry out. Each of the roles, such as hazardous materials inspections, technical rescue, hazardous materials response, or public education requires the dedication of resources, personnel time, operational funds, and management oversight, which the Department has in short supply.

This means the leadership team must focus on the programs having the greatest frequency of need or that impact firefighter and citizen safety. Many of the pieces are in place to make this happen, the hard part is choosing the programs and providing the effective direction to the Department to make things happen. In today's litigious society with the ever-increasing oversight of the fire service by state and federal regulators, the San Luis Obispo Fire Department cannot afford to ignore health, safety, training, and legal mandates while simultaneously loading itself down with self-imposed restrictions that consume precious resources.

Citygate understands the City's severe fiscal situation and does not find the headquarters function *significantly* insufficient. In particular, for a city its size, there is a significant commitment to fire prevention programs. However, the following findings and recommendations do point the way for the Fire Chief and staff to first prioritize the current resources to the highest priority needs and to provide a road map from which to request additional resources as the City finds the ability to provide them.

The following recommendations for the headquarters and support functions for the San Luis Obispo Fire Department can be accomplished over time as City 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:

Finding #12: Given the scope of programs in the Department, the need for executive oversight of these programs, and the need for a trained, certified Fire Chief level position to back-up the on-duty Battalion Chief, the Department needs a second in command chief (Deputy Chief). The Department is not top heavy with only the Fire Chief and four Battalion Chiefs. The Fire Chief also has to manage citywide disaster preparedness, which has no staff assigned in the Department. Given all these

issues, the Department is clearly large enough for a second in command to the Fire Chief, at a Deputy Chief level position.

Finding #13: The size, scope and advanced programs in the Fire Prevention programs for a City the size of San Luis Obispo are exceptional in breadth and quality. The City is making a real effort to prevent fires, which allows it to limit loss and the overall quantity of needed firefighters.

Finding #15: While the City has been able to invest in a new central station and headquarters, the other three stations are 30-55 years old, and when built, were not constructed to be 50-100 year facilities. They have been given some upgrades, but more will be necessary. In other cities today, the more common size for a single fire company neighborhood station with space for reserve apparatus, separate gender areas and on-site outdoor activity space is an approximately 5,000 square foot and larger building on at least a 1+ acre site. The City will soon be facing significant repair and upgrade needs at the three neighborhood fire stations. The fire training area is crowded and produces noise and smoke at times better suited to a more outer city or industrial zone area.

Recommendation #7: The Department needs to add an Operations Chief (Deputy Chief position) as soon as fiscally possible. There are too many large programs without enough supervision and coordination or the Fire Chief alone to handle, much less have the time to plan and be an overall effective City Department Head.

Recommendation #8: Given the economic constraints on adding more staff to fire prevention over the foreseeable life of this fire master plan, the Department may have to begin to triage its fire inspection services to the most critical occupancies if workload exceeds available staffing. Those with smaller fire code requirements and risk for fire are going to have to be inspected on a longer cycle or even be moved to a self-inspection program.

As the City grows and has increased economic resources, a workload analysis should be done on fire prevention, and as needed, additional inspection and clerical resources will probably need to be added.

Recommendation #9: Given the City's strong commitment to prevention as evidenced by its fire sprinkler requirements, the City should continue to invest more in the wildland fuel reduction program. The City will never have enough firefighters on duty to prevent a wildland conflagration. Individual properties have to be educated on defensible space issues and the need for fuel reduction.

Recommendation #11: The City should program for an extensive evaluation of its fire station and fire training building needs, and then make long-term, cost-effective Capital Improvement Project decisions to either continue to repair the three older stations, or given the small parcel sizes and ages, re-build them completely nearby.

Additionally, the City should investigate other fire training areas and partnerships with County Fire, police agencies and the colleges.

Challenge 3: Costs and Funding Strategies

The current local government revenue structure in California makes it highly unlikely that the City can fund the recommended fire service improvements and facility replacements without some additional sources of revenue. New residential development, particularly if not accompanied by new high sales tax generating commercial business, will not generate sufficient new General Fund revenue to pay its share of both current City services and at least new minimally adequate fire and medical emergency response services to serve the development.

The fiscal chapter of this study on page 88 summarizes the funding strategies for new development that cities in California can use to grow fire services commensurate with new development. No one strategy is perfect, either fiscally or politically. The City has time during the current new construction slow down to consider the alternatives and choose the best-fit method to use going forward once new construction restarts to the eventual build-out of the General Plan.

FIRE PLAN PHASING AND COSTS

The following costs are estimated in current dollars to show the order of magnitude of what is ahead for City fire services in the mid term to build-out.

If the City decides to begin adding staff to the stations 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 08-09 dollars.

Sample Phasing and Additional Cost Plan

Phase	Item	Operating Cost	Capital Cost
One	Detailed study and costing of the fire plan Recommendations	Staff Time	
Two	Add a Deputy Fire Chief position	\$ 225,587	\$ 77,000
	Dep. Chief vehicle and office space Conduct a repair/replacement study for the older fire stations	\$ 75,000	
Three	Staff a 5 th fire station with a 3-person crew	\$1,735,036	\$2,750,000
	Construct a 5 th fire station without land costs 5 th Station Fire Pumper		\$ 450,000
Four	Add one fire inspector and one clerical support position	\$ 238,928	
	Outer Year Totals:	<u>\$2,274,551</u>	<u>\$3,277,000</u>
<i>Long Term</i>	<i>Total Replacement of Fire Stations 2 and 3</i>		\$5.5M

Priority One

- ◆ Absorb the policy recommendations of this fire services study and adopt revised fire department performance measures to drive the location and timing of fire stations.
- ◆ If one-time funding can be identified, purchase an NFIRS 5 compliant fire department integrated records system.
- ◆ When on-going funding becomes available, add an Operations Chief (Deputy Chief position).

Priority Two

- ◆ If one-time funding can be identified, study in-depth the older fire facilities and make long-term repair or replacement decisions.
- ◆ Begin to identify and conduct the appropriate due-diligence steps to identify and eventually secure or purchase a 5th fire station site in the southern annexation area.
- ◆ Using one-time funding or federal grants, plan for and replace the older fire hose inventory and structure fire breathing apparatus units.

On-Going

- ◆ Continue to support fire prevention programs, especially in the areas of wildfire and fuel reduction programs.
- ◆ As the economy recovers, look in-depth at the increased commercial construction and the need for fire code inspection services over the long term. Identify the staff impacts and plan as necessary for additional fire inspection and clerical support positions.
- ◆ When the ambulance agreement comes up for re-consideration, discuss the need for the Department to have fiscal support towards establishing a paramedic program supervisor, as a sworn or unsworn position.

SECTION 1—INTRODUCTION AND BACKGROUND

1.1 REPORT ORGANIZATION

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

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

- Section 1 Introduction and Background: Background facts about San Luis Obispo's current Fire Services.
- Section 2 Standards of Response Cover (Staffing/Station) 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 Analysis: An outline of the costs and likely financing strategies to implement this plan's recommendations.
- Section 5 Recommended Solutions and Phasing Strategies: An integrated recommendations and conclusions section.

Separately attached:

Volume 2 Response Coverage Geographic Maps

Volume 3 In-depth Response Statistics Appendix

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 the first three sections of this report. To provide a comprehensive summary a complete listing of all these same findings and recommendations in order is in Section 5. Finally, the report brings attention to the highest priority needs and possible timing.

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

The result is a solid technical foundation upon which to understand the advantages and disadvantages of the choices facing the San Luis Obispo 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 San Luis Obispo, neither this report nor the Citygate consulting team can make the final decisions or cost out in detail every possible alternative. Once final Master Plan choices are given policy approval, City staff can conduct any final costing and fiscal analysis.

1.2 BACKGROUND

This project involved the development of a Fire Services Deployment and Administrative Services Master Plan. This effort involved the study of the fire services risk within the City of San Luis Obispo. In this report, the term “Department” will be used when referring to the fire agency itself, and the term “City” will be used when referring to the City of San Luis Obispo.

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

The challenges facing the City are not unique. At the start of this project in the summer of 2008, San Luis Obispo faced the challenges that all California communities did in revenue not matching needs in an atmosphere made worse by a state budget deficit. By late fall, the national economy was in disarray and the California budget was already out-of-balance. This Fire Master Plan has to acknowledge that the City may desire improved fire services, but in the near term cannot afford any improvements. Thus, the plan will have to suggest how to prioritize existing services to revenues, while laying out a future improvements road map that can be followed when revenue growth occurs.

1.3 SAN LUIS OBISPO PROJECT APPROACH AND RESEARCH METHODS

Citygate used several tools to gather, understand, and model information about the City and Fire Department for this study. We started by making a large document request to the Department to gain background information on costs, current and prior service levels, the history of service level decisions and what other prior studies, if any, had to say. We asked the Department to have each of the members responsible for a program or segment to complete a SWOT questionnaire and 42 of these were received.¹

¹ 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.

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

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

1.4 SAN LUIS OBISPO FIRE DEPARTMENT BACKGROUND INFORMATION

San Luis Obispo (Spanish for St. Louis the Bishop), is located near the coast roughly midway between San Francisco and Los Angeles on US Highway 101. It is the county seat of San Luis Obispo County and the home of California Polytechnic State University (Cal Poly). The City is the commercial, cultural and governmental center of San Luis Obispo County. It is one of California's oldest communities being founded in 1772 by Father Junipero Serra on the site of a Chumash Indian village named Tilhini and is the fifth Spanish mission of the 21 missions in California.

The City is 10.8 square miles in size. The Pacific Ocean lies 12 miles west of the City and the Santa Lucia Mountains, part of California's Coast Range, lie to the east. San Luis Obispo is a seismically active area; there are a number of faults nearby including the San Andreas Fault.

The Union Pacific Railroad between Oakland and Los Angeles passes through the center of San Luis Obispo.

The demographic profile of San Luis Obispo as of 2008:

Population	44,239	
Households	18,639	
Density	4,144 per square mile	
Housing Units	20,222	
Age profile	Under 18	14.2%
	18 to 24	33.6%
	25 to 44	23.7%
	45 to 64	16.5%
	65 or older	12.1%

The 2007 median household income in the City was \$42,900 (compared to a California median of \$59,948 in California) and the median home price dropped from \$650,000 in 2006 to

\$500,000 in 2008. 7.1 percent of the families are below the poverty line. The unemployment rate is 7.4 percent, although 40.9 percent of the people have a bachelors degree or higher.

Because of its location on Highway 101, San Luis Obispo has long been a stop off for travelers between San Francisco Bay Area and the Los Angeles metropolitan area. The Madonna Inn is a particularly notable landmark in the City.

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 that limit the flexibility of cities in determining their staffing levels, training, and methods of operation. These are given an abbreviated overview below:

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

While under OSHA policy one of the outside “two-out” personnel can also be the incident commander (typically a chief officer) or fire apparatus operator, this person must be fully suited-up in protective clothing, have a breathing apparatus donned except for the face piece, meet all physical requirements to enter IDLH atmospheres and thus be ready to immediately help with the rescue of interior firefighters in trouble. However, given these stipulations and the operating complications they cause, the four-city automatic aid partnership to which San Luis Obispo belongs, does not recognize the incident commander as one of the “two out” personnel, since to send the incident commander inside to perform a firefighter rescue means the incident totally loses command and control, generating more safety problems.

2. May 2001 National Staffing Guidelines – The National Fire Protection Association (NFPA) Standard on Career Fire Service Deployment was issued seven 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. These guidelines will be

explained and compared to San Luis Obispo in the deployment measures section of this document.

3. The on-scene Incident Commanders (Battalion Chiefs) at Hazardous Materials Incidents must have certification compliant with NFPA 472, Standard for Emergency Response to Hazardous Materials Incidents. This is also now an OSHA requirement.
4. 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

While San Luis Obispo does not operate a volunteer firefighter system, wholly or in part, a common question is why not solve some of a city’s fire staffing problems 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:

1. Economic pressures result in more two-income families and less time to volunteer.
2. In a commuter economy, more jobs are clustered in metropolitan and dense suburban areas. Communities like San Luis Obispo, 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.
3. Due to the growth in society of complex systems and technology, the fire service was given more missions, like emergency medical services, hazardous materials response, and technical rescue. This dramatically increased the legally mandated training hours for volunteers, causing many to drop out as the time commitments became unbearable.

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 before a volunteer goes on a single incident.

In addition, most employers today are unwilling to allow volunteers to leave their jobs to respond to an emergency dispatch. Across the fire service, volunteer programs have been changing and adapting to a different model. The current model understands the commitment needed, and

usually includes two types of volunteers: the first is the usual community-based person; the second is a younger person who desires to be a career firefighter. While the younger person is going through community college fire science classes, after obtaining basic firefighter certification, they work “part-time” for shift stipend or for an hourly wage, without benefits. These personnel are used successfully to increase daily station staffing and are called “reserve” firefighters or part-time firefighters. They do not need to live in the community they serve, as they are often not needed to respond from home with quick travel times. Community-based volunteers can be used from home for major emergencies, within their limited training as they gain certifications and experience. Once they meet state minimums, they also can be used for per diem shifts.

As this report will explain in detail, San Luis Obispo fire services are already spread thin and understaffed 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 San Luis Obispo Fire 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 seriously drain the already thin headquarters staffing from managing critical day-to-day operations.

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

Section Intent: This section serves as an in-depth analysis of the current City’s ability to deploy and meet the emergency risks presented in the City. The response analysis will use prior response statistics and geographic mapping to help the City Council and community visualize what the current response system can and cannot deliver.

2.1 GENERAL FIRE DEPLOYMENT BACKGROUND INFORMATION

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

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

While working with multiple components to conduct a deployment analysis is admittedly more work, it yields a much better result than any singular component can. If we only look to travel time, for instance, and 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 Standard of Response Cover process consists of eight parts:

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

Fire department deployment, simply stated, is about the *speed* and *weight* of the attack. Speed calls for first-due, all risk intervention units (engines 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 amass together quickly enough to be effective in major emergencies.

Given the need for companies to be stationed throughout a community for prompt response instead of all companies responding from a central fire station, communities such as San Luis Obispo 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 Cover process (at varying levels of detail) to understand the risks in the City, how the City 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 City so that the study can recommend changes, if any, in fire services to the City's service area.

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

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

2.2 SAN LUIS OBISPO COMMUNITY OUTCOME EXPECTATIONS – WHAT IS EXPECTED OF THE FIRE DEPARTMENT?

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

The community, 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 City is to maintain an equitable level of fire service deployment across the entire City 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 would like to see first-due fire engines 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. The newer National Fire Protection Association (NFPA) guideline 1710 on fire services deployment suggests a 4-minute travel time for the initial fire apparatus response and 8 minutes travel time maximum for the follow-on units. This recommendation is for departments that are substantially staffed by career firefighters, as the City is.

The ISO grades community fire defenses on a 10-point scale, with Class 1 being the best. Historically, the City has been evaluated as a Class 2 department, meaning the fire engine and ladder truck coverage is adequate and similar to many suburban density areas (Class 2) fire departments. For many reasons, it is not necessary for an agency to only deploy to meet the ISO measures. The ISO criteria are designed to evaluate the fire protection system for underwriting purposes a 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. Also, 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 can only live 8 to 10 minutes maximum 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:

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

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

2.2.1 San Luis Obispo Existing Policy

The City's General Plan Safety Element, in Chapter 5, in Section 9.3a “Discussion” states that, “The Fire Department has set a response time objective of 4 minutes.” This measure does not state the beginning and end measurement points for the 4 minutes. So as written, this time interval could be driving time, or also include part or all of the steps of dispatching the crew.

Since this measure is identified in a discussion section of the General Plan Safety element and further worded as “The *Fire Department* has set...” it does not appear that the San Luis City Council has *adopted* a fire department response measure that meets all the elements considered a best practice today.

In other budget performance measure documents the Fire Department reports call for service types and totals, and some response time measures, but these again are not tied to a City Council policy of what level of outcome is desirable.

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 5th minute, in the 6th minute or way beyond at 10 minutes. This is a significant issue if hundreds or thousands of calls are answered much beyond the average point.

Finding #1: The City does not have a fire deployment measure adopted by the City Council 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).

In national recommendations years ago, it was thought to take 1 minute for the company to receive the dispatch and get the 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.

Thus, from the time of 911 *receiving the call*, an effective deployment system is **beginning** to manage the problem within 7 minutes total reflex time. This is right at the point that brain death is becoming irreversible and the fire has grown to the point to leave the room of origin and become very serious. 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 SAN LUIS OBISPO FIRE RISK ASSESSMENT

The City mostly contains a mix of older, single- and multi-family dwellings, small and larger businesses, and retailers. There are also some office park buildings, smaller warehouse and light manufacturing facilities, with some newer and some very old. In addition to the City area, the Department protects under contract the very large and diverse Cal Poly Campus. The campus has other effects on the community by driving a demand for various types of student housing, some of which are rental units owned by out-of-town parties. Both newcomers to the community, as well as long-term residents, may not realize the community assets that are at risk today in such a vibrant and diverse community. The City is charged with responding to a variety of emergencies, from fires to medical calls to special hazards and cargo transportation emergencies on the highway. Here is a partial inventory of the types of risk demographics in addition to the visible homes and business buildings:

- ◆ Some hazardous materials storage, use, and release, including industrial and transportation on the highway and Union Pacific Railroad
- ◆ Local businesses use hazardous materials and are regulated by the fire prevention bureau
- ◆ Wildland fires
- ◆ Weather and seismic disaster potential
- ◆ Newer mid- and high-rise buildings – both downtown and Cal Poly
- ◆ Large retail sales buildings
- ◆ County community airport (City Fire is the secondary responder)
- ◆ Residential care facilities, many of them for the elderly
- ◆ Student housing.

In the downtown area, there are twelve significant new projects in the planning stages that include a mix of retail and multi-story building office or residential uses. In just commercial uses downtown, there are over 77,000 square feet of new space planned. Including the new southern annexation areas, there could be up to 700,000 square feet of commercial space added by the build-out of the City. There also continues to be small in-fill housing projects built or planned across the City in the range of 979 additional units. Overall the total number of housing units envisioned at build-out is 24,300 or up modestly from the current number of 20,222. At a factor of 2.19 persons per household, this increase in units could add 8,900 additional residents, increasing the total population to just over 53,000. This does not include the Cal Poly Campus amounts.

In the southern and western City areas, there are several planned annexations either recently completed or proposed. The recent additions include the Airport and the Margarita Specific Plan Areas. The housing numbers cited above included these new areas.

Other possible future annexations could include the Chevron land areas in the south and to the west, a proposal by Congregation Beth David in collaboration with the Twisselman and Madonna families for the annexation of approximately 1,386 acres of property. This area is identified as Area 9 of the Sphere of Influence update and is roughly bounded by Los Osos

Valley Road, Foothill Blvd. and the existing City limits. The building and population effects of these possible annexations is unknown, but given the character of planning to date in San Luis Obispo as well as the environmental and topographic constraints on these lands, increases in buildings and population will likely be modest.

While some of the above new construction may be slowed due to the national economic downturn, these projects are all desirable and will eventually be built.

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

To its credit the City has adopted over the years a very stringent automatic fire sprinkler building code ordinance that exceeds the state building code minimums and basically requires all buildings larger than 1,000 square feet to be fully fire sprinklered.

The Department does not operate a full-featured fire records system and as such accurate fire dollar loss estimates are not available. However, in reviewing the records available, most recent building fires have started small and allowed the available on-duty force to catch them. The reasons for this can range from the impact of automatic fire sprinklers to the fire being still small upon being reported, to the fire having occurred close to a fire station, being in a newer building, and most importantly, the fire being attacked with a prompt and effectively sized response force.

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. This same reporting system is often the only statistically significant evidence of the frequency and consequence regarding the values at risk in any community.

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 that surrounds the City.

In Map #2 in the mapping appendix to this study (found in Volume 2, separately bound), are displayed the locations of the *commercial* buildings that the Insurance Service Office (ISO) has sent an evaluation engineer into for underwriting purposes. Also mapped are the buildings the Fire Department has separately identified, as higher risk for serious fires, should one start. Then on the perimeter of the City the wildfire threat zones are mapped as identified by the City and CAL FIRE.

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 City, the ISO has data on 218 commercial buildings. Of these, 49 buildings have required fire flows of 2,000 gpm or higher. There are a total of 12 buildings with fire flows in excess of 3,500 gpm. This is a significant amount of firefighting water to deploy, and a major fire at any one of these buildings would outstrip the on-duty City fire staffing and even the two near-by CAL FIRE Stations. Using the generally accepted figure of fifty gallons per minute per firefighter on large building fires, a fire in a building requiring 2,000 gallons per minute would require 40 firefighters, or *three times* the on-duty staffing of thirteen (13) firefighters in the City.

The Department also used a U.S. Fire Administration building fire risk assessment tool that looked at the commercial buildings from a variety of fire and life safety measures and found that 46 buildings were “high hazard” properties in that if they caught fire, the entire building, its occupants and adjoining buildings would be very much at risk.

In the new southern annexation areas, in addition to the ISO buildings identified above, City Fire Prevention has identified 119 buildings, some large, that the Department now has to inspect and respond to. Given their age and that they have been built in the County over a long period of time, most of the small- to mid-size buildings are not covered with fire sprinklers.

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

2.3.2 Special Hazard Risks

The City has approximately 300 businesses that use or resell hazardous materials. Examples are gasoline stations and dry cleaners. These businesses are highly regulated by the building, fire and environmental codes. The Fire Department Fire Prevention Bureau handles the code enforcement of advanced hazardous materials state regulations along with the City fire prevention inspectors under the fire code. The City participates in a countywide shared, regional fire department Hazardous Materials Response Team for serious incidents.

2.3.3 Wildland Fire Risk

The wildfire threat in San Luis Obispo is significant, as many of the City’s edge neighborhoods are exposed to wildland fuels and upslope terrain, all of which combine to pose a real danger. Examples of these areas are Bishop’s Peak, the Perfumo Canyon/Irish Hills Open Space, the Bowden Ranch Open Space, the Cerro San Luis Open Space, and Islay Hills. Additionally, over the decades the City has, in fact, experienced serious wildfires on its borders. To combat this risk, the City works closely with its mutual aid partner fire departments while training and equipping its firefighters for wildland firefighting in San Luis Obispo County conditions.

2.3.4 Desired Outcomes

Once policy makers choose outcomes, then the response system can be designed with staffing and station locations to accomplish the desired outcomes. An outcome example is, “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.”

Given the Fire Department’s current response time goal and its Class 2 fire insurance classification rating, the City has, in effect, adopted a structure fire goal of deploying a significant force to building fires to contain the fire near the room, or compartment, of origin, if the fire is small to modest when first reported. By delivering paramedics via fire engines, the City has committed to a higher level of emergency medical care than the County Ambulance System can deliver by itself.

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

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

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

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

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

It is important to have an understanding of the duties 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.**

- ◆ We may risk our lives a lot to protect savable lives.
- ◆ We may risk our lives a little to protect savable property.
- ◆ We will not risk our lives at all to save what is already lost.

Considering the level of risk, the Incident Commander will choose the proper strategy to be used at the fire scene. The Incident Commander must take into consideration the available resources (including firefighters) when determining the appropriate strategy to address any incident. The strategy can also change with conditions or because certain benchmarks are achieved or not achieved. For example, an important benchmark is “all clear,” which means that all 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 14 to 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 can be derived from the desired outcome and risk class. If the community desires to confine a one-room fire in a residence to the room or area of origin, that effort will require a minimum of 14 personnel plus incident commander. This number of firefighters is the minimum needed to safely conduct the simultaneous 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 City

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

Units and Staffing Daily Plan

<u>Minimum Per Unit</u>		<u>Extended</u>
3 Engines @	3 Firefighters/day	9
1 Ladder Truck @	4 Firefighters/day	4
Subtotal <i>firefighters</i> :		<u>13</u>
1 Battalion Chief @	1 Per day for command	1
Total 24/hr Personnel:		<u>14</u>

In addition to the City daily staffing listed above, CAL FIRE operating under contract as the San Luis Obispo County Fire Department operates two stations near the City, one at the northern City limits near the entrance to Cal Poly, and a southern station at the County Airport. The staffing on these companies can vary from a minimum of two up to four or more during fire season. The City and County Fire Departments operate under an “automatic aid” policy where they each send one closest unit in defined northern and southern City areas. This policy means that most City building fires receive a County Fire unit, if available and not on a County or CAL FIRE assignment. This means that initial staffing on a City building fire can increase by 2-4 personnel.

2.4.3 Staffing Discussion

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

As stated earlier in this section, national norms indicate that 14 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.

To meet its goal of sending 3 engines and 1 ladder truck to serious building fires, the City has to send 100 percent of its on-duty force. Then to augment its staffing above a minimum of 13, it has to send the 5th unit from the County Fire Department. However, these units are slightly delayed during the dispatch step, as they are not dispatched from the same communications center. Given

the occurrence of building fires in the City at approximately 65 per year, or about five per month, the City can typically field enough firefighters at a modest building fire, but when it does so, it does not have any remaining force for simultaneous calls, even medical ones. Mutual aid units and the regional ambulance provider would cover any such simultaneous calls.

2.4.4 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 to demonstrate how much time the entire operations take. The following tables start with the time of fire dispatch notification and finish with the outcome achieved. There are several important themes contained in these tables:

1. These results were obtained under best conditions, in that the day was sunny and moderate in temperature. The structure fire response times are from actual events, showing how units arrive at staggered intervals.
2. It is noticeable how much time it takes after arrival or after the event is ordered by command to actually accomplish key tasks to arrive at the actual outcome. This is because it requires firefighters to carry out the ordered tasks. The fewer the firefighters, the longer some task completion times will be. *Critical steps* are highlighted in **grey** in the table.
3. The time for task completion is usually a function of how many personnel are *simultaneously* available so that firefighters can complete some tasks simultaneously.
4. Some tasks have to be assigned to a minimum of two firefighters to comply with safety regulations. An example is that two firefighters would be required for searching a smoke filled room for a victim.

The following tables of unit and individual duties are required at a first alarm fire scene at a typical single-family dwelling fire. 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 Cover process and that found in NFPA 1710. No conditions existed to override the OSHA 2-in/2-out safety policy.

Shown below are the critical tasks for a typical single-family house fire with two rooms burning on the 2nd floor. The response force is three engines, one ladder truck, one Battalion Chief responding for a total of 14 personnel (*table continued on following page*):

Critical Tasks – Structure Fires

Structure Fire Incident Tasks	Time From Arrival 1 st Engine	Total Reflex Time
Pre-arrival time of dispatch, turnout and travel to 90% of calls		7:45
Engine 3 arrives – on scene report	00:00	
Pre-connect hose line to front door – 1 firefighter (FF) eventually to be joined by Captain 3	01:20	

Structure Fire Incident Tasks	Time From Arrival 1 st Engine	Total Reflex Time
Engine 3 size-up, full walk around, condition report	01:28	
Engine 3's 1 ¾" line (200') charged at front door	02:00	9:45
Battalion Chief on-scene (01:13): assumes command	02:11	
Truck 1 on-scene	02:20	
Truck 1 assigned roof ventilation and utilities	02:40	
Engine 3 Captain and FF3 ready for entry (on air)	03:29	
CAL FIRE Engine on-scene, assigned exposure residence	03:48	
Truck 1 – Ventilation, first ladder to roof	04:10	
Engine 2 on-scene – assigned Rapid Intervention (RIC) and water supply	04:15	
Engine 4 on-scene assigned Primary Search with back-up attack line (1 ¾" x 200')	04:45	
Engine 3 – Attack line advanced interior via front door	05:40	13:25
Truck 1 – Ventilation, second ladder to roof	05:05	
Truck 1 – Utilities controlled	06:03	
Water supply to attack pumper E3	07:00	
T1 – Ventilation – Heat hole in roof complete	07:33	
CAL FIRE Engine – water to exposure line side D	08:10	
Engine 3 – Fire knocked down on second floor	09:06	16:51
E4 primary search – first floor "All Clear"	10:00	
E4 primary search – second floor "All Clear"	11:25	
Incident under control	11:25	19:10

A similar timed drill was conducted simulating a fire in a second-story room of a three-story apartment complex. There was full fire involvement of the living room, kitchen and dining room area. The occupants evacuating, but it was unknown as to if all were out. Upon size-up, 1 person was observed on the 3rd floor window above the fire yelling that he is trapped – but is not yet in immediate danger. In this scenario the time to having the fire under control was **14:45** (minutes/seconds) after the arrival of the first unit, or **22:20** from the time of receiving the 911 call. This more complicated problem took over 3 minutes longer to control.

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

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

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 three patients and one of these entrapped. Three engines and the Battalion Chief responded with a total of ten (10) personnel. *(table continued on following page)*

Critical Tasks – Auto Incident – 2 Vehicle, 2 Patients – Air Transport

Vehicle Extrication Critical Tasks	Time From Arrival 1st Engine	Total Reflex Time
Pre-arrival time of dispatch, turnout and travel to 90% of calls		9:00
Engine 4 on-scene report, hot lap. PD controlling traffic.	00:00	
Patient contact – patient conscious, complains of mild chest pain and possible fractured left tibia. Contact by E4 Capt.	01:06	
1 ¾" hose line pulled and charged, check for down fluids (coolant only). By E4 FF/Medic	01:16	
Ambulance on scene, assigned 2 mild patients	02:00	
E4 FF/Medic with patient, axial stabilization started	02:11	11:11
Initial vehicle stabilization (chocks, shut-off motor, steering wheel cover)	03:05	
E3 on-scene, assigned extrication	03:38	
BC on-scene and does walk around	04:43	
E2 arrives, assigned safety – Captain as safety officer	04:45	
E2 engineer staffs charged hose line	05:33	
The following completed by E3 crew:		
Vehicle stabilized	04:48	13:48
2 personnel ready to force driver door	06:00	
Extrication tools to front of vehicle, tools connected	06:35	
Door removal completed	10:18	
Other activities:		
Second extrication tool brought to scene and started by E2	06:45	
Battery disconnected	08:30	
Second ambulance on scene	08:30	

Vehicle Extrication Critical Tasks	Time From Arrival 1 st Engine	Total Reflex Time
Plan formulated to remove patient out driver's side	10:30	
Patient extricated	11:24	20:24
Patient packaged in Full Spinal Precautions	13:44	
Total Time to Control	13:44	22:44

The table above shows typical task times for good patient care outcomes. These patient care times and steps are consistent with San Luis Obispo County patient care protocols and would provide positive outcomes where medically possible.

2.4.5 Critical Task Measures Evaluation

What does a deployment study derive from a response time and company task time analysis? The total completion times above to stop the escalation of the emergency have to be compared to outcomes. We know from nationally published fire service “time vs. temperature” tables that after about 4 to 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 the City are able to expect positive outcomes and have a better than not chance of survival in a *modest* 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 11 minutes after the time of the first unit’s arrival, or 19 minutes from fire dispatch notification. The outcome times, of course, will be longer, with less desirable results, if the arriving force is later or smaller.

In San Luis Obispo 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 City’s housing stock is diverse and increasingly used by the young and the elderly (*over 11,000 residents*). There are many 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 needing to rescue trapped, or immobile 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 11 minutes total reflex time and is able to be transported within 22 minutes. These times are good for trauma patients, when all the needed units can arrive by minute 7, which is not always possible at the outer perimeter areas of the City, or when multiple calls for service occur.

However, each of these incidents, while only being moderate in size, required 10 to 14 personnel. If 14 City personnel are committed to a building fire, this is **100** percent of the entire on-duty force for a single modest structure fire. Response needs greater than this always will require mutual aid assistance from adjoining departments. Even at that, once the two nearby County fire stations respond (if available) other mutual aid fire units are much farther away.

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 City can do a good job, in terms of time, on one moderate building fire or two routine medical calls. This is typical of departments that staff few 3-person companies for average, routine emergencies. However, major fires and medical emergencies where the closest unit is not available to respond **will** challenge the City response system to deliver good outcomes. This factor **must** be taken into account when we look at fire station locations.

Previous critical task studies conducted by Citygate, the Standard of Response Cover documents reviewed from accredited fire departments, and NFPA recommendations all arrive at the need for 14+ 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.

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, 13 initial firefighters (3 engines, 1 ladder truck) can handle a low risk house fire (especially on the first floor). An effective response force of even 16 will be seriously slowed if the fire is above the first floor in a low-rise apartment building or commercial / industrial building.

Finding #2: The diversity, age and size of the City and Cal Poly building stock and the increasing numbers of younger and older populations means that there is a greater chance of more serious fires where rescues will be necessary, and if so, the current quantity of firefighter staffing will be quickly overwhelmed with too many critical tasks to accomplish.

When the on-duty staffing is stretched thin, the City can bring in automatic or mutual aid equipment, but from a distance and under the assumption that the aiding department is not already busy. Given that some of the current built-up areas of the City seem to have the minimum number of firefighters for an *initial* attack on a building fire, does the mapping and analysis of prior response times show the City is meeting desired policy goals or reasonably modified ones, and can the system provide the same level of service equitably to all neighborhoods?

2.5 CURRENT STATION LOCATION CONFIGURATIONS

The City is served today by four 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 City continues to evolve. In brief, there are two geographic perspectives to fire station deployment:

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

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

The maps (found in Volume 2 of this study) display travel time using prior City 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 City does not currently have a City Council adopted travel time measure, the initial map measures in this study 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 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.

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. 1.5 miles driving distance equates to 3.5 to 4 minutes travel time over the road network.

The map set in this study also shows coverage from the closest, nearby automatic aid fire stations from County Fire. The first goal is to determine if the City can substantially cover itself with its fire stations in appropriate response times. If so, then the automatic aid coverage is useful for back-up unit response when City units are on other incidents.

Map #1 – Existing Fire Station Locations

This first map shows the City and its current fire stations along with the two County fire stations that are part of the regional closet unit response system. This map view, then, is important to remember as later maps in the set display the fire station coverage areas.

Map #2 – Risk Assessment

Displayed here are 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 due to zoning.

These are the buildings that must receive a timely effective first alarm force to serious fires. Also displayed in blue are the locations of the Fire Department identified higher hazard buildings. For either of these measures, risk measurements do not exist for the Cal Poly campus.

On the perimeter of the City, the wildland fire threat severity zones are mapped.

Finally, the new southern annexation growth areas are identified.

Map #3 – First-Due Unit Distribution – Existing Stations

This map shows in green colored street segments the *distribution* or first-due response time for each current City *or* County fire station per a desirable suburban response goal of 4 minutes travel time. Thus, the computer shows how far each company can reach within 7 minutes fire department *total* response time from the time of the fire communications center receiving the call. Therefore, the limit of color per station area is the time an engine could reach the 4-minute travel time limit, *assuming* they are in-station and encounter no unusual traffic delays. In addition, the computer uses speed limits per roadway type that are slowed by actual fire unit travel times. Thus, the projection is a very close modeling of the real world.

As can be seen in this measure the shape of the City is very hard to serve, even with a grid type road network in the City core. The existing stations are somewhat laid out on a NW-SE line with Station 4 over in the southwest neighborhood area. While much of the City is within 4 minutes travel time of a fire station, some of the edges and the south central existing or annexation areas are not. The Cal Poly campus is also not completely covered within the 4-minute drive time, but this is not a City Council policy decision as the CSU system contracts for fire protection from the City at the level the City can provide, not per a CSU response time policy.

A goal for the City could be to cover 90 percent of the geography containing higher 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.

The message to be taken from this map is that it would be very challenging for the City to improve travel time coverage without adding fire stations. The size of the southern annexation areas are just too large for either of the existing City or County stations to cover in a desirable suburban outcome travel time of 4 minutes. These areas are not yet highly populated and would receive coverage within 10 minutes or less driving time, meeting an NFPA 1720 emerging suburban or rural level of response coverage.

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

This map exhibit displays the Insurance Service Office (ISO) requirement that stations cover a 1.5-mile distance response area. Depending on the road network in a department, the 1.5-mile measure usually equates to a 3- to 4-minute travel time. However, a 1.5-mile measure is a reasonable indicator of station spacing and overlap. As with the 4-minute drive time map, much

of the populated core of the City is served within 1.5-mile distance from the existing fire stations. As the 4-minute map projected, the southern annexation areas are not.

It should be noted that the 1.5-mile coverage distance is slightly better than the 4-minute drive time model, especially in the Cal Poly campus. This is because the 4-minute model used real fire unit travel times to calibrate how fast larger fire units actually cover the street network. Thus depending on time of day (rush hour, civic events) and weather the actual travel times will be between the two models. Stated this way, the two models represent the best and least coverages likely and both state that the southern annexation areas cannot be covered within suburban outcome travel times.

Map #5 – Concentration (First Alarm) – City and Mutual Aid Stations

This map exhibit shows the *concentration* or massing of fire companies for serious fire or rescue calls. Building fires, in particular, require 14+ 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 three of its engines, one ladder truck, one Battalion Chief *and one mutual aid* engine to building fires within 8 minutes travel time (11 minutes total Fire Department response time from the 911 call receipt). This measure ensures that a minimum of 13 City firefighters, one Battalion Chief and 2 to 3 County firefighters can be deployed at the incident to work *simultaneously* and effectively to stop the spread of a modest fire.

The green color in the map shows the area where the City's current fire deployment system should deliver the initial effective response force. Streets without the green highlights do not have three engines, one ladder truck and the Battalion Chief in 8 minutes travel time.

As can be seen, due to the spacing of the City and mutual aid fire stations, an effective response force of 4 to 5 stations can be gathered in much of the City. While this is effective coverage, it is built upon receiving aid from one or both of the County stations.

Map #6 – Battalion Chief and Ladder Truck Coverage

This map displays the 8-minute travel time coverage for the ladder truck and Battalion Chief from Station 1. It shows that the ladder unit coverage depth in 8 minutes is good, even to the Cal Poly campus and much of the southern annexation areas. Thus, Station 1 should continue to be the location of these specialty units.

Map #7 – All Incident Locations

This is an overlay of the exact location for all fire department incident types for three years from July 2004 through July 2008. It is apparent that there is a need for fire department services in all of the station areas of the City. 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.

Map #8 – EMS Incident Locations

This map further breaks out only the emergency medical and rescue call locations. Again, with the majority of the calls for service being emergency medical, almost all streets need fire department services.

It should be noted that even over a four-year period, the actual calls inside the Cal Poly campus were few. The same may not be true in the southern annexation areas, as this study did not plot the calls that only the County Fire unit might have responded to.

Map #9 – All Fire Type Locations

This map identifies the location of all fires in the City. All fires include any type of fire call from auto to dumpster to building. There are obviously fewer fires than medical or rescue calls. Even given this, while it is evident that all first-due station areas experience fires with Station 1 and 2's area, with the greatest population density, having the most fires.

Map #10 – Structure Fire Locations

This map is similar to the previous map, but only displays structure fires for four years. 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 City. Fires in the more complicated building types must be controlled quickly or the losses will be very large.

Map #11 – All Incident Location Hot Spots

This map set examines, by mathematical density, where clusters of incident activity occurred. In this set, all incidents are plotted by high-density workload. For each density measure, the darker the color, the greater the quantity of incidents in a small area. This type of map makes the location of frequent workload more meaningful than just mapping the dots of all locations as done in Map #7.

Why is this perspective important? Overlap of units and ensuring the delivery of a good concentration for the effective response force. When we compare this type of map with the concentration map, we want the best concentration of unit coverage (first alarm) to be where the greatest density of calls for service occurs. For the City, this mostly occurs in Station 1's area, which also receives timely back-up support from both Stations 2 and 3.

Map #12 – EMS Incident Location Densities

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

It should be noted that Station 3 has a very high density of medical calls close to it. This district, while somewhat separated from the City core and containing mostly housing has multiple medical and invalid care buildings. As such, even though Station 3 appears from a map view to be placed too far out to the edge of the City, it is actually very well located close to the majority of its calls for service.

Map #13 – All Fire Location Densities

This map sets shows the hot spot activity for all fires. Again, the call-for-service density is highest in the northern half of the City.

Map #14 – Structure Fire Densities

This map only shows the structure fire workload by density. Here, the activity clusters are spread across more areas of the City, due to the actual lower quantity of structure fires.

2.5.1 Possible Re-Deployment Scenarios

As these baseline coverage maps were understood, Citygate worked with the City staff to identify and test the impacts of possible re-deployment scenarios. The next series of maps will explain the best-fit choices identified.

Map #15a – Effect of Adding a 5th City Fire Station

Given the size of the southern annexation areas, Citygate and staff looked at the effect of adding another fire station. Prior to this, Citygate used the mapping computer model to look separately at the coverage zone of the County station at the airport as well as moving Station 3 westerly. No combination of moves could cover any of the annexation area substantially without uncovering existing City neighborhoods.

City staff identified two possible station sites in the annexation area and Citygate added into the road network two important future interconnect streets. The best-fit station site that could cover the most under-served road miles in 4 minutes driving time was located across the street from 265 Tank Farm Road on the north side of the road.

The advantage to this site is that it improves two areas – the existing under-covered area east of Station 4 and much of the annexation areas. Both this station and the County Airport area station might cover more of the annexation area if, as development streets are master planned, more cross connect streets can be designed in the second phase airport annexation area.

Map #15b – Concentration of Stations With a 5th Fire Station

If this map is compared to Map #5 the addition of another fire station on the southern area greatly increases multiple-unit coverage in much of the City from five to six or seven units. Even westerly in Station 4's area, the multi-unit coverage is increased significantly. Even most of the southern annexation area would receive four stations in 8 minutes travel to the future southern, central City limits.

2.6 MAPPING MEASURES EVALUATION

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

<p>Finding #3: Given the travel distances in the existing southwest and southern annexation areas, a 5th fire station is desirable, when the annexation areas fully develop.</p>
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Finding #4: If an additional fire company location could be funded, effective first-due unit coverage can be obtained at the build-out of the City from five (5) fire station sites, at 4 minutes travel time.

Finding #5: While multiple-unit coverage is currently adequate in the core of the City, it depends on successful, timely, mutual aid from either of the two County stations, which are not always available. A future 5th City fire station will increase multiple-unit coverage in the southwest and southern areas, as well as lessen dependence on the two County fire stations.

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

2.7 CURRENT WORKLOAD STATISTICS SUMMARY

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

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

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

In the Standards of Response Coverage approach, it is recommended that the performance of each *station area* also be determined to ensure **equity** of coverage. However, even this approach is not perfect – a station area may well have less than 90 percent performance, but serve lower-risk open space areas with limited buildings thereby not having an economic justification for better performance. In addition, the study must discuss just what is measured within the underperforming 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 San Luis Obispo Police Dispatch Computer system. The Fire Department does **not** use an NFIRS compliant records system and only files abbreviated fire incident reports into the police system. The lack of NFIRS data is not only a major limitation to this study, it also means the Department cannot completely measure its emergency operations, or completely respond to lawsuit information requests.

Finding #6: Federal and state incident reporting mandates have established NFIRS 5 (National Fire Incident Reporting System Version 5) as the definitive reporting standard for fire departments. While NFIRS 5’s “Basic” module is mandatory, best practices dictate use of the optional “Apparatus” module to document vehicle responses. The Department needs to adopt this reporting standard.

Total response time in this study is measured from the time of receiving the call at the City Police dispatch center to the unit being on-scene.

For suburban and urban 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, the outer NFPA 1710 recommended measurement is 8 travel minutes, plus two for turnout and one minute for dispatch, which is an 11-minute total reflex measure.

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 this statistics review, we are modeling the Department’s prior performance and comparing the data results to the “ideal” per NFPA 1710 for fire service deployment, since the existing City measures are not specific or adopted yet by the City Council. Additionally, the Fire Department measure does not begin with the time of fire dispatch receiving the call, or include what outcome is desired, all of which are considered a best practice by the Center for Public Safety Excellence (formerly the Commission on Fire Accreditation). 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 City.

The City’s police dispatch system provided 33,679 response records for apparatus over a 48-month period.

2.7.1 Incident Types

Below is a list of San Luis Obispo “Nature of Call” counts for the 48-month period. These counts are based on first apparatus arrivals so they represent incidents as opposed to apparatus responses. Only call categories of 10 or more were included.

Nature of Call	Count
Medical	9,770
Alarm Fire	986
Public Assist	845
COLL MINOR INJ	844
Electrical Haz	209
Fire Ill Burn	173
Hazmat Small	151
Alarm Water Flow	135
Fire Structure	131
Smoke Check Out	127
Fire Vehicle	111
Fire Sm Trash	106
Medical Non-Em	99
Fire Wildland	85
Smoke Check In	74
Fire Rpted Out	64
COLL FREEWAY	62
Gas Inside	58
COLL MAJOR INJ	57
Gas Outside	55

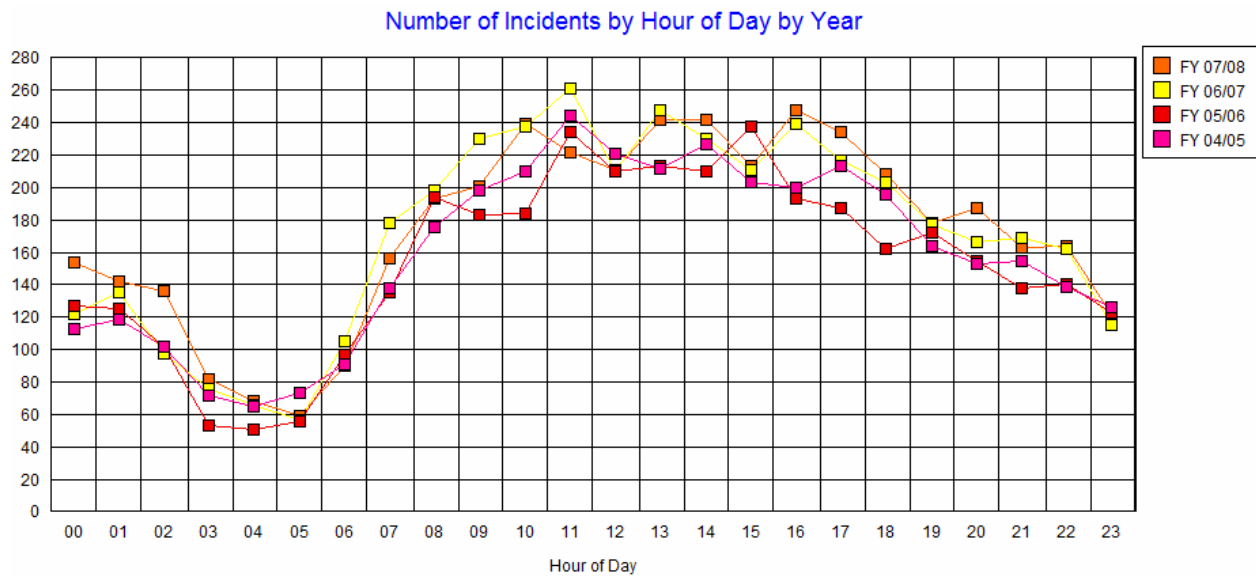
Here is a breakdown by city:

City	Count
San Luis Obispo	15,317
Cal Poly	288
SLO County	110
Atascadero	1
Morro Bay	1
Nipomo	1
Paso Robles	1

Here is the numeric breakdown by year:

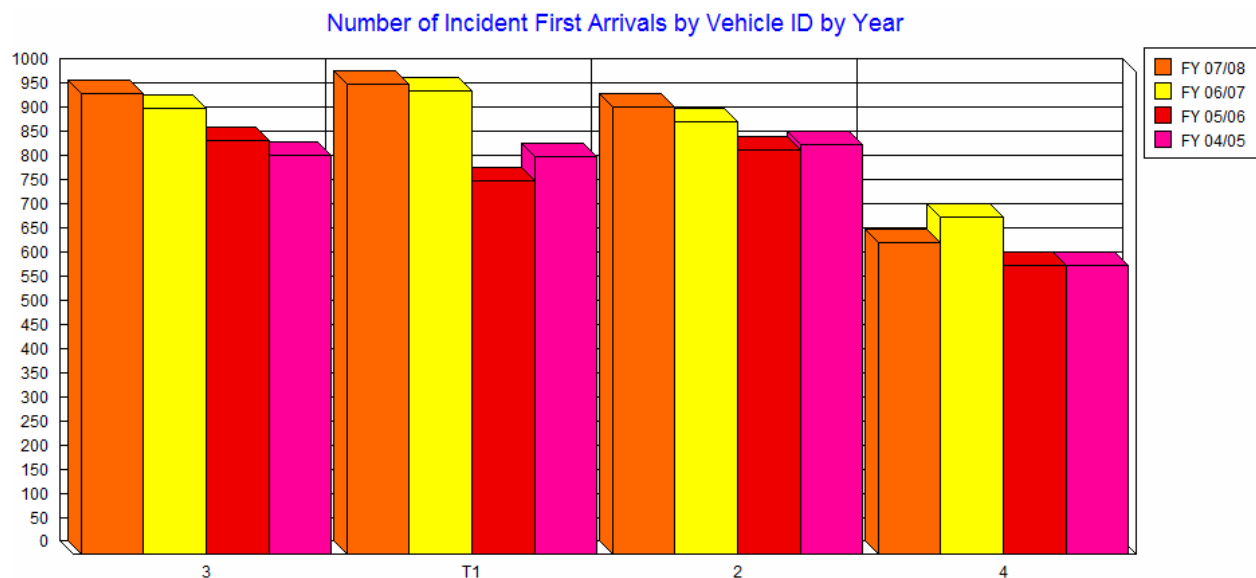
FY 04/05	3,810
FY 05/06	3,682
FY 06/07	4,111
FY 07/08	4,154

This graph compares incident activity by hour of day by year. Notice while incident activity closely tracks for each of the 4 years there was a slight increase in activity in FY 07/08 from 16:00 – 20:00 as well as from midnight through 03:00.



Demand by Vehicle ID

In general Engine 3 is seeing a steady increase in activity. T1 saw an increase in activity in the last two years. Engine 4 had a slight bump in activity in FY 06/07.



2.7.2 City 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

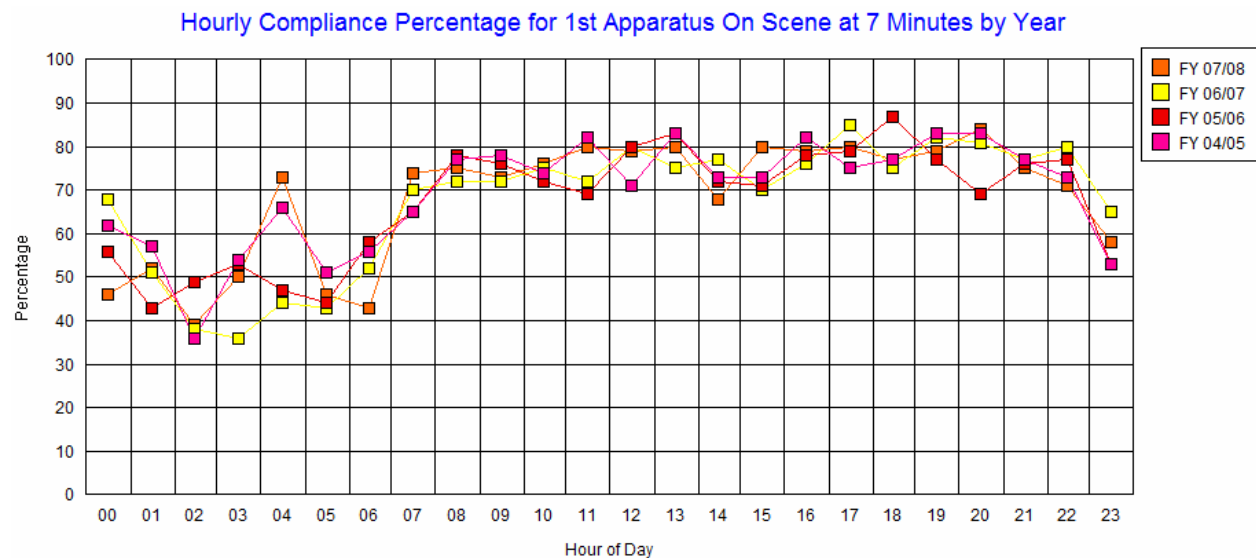
effectiveness is fractile analysis of response time. A fractile analysis splits responses into time segments and provides a count and percentage for each progressive time segment.

Here is a fractile response time breakdown for San Luis Obispo City station responses for the study period. To focus these calculations only Code 3 responses on or after 7/1/2006 (which is after the mobile data system conversion was solidified) are used which dropped the data set to **5,504** responses as being the most accurate and reflective of emergency performance. Incidents outside of City station areas and those exceeding 20 minutes response time were also eliminated.

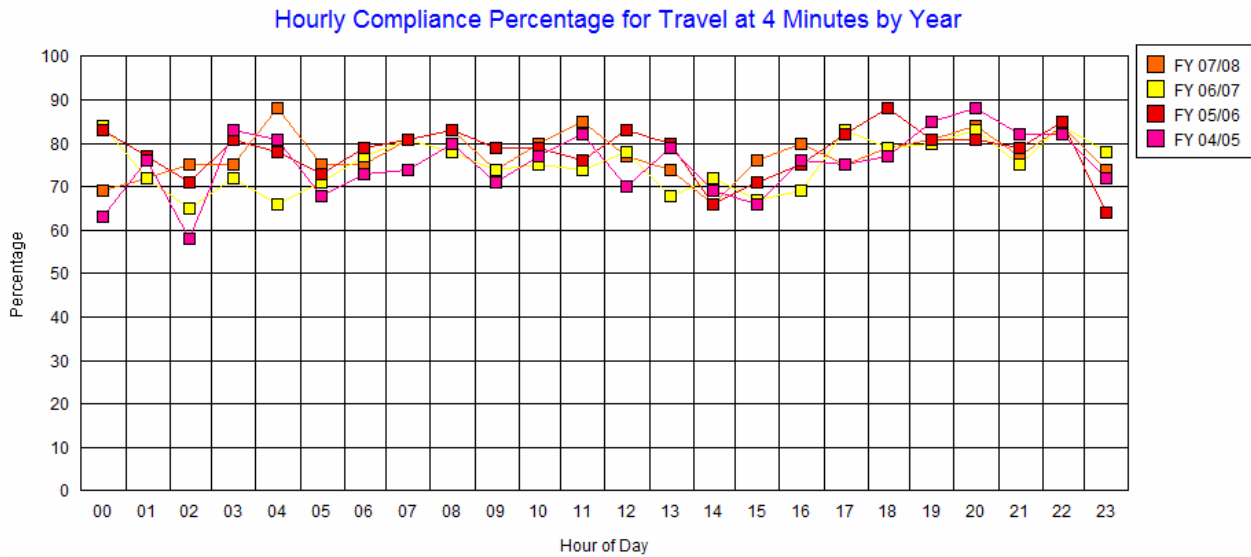
For **fire and EMS incidents**, the following fractile results:

- 1st Apparatus On Scene <= 00:05:00 34.3%
- 1st Apparatus On Scene <= 00:06:00 **54.7%** – Current *probable* City goal
- 1st Apparatus On Scene <= 00:07:00 **71.6%** – *Recommended Citygate goal*
- 1st Apparatus On Scene <= 00:08:00 83.2%
- 1st Apparatus On Scene <= 00:09:00 **90.6%** – **Actual 90% Compliance Point**

The graph below displays response time performance by minute of the day:



Here is the breakdown of Travel Time compliance by hour of day by year. Notice compliance averages a fairly flat 80 percent during the day. This perspective also correlates to the mapping model findings.



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

- 1st Apparatus On Scene <= 00:05:00 51.5%
- 1st Apparatus On Scene <= 00:06:00 **69.7%** – Current *probable* City goal
- 1st Apparatus On Scene <= 00:07:00 **75.8%** – *Recommended Citygate goal*
- 1st Apparatus On Scene <= 00:08:00 87.9%
- 1st Apparatus On Scene <= 00:08:30 **90.9%** – **Actual 90% Compliance Point**

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:

1. 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.
2. 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.
3. Travel time – time unit is responding 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.

Call Processing <= 01:00 25.7% – Desired Goal Point
Call Processing <= 2:30 90.5% – **Actual Performance**

Company turnout time – the time from company notification to donning protective clothing to getting underway.

Turnout <= 01:00 25.6% – NFPA 1710 Recommended Goal Point
Turnout <= 02:00 79.0% – Citygate Recommended Goal Point
Turnout <= 02:30 89.9% – **Actual Performance**

Older national recommendations were for turnout time to take 1 minute. Over the last five years of increasing protective clothing regulations by OSHA and the NFPA, complete data studies have shown this to be a near impossible goal to safely accomplish. Citygate finds a more realistic goal is to complete the company notification and turnout process in 2 minutes or less, 90 percent of the time. Attention to this critical time element can help reduce the time.

Travel time – here are the citywide travel time measures for the three years of data to *fire and EMS* incidents:

Travel <= 04:00 76.7% – *Desired Goal Point in NFPA 1710 and Department Goal*
Travel <= 05:15 90.3% – **Actual Performance**

This travel time correlates to the map measures at 4 minutes of travel. The City is a little too large, with a non-grid street network in some areas, to cover in 4 minutes travel from only four fire stations. Non-grid street networks sometimes referred to as dendrite type networks actually slow emergency response.

2.7.4 Simultaneous Call Measurements

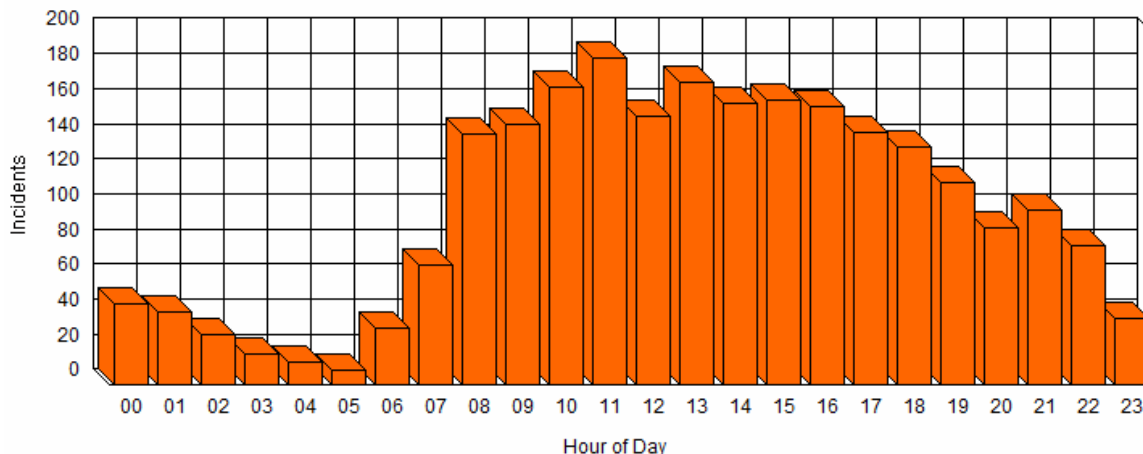
Obviously, incidents that occur at the same time tax fire department resources more than those occurring when there is no other fire department response activity. Examining incident data for the 48-month period shows only 37.38 percent of incidents occurred when the Fire Department was already engaged in other response activity.

Here is the breakdown by number of incidents:

At least 2 Incidents occurring at the same time	18.36%
At least 3 Incidents occurring at the same time	1.86%
At least 4 Incidents occurring at the same time	.13%

The graph below illustrates the hourly distribution of 2 or more simultaneous incidents for the analysis period by hour of the day. This graph shows an increase in the number of simultaneous alarms during the hours of peak human activity hours, which is typical for most fire departments.

Number of Simultaneous Incidents by Hour of Day



This amount of simultaneous incident activity is not a significant issue given the close-by mutual aid stations that the City can draw upon.

2.7.5 Response Time Statistics Discussion

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

- Finding #7:** With a City fire/EMS incident first-due unit performance of 07:00 (minutes/seconds) at 71.6 percent, and a travel time of 05:15 at 90 percent, as the mapping analysis predicted, the City does not have enough primary neighborhood fire stations in the City to deliver suburban response times to all outer areas.

- Finding #8:** The City dispatch and fire crew turnout times need focus by both agencies (Police Dispatch and Fire Department) to lower times to best practice recommendations. If a combined 01:30 (minutes/seconds) from dispatch and turnout time is saved, citywide emergency response time would lower to the recommended 07:00 at 90 percent.

- Finding #9:** The simultaneous emergency call for service rate of 18 percent for two incidents at once is not a significant issue in the near term given the mutual aid support from the County fire stations.

- Finding #10:** The City benefits from the mutual aid regional response system. While this system cannot replace existing City stations or units, the City should continue to participate in this valuable support system for simultaneous calls for service and multiple-unit serious emergencies.

2.7.6 Integrated Fire Station Deployment Recommendations

The City of San Luis Obispo has good fire crew coverage, but it is co-dependant on its neighboring fire department for two reasons: (1) primary coverage into the some City areas and (2) providing the balance of the staffing needed for an effective response force (first alarm) to serious fires and other serious or simultaneous emergencies.

The issue with this approach is that the resources of the County are not dedicated to the City, especially in times of their own simultaneous calls for service, or during time of region-wide firestorms or disasters.

While no one city (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 neighborhoods, as well as be able to provide an effective initial response force (first alarm) to moderately serious building fires.

Due to the local economy, the City has struggled over the decades to increase the daily firefighter staffing as the population and calls for service have significantly increased. As the following table shows, the daily firefighter (not counting the Battalion Chief) count of 13 is only two more than was provided in 1978:

Historical Daily Firefighter Staffing in the City

Year	Population	Minimum Staffing	Calls for Service
1978	34,050	11	1,095
2002	44,399	12	3,952
2004	44,163	13	4,263
2008	44,489	13	4,154

The City is close to a desirable goal of being self-sufficient for usual and customary emergencies by fielding four fire companies per day. However, there are two gaps that over time that could be improved as fiscal resources allow:

1. The lack of 4-minute primary unit coverage by a City unit in the southern annexation areas;
2. Not enough total firefighters on duty to field an effective initial force to serious fires without help from the County Fire Department.

While the City could staff each of the three existing fire engines with 4 firefighters per day minimum, up from three, replacing the staffing reliance on the County for one additional 3-firefighter engine on a first alarm fire, it does not address response times in the southern annexation area or allow simultaneous calls to be covered by a 5th unit in the event a County unit is not available.

Over time, as fiscal resources further allow, if the City added a 5th fire station and crew in the southern annexation area and staffed the engine with a minimum of three personnel, then the daily staffing increases to 16 per day (plus the Battalion Chief) would not only improve the

response times in the southern City, but also improve City-based staffing to serious multiple-unit emergencies in alignment with national best practice recommendations. Thus, adding a 5th fire station and crew improves all the response system deficits identified in this study.

Recommendation #1: The City should adopt revised performance measures to direct fire station location planning and to monitor the operation of the Department. The measures should take into account a realistic company turnout time of 2 minutes and be designed to deliver outcomes that will save patients medically salvageable upon arrival; and to keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:

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

1.2 Multiple-Unit Effective Response Force for Serious Emergencies: To confine fires near the room of origin, to stop wildland fires to under 3 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 14 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1 minute dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units.

Recommendation #2: As fiscal resources allow, the most beneficial next improvement in fire services the City could make would be to add a fire station in the southern City area equipped with one fire engine and a 3-person crew.

Recommendation #3: The City should adopt fire deployment measures for the emerging southern annexation areas, ranging from rural to emerging suburban to suburban based on population, along the lines of this table modeled after the recommendations in NFPA 1720 on combination (volunteer) fire services. These measures would allow the City to define the services that can be cost effectively delivered in the early annexation period and then set the trigger point for adding fire services.

Proposed Deployment Measures Based on Population Densities

	Suburban	Emerging Suburban	Rural
	>1,000 people/sq. mi.	250-1,000 people/sq. mi.	<250 people/sq. mi.
1 st Due Travel Time	4	8	12
Total Reflex Time	7	11	15
1st Alarm Travel Time	8	12	16
1st Alarm Total Reflex	11	15	19

Recommendation #4: The City needs to fund a fire records system that is National Fire Incident Reporting System (NFIRS) version 5 compliant.

Recommendation #5: If, prior to the funding being available to operate a 5th fire station, the City had partial funding to increase the number of daily firefighters, it could do so by increasing Station 1 from 4 firefighters to 5 firefighters per day. This would allow either:

- ◆ A 3-person engine company to respond to medical emergencies and small fires, while the other two personnel would still cover a dedicated ladder truck and be able to respond to structure fires and technical rescue calls citywide where the crew could combine with an engine crew(s).
- ◆ Or, three personnel would staff an engine/ladder “quint” apparatus and two personnel would respond in a squad to downtown area medical emergencies.

Both of these staffing options require additional discussion with the firefighters’ representatives and making the decision on if the current “quint” should be replaced with a dedicated ladder truck.

When the City can add a 6th firefighter per day to Station 1, then split the crews into two 3-firefighter crews and open the 5th station.

In a last phase, as funding allows at the build-out of the City, the City can increase the staffing at Station 1 on the pumper/ladder unit to 4 firefighters per day, which is a much more effective team to operate a ladder truck at a serious building fire.

Recommendation #5 - Staffing Discussion:

Station #1 is the busiest in the City, and in addition to the medical call for service volume, the need for an aerial ladder truck is greatest in the core of the City, plus the university contract area.

The Department currently operates a “quint” apparatus that provides five functions:

1. Pump
2. Fire Hose
3. Water Tank
4. Ground ladders
5. Aerial Ladder.

A typical fire department “pumper” only provides the first three items for firefighting. A quint unit is far heavier, longer and more expensive to operate and maintain. Suburban cities, due to limited staffing, often deploy quints. Larger departments deploy separately staffed pumpers and ladder trucks.

Small departments have then only four choices to deploy an aerial ladder unit:

1. Operate a quint.
2. Have a separate pumper and ladder, but “cross staffed” by **one** crew, so for large fires, the crew has to be in quarters to respond the aerial ladder truck, which is problematic given the high call for service volume in San Luis Obispo.
3. Staff two separate units.
4. Operate a quint with a five-person crew and have two of the five go to medical calls in a squad.

All of these choices are valid, but need extensive local study as to the Department’s needs for the aerial unit, which is affected by street designs for maneuverability and building access set backs for aerial ladder deployment. Consideration also is needed for how many specialty tools for other rescues the Department needs to carry and if all of these can fit in a quint.

Finally, the firefighters need to be involved in the discussion of “splitting” the crew across two units as in a quint and squad. Each of the four choices above thus have many variables; there is no one singular best fit.

Therefore, Recommendation #5 above lays out several choices for staff to pursue with the local variables they best understand in determining how to serve the needs of San Luis Obispo.

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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 interviewed staff, inspected the apparatus, equipment, and facilities and examined documents. 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.

3.1 OVERALL IMPRESSIONS

The San Luis Obispo City Fire Department is a well-run, smooth-functioning fire department. Since San Luis Obispo is a moderate-sized but growing community with the San Luis Obispo County Fire Department (a CAL FIRE contract) as the adjacent fire department and little further assistance nearby, it has developed a something “stand-alone” character. The San Luis Obispo City Fire Department has an internal culture characterized by a sense of values and principles best described as a cross between traditional and progressive.

The City has recognized 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 or elderly residents and the threat of wildland fires on the City’s edges. To meet these challenges, the City has adopted safety codes and inspection programs more strenuous than those mandated by state minimums. Examples include the automatic fire sprinkler ordinance, hazardous materials code enforcement, and the newer multi-dwelling property inspection program.

For the risks present in San Luis Obispo, which are more often found in much larger communities, and given the modest quantity of on-duty firefighters, the City’s commitment to fire prevention programs **must** be continued and not seen as “nice-to-have” in tough economic times.

As much as San Luis Obispo Fire Department as a “full service agency” wants to do all of the programs that an “all risk” fire department does, it does not have the resources in terms of funds, time and personnel to fulfill this varied mission effectively in every area. This is not a unique circumstance. Many moderate-sized departments, one to four stations in size, have this difficulty. They cannot maintain the required training to do confined space rescue, hazardous materials response, wildland fire response, fire prevention, high angle rescue, and swift water response, for example, and still be effective in their two main areas of response: structural fires and medical emergencies. As in a mass casualty incident, the Department needs to do a triage and focus its efforts on those areas where there is likely to be calls for services.

Citygate Associates evaluated all aspects of the San Luis Obispo City Fire Department by interviewing key personnel, by examining facilities and equipment and by a thorough fire

department document review, including 42 SWOT² analysis questionnaires on every aspect of department operations. A number of main themes emerged, some of which deserve particular consideration while others only require the regular attention they currently receive.

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 San Luis Obispo’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 an organization that should generally meet the needs of a department the size of San Luis Obispo’s. However, due to the fiscal pressures on the City, there has been greater emphasis on staffing fire companies to provide emergency response than on the needs of the management team to coordinate and lead the organization. As the City struggled with its shrinking finances, it could not expand some staff positions in some of the essential fire headquarters support positions. This situation developed as an interim solution in the hopes that the budget situation would improve.

Issues:

- ◆ 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).
- ◆ As the Department continues to expand to meet the demands of the growing population, using the above mentioned guidelines to expand the managerial support system would serve the Department well and ensure that it meets best practices in this regard.

² SWOT Strengths, Weaknesses, Opportunities, Threats Analysis.

Observations:

- ◆ Organizationally, the Fire Chief supervises the three 24-hour shift based Battalion Chiefs. A retired annuitant chief officer, Tom Zeulner, currently works on some special projects on a limited funding basis.
- ◆ There is no second in command, commonly found as an Operations Deputy Chief or Assistant Chief, to coordinate the three Battalion Chiefs to ensure one administrative culture is present, not three. Not having this position also means there is no dedicated second in command when the Fire Chief is out-of-town or unavailable. Given the nature of the 3-shift rotation cycle for the Battalion Chief, it frequently means the Fire Chief has to wait a week to see one in person, unless he comes in on a weekend, or the Battalion Chief works overtime on a weekday.
- ◆ Disaster Management – the Fire Chief and staff on a limited time basis manage the City disaster preparedness plan. Staff is working on a plan update due by June 2009. The last citywide disaster plan drill was conducted in October 2008.
- ◆ The Department uses an Administrative Analyst II position that coordinates budgeting and other duties with the support service departments in City Hall such as finance and personnel. The Department budget, contracts and expense systems are well designed and followed.
- ◆ While the Department coordinates minor personnel functions, major ones are supported from City Hall departments such as personnel, risk management and legal.
- ◆ The Department office support staffing of three is on the light side for seven managers, four fire prevention inspectors, one fleet mechanic and 39 line staff. This means that headquarters staff performs more of their own clerical work or wait in turn for support. Neither of these results is cost-effective per hour for a management position.
- ◆ San Luis Obispo Fire Department uses FIRESCOPE Incident Command System (ICS) and has adopted the states Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS).
- ◆ The Department conducts periodic appraisals of its emergency response program on an unscheduled basis. The on-duty chief officer does the appraisal at the drill tower.
- ◆ 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. There are a number of requirements for training and certification governing departments that engage in these activities. 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 Department responds to the following types of emergencies in addition to fires and medical emergencies:
 - As part of a countywide regional technical rescue team, the Department responds to high angle and low angle technical rescue and confined space rescue.
 - The Department is also a member of a regional Hazardous Materials response team and has two specialists per shift.
- ◆ The Department uses Performance Standards/Measurements. The Training Battalion Chief and each Duty Battalion Chief are tasked with training for each shift, and conduct the testing.
- ◆ The Duty Battalion Chief performs oversight on daily operations.
- ◆ Oversight of “2 In/2 Out” Rapid Intervention Crew adherence/compliance is done by the on duty Battalion Chief in his role as Incident Commander (IC). The IC can appoint a Safety Officer. The Training Battalion Chief is also the Department Safety Officer and can take that role.

Finding #11: The Department’s administrative functions are in place and appropriately designed for a department this size. There is not enough clerical support staffing for the variety of programs the Department handles, but this is due to fiscal limitations, not a lack of management.

Finding #12: Given the scope of programs in the Department, the need for executive oversight of these programs, and the need for a trained, certified Fire Chief level position to back-up the on-duty Battalion Chief, the Department needs a second in command chief (Deputy Chief). The Department is not top heavy with only the Fire Chief and four Battalion Chiefs. The Fire Chief also has to manage citywide disaster preparedness, which has no staff assigned in the Department. Given all these issues, the Department is clearly large enough for a second in command to the Fire Chief, at a Deputy Chief level position.

3.1.2 Management Reports

Fire service daily activity and other periodic reports form the basis for management oversight and the necessary historical records. They consist of the activity log, drill rosters, equipment status reports and similar documents.

Issue:

- ◆ Are the daily reports adequate, available and timely enough to provide management oversight and historical record?

Observations:

- ◆ The station captain completes daily reports in logbooks that are archived for future reference.
- ◆ There are daily apparatus checks performed by the engineers. (This is discussed more fully in the section on Fleet Management.
- ◆ Drug inventory is maintained daily and passed from medic to medic. The paramedic coordinator performs oversight on the daily reports.
- ◆ One captain suggested that the perhaps the reports may be lacking in technology and could be computerized.
- ◆ The Department does not use a National Fire Incident Reporting (NFIRS) compliant reporting system, nor is it integrated with dispatch and fire prevention systems.

Commendations:

The Department staff is aware of their responsibilities, and within the time and disparate systems, do the best they can. The current system is built from different paper and separate software systems.

Recommendation #6: San Luis Obispo Fire Department should switch to full-featured fire department NFIRS 5 compliant incident reporting and management records system (RMS) that will allow better management oversight of activities.

Recommendation #7: The Department needs to add an Operations Chief (Deputy Chief position) as soon as fiscally possible. There are too many large programs without enough supervision and coordination for the Fire Chief alone to handle, much less have the time to plan and be an overall effective City Department Head.

Recommendation #7 Discussion

Another way to staff the unmet chief officer level functions would be to add another (the 5th) Battalion Chief position. While this is slightly less expensive annually, it has a significant drawback in Citygate’s opinion. While another Battalion Chief position would allow for rotation of assignments between the Battalion Chiefs, all the positions would be equal and with the Fire Marshal and Administrative Officer positions, the Fire Chief is supervising seven direct reports, which is too many. Having all Battalion Chiefs means that in the absence of the Fire Chief, there is no permanent “the buck stops here” second in command person. Further, an Administrative Battalion Chief as a peer cannot tell the other three Battalion Chiefs to “get on the same page.” Given these issues, the cost difference between a Deputy Chief and Battalion Chief is so small, the benefits of a permanent second in command far outweigh the slight additional cost above that of Battalion Chief.

3.1.3 Fire Prevention and Fire Investigation

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

Issues:

- ◆ Is there an adopted fire code and staffing plan to meet the needs of new construction, existing commercial occupancy inspection and public education?
- ◆ Do engine companies perform inspections? If so, of what?
- ◆ 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?

Observations:

- ◆ The Department and City have adopted and continue to update the appropriate Model Building and Fire Codes. The City has adopted a very complete automatic fire sprinkler requirement for commercial buildings larger than 1,000 square feet and for multi-family residential housing.
- ◆ The Department has a fire prevention program managed by a fire marshal and staffed with three fire inspectors, one hazardous materials coordinator, and 1.5 administrative assistants.
- ◆ Fire Company crews handle some inspection types.
- ◆ Annually fire prevention has been responsible for:
 - Annual inspections of all apartment houses, hotels, fraternities and industrial occupancies utilizing hazardous materials;
 - Building and fire protection system plans review, development review, construction related inspections, Hazardous Materials business plan program reviews as a CUPA Participating Agency;
 - Fire Investigations;
 - Child safety seat program;
 - Vegetation management program and code enforcement.
- ◆ Fire Prevention workload – new construction and ongoing inspections totals per year include over 970 annual fire safety inspections, 100-150 construction-related plan reviews, 60 – 70 development reviews, and approximately 300 construction-related inspections per year. In total, each inspector handles at least 300

inspections per year, plus plan reviews and other duties. The staffing workload is at maximum for a bureau of this size, and there is no “surge” capacity if an inspector is off work long due to illness, or if a large new business comes in that requires extra fire code or hazardous materials oversight.

- ◆ The Rental Housing Inspection program is new and designed to enforce the fire codes in these housing units. A new fee for service program supports it. The program appears very promising, but it is too new to determine if the staffing to workload and fees received are in balance.
- ◆ The Fire Prevention Division also handles Hazardous Materials code enforcement programs for the City, county and state. This “unified” program was adopted to provide permit and regulatory streamlining for businesses using hazardous materials. The program is staffed with one full-time position, supported by others in fire prevention. This program is fee supported and given significant oversight and audits by the state. The single Hazardous Materials Coordinator has to handle 300-plus site inspections per year, along with plan reviews. The businesses added in the new southern annexation areas will also increase this workload.
- ◆ Given commercial building growth in the City, along with the new rental inspection program, the staff is increasingly unable to keep up with all its desired inspection frequencies. In 2007, the bureau and engine companies conducted just over 1,800 inspections.
- ◆ The Fire Prevention Division also handles an effective weed abatement program as well as vegetation management and/or clearing in the urban-wildland interface area on the edges of the City where buildings are exposed to heavier fuel types and steep terrain, both of which increase wildfire danger. Some of the fuel reduction work is done via contracts, grants or firebreak funding by the California Department of Correction Conservation Camp crews.

Commendations:

- ◆ The Division accomplishes a lot with a small staff for the size of the City and assigned duties.
- ◆ The commitment to proper staffing, code adoption, training and quality service is excellent, *but must continue to be funded*.
- ◆ The City has shown leadership and commitment in its adoption of automatic fire sprinkler codes and a rental housing inspection program.
- ◆ The commitment to pursue arson fires to closure is excellent.

Finding #13: The size, scope and advanced programs in the Fire Prevention programs for a City the size of San Luis Obispo are exceptional in breadth and quality. The City is making a real effort to prevent fires, which allows it to limit loss and the overall quantity of needed firefighters.

Recommendation #8: Given the economic constraints on adding more staff to fire prevention over the foreseeable life of this fire master plan, the Department may have to begin to triage its fire inspection services to the most critical occupancies if workload exceeds available staffing. Those with smaller fire code requirements and risk for fire are going to have to be inspected on a longer cycle or even be moved to a self-inspection program.

As the City grows and has increased economic resources, a workload analysis should be done on fire prevention, and as needed, additional inspection and clerical resources will probably need to be added.

Recommendation #9: Given the City's strong commitment to prevention as evidenced by its fire sprinkler requirements, the City should continue to invest more in the wildland fuel reduction program. The City will never have enough firefighters on duty to prevent a wildland conflagration. Individual properties have to be educated on defensible space issues and the need for fuel reduction.

3.1.4 Public Education and Public Information

On the level of human behavior, including the basic ignorance that often causes unwanted fires, there is a need for more public education. Now that the fire service is in a lead role in the emergency medical arena, the role of public education has expanded to a much broader area of accident prevention. Simultaneously, the Fire Department's message plays against an increasingly noisy backdrop of media messages.

Public information for the fire service serves two purposes: information about emergencies and other Fire Department activities as well as providing the public with information that they can use to prevent fires and injuries and prepare for emergencies.

Issues:

- ◆ Does the Department have an effective public education program that takes advantage of opportunities for exposure?
- ◆ Does the public education program recognize the changing role of the fire service by broadening its scope?
- ◆ Is the public information system effective in providing information about the Fire Department and providing information about fire prevention?

Observations:

- ◆ These programs are assigned to the Administrative Analyst II for supervision and include:
 - Station Tours: of all our Fire Stations for any interested parties;
 - Community Events: for example, Children’s Day at the Plaza, Home Depot Fire Safety Day, “Day of the Child,” Chili Cook-offs, Parades, etc;
 - Senior Safety Programs: 6 different classes are offered, ranging from Disaster Preparedness to Fall Prevention for seniors in care facilities and also for those living on their own;
 - Career Information: career information is provided to our schools within San Luis Coastal School District, Hancock College, Cal Poly University, and Cuesta College;
 - Fire Extinguisher Training: extinguisher training is provided to businesses within the San Luis Obispo City limits;
 - Preschool and Elementary School Fire Safety Programs;
 - Neighborhood Disaster Preparedness workshops for several SLO city neighborhoods and Cal Poly residents on disaster preparedness in coordination with the SLO City Police Dept;
 - CERT: Community Emergency Response Training for citizens in San Luis Obispo to be better prepared in times of a disaster;
 - Charity Auction Donations: birthday parties and station dinners for a variety of organizations in San Luis Obispo;
 - Open House: open the station and provide the public with tours and information regarding fire safety;
 - Chamber and Rotary Socials held at the Fire Department;
 - Training Cal Trans Workers: helping them be better prepared out in the field in emergency procedures;
 - Cal Poly: provide informative fire safety information during WOW Week and during their housing fairs;

Everyone in the Department is involved in public education: fire suppression, prevention and administration personnel. The Public Education Coordinator keeps track of who conducts the events and the number of hours.

There is not a dedicated budget for public education; it is done by both on-duty fire crews and fire inspectors, or by personnel on overtime.

The number of qualified CERT instructors is small and some are nearing retirement. The program will need new and additional instructors to be able to grow the number of classes.

Finding #14: As with fire prevention, the public education program scope is very commendable for a department this size. There is not a clear accounting of what it costs, or what an ongoing dedicated budget appropriation should be.

Recommendation #10: The public education program needs greater tracking of what programs educate the most individuals and a separate budget line item so that the appropriate resource decisions can be made.

3.1.5 Fire Stations – Facilities

While the personnel in any fire department are the ones who provide the customer services, they need to operate from safe, effective facilities across the community. The firefighters live in these buildings 24 hours or more at a time and they need to also be accommodating to personal and business needs. Additionally, the stations are special facilities that have to withstand disasters and continue to shelter the crews and apparatus in the event of a local disaster. The State Essential Facilities Act regulates these special construction requirements.

Observations:

- ◆ Fire Station 1 and Headquarters, 2160 Santa Barbara Street, new in 1996. Meets all state essential facility act requirements. The headquarters spaces are already crowded and will not easily accommodate, if at all, more desk positions over any future timeframe.
- ◆ Fire Station 2, 132 North Chorro. Built in 1953, 55 years old with 2,900 square feet and a separate fitness room at 450 square feet on .39 acres. The station and land for parking and fire apparatus daily checks is very tight on space for its current daily crew of three. There is only one restroom at this station with no dedicated female restroom or separate female dorm. One dorm was created out of a closet about 10 years ago. There would need to be more living and dorm space added to the station if and when the daily staffing is increased above three or if a female firefighter was assigned to Station 2. Station 2 was seismically retrofitted in 1993.
- ◆ Fire Station 3, 1280 Laurel. Built in 1959, 49 years old with 3,563 square feet and a separate fitness room of 346 square feet on .55 acres. The station and land for parking and fire apparatus daily checks is very tight on space for its current daily crew of three. Station 3 was seismically retrofitted in 1993.
- ◆ Fire Station 4, 1395 Madonna. Built in 1978, 30 years old with 3,522 square feet, on .80 acres. While the interior is just large enough for a crew of three, there is no expansion room. The outside grounds are sufficient for parking and apparatus check uses. Enough space for dedicated fitness room and station storage has been

an issue at Station 4 for many years. The Department has requested CIP funds to build a detached fitness room and storage building 2 times in the last 10 years without success. An 8 foot by 12 foot temporary storage shed was located at Station 4 about four years ago to help with station storage needs.

- ◆ Fire Fleet Repair, Training and Storage – At the rear of the Fire Station 1 site, the fire apparatus repair building is located. It has 1,536 square feet and is sufficient for the needs of the current fleet and one mechanic position. There is a small training tower with props with some concrete pad room for training evolutions. There is a new 2,900 square feet storage building and a new 4,376 police/fire communications center to be built this year. The entire site is 2.43 acres. With the new communications center and storage buildings, the open training area is going to be constrained when it and the tower were small to begin with. While the City is making good use of this site, any further headquarters expansion will effectively mean the training area has to re-locate off this property.
- ◆ All routine maintenance and repair of the Fire Department buildings is handled by the City Building Maintenance Division.

Finding #15: While the City has been able to invest in a new central station and headquarters, the other three stations are 30-55 years old, and when built, were not constructed to be 50-100 year facilities. They have been given some upgrades, but more will be necessary. In other cities today, the more common size for a single fire company neighborhood station with space for reserve apparatus, separate gender areas and on-site outdoor activity space is an approximately 5,000 square foot and larger building on at least a 1+ acre site. The City will soon be facing significant repair and upgrade needs at the three neighborhood fire stations. The fire training area is crowded and produces noise and smoke at times better suited to a more outer city or industrial zone area.

Recommendation #11: The City should program for an extensive evaluation of its fire station and fire training building needs, and then make long-term, cost-effective Capital Improvement Project decisions to either continue to repair the three older stations, or given the small parcel sizes and ages, re-build them completely nearby.

Additionally, the City should investigate other fire training areas and partnerships with County Fire, police agencies and the colleges.

3.1.6 Apparatus and Equipment Readiness

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, 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, 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, which ensures 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.

Issues:

- ◆ To be effective apparatus must be of proper design, well equipped with the proper hose, appliances, tools, ladders and paraphernalia necessary to do the complex work of firefighting, rescue, emergency medical and public service type assignments.
- ◆ There should also be a system of testing, maintenance and repair, which ensures a high state of readiness of apparatus, and critical equipment.
- ◆ Does the San Luis Obispo City Fire Department have the proper apparatus and equipment in a first-class state of readiness?

Observations:

- ◆ Bill Dugger, the Fleet Manager, has been maintaining the Fire Department fleet for over 30 years. He is nearing the end of his career and would like to make a smooth transition to his replacement. For this reason, he has asked for assistance. In reality, he is quite capable of keeping up with the maintenance of the fleet.

- ◆ Dugger is a competent Fleet Manager with an intimate understanding of the apparatus that are his responsibility. He has been a participant in the Fire Mechanics Section training but has allowed that to lapse over the last three years. He also attended that National Fire Academy course on Apparatus Specifications and Purchasing and is responsible for developing the purchasing specifications for the Department.
- ◆ The Department has an apparatus maintenance policy, which it follows. The policy follows current law and best practices.
- ◆ Staff vehicles are maintained by the City’s mechanics at the City corporation yard. This has been an area of contention between the Fire Department and the Public Works Department. The Fire Department is the only City department that has its own shop and maintenance program. Because fire apparatus is so specialized, this system ensures that Fire Department apparatus receives appropriate maintenance. This should be continued, if possible.
- ◆ The Fleet manager has a total inventory of 24 vehicles. Of those vehicles, seven are fire apparatus and the rest a mixture of light vehicles and specialized equipment.
- ◆ Of those seven vehicles, 3 are reserve, enough according to the fleet manager, to handle out of service mechanical needs. If two frontline engines are out of service for mechanical, one for annual maintenance and one for 90 day inspection, that leaves little depth for a second alarm fire and call-back of personnel to staff reserves. Since San Luis Obispo Fire Department has only adjacent county resources to call on for a major fire, it appears that it would be prudent to have more reserves that could be staffed in an emergency.

San Luis Obispo City Apparatus

Fire Department Identification	License	Vehicle Description	Acquisition Year/ Replacement Year	Assigned Program
F-108 E-5 Reserve	E-347579	1991 Pierce Javelin Pumper Type 1	1991 <i>2013 When F-109 is replaced</i>	Emergency Response
F-109 E-4 Frontline	E-021647	1997 Pierce Lance Pumper Type 1	1997 <i>2012 Replace and move to reserve Surplus F-108</i>	Emergency Response
F-110 E-2 Frontline	E-1050593	2000 Pierce Lance Pumper Type 1	2000 <i>2015 Replace and move to reserve Surplus F-109</i>	Emergency Response

Fire Department Identification	License	Vehicle Description	Acquisition Year/ Replacement Year	Assigned Program
F-111 OES-271 Reserve	E-959477	2000 OES – HME Weststates USAR Pumper Type 3	2000 <i>State will replace</i>	Emergency Response
F-112 E-3 Frontline	E-1148762	2003 Pierce Lance Custom Pumper Job # 14170	2003 <i>2018 Replace and move to reserve. Surplus F-110</i>	Emergency Response
F-114 E-6 Reserve	E-1137087	2007 West Mark Type 2	2007 <i>2012 Replace and keep unit as a Type 3 reserve</i>	Emergency Response
F-203 T-1 Frontline	E-375646	1993 Pierce Lance Quint	1993 <i>2010 Replace and move to reserve</i>	Emergency Response
F-304	E-950356	1986 1-Ton Trailer	<i>Not on replacement schedule</i>	Emergency Response
F-314 B/C Command Frontline	E-1050582	2000 Chevy Tahoe 4x4 B/C- C/P	2000 <i>Replace in next C.I.P. 2010-2015 ASAP</i>	Emergency Response
F-315	E-1050822	2001 F-550 4 Dr. 4x4 Hook Lift	<i>Surplus as soon as means to move heavy rescue equip. exists</i>	Emergency Response
F-316	E-950359	1998 Pace Trailer	<i>Not on replacement schedule</i>	HAZ-Mat
F-317	E-1124080	2002 Ford 4 Door F-150 4x4	2002 <i>Recommend replacement 2012</i>	Training
F-318 Special Call	E-1014940	1998 E-350 Squad	2000 Purchased used <i>Recommend replacement 2010</i>	Emergency Response

Fire Department Identification	License	Vehicle Description	Acquisition Year/ Replacement Year	Assigned Program
F-319	E-1264827	2008 F-550 Shop Utility	2008 <i>Recommend replacement 2020</i>	Emergency Response
F-320 Special Call	E-1264778	2008 F-550 Type-4 Brush Patrol	2008 <i>Recommend replacement 2020</i>	Emergency Response
F-419	E-1124065	1999 Ford Explorer XLT	Purchased used <i>Recommend replacement 2010</i>	Prevention
F-420	E-1124063	2000 Ford Explorer XLS	Purchased used <i>Recommend replacement 2010</i>	Prevention
F-421	E-1124064	2000 Ford Explorer	Purchased used <i>Recommend replacement 2010</i>	Prevention
F-422	E-1219136	2007 Silverado Classic	Purchased used <i>Recommend replacement 2019</i>	Prevention Arson
F-424	E-1205958	2005 Ford Ranger	Purchased used <i>Recommend replacement 2018</i>	Prevention
F-425	E-1219105	2006 Crown Victoria	Purchased used <i>Recommend replacement 2016</i>	Emergency Response/ Administration
F-426	1262230	2007 Chevy Silverado ½ Ton P/Up	2007 <i>Recommend replacement 2019</i>	HAZ Mat
F-427	1264700	2008 F-150 4 X 4	2008 <i>Recommend replacement 2020</i>	Emergency Response

Fire Department Identification	License	Vehicle Description	Acquisition Year/ Replacement Year	Assigned Program
F-501	None	Clark Fork Lift	Purchased used <i>Recommend replacement 2010–2015</i>	Emergency Response

Commendations:

- ◆ The fleet appears to be well maintained. The daily, weekly and other inspections required by policy or by law are observed and followed. There are a number of laws and policies that govern these vehicles; this can be an area where departments might take a short cut, but San Luis Obispo Fire Department appears to follow the rules diligently.
- ◆ The San Luis Obispo Fire Department Training Manual has complete specifications of each frontline apparatus. Having this available for engineers to familiarize themselves with each individual unit is very helpful.

Recommendation #12: As apparatus becomes available, San Luis Obispo Fire Department should consider extending the time apparatus is in reserve status in order to build up its second alarm capability. Not including the OES engine, a duplicate of each type would seem prudent. This could be achieved by keeping F-109 about 3 more years

When Fleet Manager Dugger is due to retire, consider keeping him on as a retired annuitant for six months to work with his replacement as a good transition process.

3.1.7 Personal Protective Equipment (PPE)

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, specifies which types of PPE are to be used for various types of operations and that the PPE must be certified as compliant with the appropriate product standard for that use.

NFPA 1851, *Standard on Selection Care and Maintenance of Structural Fire Fighting Ensembles* (turnouts), and NFPA 1852 *Standard on Selection Care and Maintenance of Open-Circuit Self-Contained Breathing Apparatus* (SCBA’s), provide fire departments with guidance on specific aspects of a fire departments PPE program.

Turnouts

Turnouts are considered contaminated any time they are worn at a fire or other emergency operation. Therefore, they have to be decontaminated (laundered) after each use. While they are

being laundered, firefighters need to have another set of turnouts to wear in the event there is a fire or other emergency.

San Luis Obispo Fire Department Turnout Condition

Turnouts	Number	Average Age
Front line sets	42	6-9 years
Reserve sets	42	10 or more
Total sets	84	

The replacement cost of turnouts is estimated at about \$2,000 per set. Most manufacturers give a warranty life of 5 to 7 years. At 42 employees needing turnouts, the Department should have 84 sets. (No replacement sets should be maintained in the Department; most manufacturers carry a full range of turnouts for “just in time delivery” so that a department the size of San Luis Obispo Fire Department does not need to keep new sets in stock.)

Finding #16: With a life expectancy of five years, the Department should be budgeting annually for turnout replacement. This can be adjusted, and in all probability, an alternate year purchase of enough sets to maintain an overall 5-year life cycle would obtain a better price.

Recommendation #13: The Department needs to develop a program for on-going replacement of protective clothing (turnouts) on a life cycle of 5-7 years for 84 sets of gear. This means an annual budget commitment of approximately \$35,000.

3.1.8 Hose, Tools and Appliances

NFPA 1961, *Standard on Fire Hose*, and NFPA 1962, *Standard for the Care, Use, and Service Testing of Fire Hose Including Couplings and Nozzles* provide guidance for the fire service on their hose programs. Testing of fire hose is an important fire department function. Fire hose carries water at pressures much higher than experienced with a garden hose. For this reason, burst hose on the fireground can injure firefighters and bystanders as well as slow the progress towards bringing a fire under control. Fire hose should be tested annually, after repairs and after hard usage or if damage is suspected. There are many different types and manufacturers of hose and no single standard replacement schedule, although *traditionally* with cotton jacket hose, replacement of one and one half inch hose was five to seven years and two and one half inch was ten years. Manufacturers warranty hose for certain lengths of time, but these are not necessarily the service life of hose. In addition to the hose carried on fire apparatus, there is a need for back-up hose in case hose gets dirty, damaged or destroyed. Traditional cotton jacket hose must be cleaned and dried after each use and requires a 100 percent back-up supply stored in the fire

stations; modern synthetic or rubber covered hose can be reloaded dirty and only requires a 20 percent back-up.

Observations:

- ◆ San Luis Obispo Fire Department has a computer hose record keeping system and an active annual hose-testing program. This tracking system tracks inventory, required hose testing and service life trends and purchasing needs.
- ◆ In 2007, a hose liner delaminating problem was discovered in more than 50 percent of the 4” hoses. This type of problem can cause catastrophic water delivery failures. The problem required aggressive attention and took those hoses out of service. This placed the Department below the required number of supply hoses on front line fire engines. Most of the affected hoses have been repaired.
- ◆ Staff believes that in a short period of time the remaining 4” hoses will become unserviceable due to liner delaminating; a manufacturing defect is considered the cause.
- ◆ All of 4” hose was purchased at one time in the 1990s. Consequently, when the hose delaminating started, it had an impact on a lot of hose. Simultaneously, the reserve inventory of all sizes and lengths has been slashed due to lack of budgeted money. Only \$3000 is budgeted this year for hose. Hose testing failures and needed replacements costs exceed the amount funded. Each year the solution is to change and reduce the reserve hose inventory.

Finding #17: The hose program appears to be relegated to a budget status where inventory levels are too low and replacing the prematurely failing hose is problematic.

Recommendation #14: The Department should develop a standard complement, specification, and hose replacement program. As soon as the City can find the funding it should start improving its hose inventory.

3.1.9 Self-Contained Breathing Apparatus

Observations:

The SCBA program has specific requirements. NFPA 1981, *Standard on Open Circuit Self-Contained Breathing Apparatus*, establishes the minimum respiratory protection used by emergency personnel in an IDLH³ atmosphere during fire fighting, rescue, hazardous materials,

³ IDLH Immediate Danger to Life and Health.

or similar operations. Additionally, the CAL OSHA and NIOSH (National Institute for Occupational Safety and Health) standards also apply.

- ◆ There is only one SCBA technician in the Department. He handles program administration as well as the technical processes. Two other firefighters assist with the annual testing. The equipment does not belong to the Department; it is borrowed from Allan Hancock College.
- ◆ The current inventory of the Department does not meet the requirements for chemical, biological, radiological and nuclear (CBRN) environments. They do not have the universal RIC connection, important for “buddy-breathing” in crisis situations on any pack and no communication/voice amplification systems. All of these are now required by NFPA 1981.
- ◆ The Department performs mutual aid with other fire departments in the County; at times either they or the Department might perform RIC. San Luis Obispo Fire Department SCBA’s are without a connection to mutual aid packs either with a RIC connection or buddy breather line.
- ◆ The Department has a total of ninety bottles; thirty are in service as SCBA packs, thirty more are carried on apparatus as backup and thirty more are further backup in storage at Station 1. Once the initial thirty bottles are used, an off-duty firefighter is called in to transport the thirty bottles in storage to the scene and return the empties for refill.
- ◆ The Department has a Bauer three-station fill unit stationery air supply.
- ◆ The Department currently uses Interspiro SCBA’s. The SCBA technician reports that Interspiro used to work well through their local jobber Bauer; now they do not and communication suffers.
- ◆ Of the 90 bottles, 17 had to be pulled from service due to service life. There is no funding in the current budget to replace these bottles.
- ◆ Interspiro is a minority supplier of SCBA’s. The adjacent County Department does not use Interspiros.
- ◆ The technician does not have repair tools, a test stand or test equipment. SCBA’s do receive annual testing. SCBA testing and repair is done by a vendor.

Finding #18: The breathing apparatus program, like many of the Department’s support programs is impacted by a lack of administration time.

The Department needs to have its own fit face mask testing capability as well as its own test equipment to verify vendor repairs. It could save money by doing SCBA repairs in house if it had the bench space and tools. If the current technician is unable to fulfill his role, there is no back-up.

Recommendation #15: The Department needs to develop a complete breathing apparatus capital replacement plan and then identify funding for the plan.

The new SCBA system would have the following characteristics: yearly testing, for SCBA's, integrated enhanced voice communication, CBRN compliant universal RIC/RIT connection, portable air unit and heads up display.

In the interim, the Department needs to acquire additional spare cylinders, fit-testing equipment and a test stand. It should consider getting a cascade and or portable compressor system to do refills on large-scale incidents.

Consider developing greater program technician depth and have a certified technician on each shift.

3.1.10 Mutual Aid/Automatic Aid

Since only the very largest cities have sufficient resources to handle almost every call, fire departments developed mutual aid systems to assist each other when their needs exceeded their capabilities. Departments build their mutual aid agreements upon the concept of reciprocity, "We will take care of you this time if you will take care of us next time." As long as the give and take of the agreement stays fairly even it works very well. In California, virtually all fire departments are signatory on the California Master Mutual Aid Agreement, which creates a tremendous depth of capability for any jurisdiction that suffers a calamitous fire.

A special case of mutual aid is automatic aid, whereby adjoining jurisdictions assist each other with their closest resources, which may be closer to the emergency than the jurisdiction's own resources.

Issue:

- ◆ Does the San Luis Obispo Fire Department maintain a sufficient mutual aid and automatic aid system with other jurisdictions?
- ◆ Are the agreements written and current?

Observation:

- ◆ Except in the cases of wildland fires or major disasters such as an earthquake, much of the Statewide Master Mutual Aid resource is beyond the reach of fire departments that are somewhat isolated as is the case of San Luis Obispo City. This creates a need to ensure that the Department internally has greater depth to handle major fires (concentration) and rock solid agreements with its nearby neighbors to provide assistance.

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- ◆ San Luis Obispo Fire Department enjoys a strong working relationship with the surrounding communities and fire departments. About once a year, the San Luis Obispo Fire Department assists other departments in the County, except for the County Fire Department, which receives about 110 assists per year.
 - ◆ The County Chiefs Association, which coordinates mutual aid system, updates the County's mutual aid plan once a year. Annual wildland deployment drills are held in the spring in rotating areas of the County.
 - ◆ If the City sends its ladder truck out on mutual or auto aid for any length of time, the City truck service is not covered, because it does not have a reserve truck.
 - ◆ The San Luis Obispo Fire Department maintains mutual aid agreements with some of the surrounding jurisdictions.
 - ◆ On those rare occasions that the Department needs assistance or move-up and cover due to a major incident, that is accomplished through the operational area (CAL FIRE) Command Center utilizing the Master Mutual Aid Agreement. CAL FIRE dispatches, assigns and tracks all mutual aid resources in the County.
 - ◆ The San Luis Obispo Fire Department also maintains an Emergency Services Contract with California Polytechnic State University. Under the conditions of this agreement, San Luis Obispo Fire Department provides fire and other emergency services to the university in return for a set annual fee. Also, a condition of this agreement is participation in the purchase of an aerial apparatus.
 - ◆ The San Luis Obispo Fire Department also maintains an agreement with the Los Padres National Forest for wildland response in adjacent areas. Additionally, this agreement allows members of the San Luis Obispo Fire Department to participate in Forest Service incident management teams. It bars the Forest Service from responding to non-wildland incidents unless they threaten the adjacent forest with fire.

Commendations:

- ◆ The Department does have extensive interagency plans and partnerships.

3.1.11 Radio Communications

Modern fire departments rely heavily on radio communications for dispatching, fireground coordination and safety, and administrative communication. It is most desirable to have a radio communications system that is reliable and interoperable with adjoining jurisdictions.

Issue:

- ◆ Is the current radio communications system adequate for the needs of the San Luis Obispo Fire Department?

Observations:

- ◆ San Luis Obispo is in the middle of developing a new police/fire dispatch center; simultaneously, a new citywide trunked radio system will be put in place during

2009. While this new system is digital, it incorporates complete analog back-up allowing the Fire Department's tactical channels to remain analog.

- ◆ There is good radio coverage throughout the City; the mobile radios in the apparatus are fairly reliable, while the portable radios are of different types and generations. The station radios are also older and the alerting system has lost some reliability. The new system should take care of these issues.
- ◆ The new system will be compatible with mutual aid resources.
- ◆ The new digital trunk system will create a reliable radio system with distress signal ID, simplicity/uniformity of operation and improved clarity in all locations at all times for personnel. It will improve station alerting and will allow for specific personnel-alerting capability.

Commendations:

- ◆ Moving to a digital trunk radio system will ensure the reliability of dispatch and fireground communications.

3.1.12 Pre-Incident Planning

A pre-incident plan is one of the most effective tools for aiding the fire department in effectively controlling a fire or other emergency incident. This is particularly true in major commercial and industrial facilities that have complex construction and fire protection systems. They also pose a safety threat to firefighters and occupants alike.

Issue:

- ◆ Pre-incident planning ensures that firefighters know as much as they can about a facility's construction, occupancy, and fire protection systems before an incident occurs.
- ◆ Does the San Luis Obispo Fire Department have a program that provides pre-incident plans of the major commercial and industrial facilities?

Finding #19: The San Luis Obispo Fire Department does not have a pre-fire plan program. They have been giving consideration to developing a system incorporating Google Earth maps but have made no progress on the project.

Recommendation #16: The Department should develop preplans for target buildings. While a process using Google Earth or other similar process might eventually work well, a much simpler program, using the stock National Fire Academy format, could be started immediately. As part of its risk analysis, the Department self identified about 45 target hazard buildings; this divides into about twelve per station or four per shift, a very reasonable number of preplans to develop and maintain. This would provide responding companies with vital information about the target hazards before they arrive. Later on, when the Department acquires the technology, it could computerize the information in one of many available formats.

3.1.13 EMS Response

Nationally fire department emergency medical response outnumbers fire response by about six to one. Although many fire departments provided ambulance service and emergency first aid, the major growth in this area has been since the early 1970's when advanced life support (paramedics) became part of the emergency medical system.

Issues:

- ◆ Does the San Luis Obispo Fire Department provide adequate training for the level of emergency medical services it provides?
- ◆ What level of emergency medical service does the Department provide? What level does the community desire? Is it the same as the service provided?
- ◆ Does the Department provide pre-arrival instructions through a recognized EMD program?
- ◆ What is the EMS reporting system?

Observations:

- ◆ The Department has provided engine-based Advanced Life Support (ALS or paramedics) since 1995. This decision was based on community input through studies and City Council input. The Department does not provide patient transport. All response personnel that are not paramedics are trained to the EMT-I level and provide basic life support.
- ◆ The City provides emergency medical dispatching, pre-arrival instructions. The system is one that the County developed.
- ◆ They use a two-tier (code 2—code 3) response system.
- ◆ The City receives a \$100,000 reimbursement from the ambulance providers for assisting them in meeting the time factors of their contracts. The City also

receives about 20 percent cost recovery for supplies from the hospitals through the ambulances billed to the patient. The ambulance company will exchange drugs that are close to expiration for ones with longer expiration dates.

- ◆ The Department responds to an increasing number of medical “emergencies” in elder care residential facilities that are being built new, as well as in converted college dormitory buildings. In many cases, the care unit’s on-duty person does not have enough medical training, equipment or scope of practice to handle even a minor medical emergency. The result is a call to a 911 system, where in many cases, if the same issue happened in a home, a relative would likely handle the problem by calling their medical provider for advice and/or take the elder in a private vehicle to an appropriate treatment facility.

This is an increasing issue in the elder care industry and for all local government 911 systems. There are no easy answers given the need for such care units, the current regulatory system on the facilities and the convoluted medical insurance system. Ideally, this industry would staff in a way to lower the need for 911 paramedic calls. If the City were to charge a “response fee” to both cost recover and deter calls, the fee might not work. Someone would have to agree to pay the fee, not all insurance plans would, and the family and facility operator could argue over fee responsibility, with the result being the fee is not paid at all. Or, the fee does stop 911 calls to the point where true emergencies are not called in to avoid the fee.

Citygate believes that a group of representative stakeholders needs to meet on this issue to study all the issues and potential solutions before the City attempts a usage fee. The interested parties also should include County EMS, the hospital and paramedic ambulance provider.

- ◆ There is no County medical oversight or standards for the purchase of medical supplies and medications. The de facto standard is what the local ambulance company chooses to buy. First responders in the County are restocked with supplies the ambulance company purchases. There are many products, which the ambulance company chooses not to use because of cost. However, out of consideration for patient care, the Department uses more costly products in some cases. This forces the Department to either absorb the difference in cost of the medication or to always use the ambulance standard.
- ◆ The program operates out of two hospitals, Sierra Vista and French; both are base stations, and the medics utilize the hospital that is geographically the closest to the incident.
- ◆ The Department hires medics who already have completed their paramedic training. The Department provides 18 of the 40 hours required every two year of the continuing education requirement. This consists of advanced protocol review and medic updates. Quality assurance is accomplished through the emergency room, to the paramedic coordinator (fire captain), then to the shift medic coordinator. The San Luis Obispo County, EMSA provides oversight through two committees, operational and clinical. The operational committee handles medical matters and clinical committee handles administrative matters. The

County Fire Chief Association has a representative on each committee. The EMSA interfaces well with the Fire Department.

- ◆ The Fire Department does not support an EMS public education program.
- ◆ The newer, stand-alone, computer-based EMS reporting suffices for the Fire Department's reporting needs.
- ◆ The Fire Department currently has three dedicated Captain/Paramedic coordinators, one for each shift. The three Paramedic Coordinators, who are also shift Fire Captains, currently manage the program. These three Captains still have all of the work and responsibilities of an Engine Company Captain with the added responsibility of the Medical Program. Among their collateral duties, the coordinators work on the computerized medical report writing system for documentation of calls and quality assurance program; develop the line item dedicated yearly medical budget for purchase of necessary medical supplies and equipment; and administer the dedicated training budget money for Paramedic continuing education and required certification programs.
- ◆ The standard is for there to be a paramedic assigned to the same engine as the coordinator so that he can be free to administer the program on his shift; this is not always possible as the Department is not at its full paramedic strength, plus the impact of vacations and sick leave in a small agency.
- ◆ The Paramedic Coordinators were unanimous in their assertion that the medical program has more than enough work to justify a 40-hour per week administrative position. They estimate that, as it is currently structured, they are fortunate if they can spend 10 hours per week managing the paramedic program. Because of these time limitations, only the absolute critical functions get completed.
- ◆ In addition to these three mid-management positions, the Department has the following resources to help complete the Emergency Medical Program mission:

Paramedics

Position	Number	Remarks
Paramedics	20	Funded for 24
Certified EMT-1's	21	
Certified field training officers	4	From the pool of 21
Fire Captain Paramedics	3	From the pool of 21
First responding ALS Units	4	
Reserve or unstaffed ALS	2	

- ◆ The current plan is to fill the four Paramedic vacancies into the pool of 24 positions through hiring. Currently, the plan is just keeping up with attrition since the Department hires both EMT-1's and Paramedics.
- ◆ According to the NFPA, only fifteen percent of the communities in the U.S. provide Advanced Life Support (paramedic) service.

- ◆ San Luis Obispo Fire Department’s emergency medical program meets best practices.
- ◆ The Paramedic Coordinators all expressed concern over the coordinated management of the paramedic program. They felt that the program needs a unified approach through a program-wide Emergency Medical System (EMS) Chief Officer.
- ◆ An EMS public education program could result in reduced call volume if it targets those users of the EMS system who access all of their medical care through EMS.
- ◆ The Fire Department assists the Police Department SWAT by providing SWAT medics. Not all paramedics are trained to this level.

Commendations:

- ◆ The Fire Department’s Emergency Medical program provides quality service to the citizens of San Luis Obispo.

Recommendation #17: When funding is available, perhaps at the next renegotiation of the ambulance contract, the Department should consider adding an EMS Manager as a forty-hour per week position.

In conjunction with the County, the Fire Department and ambulance service should investigate successful public education programs and consider how they might provide that education with a target of reducing abuse to the system.

3.1.14 Hydrant Maintenance

A reliable water delivery system is a cornerstone of a successful municipal fire protection system. Properly functioning hydrants are a key to making that system work. In most cities, the fire department is responsible for the routine testing and maintenance of fire hydrants. The testing occurs annually.

Issue:

- ◆ Does the Department have an inspection and routine maintenance system that ensures a reliable delivery of water from hydrants at their rate fire flow?
- ◆ The Fire Department uses fire interns to do the hydrant testing. This job gives future firefighters a chance to learn some things about the fire service and especially water supplies.

Commendations:

- ◆ This program means that expensive firefighters are not engaged in a task that can be “farmed out” to lower cost labor.

- ◆ The interns also assist the training division.

Recommendation #18: Continue the hydrant-testing program. Consider working with the water system enterprise fund to have the water utility rate structure cover the full annual testing and repair of fire hydrants. This program should not be a General Fund program.

3.1.15 Training and Education

The job of a firefighter is extremely complex and the services they provide 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.

Issues:

- ◆ Is there an effective training program in the Department?
- ◆ Is there an effective education program in the Department?
- ◆ What percent of employees are in a certification process? What percent certified at their level?
- ◆ Training is the keystone to effective emergency response. During emergency operations, time is always of 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 difference between effective CPR that starts on time and a patient that dies.

Training (Training Officer)

The NFPA has several recommended standards that cover the training arena; among the ones that apply to San Luis Obispo Fire Department are:

- ◆ California State Fire Training Certifications and educational programs.
- ◆ NFPA 1001 *Standard for Fire Fighter Professional Qualifications*—this standard establishes the basic qualifications for Firefighter I and II.
 - San Luis Obispo hires both paramedic and non-paramedic firefighters. All new firefighters, including lateral hires from other departments, receive an 8-week academy, one year of probation and 3 to 3-1/2 years in the Joint Apprenticeship Program. There is also a Probationary Check Off List that all must complete. The list consists of all the standard aspects of a firefighter’s job; firefighters need to get the list complete during probation.

- ◆ NFPA 1002 *Standard for Fire Apparatus Driver Operator/ professional Qualifications*—the standard sets forth the performance objectives for driver/operators of all types of fire apparatus and emergency vehicles.
 - San Luis Obispo has an in-house “Relief Engineer” program whereby firefighters wishing to become engineers work under direction. Promotion also requires a battery of tests and completion of a Relief Engineer Task Book. The task book appears to be well thought out and well designed; firefighters wishing to take assignments as relief engineers must complete the task book.
- ◆ 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.

Finding #20: San Luis Obispo does not require certification for fire officers or chief officers. For Company Officer, the Department has an acting captain certification, which includes an Acting Captain Task Book; it is also highly recommended that company officers have the California Office of State Fire Training Company Officer Certification. The task book appears to be well thought out and designed; engineers wishing to take assignments as acting captains must complete the task book. In San Luis Obispo, promotion to chief officer is either by a four-year degree or Chief Officer Certification.

- ◆ NFPA 1031 *Standard for Professional Qualifications for Fire Inspector and Plan Examiner*—This standard describes the professional performances of the fire inspector and plan examiner.
- ◆ NFPA 1041 *Standard for Fire Service Instructor Professional Qualifications*—This standard guides the development of the fire-service training instructor through the three levels of advancement: Instructor I, II and III. It is critical for proper delivery of training that all instructors meet the appropriate level of instructor development, which also includes delivery of instruction, evaluation, and testing processes, and management of training programs.
- ◆ NFPA 1401 *Recommended Practice for Fire Service Training Reports and Records*—This standard is of particular importance to San Luis Obispo since it includes all aspects of training documentation such as training schedules, reports,

records, legal characteristics of training records, record management systems (RMS), and means to evaluate the RMS.

- ◆ Management does not receive training management reports via the Department RMS.
- ◆ NFPA 1403 *Standard on Live Fire Training Evolutions*—Since San Luis Obispo performs live fire training at the training center, this standard is also critical as it outlines the procedures required for safe live fire training. Sadly, live fire training has been the source of many injuries and fatalities to firefighters. In the present day, failure to adhere to this standard would be negligent.
- ◆ NFPA 1404 *Standard for Fire Service Respiratory Protection Training*—This standard covers the proper use, inspection, maintenance, and program administration of SCBAs. The Department is 29 Code of Federal Regulation and OSHA compliant.
- ◆ NFPA 1451 *Standard for a Fire Service Vehicle Operations Training Program*—This standard covers the minimum requirements of a vehicle operations training program.
 - San Luis Obispo does not reference this standard specifically or indirectly.
- ◆ 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. There are a number of requirements for training and certification governing departments that engage in these activities. 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*.
 - While San Luis Obispo does not support full Technical Rescue and Hazardous Materials Response programs, it participates, through the automatic aid program, in a regional technical rescue program.
 - All members must attend Rescue Systems 1 the standard basic technical rescue training in California. Some members attend Rescue Systems 2 training as well; this is the more advanced technical rescue-training program. Given the resources countywide, it would be possible to assemble a countywide type 2 technical rescue team.
 - All members are trained as Hazardous Materials First Responders—Operational and at least two members per shift are trained Hazardous Materials Specialists. (Specialists would be the City’s contribution to an activation of the County’s Hazardous Materials Team.) The City’s Hazardous Materials Inspector is also a Specialist and a member of the countywide Hazardous Materials Response Team.

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- All personnel are trained in Confined Space Awareness and the CAL OSHA permit process. Additionally, six members are trained in Confined Space Operations, but only receive refresher every other year. The Code of Federal Regulations specifically requires annual training for Confined Space Operations personnel.⁴
 - San Luis Obispo Fire maintains a shore-based swift water rescue capability. All members receive annual refresher training on shore-based swift water rescue. The City has one significant swift water hazard, San Luis Creek in the wintertime.

Observations:

- ◆ FY 2006-07 budget reinstated the 40-hour Training Battalion Chief position. This position provides the needed management and leadership to the training program. This resulted in an overhaul of the training program.
- ◆ The Training Chief has developed a number of initiatives to bring the training program up to speed such as:
 - San Luis Obispo Fire Department training manual, a very well designed manual that uses hyperlinks to cross-reference the various sections of the manual to each other.
 - Emergency Operations Guidelines, which appear to have been drawn in some cases from best practices, such as IFSTA and FIRESCOPE.
 - Dedicated time allotments each week established for training.
 - Company Refresher program outlines 24 training blocks, which Captains are responsible to oversee with their crews.
 - Simple-to-use Training Database that tracks Department training.
- ◆ There is significant mentoring that goes on between the company officer/chief officers and members at the company level.
- ◆ Because the Department participates in California Joint Apprenticeship Committee sanctioned training, they recapture funds from that source to offset some costs of training.
- ◆ The aforementioned mutual aid agreement with the Los Padres National Forest assists the Department in achieving California Incident Command System (CICCS) training and qualification.
- ◆ While the Training Chief devotes significant effort to the program, there appears to be a lack of support from the other chief officers. This includes participation at

⁴ 29 CFR 1910.146, Dec. 16th, 1997: 1910.146(k)(2)(iv) Ensure that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

multi-company drills, the one place chief officers should be participating in the drill evolutions. This results in a company level workforce that is slow to actively take on training as a “personal” responsibility.

- ◆ The General Operations Section 501.01, Training Program Overview, which lays out the foundation for Departmental training, is still not approved after almost two years since it was first written.
- ◆ The Department training facility consists of a small training area and a three-story training tower; a new dispatch center is scheduled to take up some of the drill space.
- ◆ It appears that there are no countywide or regional training standards even though the City and the County routinely, almost daily, assist each other through automatic aid.
- ◆ The Department culture appears not to be one that is sparked by either a strong desire to train or value following current best practices.
- ◆ Few of the engineers are certified driver/operators.
- ◆ About half of the company officers and chief officers are certified by the OSFM.
- ◆ There is no participation in the National Fire Academy programs.
- ◆ The Training Officer has the following goals:
 - Establish a training committee that meets quarterly.
 - Hire a full-time drill master to assist with new hire and on-going training.
 - For each shift, appoint a trainer, similar to the Paramedic Captain, who would be assigned to Station 3; designated as a training station.
 - Assign, from the regular work force, 10 people who would be specialist trainers (train the trainers).
- ◆ There is a complete annual training schedule. This schedule lists training for about 14 hours per month or an annual total of approximately 170 hours. That is a number of hours that is fairly consistent with fire service practice for required training.
- ◆ The stand-alone training record system has the capability of developing exception reports to indicate that individuals have or have not completed required training. While these reports are valuable for the training officer, they should be shared with the entire management staff, especially for training that follows a legal mandate or internal policy for completion.
- ◆ Of the required 170 hours of training, one individual sample showed a captain completing 230 hours of training in the first nine months of 2008.
- ◆ The training program is an internally driven program, and except for the participation in the Joint Apprenticeship Committee, which is a fund generator, there appears to be little connection with current fire training best practices of the fire service. National Fire Protection Association (NFPA), International Association of Fire Chiefs (IAFC), the Office of State Fire Marshal (OSFM) and

the National Fire Academy (NFA) have a consistent vision of what the training programs of the fire service should look like. Referencing these sources and using their guidance would assist the program.

- ◆ There are complete policies in draft format covering most elements of a best practice fire department training program. The policies do not reference best practice sources such as NFPA, IFSTA and FIREScope.

Commendations:

- ◆ There are some elements of an effective training program present in San Luis Obispo Fire Department, participation in the Joint Apprenticeship program (JAC) being the most notable one.

Recommendation #19: The training program needs on-going executive attention. The current training officer is off to a good start, but will probably be going to shift work by the time this report is complete. The executive attention needs to be focused on four essential areas:

- 19.1** A training records management system that provides exception reports on a shift basis so that the Fire Chief and shift Battalion Chiefs know who is training and, more importantly, who is not training.
- 19.2** A Department-wide commitment to certification at all levels from Firefighter I through Fire Chief. With the chiefs modeling the behavior expected of the rest of the Department, it would not take long before everyone was certified. This is particularly important at the Driver/Operator level.
- 19.3** An increased focus on and participation in the essentials of firefighting, including multi-company drills, preplans followed by chalk talks on all target hazards, and in house drills focused on the basics.
- 19.4** Referencing the source documents for training policy to current best practices. Doing this will ensure that the program and, more importantly, the Department is doing its best to ensure that the training received by firefighters meets or exceeds industry standards.

Conceptual Idea: The City and the County could jointly develop a regional training facility. Citygate did not investigate this; however, with the University or a community college, perhaps the departments could build it on a college campus with some college funding.

3.1.16 Risk Management

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 standards for the occupational safety and health program for the fire service. NFPA 1500 outlines the required components of a model program, including an organizational statement, organizational structure and a safety and health committee. It also spells out the need for a scene safety officer, department safety and health officer, and training and education programs. It also has chapters on fire apparatus, tools and equipment, protective clothing, and equipment, emergency scene operations, facility safety, medical requirements for firefighters, a member assistance program and critical incident stress management. Among the elements 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.

NFPA 1500's 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
- ◆ Occupational safety and health officer
- ◆ Infection control
- ◆ Critical incident stress management
- ◆ Post-incident analysis.

Issue:

- ◆ Is there an effective risk management program in the Department?

Observations:

- ◆ Firefighters are in a high-risk occupation. Experts who have examined mortality and morbidity statistics of the fire service agree that during emergency operations it is the most hazardous occupation in the country. An effective risk management program is an essential component of a fire department that adheres to best practices.
- ◆ The program for the Fire Department is based, in part, on NFPA 1500. However, the program itself is part of the larger City safety program.
- ◆ There is a Health and Safety Council for the City as a whole that meets monthly. Among other things, it investigates and reviews all accidents, injuries and exposures. Due to HIPPA requirements, these investigations are limited to the circumstances surrounding the injury, not the details or treatment.
- ◆ There is a physical fitness program; each employee is permitted 1 hour per day during shift time to complete physical fitness.
- ◆ The Personnel Accident/Injury Reports/Procedure is to complete the Workers Compensation forms. Treatment is normally done at Sierra Vista Hospital.
- ◆ The Vehicle Accident/Injury Reports/Procedure is to have the Police Department conduct the investigation and to notify the employee's supervisor.
- ◆ New employees receive a firefighter Safety Orientation and an additional safety orientation from Human Resources.
- ◆ The Hazardous Condition Communication System that consists of a quarterly inspection program where conditions are spotted. In addition, employees can communicate confidentially with the Department Safety Officer.
- ◆ The MSDS Sheets in each facility have not been verified for currency, completeness or accuracy. While this is a small item, it is the kind of thing that can cost a department a serious CAL OSHA citation in the event of an accident involving the use of a listed hazardous material.
- ◆ Human Resources maintains the Cal/OSHA Form 300; called the Log of Work-Related Injuries and Illnesses. There is one in Department Headquarters.
- ◆ Company officers conduct Tailgate Safety Sessions twice monthly. They are in the training schedule. The company officers choose the topics.
- ◆ The Department, in conjunction with the City, has a Health and Safety program. The fire department component of the City's program is based on NFPA 1500.

Finding #21: The Department training officer has the safety officer responsibility as a collateral duty. The Fire Department has a risk management program that appears proportionate with the size of the Department. The safety programs reference the needed source documents for training policy to current best practices.

Recommendation #20: It would be valuable for the Department to complete the NFPA 1500 *Fire Department Occupational Safety and Health Program Worksheet* in NFPA 1500 Annex B. This program review will identify weaknesses in the current program and provide guidance for the Department to improve the risk management program.

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SECTION 4—FISCAL ANALYSIS

Section Intent: This chapter first sets out order of magnitude costs identified for the recommendations contained in this study. These are sufficient to permit the understanding of costs in current dollars so future long-range fiscal planning for fire and other City needs can occur when the economy recovers. Then illustrative general timelines for implementing improvements are demonstrated.

Detailed costing is not possible until City leadership approves fire service deployment measures, new station trigger point formulas and sees enough of an economic recovery to plan for fire service enhancements. Even when the economy recovers, the City will likely have sustained damage to its existing service levels and fiscal reserves. As such, Fire Department needs may or may not be of sufficient priority to receive funding early in a recovery. The Council will have to understand all of the City's under met needs and make the appropriate fiscal allocation decisions. Additionally, the facility needs mentioned above need more detailed planning and cost estimation based on City fire station standards and specific site costs.

4.1 COMPONENT COSTS

Personnel Cost to bring a 5 th station on-line with a 3-firefighter crew per day with salaries benefits, overtime and supply costs:	\$ 1,735,036
Personnel (salary/benefits) Cost for one (1) Deputy Fire Chief	\$ 225,587
Personnel (salary/benefits) Cost for one (1) Fire Inspector III	\$ 132,276
Personnel (salary/benefits) Cost for one (1) Administrative Analyst II	\$ 106,652
Office remodel to accommodate Deputy Chief	\$ 45,000
Deputy Chief Command Vehicle	\$ 32,000
Cost for one (1) <i>additional</i> fire station @ \$550/sq. ft. X 5,000 sq. ft.:	\$ 2.75M
Cost for one (1) <i>additional</i> structure fire pumper @ \$450K each:	\$ 450,000
Cost for <i>replacement</i> of one (1) older fire station, without land costs @ \$550/sq. ft. X 5,000 sq. ft.:	\$ 2.75M

If the City decides to add these 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 08-09 dollars.

Sample Phasing and Additional Cost Plan

Phase	Item	Operating Cost	Capital Cost
One	Detailed study and costing of the fire plan Recommendations	Staff Time	
Two	Add a Deputy Fire Chief position	\$ 225,587	\$ 77,000
	Dep. Chief vehicle and office space Conduct a repair/replacement study for the older fire stations	\$ 75,000	
Three	Staff a 5 th fire station with a 3-person crew	\$1,735,036	\$2,750,000
	Construct a 5 th fire station without land costs 5 th Station Fire Pumper		\$ 450,000
Four	Add one fire inspector and one clerical support position	\$ 238,928	
	Outer Year Totals:	<u>\$2,274,551</u>	<u>\$3,277,000</u>
<i>Long Term</i>	<i>Total Replacement of Fire Stations 2 and 3</i>		<i>\$5.5M</i>

4.2 OPERATING AND CAPITAL FINANCING ALTERNATIVES

These Fire Department planning recommendations include both service and facility needs driven by new development as well as replacement/improvement of current facilities that are either already inadequate or expected to be inadequate within the next 10-20 years.

If the City were to construct one new fire station and replace two existing stations based on information in this Fire Plan, the total cost in current dollars could approach \$8.7M including one additional fire pumper. Annual operating costs to staff a 5th fire station with 3 full-time career staff on each shift plus adding three headquarters positions would cost \$464,515.

The current local government revenue structure in California makes it highly unlikely that the City can fund these Fire Plan service improvements and facility replacements without some additional sources of revenue. New residential development, particularly if not accompanied by new high sales tax generating commercial business, will not generate sufficient new General Fund revenue to pay their share of both current City services and at least new, minimally adequate fire and medical emergency response services to serve the annexation areas.

Cities throughout California use a variety of fiscal approaches to both ensure that new development pays the incremental added cost of providing fire service to the development and also pays for upgrading the level of fire service to current development. Below is a brief outline of the approaches that have been most successful for other agencies.

4.2.1 Facility Financing

Development Agreements

When it can be established that a development will not receive fire services that meet standards adopted by the local agency unless a facility is replaced or a new one constructed, it is reasonable to require a developer to construct the facility. A Development Agreement is often used to accomplish this. If there is ancillary benefit to property outside of the boundaries of the development, and if this benefit is significant in scope, then the agency may want to consider including provisions for at least partial reimbursement of the developer from a source of revenue associated with benefiting properties that are outside the development boundaries. By using a Development Agreement, there is no requirement for these reimbursement provisions nor is there a requirement that the amount of reimbursement be related to any measure of benefit received by the outside properties.

The source of reimbursement revenue may be a Fire Facility Impact Fee (adopted pursuant to the provisions of AB1600). It is not uncommon to give the developer “credits” for the buildings within the development as part of the reimbursement and to use some portion of the impact fee paid by other benefiting properties to also provide the reimbursement funds. Since a Development Agreement is used as the vehicle to require construction of the fire station, the local agency can limit the reimbursement in any fashion agreeable to the parties. For example, reimbursement may be limited to funds collected only over a ten-year period, even if this is not the total amount the developer incurred in building and equipping the fire station.

Fire Facility Impact Fee

The current framework for local government’s ability to charge new development an “impact” fee to fund their fair share of public facilities that will serve the development originated in Assembly Bill 1600 and took effect in January, 1989. AB 1600 added several sections to the Government Code, beginning with Section 66000, which have since been amended from time to time. The relevant code sections are now known as the “Mitigation Fee Act.”

The Mitigation Fee Act does not limit the types of capital improvements for which impact fees may be charged, and defines public facilities broadly to include "public improvements, public services and community amenities." Impact fees, however, may not be used for maintenance or operating costs.

Using a Fire Master Plan as the basis for calculating the impact fee amount to be charged to new development, typically an impact fee calculation would determine the depreciated value of all existing and the cost of all future fire service assets and allocate these costs and depreciated value to both current and planned development. The fee to be paid by new development then would represent their proportionate share of the value of the current and planned fire capital assets. This proportionate share may be determined by projecting the number of incidents that are expected to be generated by various land uses as compared to the total number of incidents being generated by current development.

An important caution is that development rates are problematic, and bonds will need to be backed by a secure revenue source rather than impact fee revenues that are subject to annual market conditions.

Community Facility Districts

Since 1982, local agencies have been able to form Community Facility Districts, formerly referred to as Mello Roos Districts. Residents are able to approve a tax based on a two-thirds vote requirement. Funds can be used for both capital and operating expenses. Typically, these financing districts are formed to provide capital and operating funding for services to be provided to land proposed for development. If there are fewer than 12 residents, then the election is held among property owners. Since the district is usually formed as a condition of development approval by the local agency, the property owner/developers vote in favor of the district.

If the City were to use this source of funding to meet fire service needs, the funding could be used to pay debt service on bonds used to finance the construction of fire facilities serving the district area and the associated annual operating costs. If there is ancillary benefit to areas outside of the boundaries of the Community Facility District, the local agency may choose to find some other revenue source to pay a share of the fire facility and operating costs, so that the Community Facility District properties pay only some perceived fair share based on the benefit they receive.

Benefit Assessment Districts

The City can form a Benefit Assessment District to provide the revenue needed to pay the debt service on bonds issued to finance the construction of fire facilities. This type of district is called a “benefit” assessment district because the local agency establishes that the properties within the boundaries derive a special benefit from the facilities that is over and above the general benefits received by the properties or the public at large, and the amount of assessment charged to each property varies depending on the relative benefit to be received by each. Formation of the district is approved by the local elected body, following a protest election. The district can only be formed if there is not a protest by a majority of property owners with votes weighted according to the proportional financial obligation of affected properties.

Unlike an Impact Fee, it would be hard to argue that a Benefit Assessment District Fee should be used to fund replacement of fire stations located far from the development in the district, because this does not appear to be a special benefit distinct from the benefit received by the public at large. To overcome this problem, it is common for local agencies to establish the benefit boundaries to be the same as the boundaries of the local agency so that all properties benefit.

The City could form a Benefit Assessment District that includes all undeveloped or annexed property within the City. The City could then use the Fire Master Plan to define the needed facilities and their cost and determine a fee for each property that will pay the debt service on the bonds necessary to build the new and replacement facilities. A protest election would be held. In simple terms, this represents a 50 percent protest as opposed to the two-thirds positive vote required for the formation of a Community Facilities District.

4.2.2 Operating Expense Financing

General and Special Taxes

There are no provisions for using “fees” to pay for operating expenses except for special services such as permits and inspections where the individual or the property is receiving a clearly

recognized separate service or benefit. Fees are intended to recover the direct cost of providing a service that is not generally available to all or most properties and residents.

Instead, general operating expenses of services such as fire and medical emergency response is funded through taxes. The principal restrictions faced by local government in increasing tax rates to generate more taxes are twofold. First, Proposition 13 effectively restrained local government from raising the property tax rate for operation expenses because it limited the “ad valorem” rate that could be charged on property. Second, local governments are required to obtain voter approval in order to raise other taxes.

There are a variety of taxes that are not “ad valorem” (based on the value of property). Some examples are utility user taxes, sales taxes, parcel taxes and transient occupancy taxes. In order to raise these taxes, there are two voter requirements, based on the intended use of the tax.

If the tax is a “general tax” with its intended use not earmarked and the tax revenue going into the General Fund where the elected officials decide each year how to use the money, then a majority vote approval is required to levy or increase a non-ad valorem tax. If the tax revenue is to be earmarked for a specific use, such as a sales tax increase specifically to fund fire services, then a two-thirds voter approval is required.

Most agencies use a special parcel or sales tax, with a two-thirds vote requirement, if they seek additional funding for public safety services that benefit the broad general public.

Community Facility Districts

As noted earlier, Community Facility Districts can be used to help finance the cost of providing services within an area. Most often these districts are formed as part of the local agency approval of a development plan in order to ensure that the development generates sufficient revenue to fund the services being provided to the property and residents. Often the tax and fee revenue coming from new development under the normal local agency tax structure is not sufficient to fund the services that new development will require. Ultimately this results in lower service levels for all residents of the local agency, as tax resources are stretched thinner and thinner with the coming of new development that does not “pay its way.”

While formation of Community Facility Districts require a two-thirds approval of the voters for occupied properties, if there are fewer than 12 residents, then the election approving the district can be held among property owners. Typically there are only a few property owners who are also the developers, and they approve the formation of the district prior to any building. Residents and business owners, who then purchase property within the district, know in advance that there is a special tax levied on their property to help fund the provision of services.

Many local agencies now routinely require new development to be accompanied by the formation of a Community Facility District.

Benefit Assessment Districts

The City can form a Benefit Assessment District to provide the revenue needed to pay all or a portion of the operating expense of fire facilities. This type of district is called a “benefit” assessment district because the local agency establishes that the properties within the boundaries derive a special benefit from the fire services that are over and above the general benefits received by the properties or the public at large, and the amount of assessment charged to each

property varies depending on the relative benefit to be received by each. Formation of the district is approved by the local elected body, following a protest election. The district can only be formed if there is not a protest by a majority of property owners with votes weighted according to the proportional financial obligation of affected properties.

As with Benefit Assessment Districts used to fund capital assets that benefit an area, districts used to fund operating expenses need to include a careful analysis establishing that contributions to operating costs of facilities located outside of the district boundaries do in fact provide benefit to the assessed properties. To deal with this issue, the City could form a Benefit Assessment District that includes all undeveloped property in the City. The City could then use the fire deployment plan adopted standards to define the needed facilities and their operating cost and determine a fee each property will pay for the portion of operating expense that the City decides is appropriate. A protest election would be held. In simple terms, this represents a 50 percent protest as opposed to the two-thirds positive vote required for the formation of a Community Facilities District.

Policy Considerations

The City has a two-part fire service planning and funding solutions need: existing areas and future development, either in-fill or whole new areas. Improvements in fire service are outlined in this study for existing development/residents and known annexations. This study also demonstrates that new southern area development will put a strain on the fire resources if new development is not required to fund a 5th station and staff. While the City can choose to take a global approach to solving the fiscal problem through a citywide tax measure or a Benefit Assessment District, it instead can also apply the available fiscal approaches discussed in this report to only *new* development.

In developing a financing strategy for new or improved fire services, the City Council needs to consider whether the long-term approach is to secure funding from “all” property within the undeveloped City areas or if it intends, at least for the foreseeable future, to only seek funding from new development for the proportionate cost of providing service to them. If the City chooses to pursue the citywide funding approach, then adopting fire service deployment policies and developing an educational program to explain the funding need for them are important first steps to placing a measure on the ballot for a special tax election or holding a protest election for the formation of a citywide Benefit Assessment District.

If the City is not sure at this time whether a citywide election approach is either the best approach or concerned that it would not pass, then an appropriate step would be to require “all new development” to either form a Community Facilities District or a Benefit Assessment District to pay their fair share of fire service costs. This could be accompanied by a Fire Impact Fee on new development as part of that overall financing package. If the City later decides that revenue from the already developed portion of the City is necessary to upgrade the services to those residents and property, a special tax measure or the formation of a Benefit Assessment District can be crafted to avoid double taxation of the “new development” that is already paying a fire service tax or assessment.

SECTION 5—RECOMMENDED SOLUTIONS AND PHASING PLAN

5.1 DEPLOYMENT PLAN FINDINGS AND RECOMMENDATIONS

As this study has identified and measured, the City of San Luis Obispo has good fire crew coverage in much of the existing city but not in all of the annexation areas. Additionally, the Department is co-dependant on the neighboring County Fire Department for two reasons: (1) primary coverage into some City areas, and (2) providing the balance of the staffing needed for an effective response force (First Alarm) to serious fires and other serious or simultaneous emergencies.

The City is close to a desirable goal of being self-sufficient for usual and customary emergencies by fielding four fire companies per day. However, there are two gaps that over time that could be improved as fiscal resources allow:

1. The lack of 4-minute primary unit coverage by a City unit in the southern annexation areas;
2. Not enough total firefighters on duty to field an effective initial force to serious fires without help from the County Fire Department.

While the City could staff each of the three existing fire engines with 4 firefighters per day minimum, up from three, replacing the staffing reliance on the County for one additional 3-firefighter engine on a First Alarm fire, it does not address response times in the southern annexation area or allow simultaneous calls to be covered by a 5th unit in the event a County unit is not available.

Over time, *as fiscal resources further allow* if the City added a 5th fire station and crew in the southern annexation area and staffed the engine with a minimum of three personnel, then the daily staffing increases to 16 per day (plus the Battalion Chief) and not only improves the response times in the southern City, but also improves City-based staffing to serious multiple-unit emergencies in alignment with national best practice recommendations. Thus adding a 5th fire station and crew improves all the response system deficits identified in this study.

Citygate's deployment findings for San Luis Obispo as noted in Section 2 are:

Finding #1: The City does not have a fire deployment measure adopted by the City Council 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 diversity, age and size of the City and Cal Poly building stock and the increasing numbers of younger and older populations means that there is a greater chance of more serious fires where rescues will be necessary, and if so, the

current quantity of firefighter staffing will be quickly overwhelmed with too many critical tasks to accomplish.

- Finding #3:** Given the travel distances in the existing southwest and southern annexation areas, a 5th fire station is desirable, when the annexation areas fully develop.
- Finding #4:** If an additional fire company location could be funded, effective first-due unit coverage can be obtained at the build-out of the City from five (5) fire station sites, at 4 minutes travel time.
- Finding #5:** While multiple-unit coverage is currently adequate in the core of the City, it depends on successful, timely, mutual aid from either of the two County stations, which are not always available. A future 5th City fire station will increase multiple-unit coverage in the southwest and southern areas, as well as lessen dependence on the two County fire stations.
- Finding #6:** Federal and state incident reporting mandates have established NFIRS 5 (National Fire Incident Reporting System Version 5) as the definitive reporting standard for fire departments. While NFIRS 5's "Basic" module is mandatory, best practices dictate use of the optional "Apparatus" module to document vehicle responses. The Department needs to adopt this reporting standard.
- Finding #7:** With a City fire/EMS incident first-due unit performance of 07:00 (minutes/seconds) at 71.6 percent, and a travel time of 05:15 at 90 percent, as the mapping analysis predicted, the City does not have enough primary neighborhood fire stations in the City to deliver suburban response times to all outer areas.
- Finding #8:** The City dispatch and fire crew turnout times need focus by both agencies (Police Dispatch and Fire Department) to lower times to best practice recommendations. If a combined 01:30 (minutes/seconds) from dispatch and turnout time is saved, citywide emergency response time would lower to the recommended 07:00 at 90 percent.
- Finding #9:** The simultaneous emergency call for service rate of 18 percent for two incidents at once is not a significant issue in the near term given the mutual aid support from the County fire stations.
- Finding #10:** The City benefits from the mutual aid regional response system. While this system cannot replace existing City stations or units, the City should continue to participate in this valuable support system for simultaneous calls for service and multiple-unit serious emergencies.

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:** The City should adopt revised performance measures to direct fire station location planning and to monitor the operation of the

Department. The measures should take into account a realistic company turnout time of 2 minutes and be designed to deliver outcomes that will save patients medically salvageable upon arrival; and to keep small, but serious fires from becoming greater alarm fires. Citygate recommends these measures be:

- 1.1 Distribution of Fire Stations:** To treat medical patients and control small fires, the first-due unit should arrive within 7 minutes, 90 percent of the time from the receipt of the 911 call. This equates to 1 minute dispatch time, 2 minutes company turnout time and 4 minutes drive time spacing for single stations.
- 1.2 Multiple-Unit Effective Response Force for Serious Emergencies:** To confine fires near the room of origin, to stop wildland fires to under 3 acres when noticed promptly and to treat up to 5 medical patients at once, a multiple-unit response of at least 14 personnel should arrive within 11 minutes from the time of 911 call receipt, 90 percent of the time. This equates to 1 minute dispatch time, 2 minutes company turnout time and 8 minutes drive time spacing for multiple units.

Recommendation #2: As fiscal resources allow, the most beneficial next improvement in fire services the City could make would be to add a fire station in the southern City area equipped with one fire engine and a 3-person crew.

Recommendation #3: The City should adopt fire deployment measures for the emerging southern annexation areas, ranging from rural to emerging suburban to suburban based on population, along the lines of this table modeled after the recommendations in NFPA 1720 on combination (volunteer) fire services. These measures would allow the City to define the services that can be cost effectively delivered in the early annexation period and then set the trigger point for adding fire services.

Proposed Deployment Measures Based on Population Densities

	Suburban	Emerging Suburban	Rural
	>1,000 people/sq. mi.	250-1,000 people/sq. mi.	<250 people/sq. mi.
1 st Due Travel Time	4	8	12
Total Reflex Time	7	11	15
1st Alarm Travel Time	8	12	16
1st Alarm Total Reflex	11	15	19

Recommendation #4: The City needs to fund a fire records system that is National Fire Incident Reporting System (NFIRS) version 5 compliant.

Recommendation #5: If, prior to the funding being available to operate a 5th fire station, the City had partial funding to increase the number of daily firefighters, it could do so by increasing Station 1 from 4 firefighters to 5 firefighters per day. This would allow either:

- ◆ A 3-person engine company to respond to medical emergencies and small fires, while the other two personnel would still cover a dedicated ladder truck and be able to respond to structure fires and technical rescue calls citywide where the crew could combine with an engine crew(s).
- ◆ Or, three personnel would staff an engine/ladder “quint” apparatus and two personnel would respond in a squad to downtown area medical emergencies.

Both of these staffing options require additional discussion with the firefighters’ representatives and making the decision on if the current “quint” should be replaced with a dedicated ladder truck.

When the City can add a 6th firefighter per day to Station 1, then split the crews into two 3-firefighter crews and open the 5th station.

In a last phase, as funding allows at the build-out of the City, the City can increase the staffing at Station 1 on the pumper/ladder unit to 4 firefighters per day, which is a much more effective team to operate a ladder truck at a serious building fire.

5.2 NON-DEPLOYMENT HEADQUARTERS FUNCTIONS FINDINGS AND RECOMMENDATIONS

A fire department San Luis Obispo’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 an organization that should generally meet the needs of a department the size of San Luis Obispo’s. However, due to the fiscal pressures on the City, there has been greater emphasis on staffing fire companies to provide emergency response than on the needs of the management team to coordinate and lead the organization. As the City struggled with its shrinking finances, it froze some staff positions in some of the essential fire headquarters support positions. This situation developed as an interim solution until the budget situation would improve.

Citygate understands the City’s severe fiscal situation and does not find the headquarters functions *significantly* insufficient. However, the following findings and recommendations do point the way for the Fire Chief and staff to first prioritize the current resources to the highest priority needs and secondly, provide a road map from which to request additional resources as the City finds the ability to provide them.

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- Finding #11:** The Department's administrative functions are in place and appropriately designed for a department this size. There is not enough clerical support staffing for the variety of programs the Department handles, but this is due to fiscal limitations, not a lack of management.
- Finding #12:** Given the scope of programs in the Department, the need for executive oversight of these programs, and the need for a trained, certified Fire Chief level position to back-up the on-duty Battalion Chief, the Department needs a second in command chief (Deputy Chief). The Department is not top heavy with only the Fire Chief and four Battalion Chiefs. The Fire Chief also has to manage citywide disaster preparedness, which has no staff assigned in the Department. Given all these issues, the Department is clearly large enough for a second in command to the Fire Chief, at a Deputy Chief level position.
- Finding #13:** The size, scope and advanced programs in the Fire Prevention programs for a City the size of San Luis Obispo are exceptional in breadth and quality. The City is making a real effort to prevent fires, which allows it to limit loss and the overall quantity of needed firefighters.
- Finding #14:** As with fire prevention, the public education program scope is very commendable for a department this size. There is not a clear accounting of what it costs, or what an ongoing dedicated budget appropriation should be.
- Finding #15:** While the City has been able to invest in a new central station and headquarters, the other three stations are 30-55 years old, and when built, were not constructed to be 50-100 year facilities. They have been given some upgrades, but more will be necessary. In other cities today, the more common size for a single fire company neighborhood station with space for reserve apparatus, separate gender areas and on-site outdoor activity space is an approximately 5,000 square foot and larger building on at least a 1+ acre site. The City will soon be facing significant repair and upgrade needs at the three neighborhood fire stations. The fire training area is crowded and produces noise and smoke at times better suited to a more outer city or industrial zone area.
- Finding #16:** With a life expectancy of five years, the Department should be budgeting annually for turnout replacement. This can be adjusted, and in all probability, an alternate year purchase of enough sets to maintain an overall 5-year life cycle would obtain a better price.
- Finding #17:** The hose program appears to be relegated to a budget status where inventory levels are too low and replacing the prematurely failing hose is problematic.
- Finding #18:** The breathing apparatus program, like many of the Department's support programs is impacted by a lack of administration time.
- The Department needs to have its own fit face mask testing capability as well as its own test equipment to verify vendor repairs. It could save money by doing

SCBA repairs in house if it had the bench space and tools. If the current technician is unable to fulfill his role, there is no back-up.

Finding #19: The San Luis Obispo Fire Department does not have a pre-fire plan program. They have been giving consideration to developing a system incorporating Google Earth maps but have made no progress on the project.

Finding #20: San Luis Obispo does not require certification for fire officers or chief officers. For Company Officer, the Department has an acting captain certification, which includes an Acting Captain Task Book; it is also highly recommended that company officers have the California Office of State Fire Training Company Officer Certification. The task book appears to be well thought out and designed; engineers wishing to take assignments as acting captains must complete the task book. In San Luis Obispo, promotion to chief officer is either by a four-year degree or Chief Officer Certification.

Finding #21: The Department training officer has the safety officer responsibility as a collateral duty. The Fire Department has a risk management program that appears proportionate with the size of the Department. The safety programs reference the needed source documents for training policy to current best practices.

The following recommendations for the headquarters and support functions for the San Luis Obispo Fire Department can be accomplished over time as City 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 #6: San Luis Obispo Fire Department should switch to full-featured fire department NFIRS 5 compliant incident reporting and management records system (RMS) that will allow better management oversight of activities.

Recommendation #7: The Department needs to add an Operations Chief (Deputy Chief position) as soon as fiscally possible. There are too many large programs without enough supervision and coordination for the Fire Chief alone to handle, much less have the time to plan and be an overall effective City Department Head.

Recommendation #8: Given the economic constraints on adding more staff to fire prevention over the foreseeable life of this fire master plan, the Department may have to begin to triage its fire inspection services to the most critical occupancies if workload exceeds available staffing. Those with smaller fire code requirements and risk for fire are going to have to be inspected on a longer cycle or even be moved to a self-inspection program.

As the City grows and has increased economic resources, a workload analysis should be done on fire prevention, and as needed, additional inspection and clerical resources will probably need to be added.

Recommendation #9: Given the City’s strong commitment to prevention as evidenced by its fire sprinkler requirements, the City should continue to invest more in the wildland fuel reduction program. The City will never have enough firefighters on duty to prevent a wildland conflagration. Individual properties have to be educated on defensible space issues and the need for fuel reduction.

Recommendation #10: The public education program needs greater tracking of what programs educate the most individuals and a separate budget line item so that the appropriate resource decisions can be made.

Recommendation #11: The City should program for an extensive evaluation of its fire station and fire training building needs, and then make long-term, cost-effective Capital Improvement Project decisions to either continue to repair the three older stations, or given the small parcel sizes and ages, re-build them completely nearby.

Additionally, the City should investigate other fire training areas and partnerships with County Fire, police agencies and the colleges.

Recommendation #12: As apparatus becomes available, San Luis Obispo Fire Department should consider extending the time apparatus is in reserve status in order to build up its second alarm capability. Not including the OES engine, a duplicate of each type would seem prudent. This could be achieved by keeping F-109 about 3 more years

When Fleet Manager Dugger is due to retire, consider keeping him on as a retired annuitant for six months to work with his replacement as a good transition process.

Recommendation #13: The Department needs to develop a program for on-going replacement of protective clothing (turnouts) on a life cycle of 5-7 years for 84 sets of gear. This means an annual budget commitment of approximately \$35,000.

Recommendation #14: The Department should develop a standard complement, specification, and hose replacement program. As soon as the City can find the funding it should start improving its hose inventory.

Recommendation #15: The Department needs to develop a complete breathing apparatus capital replacement plan and then identify funding for the plan.

The new SCBA system would have the following characteristics: yearly testing, for SCBA’s, integrated enhanced voice communication, CBRN compliant universal RIC/RIT connection, portable air unit and heads up display.

In the interim, the Department needs to acquire additional spare cylinders, fit-testing equipment and a test stand. It should consider

getting a cascade and or portable compressor system to do refills on large-scale incidents.

Consider developing greater program technician depth and have a certified technician on each shift.

Recommendation #16: The Department should develop preplans for target buildings. While a process using Google Earth or other similar process might eventually work well, a much simpler program, using the stock National Fire Academy format, could be started immediately. As part of its risk analysis, the Department self identified about 45 target hazard buildings; this divides into about twelve per station or four per shift, a very reasonable number of preplans to develop and maintain. This would provide responding companies with vital information about the target hazards before they arrive. Later on, when the Department acquires the technology, it could computerize the information in one of many available formats.

Recommendation #17: When funding is available, perhaps at the next renegotiation of the ambulance contract, the Department should consider adding an EMS Manager as a forty-hour per week position.

In conjunction with the County, the Fire Department and ambulance service should investigate successful public education programs and consider how they might provide that education with a target of reducing abuse to the system.

Recommendation #18: Continue the hydrant-testing program. Consider working with the water system enterprise fund to have the water utility rate structure cover the full annual testing and repair of fire hydrants. This program should not be a General Fund program.

Recommendation #19: The training program needs on-going executive attention. The current training officer is off to a good start, but will probably be going to shift work by the time this report is complete. The executive attention needs to be focused on four essential areas:

19.1 A training records management system that provides exception reports on a shift basis so that the Fire Chief and shift Battalion Chiefs know who is training and, more importantly, who is not training.

19.2 A Department-wide commitment to certification at all levels from Firefighter I through Fire Chief. With the chiefs modeling the behavior expected of the rest of the Department, it would not take long before everyone was certified. This is particularly important at the Driver/Operator level.

19.3 An increased focus on and participation in the essentials of firefighting, including multi-company drills, preplans followed

by chalk talks on all target hazards, and in house drills focused on the basics.

19.4 Referencing the source documents for training policy to current best practices. Doing this will ensure that the program and, more importantly, the Department is doing its best to ensure that the training received by firefighters meets or exceeds industry standards.

Recommendation #20: It would be valuable for the Department to complete the NFPA 1500 *Fire Department Occupational Safety and Health Program Worksheet* in NFPA 1500 Annex B. This program review will identify weaknesses in the current program and provide guidance for the Department to improve the risk management program.

5.3 PRIORITIES AND TIMING

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

5.3.1 Priority One

- ◆ Absorb the policy recommendations of this fire services study and adopt revised fire department performance measures to drive the location and timing of fire stations.
- ◆ If one-time funding can be identified, purchase an NFIRS 5 compliant fire department integrated records system.
- ◆ When on-going funding becomes available, add an Operations Chief (Deputy Chief position).

5.3.2 Priority Two

- ◆ If one-time funding can be identified, study in-depth the older fire facilities and make long-term repair or replacement decisions.
- ◆ Begin to identify and conduct the appropriate due-diligence steps to identify and eventually secure or purchase a 5th fire station site in the southern annexation area.
- ◆ Using one-time funding or federal grants, plan for and replace the older fire hose inventory and structure fire breathing apparatus units.

5.3.3 On-Going

- ◆ Continue to support fire prevention programs, especially in the areas of wildfire and fuel reduction programs.

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- ◆ As the economy recovers, look in-depth at the increased commercial construction and the need for fire code inspection services over the long term. Identify the staff impacts and plan as necessary for additional fire inspection and clerical support positions.
 - ◆ When the ambulance agreement comes up for re-consideration, discuss the need for the Department to have fiscal support towards establishing a paramedic program supervisor, as a sworn or unsworn position.