

City of Oceanside, CA

**FIRE SERVICE AND
RESOURCE DEPLOYMENT ANALYSIS**

FINAL REPORT

April 2012



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Fire Service and Resource Deployment Analysis

City of Oceanside, CA

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The project team wishes to especially acknowledge Captain Jess Specht. Captain Specht acted as our primary contact and was instrumental in providing the background information necessary for the study. He also acted as our guide, providing valuable information about Oceanside and its fire department.

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

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| Jeanette Gonzales | Ambulance Billing |

Oceanside Fire Department

| | |
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| Ray Melendrez | Division Chief |
| Mike Margot | Division Chief |
| William Kogerman | Battalion Chief |
| Pete Lawrence | Battalion Chief |
| Joe Ward | Battalion Chief |
| Lynne Seabloom | EMS Coordinator |
| Jess Specht | Captain |
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FOREWORD

TriData, a division of System Planning Corporation (SPC), is based in Arlington, Virginia. SPC is a 200-employee defense and national security contractor specializing in high-level systems engineering and national security.

Over the past 30 years, TriData has completed over 290 fire and EMS studies for communities of all sizes. In addition to this local government consulting, TriData undertakes research in a wide range of public safety issues, including research for the United States Fire Administration (USFA), Department of Homeland Security (DHS), and other Federal and state agencies, as well as the private sector. TriData also conducts international research on emergency response topics and has conducted extensive research on effective fire prevention strategies in Europe and Asia.

EXECUTIVE SUMMARY

Facing on-going budget deficits, Oceanside officials requested an independent review of the Oceanside Fire Department (OFD), to determine whether fire and EMS services could be delivered more efficiently. The study was to provide a “focused, objective analysis of overall fire department emergency response operations to analyze resource deployment practices, current fire department minimum staffing levels, call volume, response times, and overtime”, and provide the City with cost-saving options.

The study was conducted by TriData, a division of System Planning Corporation located in Arlington, VA. As part of its study TriData analyzed fire and EMS incident data, response times, and fire loss data. TriData’s project team also met with senior officers and staff of the OFD, its Union, and local government officials, as well as with representatives of private ambulance and EMS billing services. The Fire Chiefs of Vista, Carlsbad, and the North County Fire Protection District were also interviewed during the study to better understand mutual aid, and how changes to the OFD might affect their departments.

OFD Organization

The OFD is a quality organization. Its members are well trained and they provide excellent service to the City and its residents. If the City were not facing the current budget situation the OFD could continue mostly as is. During recent years the OFD budget has been reduced by eliminating management positions and the reductions have affected planning activities. The fire department eliminated a civilian management position and a Captain is now doing double duty – planning and overseeing emergency management. A Division Chief’s position was also eliminated and the responsibility for administration and emergency operations are now performed by one individual. In terms of saving money, there are no more cuts available at the staff level, so any future budget reductions must be achieved through changes in direct services.

There are also issues with sick leave use that is leading to excessive overtime. The OFD uses a constant staffing model such that overtime is used to fill shift vacancies each day. The practice seems efficient, but our analyses show that senior employees use more sick leave; Captains have the highest average of sick occurrences each year, followed by Engineers.

Going forward the City will be unable to make changes to fire and EMS staffing unless the Memorandum of Understanding (MOU) with the Oceanside Firefighter’s Association is changed to remove the language requiring a minimum of 32 personnel to be on duty. This is a significant matter because it arbitrarily establishes the level of service, clearly a management prerogative.

Recommendations to improve management and to allow future changes to the level of service are:

- Re-hire a Management Analyst to assume the administrative tasks currently performed by the Administrative Captain.
- Continue to analyze the use of sick leave and take the necessary steps to decrease its use, and take measures to predict and fill vacancies more rapidly to avoid excessive overtime.
- Under any new labor agreements, do not include language that requires a minimum number of personnel on duty during each shift, the number of stations, response time goals, or other service-level parameters.

Calls for Service, Response Time and Station Locations

The vast majority of calls handled by the OFD are medical in nature, not fires. Oceanside has a much lower than average per capita fire loss as compared to national and regional averages. Likewise, civilian injuries and deaths from fires are well below the national and regional averages. It is expected that the total calls handled by the OFD will increase by about 1,000 between 2012 and 2020 from the current 16,800 calls. The additional call volume can be easily handled by OFD's current resources, which range from 1200 to 2700 calls per year for OFD engines.

Response times in Oceanside are longer than those recommended by the National Fire Protection Association (NFPA). The NFPA National Standard (1710) recommends a response time of six minutes for medical incidents and six minutes, twenty seconds for fires and special emergencies like hazmat calls, 90 percent of the time. Most fire departments are not able to meet the NFPA 1710 standard at the 90th percentile goal. When response times are averaged, the City is close to meeting the 4-minute travel-time goal, usually within 1 to 1.5 minutes. A less stringent goal of 80 percent is reasonable for Oceanside, because undeveloped areas like Morro Hills skew the results. The OFD can use the 90 percent goal for high demand areas of the City.

The City benefits from the boundary-drop system in North County where the closest emergency unit responds to a call regardless of political jurisdiction. The study determined that the City needs all of its existing fire stations, but one (Station 8) should be relocated as soon as possible to improve coverage. As a last resort to reduce its budget, the City could consolidate Stations 1 and 2 into a single facility, but doing so would require the City to establish a formal agreement with Carlsbad to cover south Oceanside. Even then, some areas in north Oceanside would have longer response times. Consolidating Stations 1 and 2 would result in little savings, and the City should not make this change, unless additional savings are needed above those made possible if EMS transport is contracted.

Recommendations to improve coverage include:

- Relocate Station 8 from the temporary facility to the proposed site at Old Grove Road and College Boulevard
- As a last resort to reduce the budget, consider merging Station 1 and Station 2 to a new location near the intersection of South Coast Highway and Eucalyptus Street

Cost-Saving Options

The primary objective of this study was to identify options to reduce the cost of fire and EMS service to address the City's structural deficit. The study determined that seven scenarios could be considered, six of which provided various levels of savings. Six of the seven 'scenarios' result in a reduction to the OFD's authorized staffing level or overtime (or both). One scenario resulted in a slight increase to the current OFD budget.

The OFD currently provides Advanced Life Support (ALS) with two Firefighter/ Paramedics on each of the four 24/7 medic units deployed throughout the City. The current system is very expensive and the City is not recouping the full cost through EMS billing. Before any of the scenarios could be implemented, the MOU would need to be changed to eliminate the minimum staffing language mentioned earlier.

The OFD does need some of the personnel on medic transport units to provide a safe and adequate response to structure fires. This is because fire units are staffed with three responders, not four, as many communities do. If the City were to change the model such that transport service is contracted, some of the Firefighter/ Paramedic positions eliminated by contracting medical transport must be added back in to increase the staffing level on one or more fire units. Another option is to create two-person squads, which could respond to fires and medical emergencies.

The seven scenarios and their estimated annual savings are:

Scenario 1 – Eliminate the OFD - provided ALS transport service and contract it to a private service. Staffing on the City's two quint fire units (combination engine and ladder) is increased from three to four persons. EMS billing is also contracted and the OFD's Nurse Trainer position is eliminated. The estimated savings for this scenario is \$1.5M.

Scenario 2 – As in Scenario 1, eliminate the ALS transport service and contract it to a private provider. Add two quick-response squads staffed by two personnel each and increase staffing of one of the two quints from three to four. Scenario 2 results in no costs savings and actually increases cost by about \$150,000.

EMS Scenario 2 (Hybrid) – Like scenario 2, eliminates the ALS transport service and contracts it to a private transport provider. Like scenario 2, two quick-response squads are added, but staffing on the City’s two quints remains at three. The estimated savings of this scenario is \$400,000.

Scenario 3 – Eliminates two OFD transport units and contracts for the additional ALS medical transport service through a private provider. One Firefighter/ EMT is added to one of the two quint trucks, increasing its staffing from three to four. The OFD would also hire Firefighter/ EMTs instead of all Firefighter/Paramedics to save money. Scenario 3 also results in an estimated savings of approximately \$400,000.

Scenario 3 (Hybrid) – Eliminates two ALS transport units and contracts for Basic Life Support (BLS) from a private provider. Medical billing is also eliminated. The anticipated savings for Scenario 3 (Hybrid) is \$1.3 M.

EMS Scenario 4 – Eliminates two OFD transport units and adds 1.5 BLS units staffed by non-safety (civilian) employees. A fourth person is added to one of the City’s two quints and medical billing is eliminated. The anticipated savings is \$1.0M.

Scenario 5 – Provides four medical transport units during the busiest periods of the day for medical calls, but eliminates one or two of them between the hours of 7:00 pm and 7:00 am. The change is made possible by eliminating scheduled overtime required by the constant staffing model used by the OFD. In Scenario 5, two to four fewer Firefighter/ Paramedics would be on overtime from 7:00 pm to 7:00 am. This model, which is referred to as peak-load staffing, fits the medical demand fluctuations that occur each day. Peak-load staffing is a common practice for private ambulance companies. The estimated savings of this Scenario annually is \$550,000.

Of the various options, Scenario 5 is the easiest to implement. It does not require the City to contract medical transport with a private provider. In addition, changes to position specifications and training requirements are not required. It can be implemented by calling back fewer personnel on overtime during nighttime hours when EMS demand is lowest. It does require a change to the MOU with the Union on the minimum staffing, which the City must address anyway, if it wants to implement any of the cost-saving options.

Other Recommendations

To improve the overall operation of the Oceanside Fire Department and its efficiency, and to possibly provide additional budget savings, the study also recommends:

- Reviewing the cost-sharing formula to participate in the 9-1-1 JPA and lowering the cost for Oceanside to participate in the North COM
- Holding discussions with the four North County fire agencies to consolidate the four training divisions into one, regional program

- Reviewing the EMS system costs and comparing them to the fee structure allowable under federal and state guidelines
- Separating the EMS budget from the fire department general budget to improve accountability and determine the full cost of providing medical service delivery
- Maintaining the existing boundary-drop system while also activating the Live MUM (move-up module) for ALS transport units in North County
- Maintaining an initial structure fire response of at least 15 responders by increasing the staffing level on quints, or by creating two-person non-transport squads, if medical transport is eliminated

To accomplish these recommendations (and the cost-saving scenarios listed earlier) will require the cooperation on of Oceanside and other North County fire agencies and elected officials. To begin the process, the study recommends that Oceanside officials take the initiative and host a multi-day conference of North County officials to discuss the opportunities to improve efficiency.

I. INTRODUCTION

To address an ongoing structural budget deficit, Oceanside officials must consider options to reduce operational costs within city departments, including the fire department. To better understand how fire services are provided, and to consider alternative deployment options, an independent third-party review of the Fire Department was authorized to determine if services could be delivered more efficiently. The expected outcome was to “provide a focused, objective analysis of overall fire department emergency response operations that analyzed resource deployment practices, current fire department minimum staffing levels, call volume, response times, and overtime”. TriData, a division of System Planning Corporation located in Arlington, VA, was selected to conduct the efficiency review.

Background on the City

The City of Oceanside is the third largest City in San Diego County, covering with 41.23 sq. mi. of land and .939 sq. mi. of water. Its population of approximately 182,000 does not include the substantial influx of beach users nor non-resident workers. Three major highways pass through the Oceanside: Interstate 5, Highway 76, and Highway 78. Two railroads also operate through the City. The most heavily used is the rail commuter and freight line operating two blocks from the beach. A second rail line used mostly for freight from San Diego crosses the City (east to west), adjacent to Oceanside Boulevard.

Oceanside has a temperate climate with an average low of 64 to an average high of 73 degrees in July and average lows of 45 degrees to highs of 64 degrees during the winter.¹ Oceanside has 3.5 miles of beach front with a wood pier extending 1,942 feet into the Pacific Ocean, at the end of Mission Avenue. The harbor accommodates approximately 900 small and mid-size boats fishing vessels along with shops and restaurants are located on the north end of the beach area. Though noted for tourism, Oceanside is predominately a residential community with a few light industrial and commercial areas. A private, non-commercial airport is also located in Oceanside.

The City’s residential community has an average household of 2.8 persons. Approximately 68 percent of all households are families with an average of 3.32 persons per unit. Approximately 13 percent of the residential population is over 65. The City contains approximately 65,000 housing units, 13,000 businesses with 4,341 persons per square mile.²

¹ Wikipedia and U.S. Census

² Ibid.

The United States Marine Corps (USMC) Camp Pendleton lies along the City's northern border. With a daily population of approximately 36,000, Camp Pendleton covers 125,000 acres and is the largest stateside USMC facility. Many of the 36,000 who work at Camp Pendleton live in and around Oceanside. The main gate for Pendleton is located near the harbor, only a short distance from the center of Oceanside. The location of Camp Pendleton has a limited impact on the fire and EMS service delivery for Oceanside.

Also bordering Oceanside is the North County Fire Protection District (NCFPD), City of Vista, and the City of Carlsbad. With Oceanside they cooperate in a fire joint-powers authority (Fire JPA), which includes a boundary-drop response system where the closest available resource is dispatched to a call, regardless of the call's location. Under the JPA, fire command is also shared and commanders have authority to direct resources from other jurisdictions.

Oceanside is a general-law city with a Council/City Manager form of government. The city manager, who is responsible for implementing city policies, is appointed by the Council. The Fire Chief and other department heads are appointed by the City Manager.

Scope of Project

The focus of this study was to determine whether potential savings are possible by changing the way the fire department provides its services. At the outset of the study it was mutually agreed that if fire and EMS services could not be restructured such that possible savings can be achieved, this will also be reported.

Topics to be reviewed as part of the study were:

- Management and Organization
 - Current system, priorities, and practices
 - Vision, goals, objectives
 - Restructuring opportunities
- Staffing
 - Allocations, deployment, and scheduling
 - Workloads and response time
 - Alternative staffing models and peak-load staffing
- Services and Practices
 - Calls for service
 - Fire station locations

- Shared-service opportunities
- Special services (hazmat, technical rescue, wildland)
- EMS response, including contracting for service
- Other Services

Because staffing and deployment practices consume the majority of budget resources, this study focused most attention on these areas.

Study Process

The process used for this project combined multiple research techniques including interviews, collecting and reviewing background information and analyzing computer-aided dispatch (CAD) and incident data. We also visited each of the City's eight fire stations, and we met with the Fire Chiefs of the three other departments in North County (Carlsbad, Vista, and North County) to discuss regional service-sharing.

TriData's project team conducted a series of onsite meetings with senior members of the OFD, its Union, and local government officials. We also met with representatives of private ambulance and EMS billing to explore those possibilities and we discussed the operation of the 9-1-1 dispatch system with North Com officials to better understand dispatch protocols and the boundary-drop system. We also conducted interviews with the Fire Chiefs of Vista, Carlsbad, and the North County F.P.D. Following our initial site visit and interviews we analyzed the incident data and conducted a series of tasks related to the assessment of station locations and response times, and then conducted a second series of meetings to review the initial findings and also to discuss possible cost-saving options.

Organization of the Report

The report findings and recommendations are addressed in the following chapters:

Chapter II, OFD Organization: Costs, Revenue, and Restructuring Opportunities presents the baseline financial situation about the fire departments, its overall organization, and the opportunities for greater efficiency going forward.

Chapter III, Population Growth, Risk, and Demand Analysis, discusses the pressures on the fire protection system, including an analysis of future population changes and a projection of demand. These factors are important in evaluating future viability of the system and identifying resource needs related to future demand for fire and medical services.

Chapter IV, Fire Station Locations, Response Time and Reliability, discusses the current and proposed location of fire stations, and the City's fire and EMS response units. The analysis for a potential station sharing opportunity with the City of Carlsbad is also discussed.

Chapter V, Fire and EMS Operations and Deployment, discusses emergency response, including discussions of required staffing, alternatives for EMS transport, and the rationale for maintaining adequate fire suppression capabilities and resources.

Chapter VI, Fire Prevention, Training Lifeguards, and 9-1-1 Dispatch (North Com), discusses the OFD's focus on preventing fires and reducing losses. Also included in this section are the reviews of the OFD's training and lifeguard divisions and the regional 9-1-1 dispatching JPA, of which Oceanside is a member.

Chapter VII, Efficiency Opportunities: Changes to Fire and EMS Deployment and Staffing, presents the cost-saving scenarios available to the City based on the findings of this study.

Appendix A, Leave Analysis, includes the spreadsheet that shows the leave and number of shifts requiring overtime for the OFD personnel, by rank.

Appendix B, Performance Measurement, reviews the process for developing the process to analyze fire station, apparatus, and staffing.

Appendix C, Evaluating Unit Workloads, discusses the factors affecting unit workloads and the process for measuring unit/hour utilization.

Appendix D, Innovative Approaches to Increased Demand for Emergency Medical Services, presents the small vehicle concepts being implemented by other communities to handle the increased medical call demand.

Appendix E, Illinois Fire Department to Limit EMS Runs, explains how the City of Alton, IL and its firefighters plan to reduce the number of "non-essential runs".

Appendix F, County Considers Cheaper Ways to Bill for EMS, discusses EMS billing in Alamance County, GA and its desire to decrease the percentage paid to a private EMS billing agency.

Appendix G, Deployment Option Cost Analyses shows the cost reductions/additional revenue and additional costs for each of the EMS scenarios (1, 2, 2 Hybrid, 3, 3 Hybrid, 4, and 5).

II. OFD ORGANIZATION: COSTS, REVENUE, AND RESTRUCTURING OPPORTUNITIES

The City of Oceanside is governed by a City Council/City Manager form of government. Five City Council members and Mayor are elected at-large. The Council is the City's legislative body to establish policy. Their policies, organizational structure and services are implemented and managed by a City Manager they employ. In order to accomplish policy the City Manager employs Department Heads to manage specialized departments, such as the Fire Department.

The OFD is an all-career full service fire department providing fire, life safety, emergency medical, disaster coordination, fire prevention, fire and arson investigation, records management, and administrative services to the City, its residents and visitors. Lifeguard services also come under the responsibility of the OFD, whose Mission Statement is "To serve the community, save life & property, and strive to be the best". The OFD provides services from eight fire stations strategically located throughout the City. Senior management personnel of the OFD have offices at the City Hall complex.

It is clear from this study that the OFD is a quality organization that provides excellent service to the City. Its members are well trained and they care about the citizens of Oceanside and those with whom they come in contact on calls. If the City were not facing the current budget situation the OFD could make some needed improvements but continue mostly as is, and its citizens would be well protected. In that future revenues are expected to fall short of current levels, the OFD will need to rethink how services are provided while still achieving its overall Mission.

Budget Situation and Revenue

Oceanside's projected General Fund Budget of \$112.47 million includes anticipated revenues of \$112.34 million. The majority of revenue is secured from property and sales tax. The City has seen significant decline of revenue over the past few years and continues to expect operating costs to exceed revenue, thus the projection for a structural deficit going forward. Currently evaluating all city services, the City hopes to reduce its operating costs.

In July 2011, the City cut \$3.6 million to achieve its current \$112.47 million general fund budget. This cut required reducing the number of positions at libraries, senior and community centers, community television, the San Luis Rey Valley resource center, the swimming pool and public safety. The City projects that without a further reduction of expenses, revenues would be less than expenses by \$2.5 million in the 2012-2013 fiscal year, \$3.5 million in 2013-2014, \$5.6 million in 2014-2015, and \$6.8 million in 2015-2016. As part of its process to cut costs, the City is exploring various options, including more reductions to public safety.

Over the past years the Oceanside Fire Department (OFD) has reduced its budget by cutting management and administrative positions. Direct services for fire and EMS response have not been affected, though future cuts could require changes to emergency response. The cost for public safety programs, including police and fire, account for 63 percent of the City’s total general fund expenditure. If it is unable to reduce costs for public safety, the City may be forced to eliminate other non-safety functions and services.

During this fiscal year (FY 2011-12), the OFD budget is \$23.72 million, of which \$18.4 million is for personnel. Of the total budget a large portion is allocated to overtime, for which fire personnel are paid when they work over their regularly assigned shift. The fire department has exceeded its overtime budget in each of the past five years. It is expected that overtime will exceed the allotted budget this year, as well.

Table 1: OFD Budget Summary, FY 2007-08 to FY 2011-12

| Year | FY 07-08 | FY 08-09 | FY 09-10 | FY 10-11 | FY 11-12 |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|
| Personnel | \$15.97 M | \$18.27 M | \$19.48 M | \$17.80 M | \$18.41 M |
| Total Budget | \$23.80 M | \$25.74 M | \$27.28 M | \$23.10 M | \$23.72 M |
| Percent for Personnel | 67 | 73 | 73 | 80 | 78 |
| Budgeted Overtime | \$1.98 M | \$2.35 M | \$2.40 M | \$2.03 M | \$1.96 M |
| Actual Overtime | \$3.61 M | \$3.20 M | \$2.80 M | \$3.20 M | |
| Amount for Overtime Exceeding Budget | \$1.63 M | \$.85 M | \$.40 M | \$1.17 M | |

To reduce its budget the OFD reduced the management structure and organization from five to three divisions by eliminating the Urban Services and Administrative divisions (thus eliminating two Division Chief positions). Over the past few years the following positions have been eliminated to reduce the OFD’s budget: two Chief Officers, one Captain and one Senior Management Analyst in Administration, an Office Specialist in Training, a Captain and a Senior Office Specialist in Fire Prevention, and a Lieutenant in the Lifeguard Section of the Operations Division, have also been eliminated. A new policy was established to eliminate through attrition the position of Division Chief in favor of Battalion Chief.

Though some elimination of positions has occurred, the OFD has continued to implement some positive changes. Among them were:

- The purchase of a replacement fire engine and ladder truck at a base cost of \$520,930 and \$973,061, respectively. The total cost (\$1.62 million) was purchased with \$.80 million in capital replacement funds with the remaining \$.82 million financed over seven years (\$.14 million each year).
- Fire Station No 7 was rebuilt and opened at 3350 Mission Avenue in July 2008.
- Fire Station No. 8, a temporary facility, was added to the City public works facility located at 4927 Oceanside Blvd. The location, though not ideal, is considered temporary until a new facility can be constructed on the proposed site at College Blvd

and Old Grove Road. This study shows that the site is a good location; however, the estimated \$3.5 million needed to construct the facility is not yet available.

- In FY 2007-08, the City began contracting with the North County Dispatch JPA for 9-1-1 dispatch service. The Dispatch JPA is an excellent resource for the City, even if the current fee (\$800,000) is considered too high. We discuss the Dispatch JPA later in this report.
- Lifeguard services were consolidated into the OFD in FY 2009-10, a move that improved the overall coordination of emergency services, in particular those involving beach activities where a significant number of medical calls are generated each year.³

Although direct services have not been affected thus far by budget reductions, the OFD’s management section has been significantly reduced to the point where there is little in the way of planning. Going forward any future costs reductions will likely need to be made by changing the way direct services are delivered, or by eliminating some services altogether. As it stands the OFD is a very lean organization, especially in management.

Clearly, the cost for overtime is also a problem for the OFD and one area where future savings could possibly be realized.

OFD Organization

OFD has 118 FTE authorized positions plus one part time training position and one consultant in fire prevention (a plan checker). The authorized full time positions for the OFD are depicted in Table 2.

Table 2: OFD FTE Positions by Division, 2011

| Division/Classification | FTE Positions |
|----------------------------|---------------|
| Administration | |
| - Fire Chief | 1 |
| - Division Fire Chief | 1 |
| - Administrative Captain | 1 |
| - Administrative Secretary | 1 |
| - Accounting Specialist | 1 |
| - Senior Office Specialist | 1 |
| - Courier | 1 |
| Sub-Total | 7 |

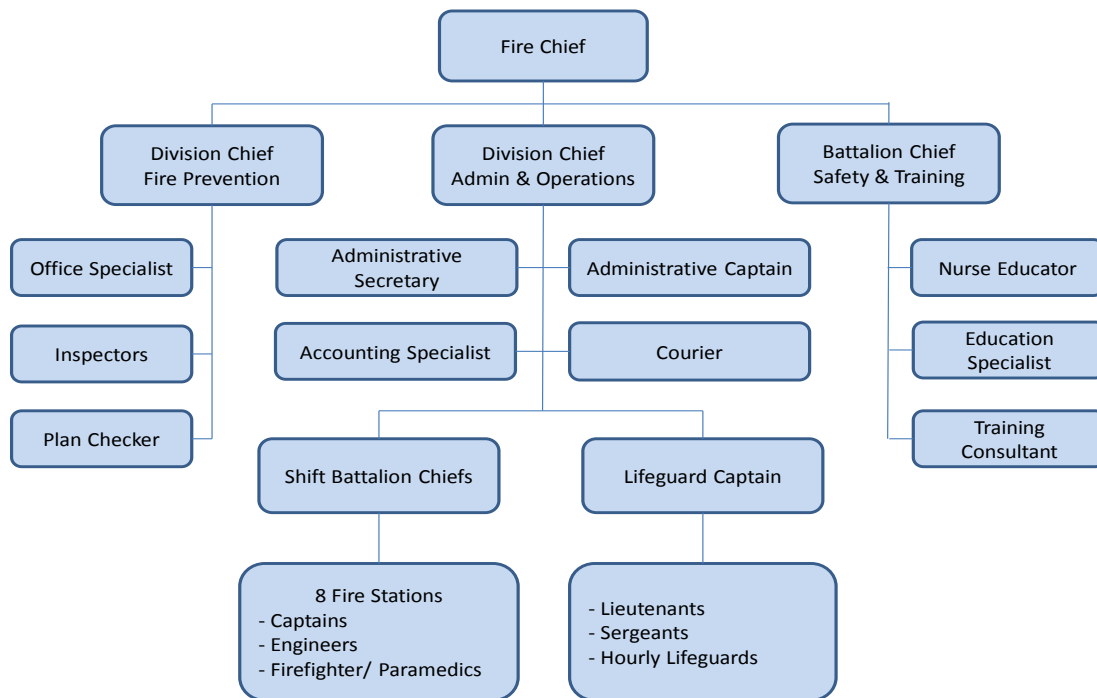
³ Notably, Lifeguard services were added to the OFD’s responsibilities without additional funding, according to the the Fire Department.

| Division/Classification | FTE Positions |
|-----------------------------|---------------|
| Operations | |
| - Battalion Chief | 3 |
| - Fire Captain | 24 |
| - Fire Engineer | 24 |
| - Firefighter/ Paramedic | 48 |
| Sub-Total | 99 |
| Fire Prevention | |
| - Division Chief | 1 |
| -Fire Prevention Specialist | 3 |
| Sub-Total | 4 |
| Training | |
| -Battalion Chief | 1 |
| -Nurse Educator | 1 |
| Sub-Total | 2 |
| Lifeguards | |
| -Captain | 1 |
| -Lieutenant | 1 |
| -Sergeant | 4 |
| Sub-Total | 6 |
| Total FTE Positions | 118 |

The OFD organization and staffing are similar to other peer municipal fire agencies. A fire chief appointed by the City Manager is the designated head the organization. Under its current table of organization since the elimination of two other division chiefs, a division chief responsible for administration and operations is one of the three direct reports to the Fire Chief. The other two are a division chief of fire prevention and a battalion chief of training. The Division Chief of administration and operations is responsible for most of the OFD's operation.

Following is the table of organization for the OFD at the time of this study.

Figure 1: OFD Table of Organization



While in practice it is likely that the administrative secretary and account specialist may report to the Fire Chief on some particular matters, those interviewed commented several times about the very high workload of the Division Chief for administration/ operations due to the elimination of two other Battalion Chief positions. Though large fire organizations often have different individuals reporting to the fire chief for functions such as operations and administration, the most common practice for smaller organizations is for the fire chief to handle administration and budget/ finance directly. This allows a ‘chief of operations’ to focus mostly on matters involving emergency operations and planning. As it is, these areas are not being addressed to the level necessary, in our opinion. Planning is especially lean because of the staff reductions that have occurred over the past few years.

With recent budget changes and the elimination of a management analyst’s position, the Fire department created a position of Administrative Fire Captain. The Captain performs many of functions previously accomplished by the civilian, but at a slightly higher salary (\$105,248 vs. \$103,371). The benefit package for the Administrative Captain is significantly greater too (\$58,428 vs. \$24,377).

A major issue for the OFD is that its management and administrative team now is too lean after the budget cuts to date, and important planning activities are not getting done, which will affect long-term efficiency. In addition to the coordination activities provided to the Fire Chief and Division Fire Chief, the Administrative Captain is also the primary person responsible

for emergency management and the emergency operations center, data analysis, bill collection, the community emergency response training (CERT), purchasing, grant preparation, special programs/ audit, risk management, and even some public education.

The workload for the Captain is far too great for any one individual. Safety positions such as the one held by the Administrative Captain are usually most effective when assigned to operations, or to areas where operational expertise is needed. Both positions are needed and the workload of the Captain could be substantially reduced if the civilian management position is again budgeted to the OFD.

Recommendation 1: RE-hire a Management Analyst to assume the administrative tasks currently performed by the Administrative Captain and keep the Captain to lead the function of emergency management, which includes planning activities. One of the proposed changes to the table of organization proposed later (in this section) depicts a Management Analyst responsible for all budget and finance activities. The anticipated cost of the management analyst's position (\$128,000) would come from expected savings from changes to the OFD's deployment, discussed later in Chapter VII.

Proposed Changes: Table of Organization

There is any number of ways to organize a fire department and no single way is perfect. The key is to be effective, yet efficient. Past practice has been for fire departments to be organized almost vertically with multiple layers of management. This is inefficient and 'flatter' organizational structures are becoming the norm.

To improve planning and allow the chief of operations to focus more on emergency operations, we developed two slightly different tables of organization for consideration. The significant difference between the two proposed alternatives is that a civilian 'Management Analyst' position is created in one to handle budget and finance.

Figure 2: OFD Table of Organization; Alternative Option 1

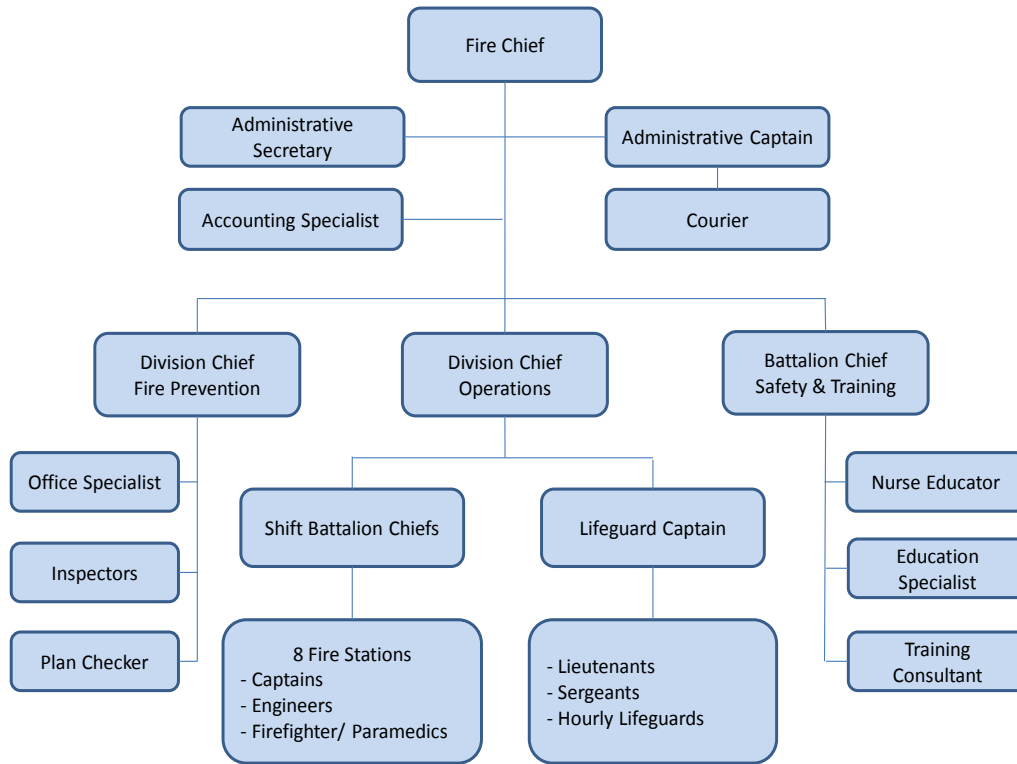
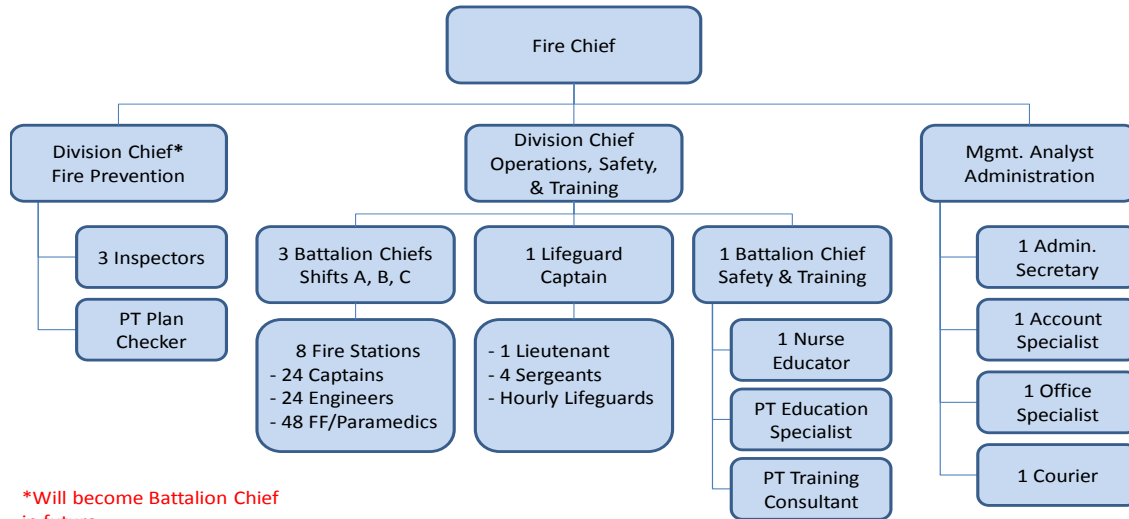


Figure 3: OFD Table of Organization; Alternative Option 2



*Will become Battalion Chief in future.

Under “Alternative Option 2”, safety and training is not a direct report to the Fire Chief, but rather to the Division Chief/ Operations, along with the shift Battalion Chiefs and Lifeguard Captain. In Option 2 a non-safety Management Analyst would be responsible for all administrative functions including data management and analysis. A well-qualified civilian manager also can provide an important perspective to management problems that uniformed personnel may not have. It is our opinion that emergency operations can be improved if training is part of operations under the Division Chief. This would also permit better coordination of training services with the field battalion chiefs, which are heavily relied on to coordinate training for the stations anyway.

Recommendation 2: Consider Alternative Option 2 as the preferred table of organization for the OFD.

Another possible change is with the fire marshal position. The incumbent is a uniformed Division Chief; however, it is expected that the incumbent might retire in the near future. If so, it is possible to replace the uniformed position with a civilian. It might also be a good time to find a regional partner and consolidate fire prevention with another community, either with a uniformed or non-safety person leading the effort. A disadvantage of a civilian is that the OFD loses a senior uniformed officer that can respond to and assist at a major incident as part of the incident command team. The benefit is that someone with a strong background and education in prevention, code enforcement and public education could be recruited. Inasmuch as this area has not been a major priority for the OFD in the past, it is our opinion that replacing the current fire marshal with a non-sworn person is the way to go.

Recommendation 3: When the current fire marshal retires, find a regional partner and consolidate the fire prevention function. If regionalization is not possible, consider replacing the position with a civilian.

Work Schedule, Overtime, and Sick Leave

The OFD uses a constant staffing methodology where the actual number of FTE positions budgeted for operations is the number of personnel necessary to staff fire and EMS units, with no extra reserves for expected and unexpected leave. Because fire departments provide their services 24/7, most fire agencies calculate the typical number of personnel off on any given day, and then apply a staffing factor such that more FTE positions are budgeted to cover for the expected daily absences. A fire department like Oceanside operating with three platoon shifts working 56 hours each, with an average of 18 percent (a typical amount) of its force off on any given day would calculate its FTE staffing requirement as:

- 168 hours week / three shifts = 56 hours per shift
- 56 hours x 18% = 45.92 average hours worked per employee per week

- 168 hours week divided by 45.92 hours per employee = 3.66 FTEs per staffed position
- 32 staffed positions times 3.66 = 117 FTE budgeted positions

The above approach works well for fire departments where the salary and benefits combined for employees are less than 1.5 times the employee’s salary paid for overtime. This is not the case in Oceanside where the combined package is approximately 1.68 times the salary. For this reason the City has chosen to use a constant staffing formula and cover every daily vacancy with overtime (1.5 times the salary). Thus a large overtime budget is needed, but is less expensive than hiring more full time personnel to fill the slots. Generally, the City’s approach makes sense economically. However, it appears that overtime also is being affected by excessive sick leave and this is causing high unplanned overtime, and thus the overtime spending in some years far exceeds the amount budgeted.

During the past several years overtime has exceeded the adopted overtime budget, in some years by more than a third. In FY 2010-11 for example, overtime costs were \$1,166,000 more than the budgeted amount. From 2004 through 2010, overtime for the OFD has increased from \$2.1 million to over \$3.0 million, so overtime is a major factor in the discussion of lower cost options for deployment.

Table 3: OFD Overtime, FY 2010-11

| Budgeted Overtime \$\$ | Actual Overtime \$\$ | Amount of Overtime Over Budget \$\$ | Amount of Overtime \$\$ Due to Vacancies |
|------------------------|----------------------|-------------------------------------|--|
| \$2.033 M | \$3.199 M | \$1.166 M | \$1.246 M |

As depicted above, the amount of overtime budgeted for FY 2010-11 was \$2.033 million, but the actual amount expended was almost \$3.2 million. A portion of the overtime was due to unfilled vacancies.

The constant staffing model used by the OFD is reasonable; however, the continuous cycle of overtime along with the regular 56-hour week schedule of firefighters is contributing to an excessive use of sick leave. National experience is that when fire personnel are continuously working overtime in addition to working their regular schedule, sick leave use does increase. In fact, the OFD is now investigating the situation and it believes there are patterns of sick leave use among some fire employees. When the City does not fill vacancies in the OFD, overtime necessarily increases and the problem is further compounded.

For this study we analyzed the major leave uses by OFD personnel to understand the various reasons for leave (Appendix A, Leave Analysis). Following is a summation of sick leave use during for three full years, beginning in 2008.

Table 4: Sick Leave Use by Rank, 2008-2010

| Position/ FTE Positions | 2008 Hours | 2009 Hours | 2010 Hours | Average Number Shifts Off Sick per Position/ Year | OT Shifts Required per Year To Cover Sick Leave |
|------------------------------|------------|------------|------------|---|---|
| Battalion Chiefs/ 3 | 110 | 60 | 237 | 1.9 | 5.7 |
| Captains/ 24 | 2276 | 3269 | 3529 | 5.5 | 133 |
| Engineers/ 24 | 3005 | 2058 | 2547 | 4.4 | 106 |
| Firefighters/ Paramedics/ 48 | 4070 | 4229 | 5028 | 3.9 | 185 |
| Totals | 9461 | 9616 | 11341 | 4.3 | 430 |

It is interesting that Captains have the highest average of sick occurrences off each year, followed by Engineers and Firefighter/ Paramedics. The reason may be attributed to Captains and Engineers being more senior employees, thus their annual vacation use is higher due to their seniority. This means that more overtime opportunities are available in these ranks with fewer FTEs, because of the increased vacation time. This goes back to our premise that the more overtime an individual works, the more likely they are to use sick leave.

A review of FY 2010-11 showed that OFD overtime was down slightly to 10,306 hours, requiring approximately \$457,345 to cover the overtime. If sick leave were reduced by 25 percent, a reasonable goal, \$114,336 in annual savings would be realized. Over five years the total savings would be almost \$600,000, not a small sum.

Situations of high sick leave use and possibly abuse are not unique to Oceanside. For example, during the conduct of this study we found that Springfield, IL was facing a similar problem. To address its situation, Springfield officials were considering changes to the City's sick leave policy that included contract provisions whereby sick leave was tied to the minimum staffing requirement. Like Oceanside, Springfield has a minimum staffing provision in the labor agreement. Springfield officials said:

“A newly created sick time performance standard would allow the city to reduce minimum manning by up to three firefighters when the number of sick-time hours used within any 30 day period reaches 1,344 hours. Mayor Houston said the provision serves as an incentive for firefighters to limit their use of sick time, which in turn, reduces the need to hire back firefighters and pay them overtime. Fire overtime costs totaled nearly \$1.6 million last budget year for the Department, which has a minimum staffing clause requiring a minimum of 49 fire personnel to be on duty.”⁴

⁴ <http://www.firehouse.com/news/10612457/illinois-mayor-firefighters-resolve-staffing-issue>

The downside to the Springfield concept is that service levels are reduced when sick leave goes above a certain level.

Instead of reducing staffing when sick leave goes above a certain threshold, an alternative idea is to combine sick leave and annual leave into one leave category. In this way fire personnel who are off duty whether for vacation or sick use leave from their annually accrued leave bank. This concept is becoming more popular, especially in the private sector.

Another way to address sick leave is for the City not to carry more than several vacant positions in the OFD, something it has done in the past. Vacant positions create additional overtime opportunities and along with the normal amount of overtime to cover vacations and other absences, an increase in overtime due to positions left vacant elevates the likelihood that fire personnel will call in sick. When the additional sick leave is factored in due to the excessive overtime caused by vacancies, the City may in fact be losing money not saving it.

Recommendation 4: Continue to analyze the use of sick leave and take the necessary steps to decrease its use.

Recommendation 5: Take proactive measures to predict and fill vacancies more rapidly to avoid excessive overtime. It is believed that excessive overtime due to vacant positions is exacerbating the sick leave use problem.

Memorandum of Understanding

Any changes the City may decide to make to reduce costs will require changes to the contractual agreement with the Oceanside Firefighters Association, in particular the requirement for minimum staffing. In the last agreement the City and Union agreed to staffing language that requires a minimum of 32 positions to be on duty, not including the shift battalion chief. An established right of municipal governments in California is to establish the level of service provided. We believe it is reasonable however, to negotiate the impact of service levels on firefighters, especially with regards to unit staffing, but not the total number of personnel on duty or deployed at various stations.

The difference is that the City could agree that every fire engine will have three persons on board when the unit is available for an emergency. However, it should not agree that there must be eight engines – the distinction being that the city may choose to have seven, three person engines. Or even ten? Ultimately, the number of units deployed should be retained as a City decision and be a part of a comprehensive and on-going process to evaluate risks within the context of the City's ability to pay and the citizens' appetite to accept more or less risk.

Our examination of the agreement also revealed some other areas that should be evaluated before the next agreement is signed:

- Section 4.03 contains a Voluntary Physical Fitness Program, established as a priority, between the hours of 0730 and 1030 hours and establishes the Core-Time work hours

of 7:00am-5:00pm even though firefighters work a 24-hour schedule. A better approach is to establish a department policy that grants sufficient time in the evening for physical fitness with daytime hours used for inspections and pre-planning activities.

- Section 5.07 allows for leave of absence without pay (LWOP). This section should be given more consideration as to its practicality and impact on cost. LWOP increases the overtime burden and it impacts team function. Also, if the LWOP is for a long period, an additional burden to provide retraining is probably required as well.
- Section 2.09 contains promotional requirements that probably do not need to be in the MOU as they can and should change before a new agreement is signed. The City should meet and confer on promotional requirements and it is the City's responsibility to establish the reasonable promotional requirements with input from the Union.

On a positive note, the Union expressed its desire to us that it would like very much to come up with efficiency measures to help the City address its budget problems. The desire appears genuine and the Union has ideas on ways to save money.

Recommendation 6: Under any new labor agreements do not include language that specifies the level of service to be provided such as minimum shift staffing, number of stations, response times, or other response parameters.

Recommendation 7: The City and Firefighter's Union should meet at least quarterly to openly discuss issues of mutual concern, and to discuss changes that each group believes is relevant to the improving service and addressing the City's current budget situation. It is important that the Fire Chief be included in any such meetings.

Regionalization Possibilities

Inasmuch as a major part of this study was to assess efficiency opportunities to include the possibility of enhancing regional partnerships, the matter of being a regional partner with other North County communities is an important one. It is notable that Oceanside has had a turnover of Fire Chiefs over recent years, indicating a somewhat troubled system with management to include labor issues and local politics. Opinions about the City and its Fire Department noted during our interviews with communities outside of Oceanside reflected that Oceanside is a difficult arena, politically. And because it is, officials in neighboring communities commented that elected officials from their community are, and have been, reluctant to form partnerships and long-term agreements with the Oceanside.

As it stands Oceanside is not viewed as a particularly good regional partner that other cities are comfortable dealing with, particularly on a sensitive matter as important as public safety. A full assessment of the reasons why this is so is not part of this study, but it is at least worth mentioning because it is so important. Even if the situation is more perception than reality,

anything the City can do to improve its standing as a viable regional partner is well worth the effort. A good first step might be to host a conference of North County governments to openly discuss the issues and future opportunities.

Recommendation 8: Consider hosting a multi-day conference of North County governments and fire agencies to discuss future consolidation opportunities. The conference could be facilitated by a respected member of the community, a civic group, or possibly the Chamber of Commerce. Openly discuss any political impediments or past issues as part of the process.

III. POPULATION GROWTH, RISK, AND DEMAND ANALYSES

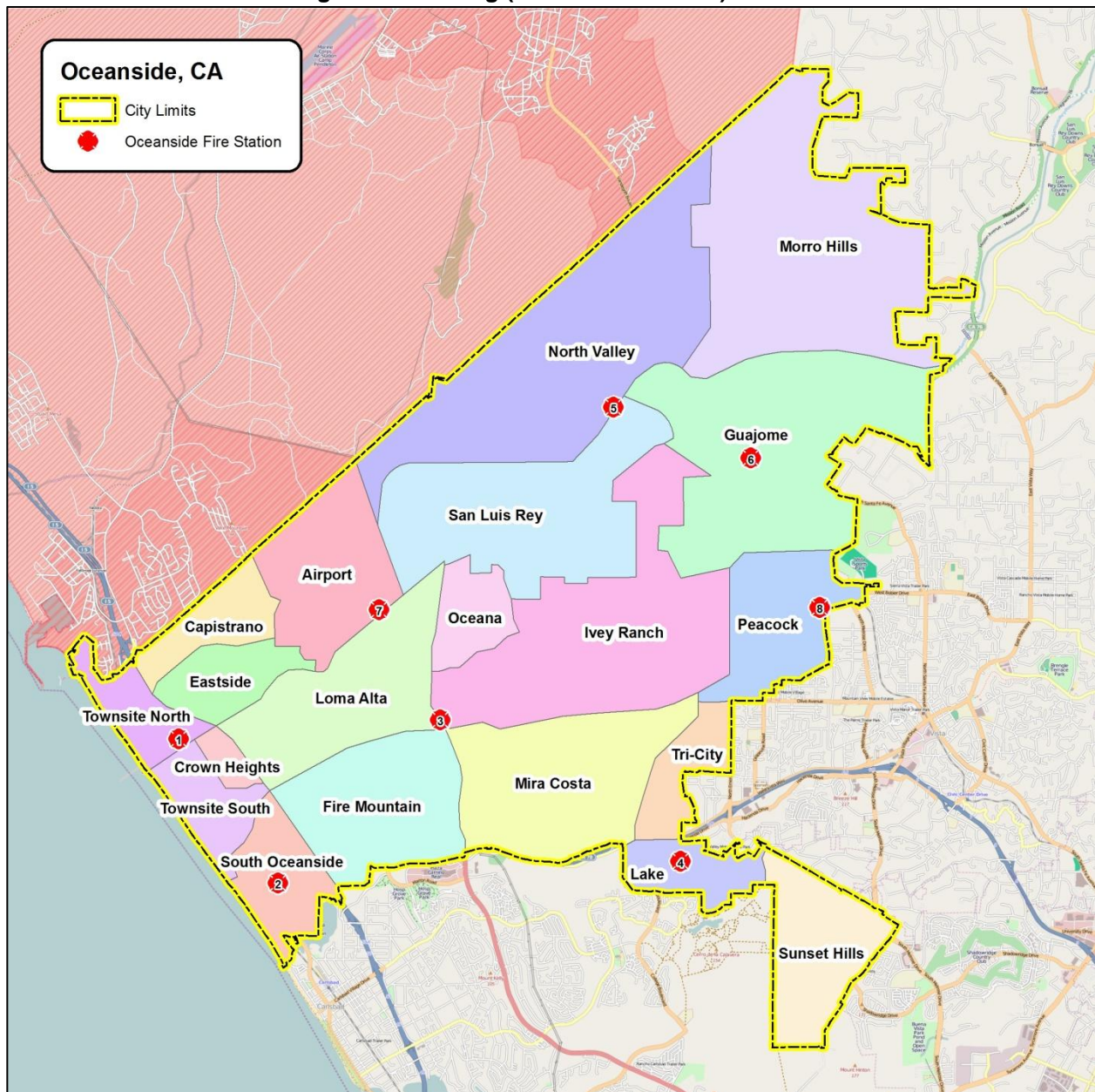
This chapter provides a review of factors that can affect demand for emergency services. Specifically, we review population growth, fire risk and historical demand for emergency services. Where possible, we conduct this analysis at a neighborhood or planning area level. The assessments conducted in this chapter are critical to not only the determination of the number and placement of resources (discussed in the next chapter), but also to the mitigation measures that may be available to the fire department (e.g., residential sprinkler ordinance or increased prevention efforts).

Planning Areas

It is good practice for fire departments to consider risk and demand at a neighborhood or planning area level because of the variations across them. Although there are no official planning areas in Oceanside, we found that code enforcement maps do exist and we used them for the study.⁵ Figure 4 shows the City's code planning areas used to analyze the demand and risk attributes for Oceanside.

⁵ Source: <http://www.ci.oceanside.ca.us/gov/ns/code/default.asp>

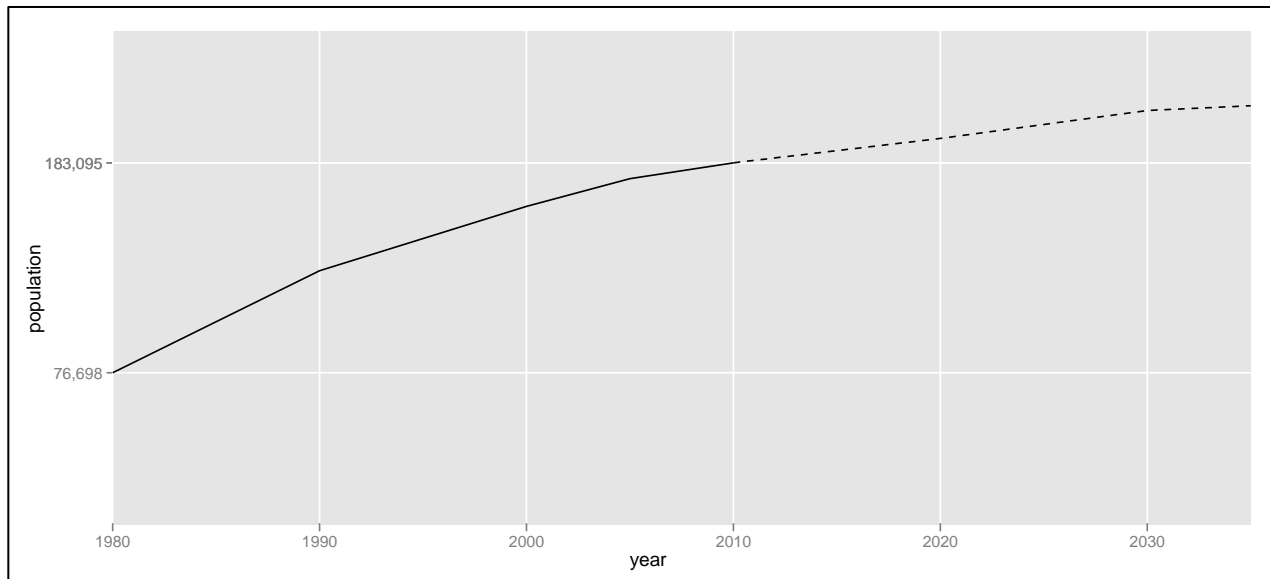
Figure 4: Planning (Code Enforcement) Areas



Citywide Population Growth and Development

Between 1980 and 2010, the population more than doubled and steady growth is expected through 2035. The City's current population of 183,095, according to the San Diego County Regional Planning Group (SANDAG), is projected to increase by an additional 10,000 residents each decade. Oceanside's steadily increasing population from 1980 and the projections going forward are depicted in Figure 5.

Figure 5: Actual (solid) and Projected (dashed) Population



SANDAG, which projects growth for San Diego County and local communities, has determined that the average household size is 2.87 persons. Sixty-five (65) percent of population lives in single unit structures and 5 percent in mobile homes. Nine (9) percent of the City’s residential housing units have been constructed since 2000. The median housing value is \$336,156. Fifty-nine (59) percent of the homes are valued at \$300,000 or greater and 41 percent valued less. Approximately 13 percent of the residential population is over 65 and 25 percent between the ages of 45 and 64. The City contains approximately 65,000 housing units, 13,000 businesses with 4,341 persons per sq. mi. The median resident age is 33.3 years and the median household income is approximately \$60,000.

SANDAG has projected that the population of Oceanside will increase by another 12,000 residents by 2020, along with additional 5,000 housing units.

Table 5: SANDAG Growth Projections for Oceanside, 2010-2050

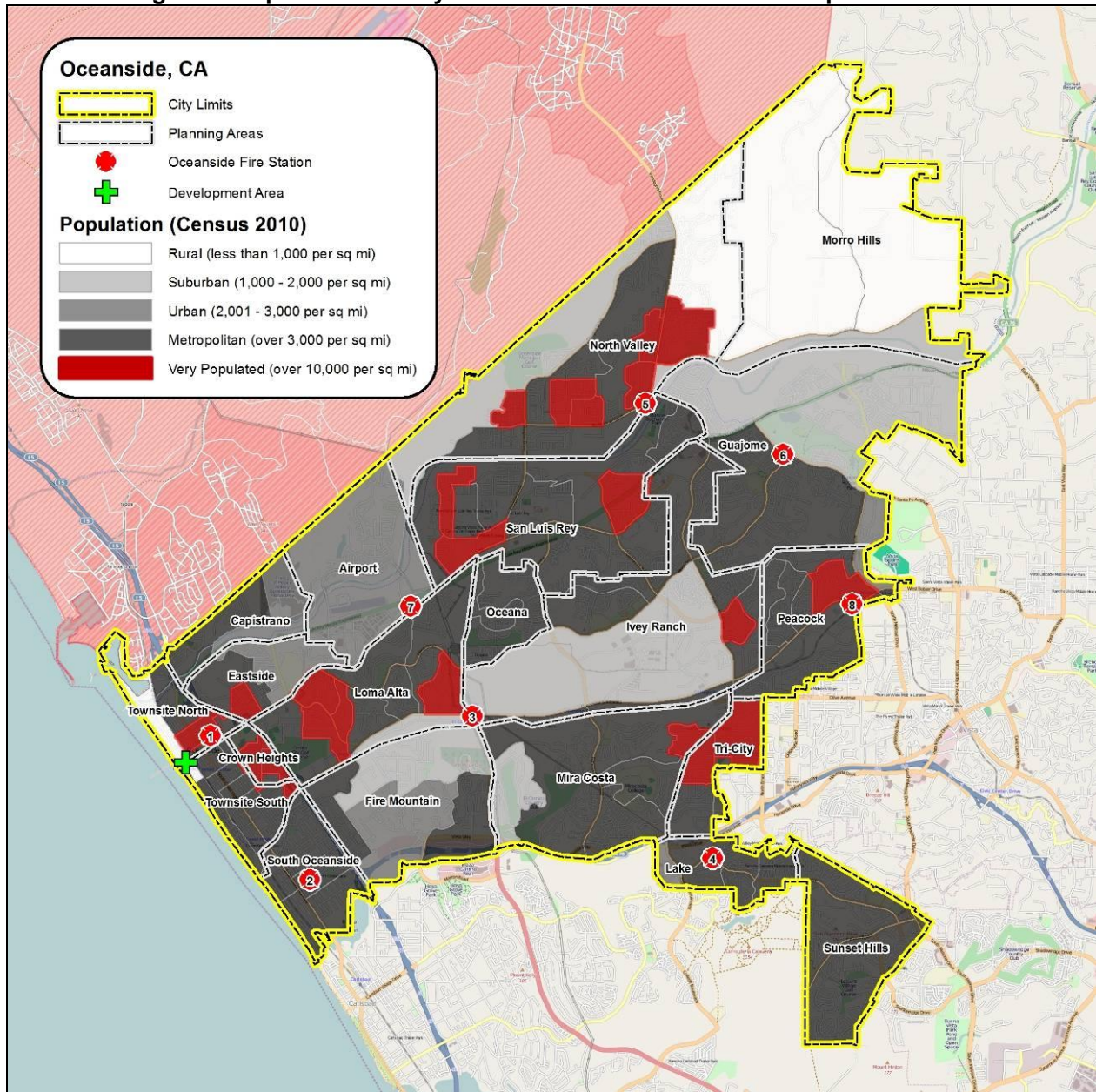
| Year | 2010 | 2020 | 2035 | 2050 |
|---------------|---------|---------|---------|---------|
| Population | 183,095 | 195,444 | 212,213 | 217,364 |
| Hosting Units | 64,275 | 69,565 | 73,599 | 73,600 |
| Jobs | 43,977 | 48,464 | 57,710 | 67,410 |

Understanding expected population growth is also an important component in planning for future provision of emergency service. In discussions with the Oceanside planning department, it was identified that most of the census population growth over the last decade has been the result of residential development in the Morro Hills area. Although that area is still considered fairly rural, it is expected that development will continue in this area over the next decades (somewhat dependent on the economic climate).

Most areas of the city are considered metropolitan with more than 3,000 people per square mile. Capistrano, Eastside, Fire Mountain, Ivey Ranch, and Guajome all have a mix of metropolitan, urban, and suburban areas. Morro Hills is the only area that is predominantly rural. The only substantial development that will have an immediate effect on the fire department will be located near the Oceanside Pier, immediately adjacent to the current mid-rise Wyndham Oceanside Pier Resort. The expected changes along the Pacific Street corridor, though important for the City economically, will not significantly impact fire service. EMS demand will increase somewhat, and future studies should analyze how new development is affecting medical demand.

Population densities and the location of new development between North Pacific Street and North Myer Street around Mission Avenue (depicted by a green cross) are shown in Figure 6. Emergency services demand, especially EMS, is predominantly driven by population. The areas with the highest population density can expect to have the highest amount of emergency services demand; these areas are shown in red.

Figure 6: Population Density with Identified Growth and Development Areas



That Oceanside is projected to continue growing, albeit not at the same rate as in previous decades, means that the city will need to prepare for additional emergency service demand, primarily to handle the additional medical calls that come with increased population, and also with some aging of the current population. In its review of the draft report, the OFD commented that it currently experiences higher concentrations of medical calls related to an aging populace in areas such as Leisure Village, trailer parks, and senior communities.

With the exception of the area immediately adjacent to the beach, Oceanside’s building stock is relatively modern and constructed to the latest codes. As a result, there should not be a significant change in the number (or severity) of structure fires.

Demand Analysis

Demand is defined here as the number of calls to the fire department for emergencies and non-emergency services. In this section, we forecast the total number of calls (or incidents) and review trends for the different incident types. We also compare emergency services demand by planning area and map out fire and EMS hotspots. Understanding both current and predicted future demand will help make important decisions in the following areas:

- **Fire Unit Locations** – Planning areas with high levels of demand help indicate where fire apparatus should be located. Further understanding of the types of incidents in each area helps to determine the number and type of response equipment that is most appropriate.
- **Weight of Response** – The demand analysis shows the number of fires versus the number of fire alarms. A higher weight of response is prudent for planning areas with higher-risk properties, and where more structure fires actually occur.
- **Prevention** – Some areas have such a high demand for emergency service that an increase in prevention and education efforts targeted to them should be considered.

Demand Projection – Using a statistical software package, a multi-linear regression procedure was used to investigate how both time⁶ and population affect the total number of incidents to which the fire department responds. A best-fit multi-linear model was used to predict future demand.

In statistics, linear regression is an approach to modeling the relationship between a dependent variable y and one or more independent variables denoted x_i . For our incident type trending, we are using year (x_1) and population (x_2) to predict incident type totals (y). We realize that time and population are not the only factors determining emergency services demand, so the model is not perfect for predicting the exact number of incidents. The use of linear regression is useful in that it shows trends, and trends are valuable for planning purposes.

For any model, it is necessary to say how statistically accurate it is, or what the confidence is in the estimates. For example, if we predict that there will be 1,000 emergency incidents ten years from now, we also have to state the confidence limits of that prediction. The confidence interval is a statistical plus/minus calculation. To continue with our example, we might say there will be 1,000 emergency incidents, plus or minus 100. This gives the reader both a prediction and a range within which we are fairly certain (95 percent certain to be exact) that the eventual number of incidents will fall.

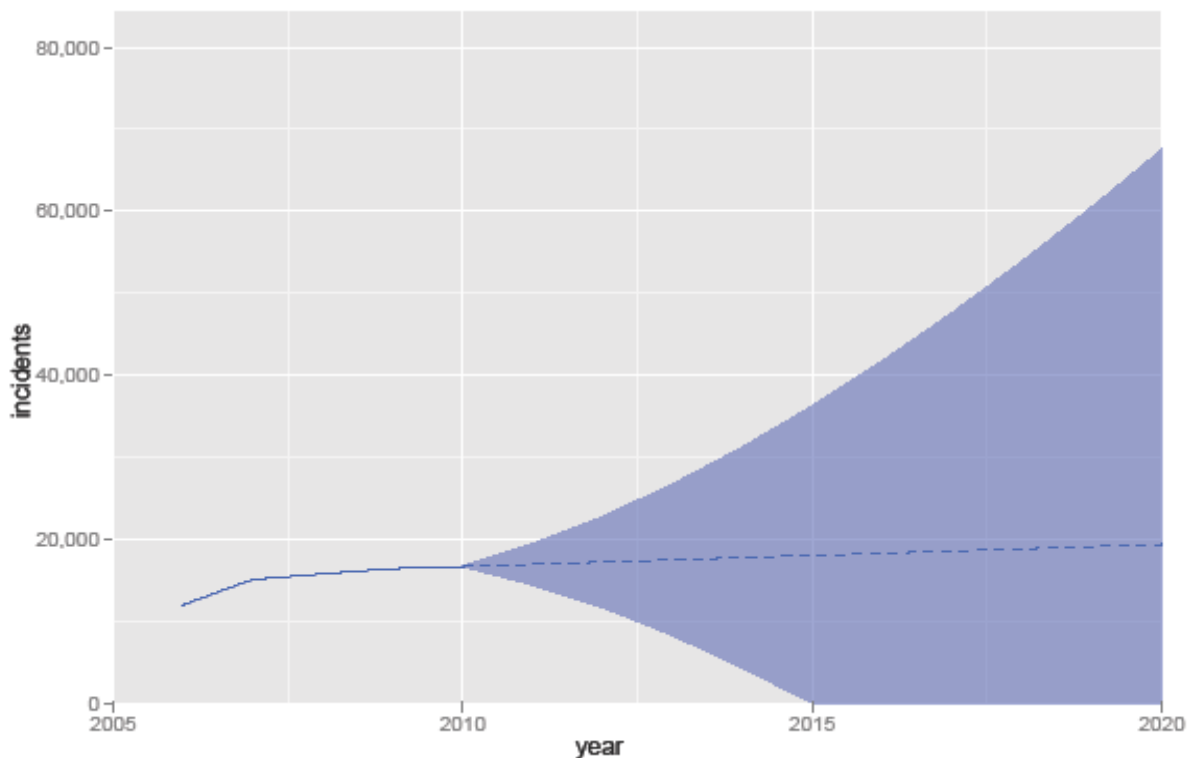
⁶ Time reflects changes in inclination to use EMS and factors other than population.

The confidence intervals are the result of a statistical calculation that analyzes how accurately our prediction model represents the actual data. A very good model will have a small confidence interval and is typically the result of historical trend that stays fairly steady from year to year; as a result, a multi-linear regression is able to make fairly accurate predictions for total incidents for at least several years into the future. The further into the future, the wider the confidence limits become.

Large confidence intervals occur when there are large incident type fluctuations from year to year that are inconsistent and cannot be accurately modeled with any of the independent variables (time and population). For instance, if the annual number of incidents fluctuates up and down 30 percent from year to year, the model cannot accurately predict the exact number of incidents for a given year. In that case, there would be a large confidence interval that essentially says we predict y, but the number could be much higher or much lower.

Figure 7, which follows, shows the actual emergency incident totals from 2006 to 2010 (solid blue line), and the total emergency incident projections going forward (dashed blue line). The shaded blue area around our projected incident totals in Figure 7 shows the 95 percent confidence interval (meaning that statistically there is a 95 percent chance that the actual incident total will be within that range).

Figure 7: Total Emergency Incident Projections



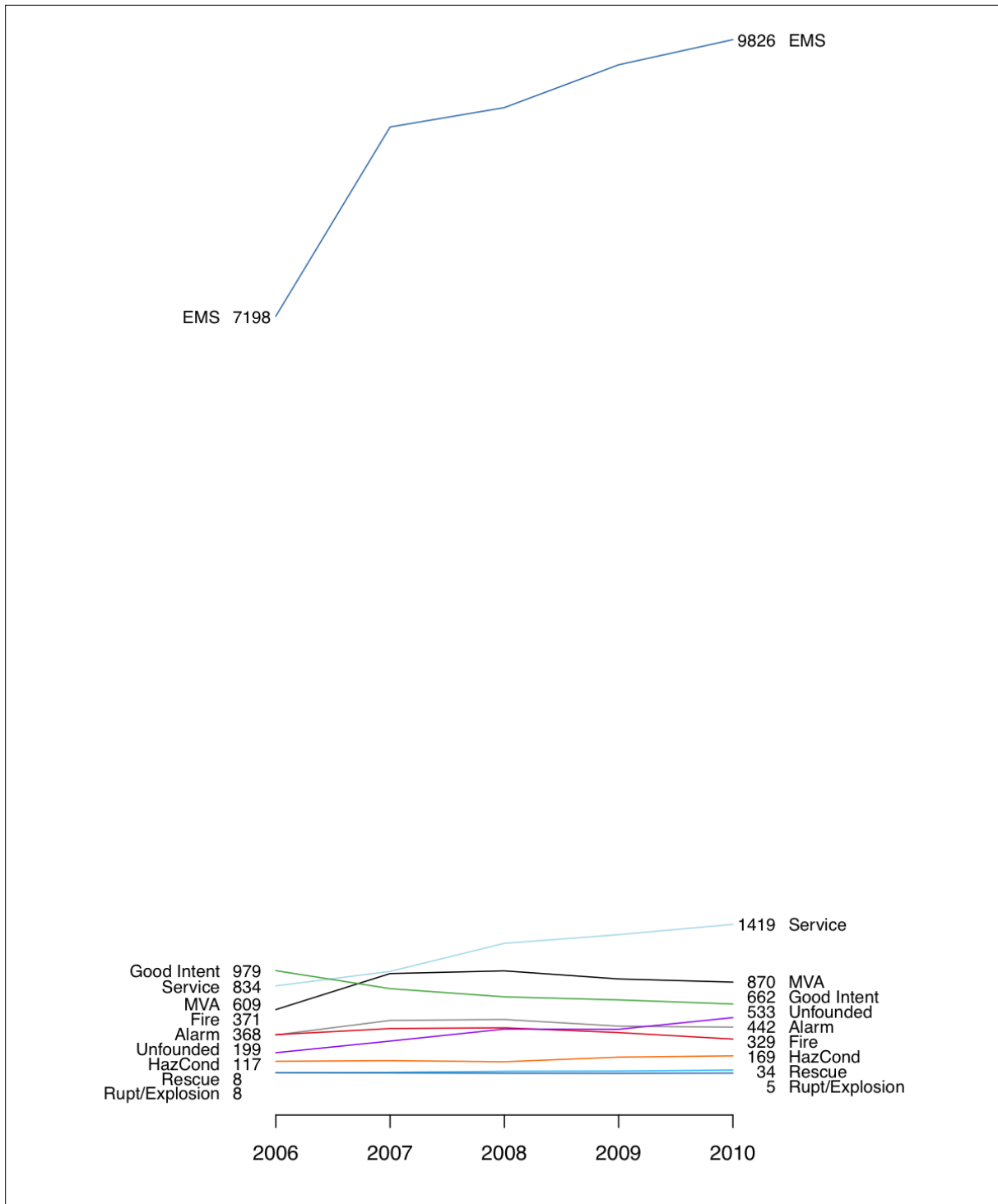
Over the last decade, both the population and total number of incidents has increased and it is projected that this trend will continue. Projections are that by 2020, the OFD will need to handle approximately 19,000 incidents.⁷ The vast majority of these calls will be medical related, not fires.

Professional judgment is needed in addition to this statistical prediction to develop an accurate picture of where demand may be headed within the bounds of the confidence interval. A solid understanding of the underlying factors that drive demand for local emergency services combined with statistical forecasting like that provided in this section is a powerful combination for successful deployment planning.

Incident Type Trends – Figure 8 shows the incident type trends from the period of 2006 to 2010. EMS calls are responsible for the highest proportion of demand, and the number of EMS calls has steadily increased 37 percent over the 2006 to 2010 time period. Although they account for a significantly smaller portion of total demand, service calls and motor vehicle accidents also substantial increases over that time period. Service calls increased 70 percent while calls for motor vehicle accidents saw an increase of 43 percent. All incident types had an overall percentage increase with the exception of good intent, fire and rupture/explosion/overheating incidents.

⁷ Each call, whether for an emergency or non-emergency situation, is referred to as an “incident”. One incident can generate multiple responses. A car fire “incident”, for example, may generate only one response (an engine), while a structure fire “incident” will require multiple responses (three engines, one quint, one rescue and one battalion chief).

Figure 8: Incident Type Trend, 2006-2010



During FY 2010-11, the OFD responded to 16,844 calls; about .092 calls per resident. A majority of the calls are of the medical variety. If the projections for population go as predicted by SANDAG and the call rate per resident remains about the same, the OFD call volume would increase to almost 18,000 calls by 2020. This is not a significant increase in call volume and the

OFD could easily handle the expected increase, though EMS resources could be affected somewhat. The OFD should analyze the expected impact of the call increase each year and then make the necessary adjustments.

Table 6: Projected Call Volume Based on Rate of .092 Calls per Resident, 2020-2050

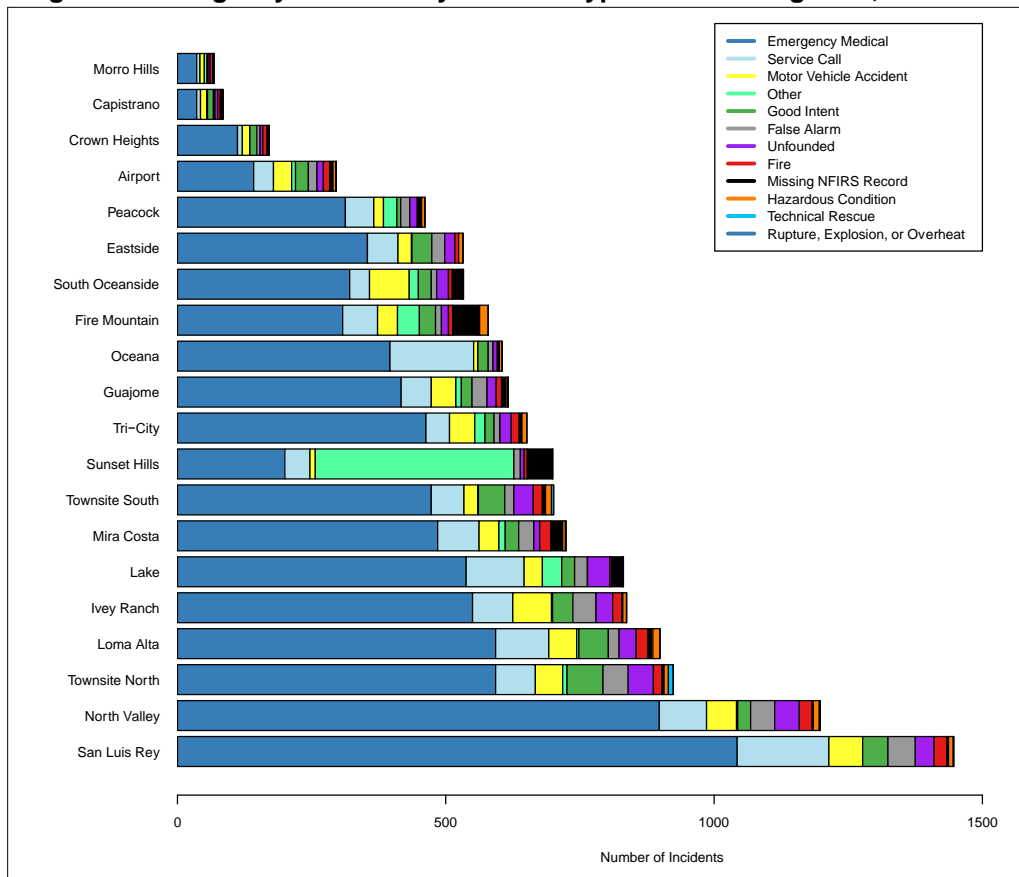
| Year | Projected Call Volume |
|--------------|-----------------------|
| 2011(Actual) | 16,844 |
| 2020 | 17,981 |
| 2035 | 19,524 |
| 2050 | 19,997 |

If, as projected, the population of Oceanside increases to about 195,000 residents by 2020, call volume for the OFD should increase by about seven percent. Based on the projections, the OFD would need to be able to handle another three calls/ day. If the increase from 2011 to 2020 were distributed somewhat equally amongst the 12 response units currently deployed, each unit would see about 95 additional responses by 2020; again easily manageable.

To make sure that the future call volumes do not increase beyond what the current system can handle, thus requiring more resources, the OFD needs to be aggressive in its prevention and public education programs. These are weaknesses in the system now as are the dispatch protocols that require a paramedic engine be dispatched on every medical call, regardless of how minor. Changing the dispatching protocols can reduce the demand for medical response resources by initially screening the calls using a tiered priority medical dispatch system. We discuss the need to improve prevention/ public education and dispatching protocols later in the report.

Demand by Planning Area – Figure 9 shows the emergency incidents by incident type and planning area. As shown on Figure 9, EMS incidents are responsible for the majority of emergency service demand in each planning area with the exception of Sunset Hills. In that case, “other” incident type had the largest percentage, which is the result of mutual aid agencies handling the call (we did not have access to mutual aid NFIRS reports to classify the final incident type). Morro Hills, Capistrano, Crown Heights, and the Airport had the least amount of incidents; in some cases (such as Crown Heights) this was because the planning area in question was substantially smaller than other planning areas. North Valley and San Luis Rey had the most emergency service demand.

Figure 9: Emergency Incidents by Incident Type and Planning Area, 2006-2010



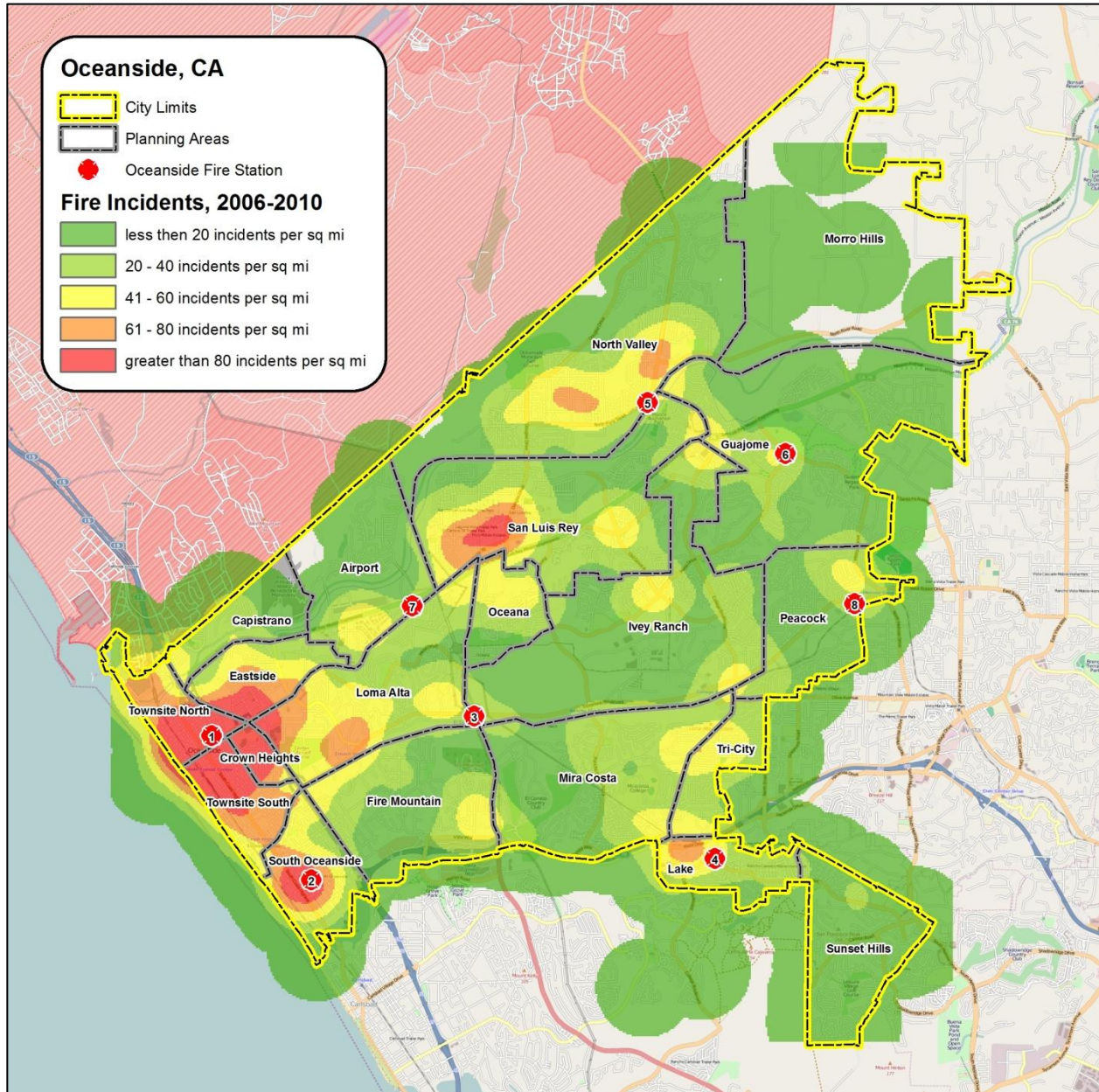
In the following table we show the actual incident counts by planning area.

Table 7: Incident Types by Planning Area

| | Emergency Medical | Service Call | Motor Vehicle Accident | Other | Good Intent | False Alarm | Unfounded | Fire | Missing NFIRS Record | Hazardous Condition | Technical Rescue | Rupture, Explosion, or Overheat |
|-----------------|-------------------|--------------|------------------------|-------|-------------|-------------|-----------|------|----------------------|---------------------|------------------|---------------------------------|
| San Luis Rey | 1043 | 171 | 63 | 0 | 47 | 51 | 35 | 24 | 3 | 9 | 0 | 1 |
| North Valley | 898 | 88 | 56 | 2 | 24 | 45 | 46 | 24 | 2 | 11 | 2 | 0 |
| Townsite North | 593 | 74 | 51 | 8 | 67 | 47 | 47 | 16 | 4 | 8 | 9 | 0 |
| Loma Alta | 593 | 99 | 52 | 4 | 55 | 20 | 32 | 22 | 9 | 13 | 0 | 0 |
| Ivey Ranch | 550 | 75 | 72 | 2 | 38 | 43 | 31 | 17 | 2 | 7 | 0 | 0 |
| Lake | 538 | 108 | 34 | 36 | 24 | 24 | 42 | 3 | 20 | 2 | 0 | 0 |
| Mira Costa | 485 | 77 | 37 | 12 | 25 | 28 | 11 | 21 | 22 | 5 | 1 | 0 |
| Townsite South | 473 | 61 | 26 | 1 | 49 | 17 | 36 | 17 | 6 | 11 | 4 | 0 |
| Sunset Hills | 200 | 47 | 10 | 370 | 0 | 12 | 7 | 6 | 47 | 0 | 0 | 0 |
| Tri-City | 463 | 44 | 47 | 19 | 17 | 11 | 21 | 15 | 5 | 9 | 0 | 0 |
| Guajome | 417 | 56 | 46 | 10 | 20 | 28 | 17 | 10 | 10 | 2 | 0 | 0 |
| Oceana | 396 | 156 | 8 | 0 | 19 | 9 | 8 | 3 | 1 | 5 | 0 | 0 |
| Fire Mountain | 308 | 65 | 37 | 41 | 30 | 11 | 13 | 8 | 50 | 16 | 0 | 0 |
| South Oceanside | 321 | 37 | 74 | 17 | 24 | 10 | 22 | 7 | 17 | 3 | 1 | 0 |
| Eastside | 354 | 57 | 25 | 1 | 37 | 24 | 19 | 7 | 0 | 8 | 0 | 0 |
| Peacock | 313 | 53 | 18 | 25 | 7 | 17 | 14 | 3 | 5 | 6 | 0 | 0 |
| Airport | 142 | 37 | 34 | 7 | 24 | 16 | 12 | 12 | 6 | 5 | 1 | 0 |
| Crown Heights | 112 | 9 | 14 | 0 | 13 | 6 | 5 | 8 | 2 | 2 | 0 | 0 |
| Capistrano | 36 | 7 | 12 | 1 | 11 | 3 | 5 | 5 | 2 | 3 | 0 | 0 |
| Morro Hills | 36 | 6 | 8 | 5 | 2 | 0 | 4 | 5 | 1 | 1 | 0 | 0 |

Geospatial Mapping of Fire and EMS Demand – A better way of looking at demand is to actually map out fire and EMS incident densities using GIS software, which allows for pinpointing of high-demand areas (“hotspots”). Figure 10 and Figure 11 show fire and EMS incident densities.

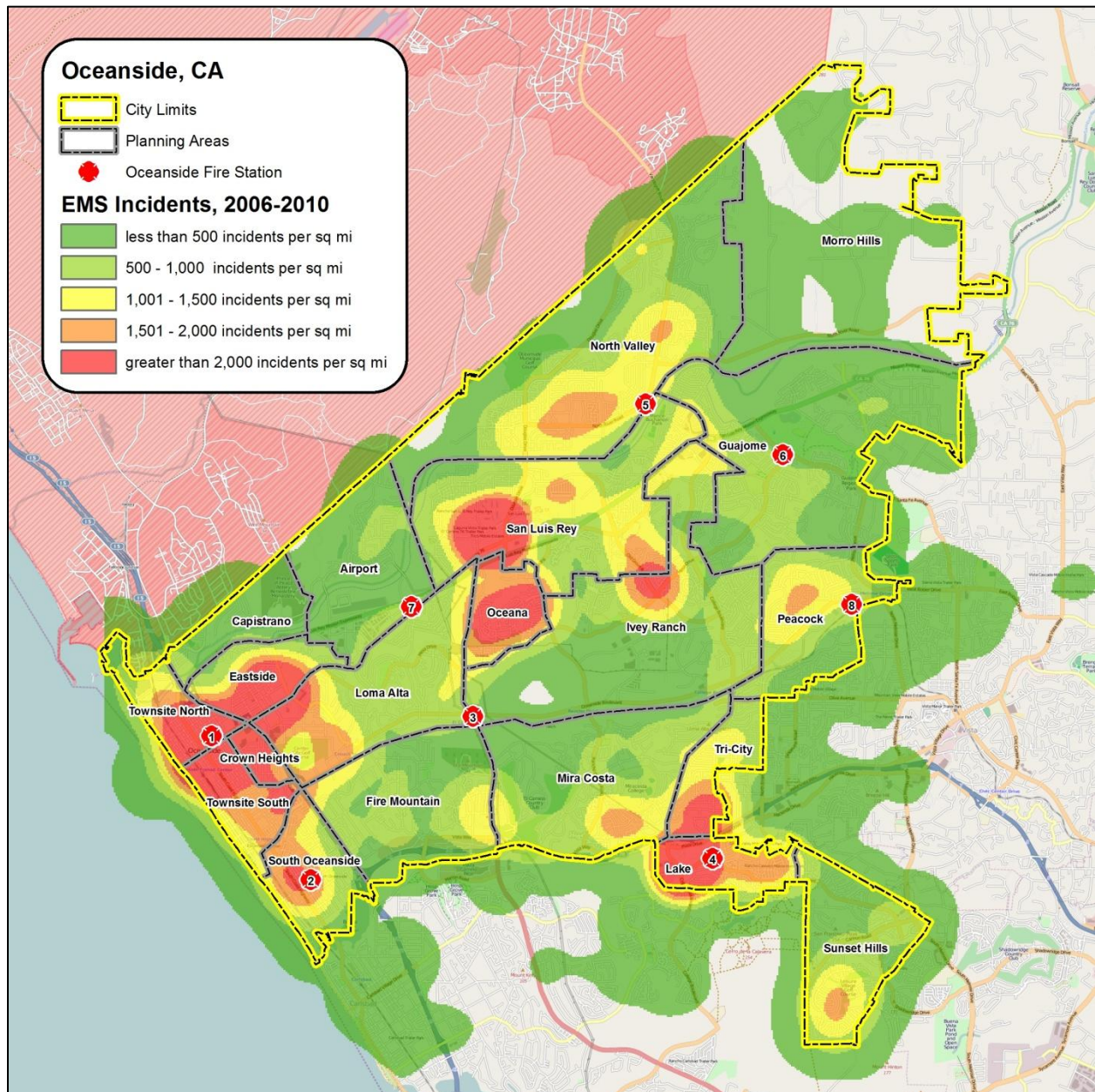
Figure 10: Fire Incident Density



The fire incident density map includes all incidents classified as a fire within the NFIRS database. This includes structure fires, vehicle fires, and outside fires. Based on the fire density map it is quite clear that the vast majority of fire demand is located in western portion of Oceanside near the waterfront. There are some smaller hotspots in the San Luis Rey and Lake planning areas. Please note that, because many of the incidents in Sunset Hills were categorized as “other” because a mutual aid agency handled the call, the fire and EMS incident density for this planning area may be underrepresented.

EMS incident density, as shown in Figure 11, shows a similar hotspot pattern on the western side of Oceanside, but there are also significant hotspots located in the Oceana, San Luis Rey, and Lake planning areas. It appears that EMS demand is much more spread-out than fire incidents. Both EMS and fire calls tend to be driven by population—the old saying that the three leading causes of fire are men, women and children generally holds true for all incident type densities. Although there are some differences in the fire and EMS incident density map, for the most part, they do follow the residential population density shown earlier in Figure 6.

Figure 11: EMS Incident Density



Fire Risk Analysis

Although fires are a small percent of total emergency services demand, fire suppression activities require more personnel to mitigate than do most other emergencies. The fire risk assessment in this section evaluates the overall trend in fires, the probability of fires in different planning areas, and the consequence or likely severity of fires in different planning areas. All of these factors were considered for the overall protection requirements of each planning area.

Jurisdiction-wide Fire Losses – One of the best indicators of fire risk is actual data collected from fires over multiple years. Table 8 shows total fires, dollar loss (defined as both property and contents), injuries and deaths, per year.

Table 8: Total Fire Loss, 2006-2010

| | Total Fires | Dollar Loss | Injuries | Deaths |
|-----------|-------------|-------------|----------|--------|
| 2006 | 342 | \$563,915 | 1 | 0 |
| 2007 | 320 | \$2,454,261 | 1 | 1 |
| 2008 | 310 | \$4,177,946 | 0 | 0 |
| 2009 | 301 | \$1,862,043 | 4 | 0 |
| 2010 | 241 | \$2,931,131 | 1 | 0 |
| (average) | 303 | \$2,397,859 | 1 | 0 |

The data reflects all fires, including vehicle fires and outside fires. As shown in Table 8, on average, there were about 303 fires, one fire injury and virtually no fire deaths per year. Annual dollar loss averaged about \$2.3 million dollars.

Table 9 compares the fire loss data to regional and national averages. Fire loss data can be easily skewed. A single exceptional incident or under- or over-reporting of deaths, injuries, or property loss could have a huge impact on the comparisons. Also, different jurisdictions may collect data in slightly different ways, making comparison imperfect. Nevertheless, it is of interest to make the comparison and ask questions about differences found.

Table 9: Per Capita Fire Loss and Comparison Statistics, 2006-2010

| | Total Fires (per 1K capita) | Dollar Loss (per capita) | Civilian Injuries (per 1M capita) | Civilian Deaths (per 1M capita) |
|--------------------------------|--------------------------------|-----------------------------|--------------------------------------|------------------------------------|
| United States | 4.4 | \$40.8 | 55.5 | 9.8 |
| Region: west | 3.1 | \$30.9 | 44.2 | 5.7 |
| Population: 100,000 to 249,999 | 3.3 | \$33.6 | 57.4 | 9.2 |
| Region and Population | 2.3 | \$32.9 | 36.8 | 7.1 |
| Oceanside : 2006 | 1.9 | \$3.1 | 5.5 | 0.0 |
| Oceanside : 2007 | 1.7 | \$13.4 | 5.5 | 5.5 |
| Oceanside : 2008 | 1.7 | \$22.8 | 0.0 | 0.0 |
| Oceanside : 2009 | 1.6 | \$10.2 | 21.8 | 0.0 |
| Oceanside : 2010 | 1.3 | \$16.0 | 5.5 | 0.0 |
| Oceanside : (average) | 1.7 | \$13.1 | 7.6 | 1.1 |

Per Table 9, Oceanside had a lower than average per capita fire loss. Oceanside had less than half the fires per capita compared to both the national and regional averages. Similarly, Oceanside has a per capita fire loss far below the national and regional averages. Civilian injuries and deaths were also below national and regional averages. This low per capita average is a testament to the men and women of the Oceanside Fire Department that put forth their strongest effort to keep these statistics low. Continuing the message of prevention, public education, and code enforcement will continue to keep these numbers below the national and regional averages.

Fire Risk by Planning Districts – Fire risk is the product of fire probability and fire consequence. High risk can result from either a large number of small fires, or a small number of large fires. Table 10 provides both probability and consequence statistics for each planning area for the period of 2006 to 2010. Probability is reflected in the total number of structure fires, defined as the number of fires that spread beyond their object of origin (meaning we excluded things such as trash can fires and cooking fires that did not extend beyond the can or pot).

Table 10: Fire Risk Classification by Planning Areas, 2006-2010

| | Fires (per sq mi) | | Beyond Room (% of fires) | | Property Loss (per sq mi) | | Contents Loss (per sq mi) | | Deaths (per sq mi) | | Injuries (per sq mi) | |
|-----------------|-------------------|------|--------------------------|-----|---------------------------|-----------|---------------------------|-----------|--------------------|-----|----------------------|-----|
| Airport | 7 | 3.7 | 4 | 57 | \$755,000 | \$399,208 | \$271,100 | \$143,345 | 0 | 0 | 0 | 0 |
| Capistrano | 2 | 2.4 | 2 | 100 | \$200,000 | \$242,707 | \$50,000 | \$60,677 | 0 | 0 | 0 | 0 |
| Crown Heights | 5 | 21.8 | 3 | 60 | \$165,000 | \$719,011 | \$40,100 | \$174,741 | 0 | 0 | 0 | 0 |
| Eastside | 7 | 8.3 | 1 | 14 | \$141,600 | \$167,858 | \$30,100 | \$35,682 | 0 | 0 | 0 | 0 |
| Fire Mountain | 8 | 3.6 | 3 | 38 | \$412,000 | \$184,362 | \$175,500 | \$78,533 | 0 | 0 | 0 | 0 |
| Guajome | 10 | 2.2 | 7 | 70 | \$651,000 | \$143,673 | \$263,000 | \$58,043 | 0 | 0 | 0 | 0 |
| Ivey Ranch | 12 | 2.8 | 4 | 33 | \$108,000 | \$25,473 | \$34,000 | \$8,019 | 0 | 0 | 0 | 0 |
| Lake | 6 | 8 | 3 | 50 | \$206,500 | \$274,275 | \$71,450 | \$94,900 | 0 | 0 | 0 | 0 |
| Loma Alta | 7 | 2.9 | 2 | 29 | \$551,900 | \$231,792 | \$111,600 | \$46,871 | 0 | 0 | 0 | 0 |
| Mira Costa | 16 | 5.6 | 3 | 19 | \$625,700 | \$218,092 | \$180,000 | \$62,740 | 0 | 0 | 1 | 0.3 |
| Morro Hills | 0 | 0 | 0 | - | \$0 | \$0 | \$0 | \$0 | 0 | 0 | 0 | 0 |
| North Valley | 22 | 4.3 | 11 | 50 | \$619,900 | \$122,177 | \$164,702 | \$32,461 | 0 | 0 | 2 | 0.4 |
| Oceana | 10 | 14.1 | 4 | 40 | \$156,500 | \$221,090 | \$117,800 | \$166,418 | 0 | 0 | 0 | 0 |
| Peacock | 4 | 2.5 | 2 | 50 | \$311,000 | \$195,445 | \$12,000 | \$7,541 | 0 | 0 | 0 | 0 |
| San Luis Rey | 18 | 5.2 | 3 | 17 | \$524,950 | \$152,109 | \$88,250 | \$25,571 | 0 | 0 | 0 | 0 |
| South Oceanside | 12 | 11.6 | 4 | 33 | \$420,000 | \$405,242 | \$102,000 | \$98,416 | 0 | 0 | 2 | 1.9 |
| Sunset Hills | 5 | 3.1 | 4 | 80 | \$496,000 | \$304,448 | \$25,500 | \$15,652 | 0 | 0 | 0 | 0 |
| Townsite North | 9 | 12.3 | 2 | 22 | \$301,700 | \$412,573 | \$70,000 | \$95,725 | 0 | 0 | 0 | 0 |
| Townsite South | 15 | 19.2 | 4 | 27 | \$274,500 | \$351,008 | \$184,720 | \$236,205 | 1 | 1.3 | 1 | 1.3 |
| Tri-City | 7 | 9.4 | 2 | 29 | \$26,200 | \$35,193 | \$6,900 | \$9,268 | 0 | 0 | 1 | 1.3 |

The table shows both the actual number of structure fires and the number normalized by land area (per square mile). Consequences are compared for each planning area using the following metrics: property loss in dollars, contents loss in dollars, civilian fire deaths, civilian fire injuries, and the number of fires that spread beyond the room of origin (more serious structure fire).

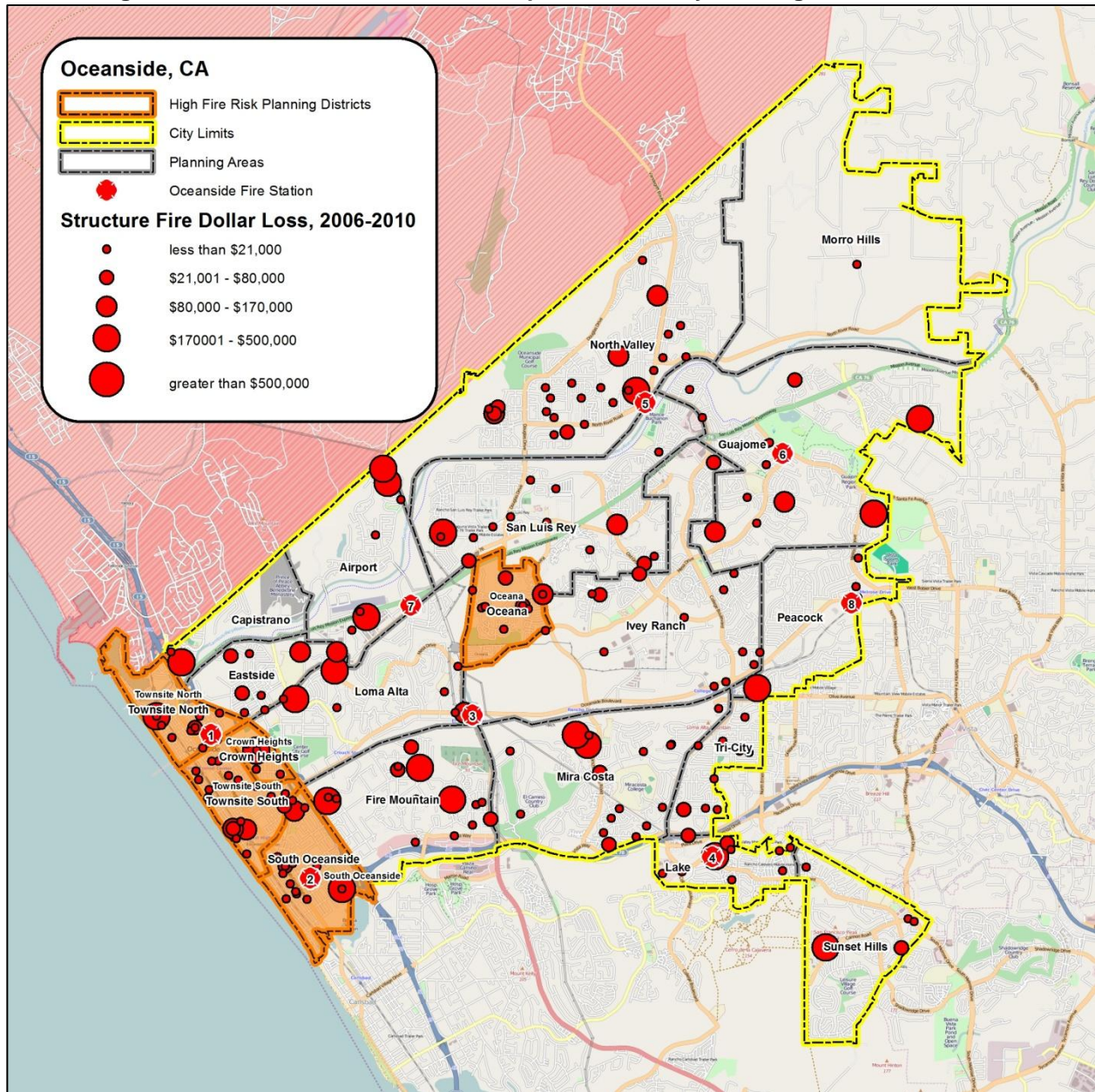
We normalized the consequence statistics by land area to make them more comparable between planning areas. Finally, we color-coded each of the statistics using the normalized value. If the normalized value fell in the lower 25 percent of incidents or losses, it was color-coded green. If the normalized value fell into the higher 25 percent of incidents or losses, it was color-coded red. The remaining values were left uncolored. Using this technique, it is usually fairly easy to determine which planning areas have higher fire risks (higher probability and/or consequence of fire) and which planning areas have lower fire risks (lower probability and/or consequence of fire).

Table 10 shows the fire risk classifications. South Oceanside, Townsite South, Townsite North, Oceana and Crown Heights had the highest number of fires per square mile, whereas Morro Hills, Guajome, Capistrano, Peacock and Ivey Ranch had the lowest number of fires per square mile. Property loss per square mile was highest in South Oceanside, Townsite South, Townsite North, Airport and Crown Heights and content loss per square mile was highest in South Oceanside, Townsite South, Airport, Oceana and Crown Heights. The highest number of injuries per square mile were sustained in North Valley, Townsite South, Townsite North, Tri-City and Mira Costa.

There were no clear-cut high fire risk areas because of contradictory probability and severity classifications for many of the planning areas. For instance, Townsite South, which had the most fires per square mile, also had one of the lower rates of fire spreading beyond the room of origin. Because of discrepancies like this, we classified the high fire risk areas entirely on probability of fire per square mile. The areas with the highest number of fires per square mile were Crown Heights, Oceana, South Oceanside, Townsite North, and Townsite South.

Geospatial Location and Severity of Fire Incidents – To help evaluate the appropriateness of fire unit locations, it helps to understand where the more serious structure fires (those that involve large fire losses) are occurring. Figure 12 shows the location and severity of structure fires shown by red circles. The sizes of the circles are scaled to the amount of fire loss. We have also outlined the areas that were considered “high fire risk” in the previous section. Although there does not appear to be any usual pattern in the location or size of structure fires, we used this map when considering the appropriateness of current fire station locations and any recommended alternatives in the next chapter.

Figure 12: Structure Fire Locations, Population Density, and High Fire Risk Areas



IV. STATION LOCATIONS AND RESPONSE TIME ANALYSIS

The analyses of the fire station locations and response times are important considerations as the city considers changes within the fire department. For this part of the study, we analyzed current station and unit performance with respect to the emergency service needs of the various planning areas. To do this, we analyzed response time performance (both citywide and by planning areas) and reviewed current workload for each of the individual fire units.

Response Times

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

Most fire departments use the NFPA 1710 standard as a goal, not as a prescriptive requirement. Few departments are currently meeting or exceeding NFPA 1710, especially with respect to travel time (which is the hardest to improve). In this response time analysis, we show average times, 80th percentile times and 90th percentile times to show how different calculation methods provide drastically different measures of performance. Average response times have been increasingly less used by the emergency service industry because small numbers of very short or long response times (or data errors) can distort the results. We show average response times because people typically understand them better than percentile/threshold times, but fire departments should never gauge performance strictly on average response times.

The public is interested in how fast a system responds to most calls, which is better reflected in percentile/threshold times rather than average times. More and more departments are adopting the 90th percentile for reporting response times (mostly due to NFPA 1710's use of this measure). However, meeting the 90th percentile goal is not always the most efficient means for delivering emergency services. A 90th percentile response time of x minutes means that, at least 90 percent of the time, an emergency crew arrives in less than x minutes. A system designed for 90 percent compliance allows only 10 percent of calls to have response times that exceed the target goal time.

Although it is certainly possible to design a system with 90 percent compliance for all areas of a jurisdiction, it is usually not a cost-effective strategy. Urban areas close to several fire stations should have high compliance, but it does not always make sense to dictate such high

compliance for suburban and rural areas (NFPA 1710 even acknowledges that it would not make sense to apply 1710 goal times to more rural areas).

Although NFPA 1710 recommends 90 percent compliance for their goal times, a better approach, is to use the 80th percentile level instead. There are several reasons for this. First, we subdivide our analysis into incident types and geographic areas (which most departments do not do). To have 90 percentile compliance in each of these subdivided areas would result in much higher than 90 percent compliance citywide. Second, departments that do not have rigorous data quality controls will typically have more calls with incorrectly long response times than incorrectly short response times.

90 percent compliance is very difficult to achieve. A more reasonable 80 percent compliance goal accounts for erroneous data that sometimes occurs in fire reporting. There are also few departments able to achieve 90 percent compliance with NFPA 1710. Achieving NFPA 1710 at 90 percent compliance would be excellent but, in our professional judgment, 80 percent compliance is more appropriate as measure of performance (the CPSE Standards of Cover Manual also uses 80th percentile times for assessing station location performance). Ultimately, the best way of determining appropriate performance measurement metrics is for the city and fire department officials to set those metrics for each individual planning area.

Appendix A provides a template by which to put in place a planning area-based system of performance measurement.

| |
|---|
| Recommendation 9: Put in place a planning area-based performance measurement system. |
|---|

The analysis of response times included only incidents dispatched as an emergency (we eliminated service calls from the response time analysis). Our analysis included only frontline pumping and aerial apparatus for fire incidents and only first-response capable units for EMS calls. These criteria were applied to keep the analysis in line with the 1710 standard specifications.

For all time segments, we analyzed one year's worth of data. We eliminated those time segments that were more than three standard deviations from the mean (outliers). Three times the standard deviation was used because, if travel times had a normal probability distribution, 99.7 percent of incidents are expected to fall within three standard deviations. Anything more than three standard deviations is likely to be an error in the data or a highly unusual situation. Each response time segment is analyzed both by hour of the day and incident type.

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

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

Figure 13 and Table 11 show the call processing times by time of day and incident type. As shown in Table 11, the 90th percentile call processing time for fire and special operations incidents was 1:23 (one minute, 23 seconds). This time is almost 40 percent higher than the standard, but it is in line with the performance levels for many other dispatch centers. EMS incidents had a 90th percentile call processing time of 1:06, which is much closer to the standard. The call processing times are reasonable, but there is clearly room for improvement. It is financially prudent to address long call processing times (even if they are just slightly over the standard) because dispatch center technology and staffing is much less expensive than adding additional units and stations to reduce the travel time component of total response time. The red line shows that even when there are peaks in the number of incidents (meaning the dispatch is handling more 911 calls), there does not appear to be an associated delay in call processing time. Furthermore, there is no pattern in call processing time based on time of day.

Figure 13: 80th Call Processing Time by Hour of the Day, July 2010-June 2011

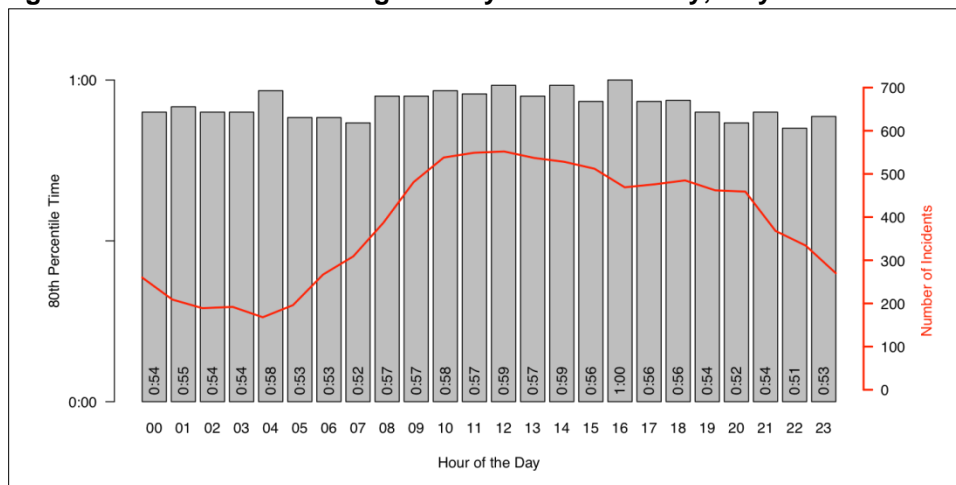


Table 11: Call Processing Time by Incident Type, July 2010-June 2011

| | Average | 80th Percentile | 90th Percentile |
|---------------------------|---------|-----------------|-----------------|
| Emergency Medical Service | 0:43 | 0:55 | 1:06 |
| Fire & Special Operations | 0:51 | 1:10 | 1:23 |
| (all) | 0:43 | 0:56 | 1:07 |

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

Figure 14 and Table 12 show the turnout times by time of day and incident type. For fire and special operation responses, the 80th percentile turnout time of 2:12 is 52 seconds above the standard. For EMS responses, the 80th percentile turnout time of 2:00 is 60 seconds over the standard. These times are longer than necessary and there may be an opportunity to reduce overall response time by addressing this time segment. Figure 14 shows that turnout time is almost a minute faster between 7:00am and 10:00pm than during the overnight hours. Addressing slow overnight turnout times would significantly bring down overall turnout times.

Figure 14: Turnout Time by Hour of the Day, July 2010-June 2011

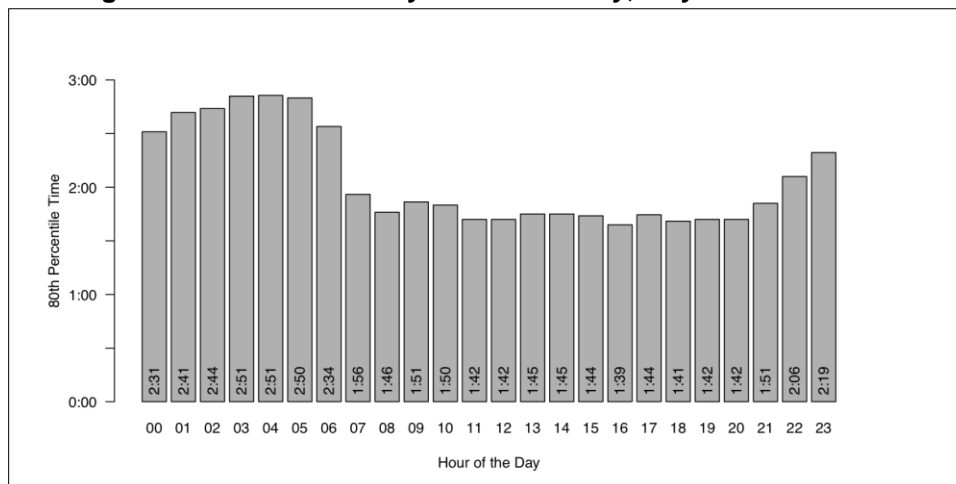


Table 12: Turnout Time by Incident Type, July 2010-June 2011

| | Average | 80th Percentile | 90th Percentile |
|---------------------------|---------|-----------------|-----------------|
| Emergency Medical Service | 1:26 | 2:00 | 2:22 |
| Fire & Special Operations | 1:35 | 2:12 | 2:40 |
| (all) | 1:27 | 2:01 | 2:23 |

Travel Time by Hour of the Day and Incident Type – Travel time is the time interval that begins when a unit is en route to the emergency incident and ends when the unit arrives at the scene. Travel times are a function of geography, road conditions, traffic/congestion, and the number of and location of fire stations with respect to the location of actual calls. NFPA 1710 recommends “240 seconds or less travel time for the arrival of the first arriving engine company at a fire suppression incident” and “240 seconds or less travel time for the arrival of a unit with first responder with automatic external defibrillator (AED) or higher level capability at an emergency medical incident.”

Figure 15 shows travel time for the first arriving unit by hour of the day, and Table 13 shows the travel time for the first arriving unit by incident type. At the 80th percentile level, travel time for all emergency incidents was 5:37, which is above the NFPA travel a time recommendation of 240 seconds (four minutes). Travel times were 5:36 for EMS incidents and 5:58 for fire and special operations at the 80th percentile. Travel time for the first arriving unit is fairly consistent throughout the day, and it does not appear that traffic has an effect on travel times. Although citywide travel times are slower than the NFPA standard, very few fire

departments actually meet the travel time component of the 1710 standard. Although citywide travel times are about a minute and a half over the NFPA standard, it is more important to look at whether travel times for different areas of the city match planning area risk levels. Unlike call-processing time and turnout time, which can be somewhat universally addressed, travel time is more easily addressed on an area-by-area basis. A later section of this response time analysis includes a breakdown of total response time and travel times by planning area.

Figure 15: Travel Time (First Arriving Unit) by Hour of the Day, July 2010-June 2011

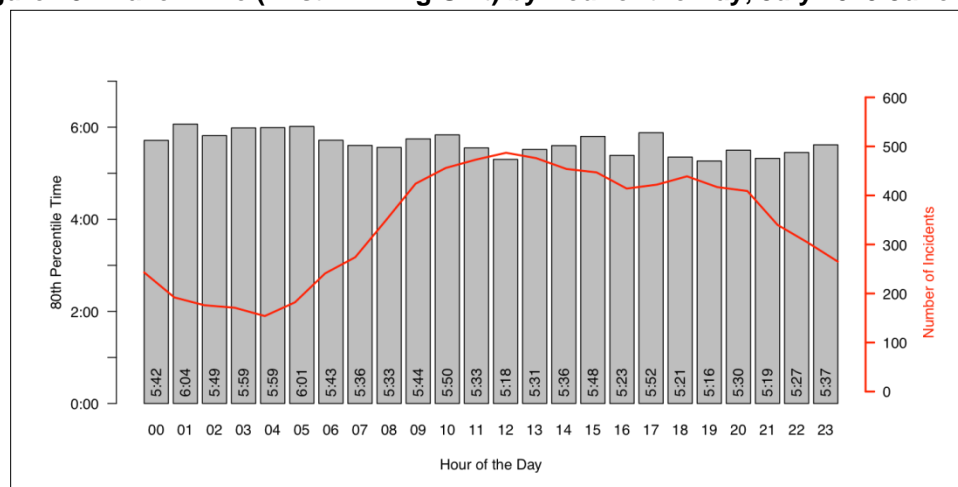


Table 13: Travel Time (First Arriving Unit) by Incident Type, July 2010-June 2011

| | Average | 80th Percentile | 90th Percentile |
|---------------------------|---------|-----------------|-----------------|
| Emergency Medical Service | 4:14 | 5:36 | 6:27 |
| Fire & Special Operations | 4:33 | 5:58 | 7:09 |
| (all) | 4:14 | 5:37 | 6:30 |

Total Response Time – Total response or reflex time is the most important time segment because it combines all the previously analyzed time segments and is the measure by which the public evaluates the effectiveness of fire and EMS service. The NFPA defines total response time to include three phases: “(1) Phase One – Alarm Handling Time, (2) Phase Two – Turnout Time and Travel Time, and (3) Phase Three – Initiating Action/Intervention Time.” Although NFPA 1710 does not explicitly provide a time objective for total response time, we added together the call-processing time objective (1:00 for all call types), the turnout time objective (1:00 for EMS incidents and 1:20 for fire and special operations incidents) and the first-arriving unit travel time objective (4:00 for all call types). By adding up the individual NFPA 1710 time segment objectives, one can conclude that the total response time should be less than 6:00 for EMS incidents and less than 6:20 for fire and special operations incidents.

Figure 16 shows the total response time for the first arriving unit by hour of the day, and Table 14 shows the total response time for the first-arriving unit by incident type. The 80th percentile total response time for EMS incidents was 7:59, which is almost two minutes longer than the recommended 6:00 minute response time. Fire and special operations incidents had an 80th percentile response time of 8:48, which is two and a half minutes longer than the

recommended 6:20 minute response time. While most fire departments are not meeting the NFPA 1710 response time standard, most are within 1 to 1.5 minutes of the time.

Generally speaking, Oceanside response times are longer than desired, but there are some ways to improve them at low cost. By addressing long call processing and turnout times, it should be possible to bring down total response times.

Figure 16: Total Response Time (First Arriving Unit) by Hour of the Day, July 2010-June 2011

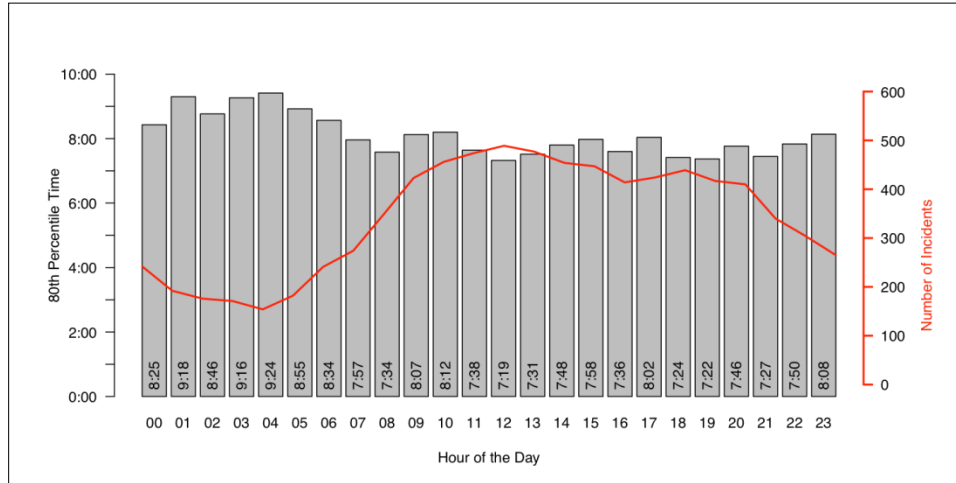


Table 14: Total Response Time (First Arriving Unit) by Incident Type, July 2010-June 2011

| | Average | 80th Percentile | 90th Percentile |
|---------------------------|---------|-----------------|-----------------|
| Emergency Medical Service | 6:28 | 7:59 | 8:55 |
| Fire & Special Operations | 7:08 | 8:48 | 10:21 |
| (all) | 6:30 | 8:01 | 8:58 |

Table 15 shows the 80th percentile response times by area, both as measure of fire department response time (FD Reflex) and total response time (Total Reflex). As shown in Table 15, total response time for the planning areas ranges from a low of 6:46 for Townsite North and a high of 14:01 for the mostly undeveloped area of Morro Hills. The average for all planning areas is 8:03, with most planning areas having a total response time in the 7-8 minute range. Again, these total response times are on the high side and Oceanside should try to address total response times, particularly in the higher population density and higher risk areas.

Table 15: 80th Percentile Response Time by First Due Area, July 2010-June 2011

| | Travel | FD Reflex | Total Reflex |
|-----------------|--------|-----------|--------------|
| Airport | 5:01 | 6:30 | 7:26 |
| Capistrano | 6:58 | 8:28 | 9:14 |
| Crown Heights | 4:47 | 6:30 | 7:09 |
| Eastside | 5:07 | 6:46 | 7:40 |
| Fire Mountain | 5:47 | 7:28 | 8:13 |
| Guajome | 5:31 | 7:06 | 7:53 |
| Ivey Ranch | 6:11 | 7:50 | 8:42 |
| Lake | 3:41 | 4:58 | 6:02 |
| Loma Alta | 5:00 | 6:44 | 7:28 |
| Mira Costa | 6:18 | 7:57 | 8:42 |
| Morro Hills | 10:51 | 13:09 | 14:01 |
| North Valley | 5:49 | 7:27 | 8:16 |
| Oceana | 5:44 | 7:19 | 8:16 |
| Peacock | 6:02 | 7:31 | 8:14 |
| San Luis Rey | 6:07 | 7:44 | 8:35 |
| South Oceanside | 4:34 | 5:59 | 6:48 |
| Sunset Hills | 6:27 | 7:44 | 8:32 |
| Townsite North | 4:15 | 5:45 | 6:46 |
| Townsite South | 4:11 | 5:54 | 6:47 |
| Tri-City | 5:34 | 7:06 | 7:51 |
| (all) | 5:40 | 7:13 | 8:03 |

Workload Analysis

Above we discussed workload and response times for the city as a whole and by areas. In this section we consider workload by call type and for each unit. As explained in Appendix B, workload may affect response time performance. As units become busier, they are unable to handle all of their first-due area calls, because some will overlap with others. This may affect response time performance depending on how close the next free station is.

Generally speaking, units in high demand downtown areas with closely spaced stations can get away with higher workloads because other stations can adequately cover their first due areas. More suburban and rural areas, where fire station coverage areas do not typically overlap, are much more susceptible to response time issues, especially when workloads get heavy.

Table 16 presents the responses by station and unit, and Figure 17 shows the amount of time spent on calls (unit hours) for each fire unit. We grouped different unit types (ambulances, trucks, and engines) to allow us to see how each unit's workload compares with both its group and the entire fleet. Table 17 through Table 19 we show the calls and workloads for ambulances, quints and engines, respectively.

Table 16: Responses by Station and Unit, July 2010-June 2011

| Station | Ambulance | Brush Truck | Engine | Quint |
|---------|-----------|-------------|--------|-------|
| 1 | 2974 | – | 2516 | – |
| 2 | – | – | 1441 | – |
| 3 | – | – | 2244 | – |
| 4 | 2843 | – | 2154 | 209 |
| 5 | – | – | 1806 | – |
| 6 | 2611 | 24 | – | 1566 |
| 7 | 2949 | 30 | – | 2028 |
| 8 | – | – | 1197 | – |

Figure 17: Workload (Unit Hours) by Unit and Incident Type, July 2010-June 2011

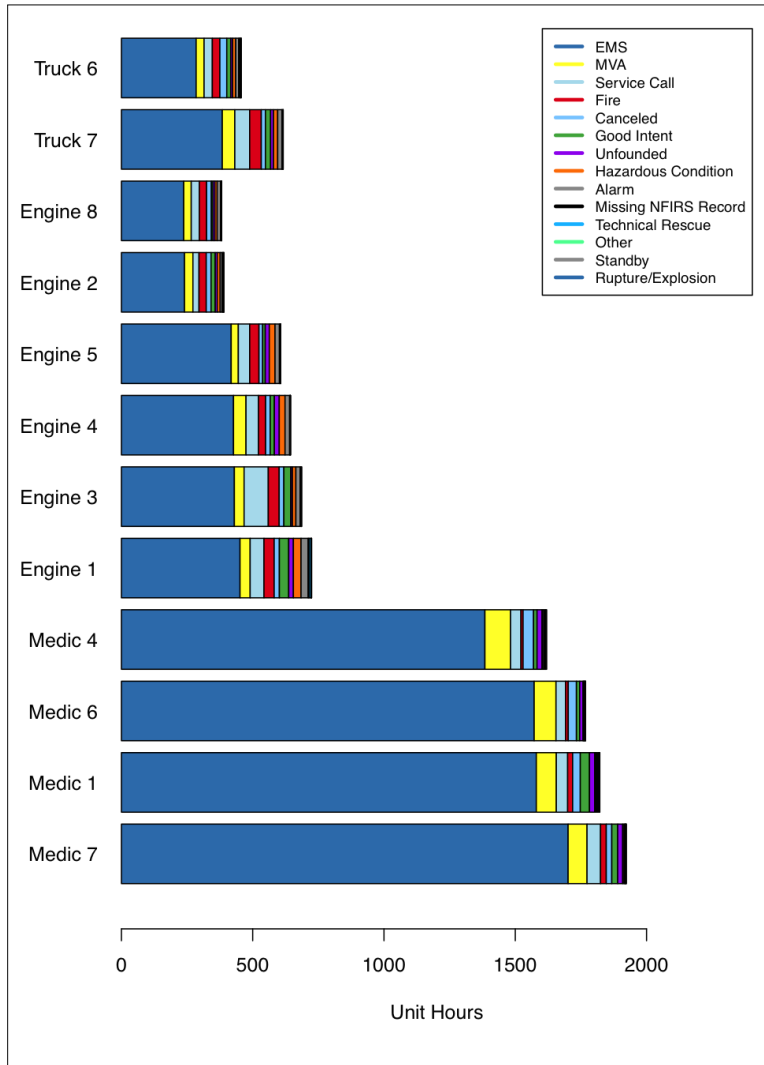


Table 17: Ambulance Workloads by Unit, July 2010-June 2011

| | Total Runs | Runs per Day | Total Unit Hours | Unit Hours per Day | Unit Hours per Run |
|-----------|------------|--------------|------------------|--------------------|--------------------|
| Medic 7 | 2949 | 8.1 | 1922 | 5.3 | 0.65 |
| Medic 1 | 2974 | 8.1 | 1822 | 5.0 | 0.61 |
| Medic 6 | 2611 | 7.2 | 1768 | 4.8 | 0.68 |
| Medic 4 | 2843 | 7.8 | 1619 | 4.4 | 0.57 |
| (average) | 2844 | 7.8 | 1783 | 4.9 | 0.63 |

Table 18: Truck Workloads by Unit, July 2010-June 2011

| | Total Runs | Runs per Day | Total Unit Hours | Unit Hours per Day | Unit Hours per Run |
|-----------|------------|--------------|------------------|--------------------|--------------------|
| Truck 7 | 2028 | 5.6 | 616 | 1.7 | 0.30 |
| Truck 6 | 1566 | 4.3 | 456 | 1.3 | 0.29 |
| (average) | 1797 | 4.9 | 536 | 1.5 | 0.30 |

Table 19: Engine Workloads by Unit, July 2010-June 2011

| | Total Runs | Runs per Day | Total Unit Hours | Unit Hours per Day | Unit Hours per Run |
|-----------|------------|--------------|------------------|--------------------|--------------------|
| Engine 1 | 2516 | 6.9 | 724 | 2.0 | 0.29 |
| Engine 3 | 2244 | 6.1 | 686 | 1.9 | 0.31 |
| Engine 4 | 2154 | 5.9 | 644 | 1.8 | 0.30 |
| Engine 5 | 1806 | 4.9 | 607 | 1.7 | 0.34 |
| Engine 2 | 1441 | 3.9 | 390 | 1.1 | 0.27 |
| Engine 8 | 1197 | 3.3 | 382 | 1.0 | 0.32 |
| (average) | 1893 | 5.2 | 572 | 1.6 | 0.30 |

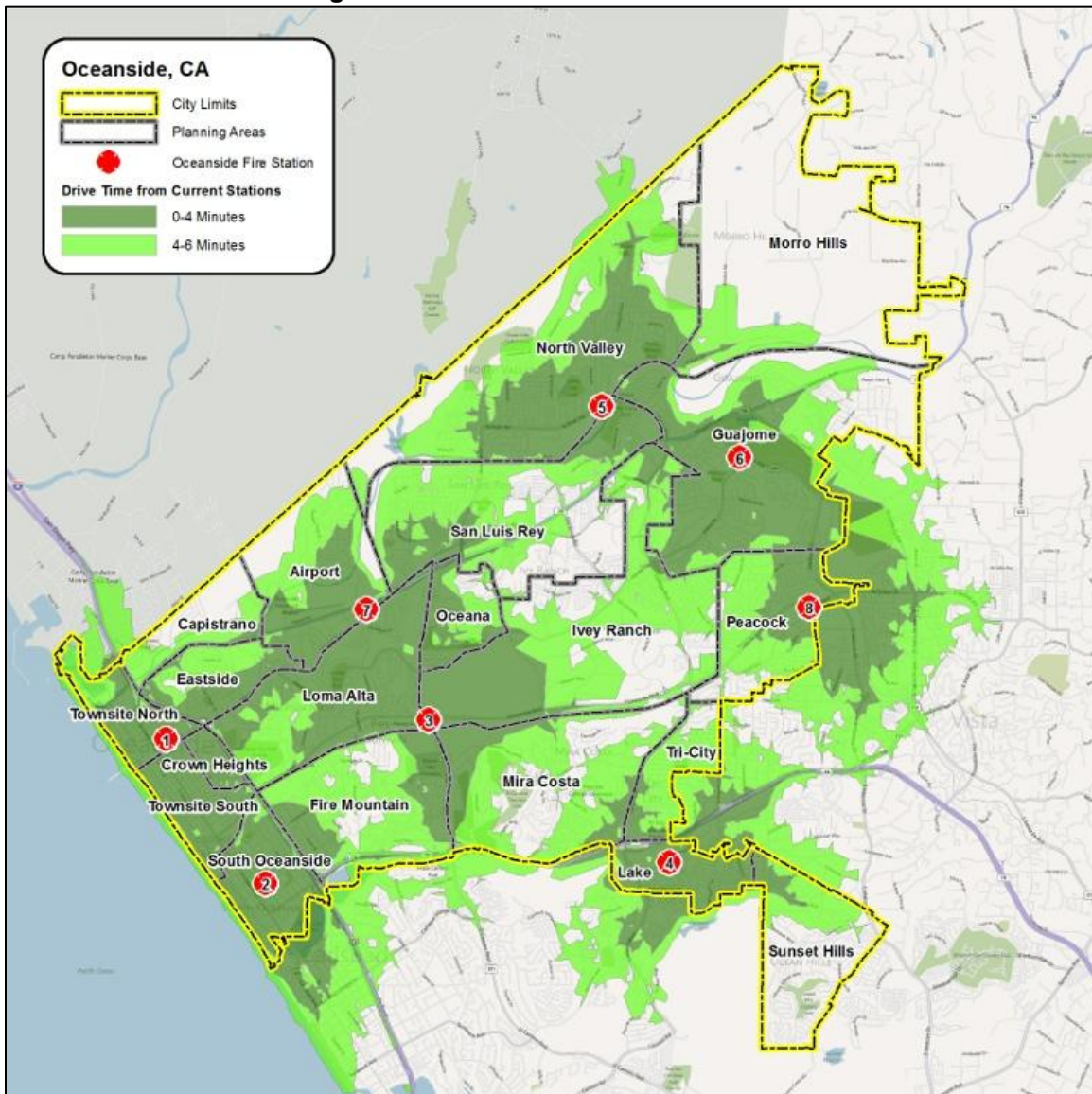
Last year, ambulances averaged 2,844 runs, with an average of 4.9 unit hours per day responding to 7.8 runs per day (Table 17). Trucks averaged 1,797 runs per year, with 1.5 unit hours per day on 4.9 runs per day (Table 18). Engines averaged 1,893 runs per year with 1.6 unit hours per day responding to 5.2 calls (Table 19). For each unit type (ambulance, truck, engine) the workload was fairly consistent across all of the units.

Overall, Oceanside Fire Department units have a moderate to high workload (Appendix B). Units currently facing a moderate workload (1,000-1,999 responses per year) include Truck 6 and Engines 2, 5 and 8. All other units are experiencing high workload (2,000-2,999 responses per year). As population continues to increase in Oceanside and emergency services demand increases, these workloads will continue to increase.

Review of Current Fire Station Locations

In this section, we present an analysis of fire station locations using Geographic Information System (GIS) software. TriData also visited each fire station to get a feel for its location and overall condition. This allowed us to understand the location of the fire stations relative to the area protected, not just from a GIS map. Figure 18 shows the current location of all the Oceanside fire stations, as well as the theoretical travel time from each of the stations. Areas in dark green can theoretically be reached in four minutes, and areas in light green can be reached in six minutes.

Figure 18: Current Fire Station Locations

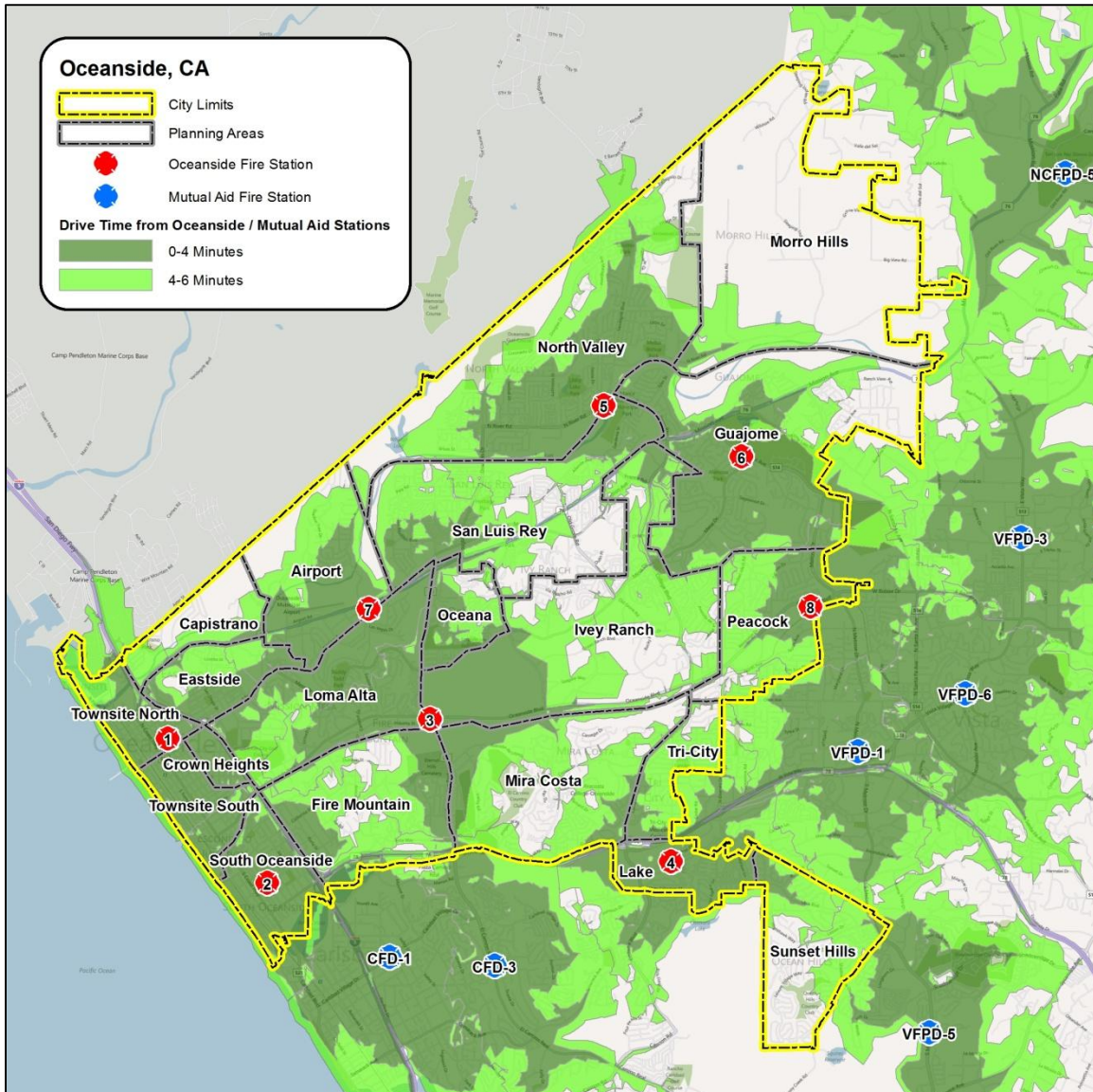


Because fire departments in North County operate using a boundary-less system (meaning that the closest unit to an emergency is dispatched regardless of jurisdiction), it is important to consider the location of neighboring jurisdiction fire stations. Figure 19 shows the theoretical travel time from each of the nearby mutual aid fire stations, in addition to the Oceanside fire stations. As the fire stations are currently laid out, they provide fairly good coverage for the city. There are only a few coverage gaps:

- Between Stations 3, 4, 5, 6, 7, and 8 in the San Luis Rey, Ivey Ranch, and Mira Costa planning areas; and
- In the more rural Morro Hills area.

Oceanside already has plans to move Station 8 to a more central location that would fill the large central coverage gap. The Morro Hills area is currently rural and as yet undeveloped, so the coverage gap here is acceptable. A new station will be needed in this area at some point in the future as development increases. Overall, the current layout provides very good coverage.

Figure 19: Four- and Six-Minute Travel Time Analysis



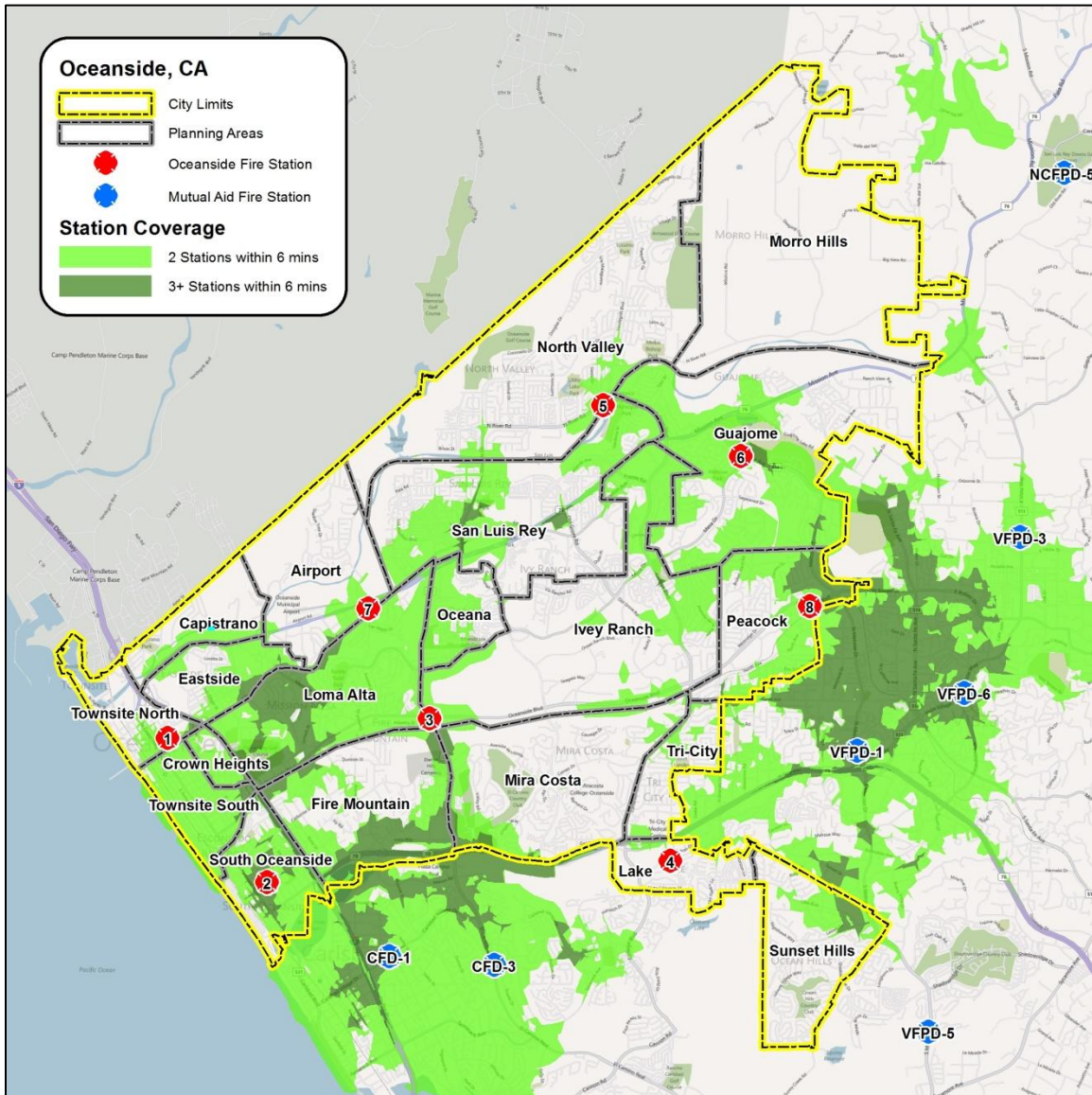
Coverage is, however, only one component of an effective station layout because it does not take into account that some areas are more likely to have concurrent emergency incidents. Some coverage overlap is necessary in the areas of highest demand.

The fire and EMS incident density plots, in the previous chapter, showed that the majority of emergency services demand occurred in the western (oceanfront) portion of the city, the Oceana planning area, the western portion of the San Luis Rey planning area, and the western portion of the Lake planning area. It is beneficial to have some station overlap occur in these

areas of higher call density (where concurrent calls are more likely). It appears that the current layout of fire stations does provide this. Other than the Lake planning area, most of these high-demand areas can be reached by at least two fire stations within six minutes travel time.

Figure 20 depicts how many stations can reach each part of the city within six minutes.

Figure 20: Current Station Overlap



Evaluation of Possible Fire Station Location Changes

The theoretical drive time shows good citywide travel time coverage (with the exception of the large central area). Likewise, six-minute response times (of multiple stations) are good in those areas of the City with the highest demand; the exception is the Lake planning area. The goal for this station location analysis is to consider whether rearranging station locations might

improve coverage or maintain coverage with fewer stations/units. We specifically reviewed the following two possible station location changes:

- Moving Station 8
- Merging Station 1 and Station 2

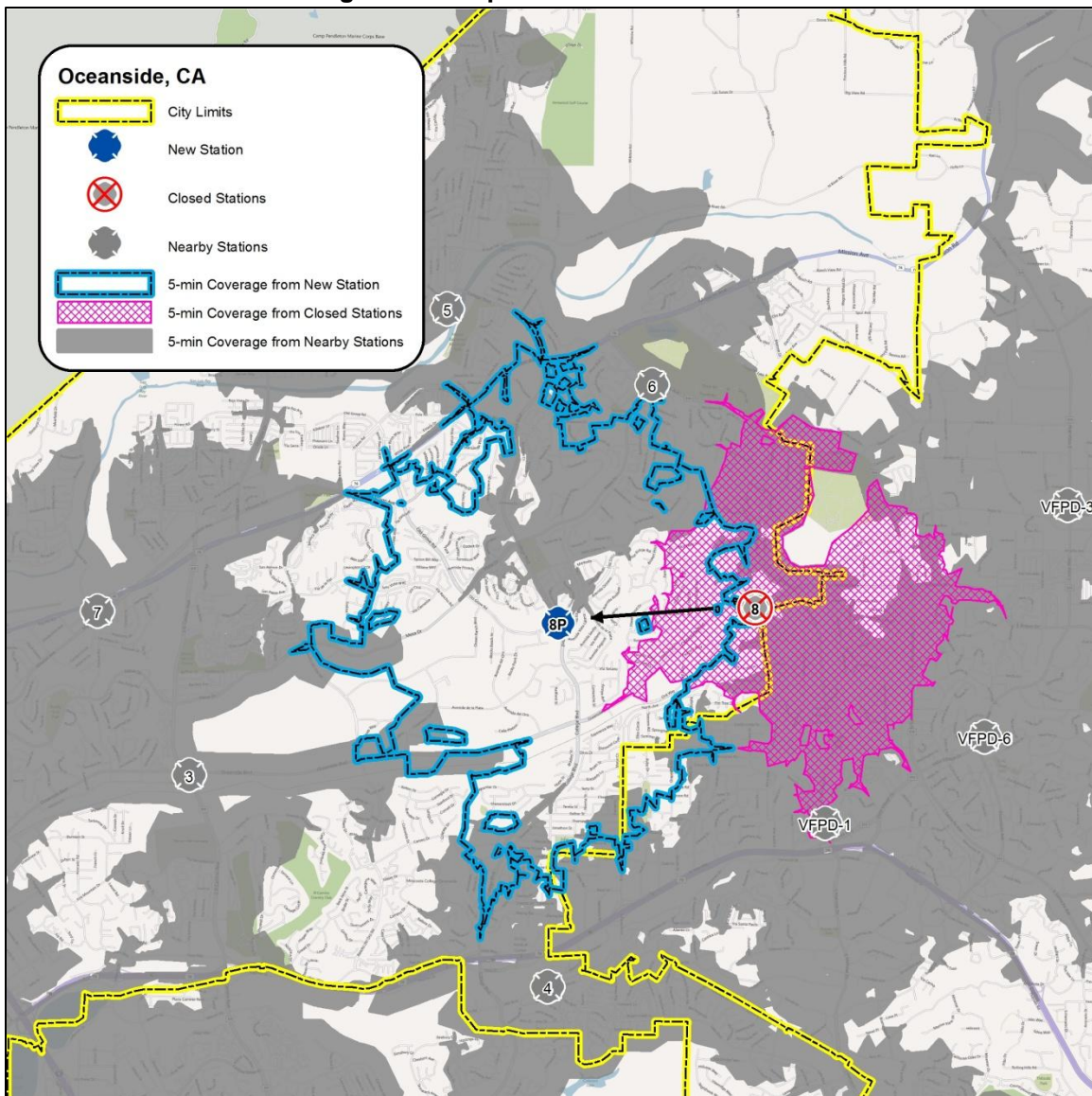
Based on our analysis in the rest of this chapter, it appears that moving Station 8 would significantly improve coverage for Oceanside and there may be an opportunity to merge Station 1 with Station 2 to a single new location.

Move Station 8 – Oceanside already has plans to move Station 8 to a new, more central location (near the intersection of Old Grove Road and College Boulevard). The new station has not been built yet because of economic reasons. The City did apply for a Federal grant but the project was not approved. Plans are to reapply for the grant again, and if approved, construction of a new facility could begin almost immediately. We analyzed the impact of the relocation of Station 8 and determined that its new location is good for Oceanside.

Because the station currently sits on the boundary with Vista and participates in the boundary-drop system, Engine 8 responds into Vista as much as it does into Oceanside. If Station 8 is moved, Vista stations could still reach this boundary area in a reasonable amount of time. There is likely more coverage overlap than necessary in this area (as shown previously in Figure 20). Meanwhile, there is a large coverage gap in the central portion of Oceanside, and there is no coverage overlap in the Lake planning area where it is needed. By moving Station 8 northwest, it closes the coverage gap (shown in Figure 21) and provides an additional station that can reach the Lake planning area in a reasonable amount of time (shown later in this chapter). This station move is necessary and should be undertaken as soon as possible.

Figure 21 shows the positive change in response time to Oceanside when the facility is relocated to the Old Grove Road and College Boulevard site.

Figure 21: Proposed Move for Station 8



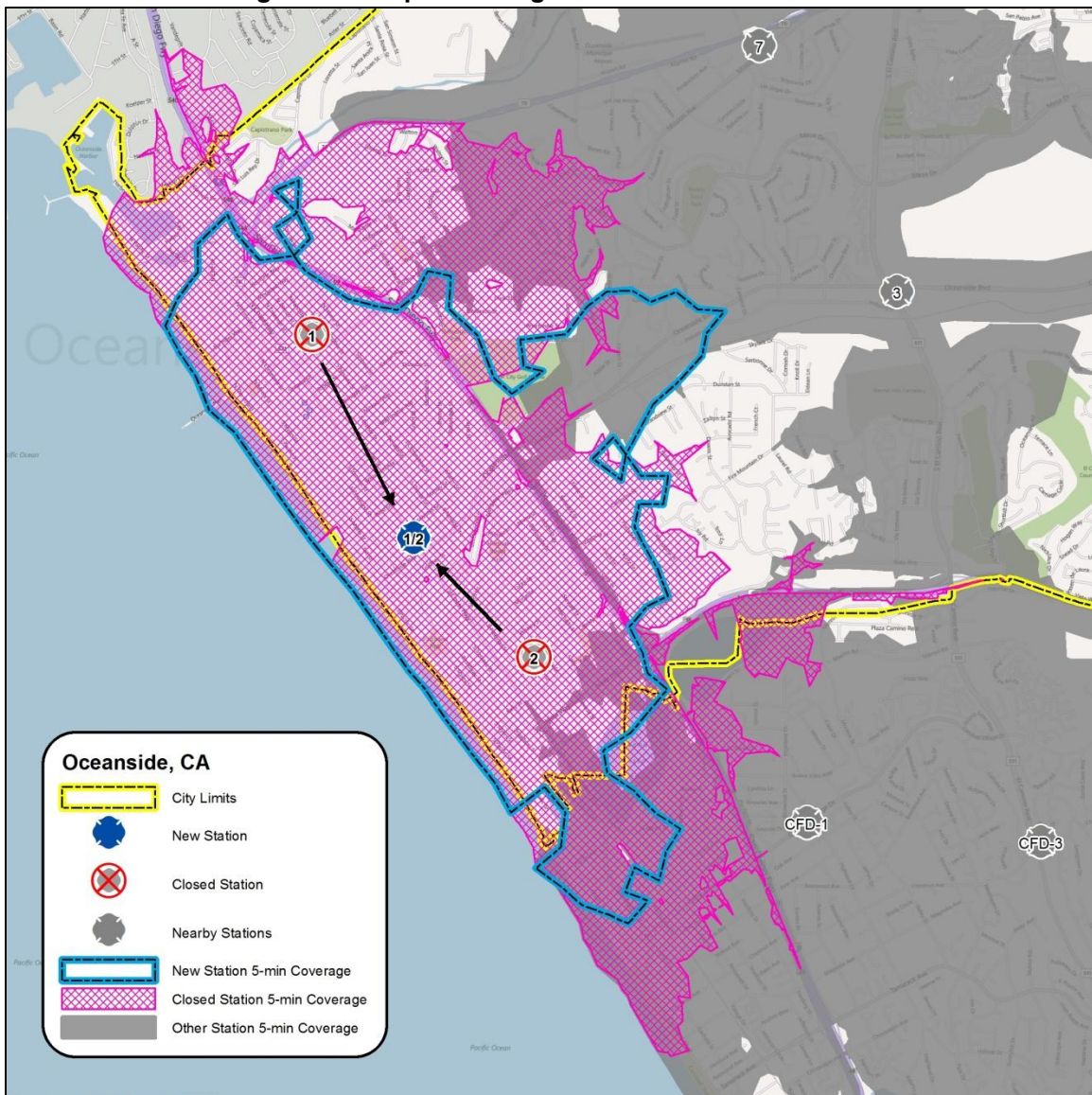
Recommendation 10: Move Station 8 to the intersection of Old Grove Road and College Boulevard as soon as possible.

Merge Station 1 and Station 2 – We also analyzed the possibility to merge Stations 1 and 2 since there is overlap in their coverage areas and Carlsbad Station 1 can cover much of South Oceanside. We determined that the consolidation is feasible, if a new station were constructed near the intersection of South Coast Highway and Eucalyptus Street. A station at this location, it was determined, would have almost the same coverage footprint as the two individual stations. The biggest difference in coverage is that Station 1 would no longer serve the Eastside planning area, which would be served by Station 7 instead. Although the map shows some loss of coverage, response times down the San Luis Rey Mission Expressway from Station 7 to Eastside are excellent, and we believe that good travel times to this area are still possible from

Station 7. In terms of coverage and the potential for additional savings, this change is possible. There are other factors to consider as well such as how the change affects the boundary-drop system. The expected increase in workload if the two stations are combined must also be considered.

The changes in coverage area if Stations 1 and 2 were consolidated are depicted in Figure 22.

Figure 22: Proposed Merge of Station 1 and Station 2



A reduction in how many units can reach the central area of Oceanside occurs when Stations 1 and 2 are merged. Most of the gap occurs in the northwestern portion near the USMC gate. Carlsbad Station 1 can reach the southern portion of Oceanside, so this area does not change much. Some of the highest call volumes and a high number of concurrent calls occur in northwestern Oceanside, thus redundancy is important here.

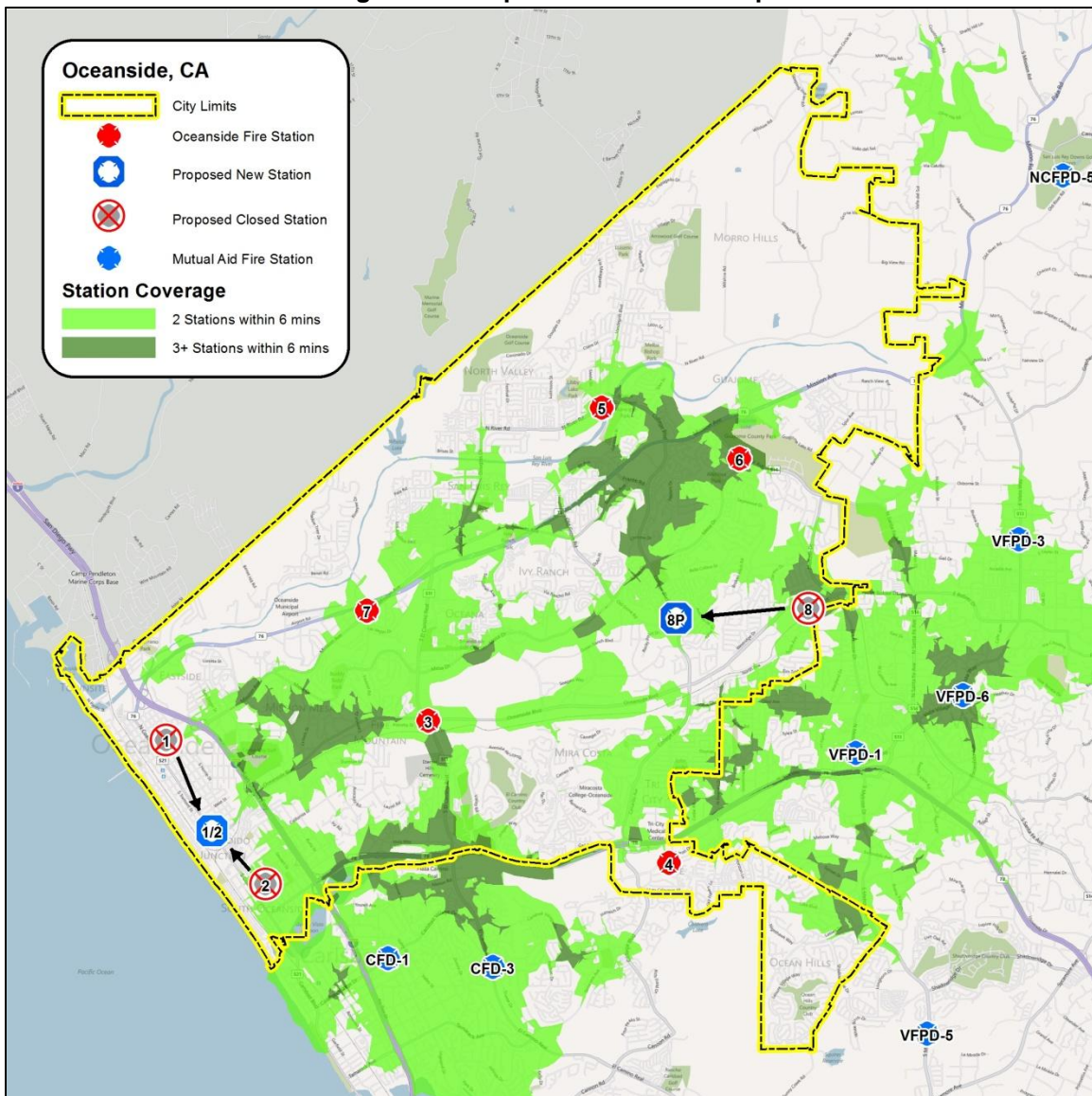
OFD Station 1 has an ambulance (3,076 annual responses) and an engine (2,573 responses). Station 2 has a single engine (1,493 responses). If the new station were to have only one engine and one ALS as Station 1 does now, the ambulance would have similar workload to the current Medic 1, but with a few more calls in south Oceanside. The engine however, would likely have over 3,300 responses per year (assuming that the new merged station takes on all of the current Station 1 workload and shares the current Station 2 workload with Carlsbad Station 1).

According to Appendix B, a unit with 3,300 responses per year has “Very High Workload” and unit availability should be reviewed. To make sure that this high-demand oceanfront area has a unit available even when there are concurrent calls, it would be necessary to either add a peak-hours unit or move one of the quints (probably Quint 7) to the new station. By moving a ladder truck, it would add another unit to the area that is available for concurrent fire calls.

Merging Station 1 and Station 2 can provide savings if the engine from Station 2 is eliminated and a two-person quick response rescue is staffed in its place. From a service delivery standpoint this move would be a reduction in service. Before considering this option the City should consider other alternatives to save money.

Figure 23 shows the 6-minute coverage of multiple stations (to include Carlsbad) if Stations 1 and 2 are consolidated.

Figure 23: Proposed Station Overlap



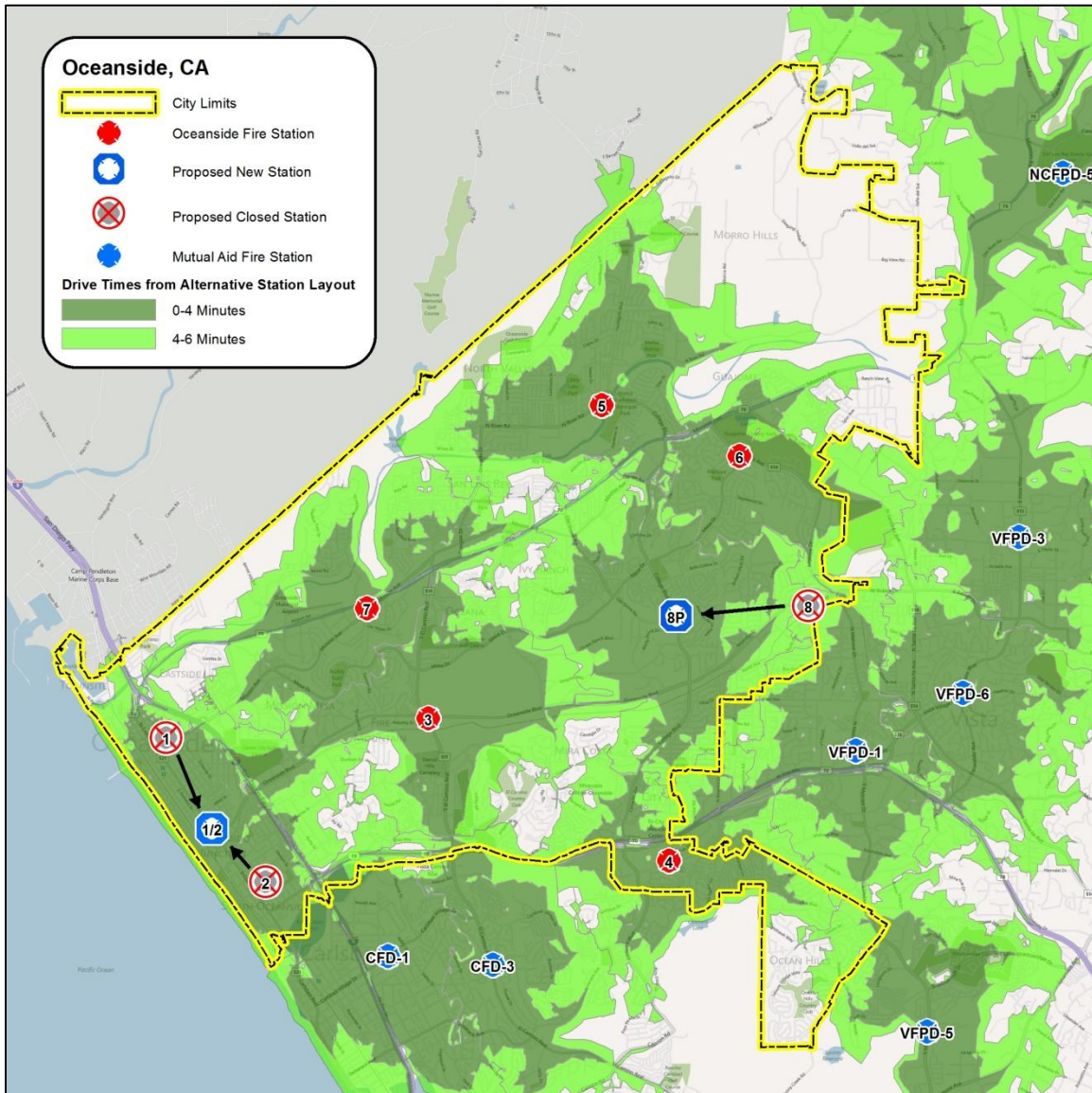
In its review of this report the OFD properly noted that if Stations 1 and 2 were consolidated, average response times citywide would likely increase, even if a two-person quick response unit were added. The reason is because a high number of calls handled by Station 1 occur around the existing station, and a new station south of Station 1 would increase response times to these calls. Fire and EMS incident densities were depicted earlier in Figures 10 and 11.

Recommendation 11: Consider merging Station 1 and Station 2 to a new location near the intersection of South Coast Highway and Eucalyptus Street, only after all other cost-saving options are exhausted. If the change is necessary, add a peak-load rescue unit or move one of the quints to the new station to provide additional capacity.

Summary of Station Locations Recommendations

Figure 24 shows all the station location changes we considered, including the move of Station 8 and the merging of Station 1 and Station 2. The figure also shows the updated theoretical four- and six-minute coverage from this station layout. These changes would result in Oceanside moving from an 8-station layout to a 7-station layout.

Figure 24: Proposed Station Changes and Drive Times



V. FIRE AND EMS OPERATIONS AND DEPLOYMENT

Recent budget reductions have affected the OFD's administration and support activities to the extent that functions such as planning and emergency management are very thin, in some cases nonexistent. If additional budget reductions are necessary the only place to make them is in operations. Fire suppression resources are already very lean and the City should do everything possible to maintain them at or near current levels.

The primary area where service-level changes could be made is to eliminate ALS medical transport and contract the service. If even more budget reductions are needed, Stations 1 and 2 could be merged, however, service levels would be reduced because response times would be longer, especially in north Oceanside. If the choice were made to merge Stations 1 and 2, the boundary-drop system currently used in North County must be retained to make it work. For this to happen, Oceanside must maintain (and improve) its working relationship, especially with the City of Carlsbad.

Fire officials we interviewed were naturally concerned about the potential of more budget cuts that could affect staffing and operations. To their credit fire officials were genuine as to how services could be maintained at the high level they are now, at the same time trying to suggest ways to address the City's budget situation. In many other studies like this the reaction is often one of dismay—this was not the case in Oceanside and for this OFD officials' and personnel are to be commended.

Current Operations

OFD is an all-hazards response organization with responsibility for fire suppression, medical first response and transport, and special operations such as technical rescue and hazardous material response. As fire departments go, OFD has an excellent reputation and the services being provided to residents are first rate. Fire stations and apparatus are maintained to a very high level and fire personnel receive excellent training. They are also committed to providing first-rate service.

As previously noted, fire and EMS services are provided from eight strategically located fire stations. Services are provided by 99 personnel assigned to three shifts (platoons). The average work schedule is 56-hours per week. Each platoon is commanded by a battalion chief responsible for the coordination of daily staffing, logistics, and they serve as the primary incident commander, usually on calls where two or more units respond such as structure fires. Battalion chiefs are also trained and may respond as a Strike Team leader on mutual aid calls under California's statewide mutual assistance protocols.

Vehicle resources for suppression and rescue include six fire engines, two quint trucks and four medic transport units. Oceanside is divided into eight emergency response districts, one for each fire station. In addition to these fire suppression capabilities, Oceanside also provides advanced life support (ALS) response and transport with four paramedic staffed transport units. Every fire unit (engine and quint) is continually staffed by at least one paramedic, thus advanced-life support measures can be provided by the first unit that reaches the patient, whether by a fire unit or ambulance.

Fire engine companies are assigned to Stations 1, 2, 3, 4, 5, and 8 while Stations 6 and 7 have quints. Quints are noted for their versatility, combining the capabilities of engines (to supply and pump water) with having a hydraulically operated aerial ladder. Every engine and quint is staffed by three responders: one Fire Captain, one Fire Engineer and one Firefighter/Paramedic. ALS transport units are located at Stations 1,4,6,7. Each of these is staffed by two Firefighter/Paramedics. Patients requiring medical treatment are typically transported to one of four receiving hospitals in the North County region, the primary one being Tri-City Hospital.

Table 20 shows the address of each fire station, its apparatus, and the required minimum staffing.

Table 20: OFD Station Locations, Units, and Required Daily Staffing

| Station | Location | Apparatus | Minimum Staffing | Other Units |
|---------|--------------------------|-----------------------------|--|------------------|
| 11 | 714 Pier View Way | 1 Engine 1 Ambulance | 1 Fire Captain 1 Fire Engineer 1 Firefighter/Paramedic 2 Firefighter/ Paramedics | Water Tender |
| 22 | 1740 South Ditmar Street | 1 Engine | 1 Fire Captain 1 Fire Engineer 1 Firefighter/P | OES Brush Engine |
| 33 | 3101 Oceanside Boulevard | 1 Engine | 1 Fire Captain 1 Fire Engineer 1 Firefighter/P | |
| 44 | 3990 Lake Boulevard | 1 Engine 1 Ambulance | 1 Fire Captain 1 Fire Engineer 1 Firefighter/Paramedic 2 Firefighter/ Paramedics | |
| 55 | 4841 North River Road | 1 Engine | 1 Fire Captain 1 Fire Engineer 1 Firefighter/Paramedic | |

| Station | Location | Apparatus | Minimum Staffing | Other Units |
|---------|--|---|---|---------------------------------|
| 66 | 895 North Santa Fe Avenue | 1 Quint 1 Ambulance | 1 Fire Captain 1 Fire Engineer 1 Firefighter/Paramedic 2 Firefighter/Paramedics | Brush Engine |
| 77 | 3350 Mission Avenue | 1 Quint 1 Ambulance 1 Battalion Chief | 1 Fire Captain 1 Fire Engineer 1 Firefighter/Paramedic 2 Firefighter/Paramedics 1 Battalion Chief | Command Vehicle Brush Engine |
| 88 | 4927 Oceanside Boulevard – City Operations Center (Temporary Location) | 1 Engine | 1 Fire Captain 1 Fire Engineer 1 Firefighter/P | |
| | | 6 Engines 2 Quints 4 ALS Units 1 Battalion Chief | 8 Captains 8 Fire Engineers 16 Firefighter/Paramedics 1 Battalion Chief Minimum Staffing = 33 | |

As can be seen in Table 20, the OFD also operates some specialized units to include an air-light unit, confined space trailer, communications trailer and two command vehicles. These units are located at various stations but do not have a dedicated staff as do the engines, quints, and ALS transport units. When requested for an incident, the personnel staffing the engine or quint respond with the unit. In addition, hazardous materials and urban search and rescue capabilities are available from other departments in the County and the City of San Diego. Operationally, Oceanside and the other department in North County have a generally good plan for providing special services.

As with other fire services, OFD protocols and operating guidelines must follow generally accepted standards and best practices such as those of the National Fire Protection Association and the Occupational Safety & Health Administration (OSHA). NFPA standards, though advisory, are generally accepted as ‘best practices’ so the City is well advised to follow them, whenever possible. Safety requirements by OSHA, which are under the auspices of the state (Cal-OSHA) are mostly directed at issues affecting safety and health. These include such items as health and safety, respiratory protection, rescue procedures, and to some degree, staffing.

Two prominent standards considered during this study included NFPA 1710 and NFPA 1500. NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, is considered the defacto' guide for staffing and response. Though NFPA 1710 has received widespread acceptance in the fire protection industry for the deployment of resources and response, its recommendations have not been validated. Still, NFPA is a reasonable guide to follow. NFPA 1500, *Standard on Fire Department Occupational Safety and Health Programs*, establishes the general procedures to report exposures, comply with infection control laws, and standards for facilities, apparatus and equipment. The OFD is aware of these and other standards, and as far as we could tell does a good job of making sure the guidelines are reasonably followed.

One important OSHA regulation requires that when two firefighting personnel are working inside a hazardous area there must two firefighting personnel outside clothed and prepared for immediate entry. This requirement can be met by providing four trained responders on one unit, or by the combined staffing of two (or more units). That the City has chosen to staff its primary fire units with three personnel and not four as some fire departments do is reasonable, considering that the demand for services is primarily EMS. The choice to staff fire units with three personnel is efficient and it is the norm in North County.

The frequency of medical calls is far greater than structure fires. However, structure fires do occur several times per week and they require more resources to handle than do medical calls. In terms of fire suppression capabilities, Oceanside should maintain sufficient resources to handle the initial alarm response for a residential structure fire while also being able to handle two other calls (most likely they will be medical calls), simultaneously. A strong, regionalized approach with each jurisdiction contributing resources to the system is the most efficient approach. As it stands Oceanside can provide this level of service but it does need the assistance of other North County agencies, especially for the occasional fire that requires more resources than a first alarm.⁸

A key part of the fire suppression strategy in Oceanside is to provide sufficient apparatus and personnel to handle the initial tasks such that fire extinguishment can begin quickly and safely. The NFPA has developed standards on the number of personnel needed to operate initially at a structure fire. These standards are predicated on the tasks generally performed by firefighters on the initial response. For low and moderate-hazard occupancies the suggested number of responders is 13 to 17, including a chief officer. Low and moderate hazard occupancies include single-family residential, commercial, and apartments; these are the ones most common in Oceanside.

⁸ In fire department jargon, a first alarm is a dispatch assignment of multiple units to a reported structure fire. In North County, a first alarm assignment is three engines, one quint (ladder truck), one rescue, and one battalion chief.

Table 21: NFPA Response Level Guidelines

| Type of Occupancy | NFPA Recommendation |
|-------------------------|---|
| High-Hazard | 4 Engines 2 Ladder Trucks 24 Firefighters 2 Chief Officers |
| Total Responders | 26 |
| Medium-Hazard | 3 Engines 1 Ladder Truck 16 Firefighters 1 Chief Officer |
| Total Responders | 17 |
| Low-Hazard | 2 Engines 1 Ladder Truck 12 Firefighters 1 Chief Officer |
| Total Responders | 13 |

A reported structure fire in Oceanside provides an initial response of three engines, one quint, one medic rescue, and a battalion chief - a combined total of 15 personnel. Unlike many other jurisdictions studied by TriData the initial response in Oceanside is not too heavy such that resources are being used indiscriminately. If the City contemplates changes to its fire suppression it must make sure that the number of units or personnel initially dispatched does not fall below the current level.

For Oceanside, which provides ALS medical transport and fire suppression, both services are interdependent and any changes to one can affect the other. This is especially true regarding fire suppression because the Firefighter/ Paramedics on the ALS units are needed to meet minimum on-scene staffing guidelines previously discussed. This is because each fire unit in Oceanside is staffed by three personnel, not four, and the two Firefighter/ Paramedics on the transport ALS units are important to augment the reduced fire unit complement. Later in this section, one of the efficiency options suggested for consideration is to eliminate ALS transport, so this interdependency is an important factor that must be understood.

To maintain adequate staffing and meet generally accepted standards, if a decision were made to eliminate ALS transports staffed by OFD personnel, the City has options to include increasing the staffing level on one or more of the already existing fire units. Another option is to create two-person squads (non-transport) to augment the three-person fire unit staffing.

Considering the above factors along with the overall demand of the system, simultaneity of calls, unit workloads, and the geographical area being covered the City should not choose to reduce its already lean fire suppression resources.

Recommendation 12: With any deployment changes considered in the future, do not reduce the initial response to structure fires below 15 responders. Even with 15 responders, Oceanside must maintain a strong automatic aid system to ensure enough resources to handle a second structure fire, provide additional resources for one large fire incident, or a combination of simultaneous incidents that may occasionally exceed the City's limited resources.

Recommendation 13: In the event that EMS transport is eliminated, increase the staffing level on at least one quint from three to four, or create two-person non-transport squads.

Quint Ladder Truck – The OFD recently took delivery of a new 105' tractor-drawn quint apparatus. The unit is replacing an older straight-chassis quint and is to be located at Station 7 on Mission Avenue. The current quint at Station 7 is to be relocated to Station 6 on North Santa Fe Avenue with the current quint at Station 6 placed in reserve.

The newly purchased quint is well made and has many modern features. It is also well designed and the OFD has plans to equip the vehicle with equipment and tools for special rescue situations such as confined space incidents, and other non-typical emergencies. The quint is also designed such that it can replace an older air unit.

Conceptually the OFD's plan is excellent. The question is whether the much higher cost for a tractor-drawn quint (which will also carry hose and water in addition to the aerial ladder) is justified. This type of unit also requires a driver to steer the rear of the truck, something that the OFD has not had before because all vehicles were straight chassis. Vehicles like the one just purchased are also heavier and their maintenance costs are known to be considerably higher.

Recommendation 14: If at some point the second quint at Station 6 is replaced, the City should not replace it with a tractor-drawn vehicle unless there is adequate justification.

Boundary-Drop System – The OFD is one of four participating departments in a boundary-drop Joint Powers Authority (JPA) response system. The JPA is supposed to eliminate jurisdictional boundaries such that the closest resource is sent to a call. The system works well and dispatch protocols have been implemented at North Com, which handles the 9-1-1 call taking and dispatch for the four departments. Fire agencies participating in the JPA along with Oceanside include the North County Fire Protection District, and the Cities of Vista and Carlsbad. The JPA is a benefit to the public because it reduces the number of delayed responses and it automatically relocates resources when multiple incidents or one large one occurs.

A goal of the JPA is to improve efficiency by making sure resources flow between communities. The system works well so long as one community does not eliminate any of its resources such that another community must take up the slack. Because this study is analyzing options that could alter or reduce the fire and EMS resources in Oceanside, continued dialogue between the four agencies is important to review how well the JPA working – it is also important even when no changes are anticipated.

Dispatch protocols used by North Com include a dispatch module called Live Move-up Module (Live MUM). The system is so designed that primary fire suppression resources such as engines are automatically moved when resources become depleted in another portion of the JPA. Live MUM analyses historical data of incident types and times and uses the information to recommend the relocation of fire units. It is one of the best ‘move-up system we have seen and Oceanside benefits from being part of North Com.

Unfortunately, the Live MUM system is not being used to its full extent because ALS ambulances are not programmed into Live MUM even though the software is designed to recommend move-ups for ambulances as well as fire units. Clearly, EMS resources have a much higher workload than fire units in the North County region and it is these units that need to be relocated dynamically as service demands change.

For this project we reviewed the responses by neighboring jurisdictions into Oceanside and the number of responses the OFD makes into other jurisdictions. Oceanside is not subsidizing services to its neighbors, in fact it receives more aid than it gets. The one problem area is near the City of Vista where Oceanside Station 8 is on the border in temporary quarters. Oceanside has plans to move this station, which we already discussed in Chapter IV.

Table 22 shows the mutual aid call breakout for FY 2010-11.

Table 22: JPA Mutual Aid Responses, FY 2010-2011

| | Vista to Oceanside | Carlsbad to Oceanside | Oceanside to Vista | Oceanside to Carlsbad |
|----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Engine Responses | 1264 | 654 | 942 | 785 |
| Ambulances Responses | 1373 | 1264 | 942 | 785 |
| Total | 2637 | 1818 | 1884 | 1570 |

The data shows that Oceanside was net-plus 1001 calls in mutual aid. The major area to consider is the number of times EMS mutual aid is provided to Oceanside by Vista and Carlsbad. The reason it is high is because Oceanside is the busiest of the four departments EMS-wise. Also, Carlsbad Station 1 has a medic unit and is closer to medical calls in south Oceanside near Station 2, which does not have an ALS ambulance. These factors need to be considered for any changes the City may consider deployment-wise.

That Oceanside must rely on its neighbors to handle a large number of medical calls does reduce EMS revenue. Under the JPA the jurisdiction handling the EMS call bills for and keeps the revenue for its services. EMS billing records showed that Oceanside collects about \$411 for each medical call. If the mutual aid information provided to us and depicted in Table 22 is correct, the City is leaving about \$330,000 on the table because Vista and Carlsbad handle approximately 800 more EMS calls in Oceanside than does Oceanside in Vista and Carlsbad.

This difference in revenue is not enough to nix the JPA, but it is one area to consider if resources are moved or eliminated in Oceanside. On the positive side, those requiring medical service get a faster response (and treatment) because the boundary-drop system is in place.

Recommendation 15: Work with North Com and the North County Chiefs to activate the move-up module for ALS transport units. At the same time conduct further analysis on the EMS revenue collection history and consider the potential of additional EMS revenue as part of any changes to the ALS transport system. If EMS transport is eventually contracted, the issue of ALS mutual aid, revenue, and who handled the call is of less importance because the medical transport contractor would collect the revenue.

Recommendation 16: Maintain the existing boundary-drop system but improve the review process of the system. One idea is to develop a matrix among the four North County departments to review the JPA incident outcomes such as mutual aid provided/ received, response time, and even EMS revenue to examine where the system might be improved.

EMS Revenue, Budget Process and Billing – The ALS emergency medical care and transport provided by the OFD is outstanding. In 2005, the City adopted the policy that all new firefighters will also be paramedics. Today, the OFD provides an excellent fire-based EMS response, with every fire unit having at least one paramedic and medical transport units having two. In 2011, two of every three calls responded to by the OFD were for medical assistance. In addition to being an “excellent” service, the all ALS system with two paramedics on every transport is also very expensive.

Revenue collected from medical calls does not cover all of the costs to operate the EMS system, so the City is subsidizing EMS. Understanding that EMS revenue will not cover all of the costs for the service, many communities still choose to provide the service at a higher level because citizens want the service and are willing to pay the difference in taxes. Personnel costs, including overtime, to staff the ALS transports is approximately \$3.6 million. A conservative estimate is that the annual costs to provide EMS at the current service level, including the administrative costs for billing, capital replacement and overhead is well over \$4.0 million. Over the past three years the average collected revenue was only \$2.43 million.

Table 23: Medical Service Responses & Revenue, FY 2010-11

| Oceanside EMS | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|-------------------------------|-------------|-------------|-------------|
| EMS Transports | 6,283 | 6,390 | 6,202 |
| Amount Billed | \$4,630,355 | \$5,580,672 | \$5,530,769 |
| Total Collection | \$2,538,500 | \$2,627,164 | \$2,123,118 |
| Percent Collected | 54.6% | 47% | 38.4% |
| Average Revenue Per Transport | \$404 | \$411 | \$342 |

The EMS revenue collection history shows that the City is subsidizing EMS to a great extent. Also the average collection rate of 47 percent over the three years of 2008 through 2011 is very low. Notably, the actual dollars collected per medical transport has by 15 percent (\$404 to \$342) from FY 2009 to FY 2011.

The cost to operate the EMS system, including the 24 Firefighter/ Paramedic salaries and benefits along with other operating costs such as training and supplies are included in the overall fire department budget. Because the service is billed to those who use the service a better approach is to establish the EMS program as a separate enterprise account. Doing so will allow City officials to better understand the systems' costs and determine whether the system is paying for itself or losing money. If losing money, then a decision can be made whether a less expensive service model should be considered, or whether citizens are willing to pay the difference to keep the higher service level by subsidizing EMS revenue with taxes.

Recommendation 17: Separate the EMS budget from the fire department general budget, either as an enterprise account or entirely separate program within the OFD budget.

The City's Finance Department provides the billing services for EMS. Charges are made based on the actual level of care provided to the patient such as Basic Life Support (BLS) or ALS. Also included are charges for medical supplies and transport to the emergency room. For the most recent year, the cost to the City to provide EMS billing was \$159,500, according to financial data provided by the City.

Table 24 depicts the costs to provide EMS billing for FY 2010-11.

Table 24: EMS Billing Costs

| Category | Cost |
|-------------------------|------------------|
| Finance Staff | \$127,000 |
| Tri-Tech/ Sweet Billing | \$12,000 |
| Gateway Clearing House | \$17,300 |
| Training | \$1,200 |
| Supplies | \$2,000 |
| Total | \$159,500 |

Using information in Table 24, the City's cost to provide billing for medical service is approximately 8 percent of EMS receipts. This is notable because we have determined from interviews with potential contractors that billing services can likely be acquired for six percent (or slightly less) of receipts. Emergency medical billing is technical and difficult and some equate it to understanding the U.S. Tax Code. One missed check box or figure and the billing is kicked back delaying payment and increasing workload on limited staff to correct the problem and resubmit.

Because they rely on the revenue to keep the company solvent, private billing agencies can typically complete the billing process faster, even with staff vacancies. They should also be able to improve the collection percentage over the City's historical percentage. Another advantage is that private agencies specializing in EMS billing are likely to be better informed about changes to Medicare. This is not to say that the City collectors are not doing a good job because they are. However, it is doubtful that the current billing staff can keep up with the

changes in medical billing, especially with the expected changes under the National health care initiative.

If the City contracted billing at six percent of the receipts in FY 2010-11, very little additional revenue would have been earned. It could be expected however, that a private contractor could increase the collection rate. In its report to the City in 2011, Public Financial Management (PFM) quoted a Journal of Emergency Medical Services (JEMS) 2008 survey of 200-Cities, found that the average collection rate of 54 percent, with another source stating collection rates of between 45 and 60 percent.

Recommendation 18: Consider privatizing the billing process for emergency medical services as a cost-reduction initiative. As part of the process, have a qualified firm write the RFP for these services to ensure that performance criteria are included in package.

On average the City’s charges much less for emergency medical care than those of neighboring jurisdictions and the region. By comparison to the \$411 per transport collected by Oceanside during the FY 2010-11, the City of Vista collected \$461 and the City of Carlsbad \$529 per transport. The comparison is not completely accurate though because the service areas and clientele are different in these communities compared to Oceanside, which is believed to have a higher number of patients without private insurance or on Medicare.

A March 2011 San Diego County Ambulance Rate Survey identified that City of Oceanside emergency medical response fees are lower (in some places considerably) than the regional average. There are many categories of fees in the regional fee survey. In Table 25 we show the most used billing category because they are for the basic services without adding supplies or medications.

Table 25: San Diego County Ambulance Rate Survey, 2011

| Billing Category | Oceanside | Regional Average | Difference % |
|------------------------------|-----------|------------------|--------------|
| ALS Base Rate | \$725 | \$1094 | (34) |
| ALS Non-Resident | \$1050 | \$1180 | (11) |
| BLS Base Rate | \$600 | \$715 | (16) |
| BLS Non-Resident | \$950 | \$790 | 20 |
| Treat & Release Base | \$100 | \$177 | (44) |
| Treat & Release Non-Resident | \$150 | \$186 | (19) |

At some point in the past the City used a ‘full-cost’ collection formula to ensure that billing for services matched the actual cost to provide them. This practice was stopped several years ago, though no one seemed to remember why. In November 2011, the City Council passed a resolution requiring that fees should once again reflect the actual cost to provide the particular service (another reason why our recommendation to separate the EMS budget out of the Fire Department’s general budget is a good move). Under the full-cost accounting process a portion of the costs for the Fire Chief, Division Fire Chief and even Battalion Chiefs should be included

in the formula. The same is true for the Nurse Trainer and the costs for training, supplies, vehicle maintenance and other expenditures.

Recommendation 19: Conduct a complete review of the EMS system costs and compare them to the fee structure and those allowable under federal and state guidelines.

EMS Service Delivery Alternatives – To reduce costs and still provide a good EMS system the City does have some choices. It could decide to contract its EMS transport service to a private company and retain its paramedic first responder program with Firefighter/ Paramedics assigned to each fire unit. Another option is to reestablish a tiered EMS model to include BLS ambulance and have fewer ALS ambulances with the BLS ambulances being contracted to lower the labor costs. Or, the City could reduce the number of ALS ambulances it has staffed during non-peak hours, a move that would reduce overtime costs substantially. There are also hybrids of each of these options.

There are varied professional opinions about which EMS delivery model is the most effective and efficient. One of the frequently debated questions is whether ALS transport units must have two paramedics, or whether one paramedic along with a lessor trained but still qualified Emergency Medical Technician is adequate. And some communities are now questioning the need to dispatch a fire engine on every medical call, regardless of how minor the call is (the protocol used by the OFD).

Paramedics or Emergency Medical Technicians: The OFD and the cities of Vista and Carlsbad all use the same staffing model that requires a Paramedic on every engine and two on every medic transport unit. This is a high level of service that is driven by uniformity, operational simplicity and a desire to match new paramedics with experienced ones.

It is our experience that it is unnecessary to have two paramedics on each medic transport unit when one is also provided on fire engine (and quint) such that two paramedics will be on the scene anyway if the medical call is, in fact, a serious emergency. Protocols by the County Health Officer only require two paramedic personnel to be on scene of a single patient and both do not need to arrive on the same vehicle.

An accepted standard is to staff transports with one paramedic and one EMT. For Oceanside, which before 2005 did have Firefighter/ EMTs, the change would save approximately 12 to 15 percent in premium pay for each position changed from Firefighter/ Paramedic to Firefighter/ EMT. Another advantage is that it could increase the OFD's diversity efforts. Fire departments that require candidates to have a paramedic certification in addition to being a qualified firefighter often have difficulty recruiting minority candidates.

Alternative BLS Response Model: One option to consider is for the OFD to move away from the ALS transport model to a less expensive service with BLS transport. There could be difficulties in doing this however, because Oceanside is part of the North County boundary-drop system and the City's primary mutual aid partners, Carlsbad and Vista, both use the ALS transport model. Providing BLS transport is less costly though, and worthy of consideration.

Discussions between the North County departments to create a medical joint-powers authority (JPA) reportedly broke down, in part because Oceanside has considered a change to the ALS transport model and neighboring departments were apparently not notified. If the City were to change to a BLS transport model, time to change the automatic aid system and dispatch protocols would be needed and there could be delays in implementing the new system. The City could choose to implement a BLS transport system unilaterally, but it's probably not a good idea if the goal is to improve regional cooperation.

In follow up discussions another possibility was offered to reduce system costs: instead of changing entirely from ALS to BLS transport ambulances, the City could do an incremental change where some of the ALS units are kept with a BLS ambulances contracted based on need. In this approach North COM would need to institute a tiered medical dispatch system, which it already has the capability to do.

Under the tiered concept with ALS and BLS transport units, ALS units would only be dispatched to serious medical calls while BLS units handle the more frequently occurring low priority calls, those where analyses shows a low probability of transport (traffic accidents, for example). Engines staffed with a paramedic would be dispatched on all serious medical calls to begin patient treatment, thus the arrival time of a transport unit is less important.

A tiered EMS response system could likely be implemented faster than eliminating the current system entirely and it would not require any new vehicles. Using non-safety EMT's or reinstating the position classification of Firefighter/ EMT will also cost less than requiring everyone to be a Firefighter/ Paramedic. Contract out BLS transport may be the least expensive, though it would require setting up a contract. In any of the above options, the boundary drop system could be retained.

Two Paramedics on Transport Units or One: The question of whether to have two paramedics on every ALS transport or one paramedic and one EMT (referred to generally as one-and-one) comes up often. The argument for two is often justified with the comment that "if a paramedic misses something during patient assessment or treatment, a second paramedic may observe the problem and suggest alternative action". Our experience is that this situation does not often occur.

Comments from those we interviewed on whether to retain the two paramedic transport system offered the following:

- Oceanside is a busy system for all companies (we never have an intern who is not able to get their 40 required ALS contacts within the required number of shifts)
- Firefighter/ Paramedics at stations with ambulances spend two-thirds of their time on the ambulance
- Firefighter/ Paramedics work significant amounts of overtime throughout the year, and when on overtime are most often assigned to the ambulance
- Firefighter/ Paramedics all attend the required continuing education classes where skills are evaluated quarterly

Ultimately, whether to have one of two paramedics is one of cost. There are many systems where one paramedic and one EMT are assigned to ambulances, including the NCFPD. Vista, Carlsbad, and Oceanside all use two paramedics on their transport units.

To answer all of the potential questions about which EMS delivery model is best for Oceanside is beyond the scope of this project. To assist the City in its evaluation we have included some relevant research on EMS delivery options as it relates to the previous discussions. The information is provided in Appendix D through F.

Recommendation 20: Consider using EMT- rated firefighters to fill one of the two positions on transport units if this service is maintained.

Peak-Load Deployment – Regardless of whether the City stays with a two paramedic system or one, or decides to institute a tiered delivery model using BLS ambulances, one thing it can and should do is to reduce some of its transport capacity during non-peak hours. This is the strategy that any private transport contractor is likely to do anyway.

To understand this possibility we analyzed the EMS incidents for FY 2010-11 and determined that the incident rate per hour decreased by almost on-half after 7:00pm. Of the total incidents for the year, almost 11,000 incidents were medical related. From 7:00am, when fire personnel start their regular shift until 7:00pm, the incident volume for all calls is 2.5 per hour. However, the rate decreases appreciably to 1.3 incidents per hour after 7:00pm. The reduction is even more pronounced 12:00am and 7:00am when the rate increases again.

Recommendation 21: Reduce overtime costs by eliminating one or two transport units during non-peak hours, which are generally from 7:00pm to 7:00am. Of the available cost-cutting options this one is the easiest to implement because it does not require significant changes to hiring or training practice and no contracts with a private transport provider. The change does require changes to the MOU.

Increased Regional Partnerships and Opportunities

Another aspect of efficiency considered in this study was the potential to increase regional cooperation to save additional money. Efforts have been made by the North County Fire Chiefs recently to jump start the discussion and move ahead but there is political reluctance to do so. Recent efforts have gone so far as to include a formal presentation by a reputable consultant on regional consolidation opportunities, to include both functional and full consolidation.

Clearly there are overlaps in the way services are provided in North County. For starters, each fire agency has its own chief and administrative staff. There are also duplicate administrators for EMS (chief or coordinator), training chiefs, and fire marshals.

Improving efficiency through greater regional cooperation is a direction that Oceanside should heartily pursue. The current system is not only inefficient, there are also equity problems because of the current financial situation and some agencies are being forced to cut resources, which affects other jurisdictions. A North County regional study was started to determine potential regional solutions that could improve service and reduce cost but is currently on hold.

The greatest impediments to regional solutions are politics, governance (the desire for direct control) and the influence of labor, rather than a focus on cost effective services to the public. Regional fire protection solutions are becoming the ‘new normal’ as a way to control costs at the same time provide good service. It is not always the case that consolidation saves dollars, but in North County where the department’s already provide excellent service, the likelihood is that it would.

It is not likely that a full consolidation would occur in the region anytime soon – for the reasons we have discussed before. The City should, as opportunities present themselves, look to contract some services, for example, a fire marshal. Another is to consolidate training with a neighboring agency. In that Carlsbad is just now completing a state-of-of-the-art training center might be an excellent time to share the cost of training with them.

The City has completed three studies concerning its emergency response services since 2007. The previous studies included an assessment of the City’s station locations and resource capabilities as compared to national standards and one that evaluated the possibilities of achieving better efficiency by improving regional partnerships. In addition, a study of emergency services in San Diego County that includes Oceanside was conducted by the Local Agency Formation Commission (LAFCO) in 2005.

Following is a brief summary of the previous studies:

Citygate Associates – A study completed by Citygate in March 2007, documented the emergency response challenges, resource weaknesses and recommendations for resource and system development based on generally accepted best practices. Its findings noted longer response times than desired and the need to accumulate 14 to 15 personnel at fire incidents. The

report found Oceanside had at least 3 concurrent calls for service 25 percent of the time during peak response hours that very well may increase to 4. The report also expressed concern that the department was using quint ladder trucks as fire engines while not have a dedicated ladder truck and raised concerns about the equity of fire station distribution because they are not distributed to give equal response times to each of the eight response districts. The study recommended additional fire stations to meet national standards, including a new facility to meet the expected development in the north east area of Oceanside.

Public Finance Management – A study conducted by Public Financial Management (PFM) involving all City agencies identified potential efficiencies in August of 2011. The report discussed potential fire department savings of \$907,000 the first year and \$2,303,624 over 5 years by contracting for private emergency medical transport and billing services with the addition of a firefighter position on 6 of 8 first response companies. If however, the city contracted EMS transport but did not add the extra firefighter positions for six units, \$3.8 million could be saved in year one and \$14 million saved over five years. PFM also identified potential savings through regional solutions.

Matrix Consulting Group – This study, which was to look at all city agencies for cost savings, determined that the City was subsidizing its fire prevention and code enforcement division to the tune of \$664,000, annually.

Local Agency Formation Commission (LAFCO) – The study by LAFCO conducted in February 2005 included an excellent review of the County's fire departments. Expressed as a concern was that the 28 autonomous fire departments and districts operate in an environment where policy decisions are isolated to the degree that the effectiveness and efficiency of regional services are negatively impacted. The study identified the absence of unified command, absence of consistent training standards and strategic regional planning to eliminate redundancies. It indicated that fire protection and emergency medical services in the unincorporated areas often have duplicate organizational structures and redundant layers of management, thus consuming public resources, e.g., 23 fire chiefs oversee services in these unincorporated areas. It contrasted San Diego County to Riverside County where a single fire chief manages emergency services to the entire unincorporated Riverside area and Los Angeles County Fire Department serving 57 cities plus unincorporated areas of the County.

Unfortunately, little has changed in the County since the 2005 study by LAFCO and duplications still exist. The exception is 9-1-1 communications, which have been consolidated in many areas including North County, a system in which Oceanside is a participant along with North County Fire District, Vista, and Carlsbad.

Recommendation 22: Begin immediate discussions with neighboring departments on sharing or contracting the services for fire marshal and training officer (Battalion Chief). Then, when the time is right seriously consider contracting with an adjacent community for the services of a fire chief (and administration).⁹

⁹ The City may want to contact the City of San Carlos, CA for information on their experience with these efforts. San Carlos went through a very extensive effort to bring about the changes we recommend.

VI. FIRE PREVENTION AND SUPPORT SERVICES

The majority of personnel and thus cost for the OFD are dedicated to the delivery of direct response services and included in the OFD operations' division budget. Therefore, most of this study's attention was directed to that area. However, the study team did review the critical functions of fire prevention, training, lifeguard services, and 9-1-1, though in less detail. These services affect demand, the severity of fires, and assist in making timely responses with properly trained personnel.

Fire Prevention

The OFD prevention division is responsible for the enforcement of applicable codes, laws and ordinances pertaining to fire safety. Services provided include inspections of new construction, mandated state inspections, certificate of occupancy inspections, conducting plan reviews, and fire cause and origin investigations. Prevention personnel are also the lead for the Department's public education efforts to provide community outreach and education on fire safety.

Fire prevention efforts in Oceanside are weak generally because their staffing is very lean and there is not enough capacity to conduct all of the tasks assigned. The prevention bureau has one Fire Marshal, three fire prevention specialists, and one part-time plans checker. The full time prevention personnel are all uniformed (safety) personnel. It is not a requirement that fire prevention personnel be trained as firefighters (safety-rated), but the City has chosen thus far to do so.

That each of the four departments in North County has its own Fire Marshals is unnecessary and inefficient. As we mentioned in an earlier chapter, the City could contract the services of a Fire Marshal from another jurisdiction. This strategy is being adopted by other communities in California to eliminate redundancy and reduce costs. The City also could contract the inspectors as well, or keep its own inspectors, who would report to the Fire Marshal.

Another weak link in the prevention effort is the lack of analysis of the incident data for better targeting and evaluation of prevention activities. Best practice organizations use incident data and compare it to the activities of code enforcement and public education efforts to determine if the efforts are being directed in the right place(s). The City also has a very high risk in the wildland/ urban interface, where the potential exists to lose a substantial number of structures with a single incident. However, planning for the wildland/urban interface fire problem has not been a high priority for the OFD, though it should be because it is a significant risk.

Another issue to address is improving cost recovery for inspections and plan reviews. A 2010 study by Matrix Corp. showed that the fees being collected for inspection services by the OFD did not recover their full cost. A fee increase would be in line with the City Council's 'full cost recovery initiative', adopted in November 2011.

While each of the aforementioned areas are important, perhaps the most significant shortcoming with the OFD's prevention program is that station personnel are not involved in code enforcement or public education to any large degree. Station personnel do give station tours and meet with schoolchildren, but while good PR, these activities do not really impact fire safety the way inspections and targeted public education programs do. To add time for inspections and education, the daytime hours for physical fitness could be moved from the core work schedule to an evening activity. Doing so would provide much more time for station personnel to conduct inspections, targeted public education, and to address the wildland/ urban interface problem.

To improve fire prevention and public education efforts, it is recommended that the City should consider the following:

- Contracting the services of a Fire Marshal, or working with another community in the region to contract the Fire Marshal function to them.
- Evaluate the feasibility of going to civilian (non-safety) inspectors.
- Determine the full costs to provide various aspects of fire code enforcement to include plan reviews and make the necessary changes to the fee structure.
- Review the annual inspection workload and increase the staffing level to allow the completion of all required inspections with the allotted time. Conduct year-round inspections for defensible space in all wildland/urban interface areas to gain 100 percent compliance.
- Train and require fire station personnel to conduct inspections, especially those where the risk is from the wildland/urban interface areas.
- Improve the data collection system such that inspections and public education priorities can be correlated to incident trends and those areas of high-risk.
- Consider adopting a retroactive sprinkler ordinance to require existing buildings over three stories in height to be retrofitted with automatic sprinklers, or better yet, all structures, going forward.

Training

Training is currently managed by a Battalion Chief with the assistance of a Nurse Trainer and a part-time training consultant. The training division is responsible for the development, implementation, and maintenance of all training for emergency responders from recruit

firefighter/ paramedic to fire captains. A major portion of time for the training staff recently has been the emphasis on newly hired firefighters that need to be trained.

As firefighters advance in both grade and rank, the training staff also provides classes on more advanced topics and it assists in the promotional selection process. Training staff also monitor the training and continuing education requirements for paramedics and special certifications such as confined space and hazardous materials. The primary role for the Nurse Trainer is to monitor medical training.

Following are the major activities of the training division:

- Produce and maintain all training manuals, materials, individual and group records;
- Schedule Annual Training;
- Monitor the timely achievement of training mandates;
- Provide guidance for employee development and conduct;
- Act as the Oceanside Fire Department Safety Officer;
- Represent the Oceanside FD at San Diego North Zone Training Officers Committee;
- Participate with the City of Oceanside accident review board;
- Act as the departments Terrorism Liaison Officer;
- Conduct a Basic Fire Academy when needed;
- Monitor California State Fire Marshal Certifications;
- Administer the California Incident Command Certification System (CICCS) qualifications program;
- Monitor and insure compliance with OSHA, State and County requirements;
- Evaluate how emergency responders perform in multi company teams;

A gap in the OFD training regimen is the absence of training related to officer development such as verbal and written communications, career development, supervision skills and time management. Because the training staff is lean, like prevention, it is unable to do provide training beyond that which is required for operations. In short, the training cadre is doing everything possible to keep up with the training requirements, however there are not enough personnel to develop or deliver more programs. If the OFD and the three other training sections in the region (Vista, Carlsbad and North County F.P.D.) were to be consolidated, training programs could probably be improved to include more topics and the effort would be more efficient.

Along with prevention, training is the one area where Oceanside and its neighbors in North County could immediately consolidate efforts such that there is only one training staff for the entire region. In fact, Carlsbad is in the process of bringing a new training facility on-line, so this might be the perfect time to pursue a regional effort with the cost of one training battalion chief and the training staff shared by Oceanside, Carlsbad, Vista, and the North County F.P.D. One concern is the distance from these departments to Carlsbad's new training facility; however, many large fire departments only have one main training complex. The logistics could be worked out with most of the day-to-day training taking place in each of the department's areas.¹⁰

If Oceanside elects to remain a separate entity, training wise, there appears to be a need to provide additional administrative and technical support assistance to the training section to allow the battalion chief and his limited staff to spend more time on actual training and less time on administrative tasks.

Recommendation 23: Review the actual workload requirements for administrative tasks associated with the training division and consider adding an administrative assistant to the training staff.

Recommendation 24: Begin immediate discussions among the four North County fire agencies to consolidate the four training divisions into one, regional program. Under a regionalized training division, one battalion chief could manage the entire program (with support from a consolidated training cadre and support staff).

Lifeguards

Oceanside's Lifeguard Service is comprised of six full-time lifeguards and approximately 60 seasonal staff. Lifeguard Services are provided seven days per week with summer hours being 8:00 am to 8:00 pm and winter hours of 8:00 am to 6:00 pm. Lifeguards staff six towers, four of which are south of the City Pier, one north of the City Pier, and one at the Harbor Jetty.

Lifeguard responsibilities include water rescue of swimmers and surfers, emergency medical care, boat rescues, underwater search and rescue, swift-water rescue for river or flood emergencies, missing persons, and other related emergencies. Oceanside lifeguards also assist with enforcement of Oceanside Beach laws and regulations through citation and arrest in cooperation with the Oceanside Police Department.

The lifeguard service has at its disposal a variety of vehicles and equipment, including four-wheel drive vehicles, rescue paddleboards, all-terrain vehicles (ATVs), personal watercraft, and inflatable rescue boats. Oceanside Lifeguards are trained in accordance with United States

¹⁰ OFD officials believe that call volumes of Oceanside units and its constant staffing model make it difficult to consolidate training. These are certainly matters worthy of consideration, but regionalized training with one battalion chief coordinating the efforts for all of North County is a goal worthy of consideration.

Lifesaving Association (USLA) standards. Many lifeguards are also trained Emergency Medical Technicians (EMT) to provide emergency medical care for beach users.

During the three year period for FY 2008-09, FY 2009-10 and FY 2010-11 the Lifeguard Unit responded to the following Medical and Rescue Emergencies.

Table 26: Beach Activity for Lifeguard Section

| Activity | FY 2008-09 | FY 2009-10 | FY 2010-11 |
|--------------------|------------|------------|------------|
| Beach Attendance | 5,770,253 | 4,768,325 | 2,215,490 |
| Medical Assistance | 2,821 | 2,465 | 3,265 |
| Rescues | 2,472 | 1,804 | 1,248 |

One thing that we noticed immediately in reviewing the incident data is that the number of medical calls handled by OFD ambulances was about the same throughout the year despite the fact that Oceanside is a summer resort destination. We also determined that the volume of medical calls handled by the lifeguard section was going up despite the decline in beach attendance last year. The lifeguards handle a large number of minor medical incidents like cuts and sprains without the OFD responding to the call or transporting the patient to the hospital as many resort ambulances do. This is excellent because it reduces the demand on ambulances, which during the summer would slow response times.

By all accounts the lifeguard service is working extremely well and the cooperation between OFD personnel and the lifeguard staff is excellent. There are no recommendations on the deployment of lifeguards.

9-1-1 Dispatch (North COM)

Oceanside is a member of the North County 9-1-1 Joint-Powers-Authority (JPA) dispatch system. Prior to joining the JPA dispatch, fire and EMS dispatching services were provided to the OFD by the City’s police department. The 9-1-1 service provided by the JPA is of considerably higher quality than it had from the OPD, but the cost to participate in the JPA is also greater.

The current 9-1-1 system helps to provide fast response times because calls do not need to be transferred among the various response agencies. Resources are also allocated more efficiently in this system that includes an 800 MHz radio system with regional capabilities for the entire San Diego County area. The dispatch system includes 12 monitored radio channels and 29 telephone lines with a computer-aided dispatch technology to document all call-taking and dispatch activity. One of the best features of the 9-1-1 system is the ‘real time’ move-up system (Live MUM), already discussed in the previous chapter.

An important aspect of emergency dispatching not used by North COM is Priority Medical Dispatch (PMD). PMD protocols and dispatch procedures allows the 9-1-1 center to ‘prioritize’ medical calls such that non-life threatening emergencies can be handled by a BLS

unit, not ALS. Because the medical transport units in Oceanside, Carlsbad and Vista are all ALS units, the fire chiefs directed North COM not to use PMD . If Oceanside were to have BLS transport units (city operated or contracted) along with the Firefighter/ Paramedic staffed engines, North Com could implement PMD. Doing so would mean that an OFD paramedic staffed engine or quint would not have to be dispatched on minor medical calls. OFD units would then see a reduction of medical calls, which could reduce vehicle maintenance and replacement costs. Fire unit availability should also increase.

In addition to the four North County fire agencies, voting members of the JPA include Encinitas, Rancho Santa Fe, and Solana Beach. Non-voting members that contract services from the JPA include Del Mar, Pauma Reservation, Elfin Forest/Harmony Grove Fire Departments as well as the CSA-17 Ambulance District, Rancho Santa Fe Law Enforcement Patrol and Olivenhain Municipal Water District. As a voting member of the JPA, Oceanside has one seat on the Board of Directors. The JPA is managed by an administrator with a communication's manager responsible for day-to-day operations.

In 2011, the cost to operate the 9-1-1 system was approximately \$3.2 million, with each participating agency contributing a share of the cost based on the number of annual responses. As the busiest agency among all of the participants, the share for Oceanside was \$800,000 in 2011, far greater than any other agency. It is our opinion that the formula is unfair to Oceanside and it should be adjusted because using call volume alone is not a good metric. The reason is because less busy organizations would still need to pay for dispatchers to be available to handle a call when it does occur.

That Oceanside pays 25 percent of the annual cost with ten other organizations sharing the remaining 75 percent does not seem rational. A more equitable formula would be to include minimum cost to participate and then apply other factors such as population served, stand-by service, and call volume. It is believed that the Board of Directors is to begin discussions on the contract with Oceanside (and others) so now is a good time for the City to request relief in the formula to lower its cost. Whatever the outcome, the City should do everything possible to remain part of the 9-1-1 JPA, because it is the foundation of every emergency response system and as such is the most important ingredient in any future consolidation possibilities the City and region might consider.

Recommendation 25: Begin discussions with the JPA Board of Directors to change the cost formula such that the cost for Oceanside to participate in the JPA is more equitable. Consider including factors such as population served and stand-by service as part of the formula, in addition to the already used metric of call volume. For its part, the City should do everything possible to remain a member of the 9-1-1 JPA, and use its position on the Board to advance further opportunities to regionalize fire and EMS service.

VII. EFFICIENCY OPPORTUNITIES: POSSIBLE CHANGES TO FIRE & EMS DEPLOYMENT AND STAFFING

As part of this study City officials desired to understand whether the OFD might be deployed differently to save money and still provide high quality fire and EMS service delivery. It is imperative that City officials be aware that fire suppression resources (staffing and apparatus) are already very lean and additional reductions would not be advisable, unless the city is willing to bear increased risk to save money. Each of the City's eight fire stations has only one firefighting unit and each unit has a minimum number of fire responders. The City benefits by having the regional boundary-drop system, which makes the system efficient.

EMS delivery is another matter altogether. The City does provide an excellent EMS system of ALS first response with at least one Firefighter/ Paramedics on every fire unit. In addition, ALS transport is also provided, with two Firefighter/ Paramedics on each of the four ALS ambulances located throughout the City. The EMS system is staffed to provide the same number of resources 24/7, even though medical demand fluctuates during the day. The City has some options to save money here, primarily by contracting EMS transport, or by reducing the number of transport units on the street during non-peak hours. It could also choose to contract BLS transport and still provide ALS transport.

In this section we present some alternative deployment scenarios in light of the City's overall risk situation and the demand for emergency services, which were discussed in previous chapters. We also analyzed salary and benefit information provided by the City and we considered the OFD's staffing requirements and leave patterns to determine whether other, less expensive solutions, might be feasible. We also examined cost information such as EMS billing, which is provided by the City's finance office and we met with private contractors that provide EMS transport in other parts of San Diego County to understand if potential savings are possible.

Of the scenarios developed by TriData the easiest to implement is for the City to change the way that EMS transport is provided from the current model where the same number of EMS transports (4) are staffed 24/7 to where only two or three transports are staffed during non-peak hours at night. The reason this change is the easiest is because firefighters are being hired on overtime almost every day and the City could eliminate two or four overtime slots during nighttime hours when EMS demand falls off significantly. Making this change does require a language to the MOU with firefighters that stipulate a minimum number of personnel (32) to be on duty 24/7.

With regards to whether any of the proposed scenarios are right for the City, only its elected officials can make the determination whether one or options deliver the ‘right level’ of service as compared to any potential savings that may be derived. For this reason we do not make a recommendation in the section, but rather to show the pros and cons and give our estimate of the potential cost savings.

In addition to this report, we provided to the City the Excel spreadsheets developed for this project. The spreadsheets include salary information for each uniformed rank and information about benefit costs, overtime, and leave-use history. As it evaluates its options, the spreadsheets may be valuable in developing other options we did not think of, or adding more detail to those scenarios we developed.

The spreadsheets used to estimate the cost of various service delivery options are provided in Appendix G.

Cost-Saving – EMS Scenarios

Changing how emergency medical services are provided has the potential to reduce costs for the City. However, as discussed in the previous chapter, Firefighter/Paramedics on medic units are also needed to augment staffing at fires and at least one transport unit is now used at fires to provide the recommended minimum number of fire personnel at a structure fire. In addition to this fact, the following attributes of emergency service and EMS should be kept in mind for any changes the City may consider.

1. The current boundary drop system could be impacted therefore issues should be thoroughly discussed with neighboring boundary drop partners. We believe most issues could be resolved, except private medics would not be available for firefighting.
2. The OFD depends on at least one medic response to make up its 15 personnel to achieve all initial tasks safely.
3. The status of the City’s 201 rights, which allows the City to operate its EMS delivery system with ‘general’ oversight by the San Diego County Health officer, could come under question by the State of California. Under the statute, if the City were to contract EMS transport, the City loses most of its ability to manage the EMS system because the County Health officer becomes the management authority for EMS transport. Also, if in the future the City wanted to return to a municipal transport system, it would need to compete against qualified private transport companies for the contract. From our discussions with County Health officials, the issue of protecting the City’s 201 rights may not be a significant issue, but its affect should be explored.

4. If the City contracted services and wanted to reassume medical transport in the future, it would have to bid for those services along with private providers under current State law.
5. Private ALS Transport units could be staffed with one EMT and one Paramedic.
6. The City should continue to maintain at least one Firefighter/ Paramedic on each of its first-line fire response units.
7. The ability of private providers to be able to sustain service may be compromised if they are not provided a substantial amount of emergency transport service.
8. A fee for fire unit responses to medical emergencies should be considered. The amount to charge would ultimately be a policy decision, depending in part on how much the City could reasonably collect.
9. Any contract for EMS transport should include a detailed agreement to include performance criteria and potential fines for non-performance.
10. Dispatching protocols should be established to screen Engine and Quint first response calls to BLS emergencies that could be handled by private BLS or ALS units within a specified time frame.
11. Additional cost reductions or increased revenues are possible in some situations. Included may be:
 - a) Fire Station rental for private transports; PFM noted Orange County at \$72,000
 - b) Sale of city transport units; PFM study estimated \$400,000
 - c) Fees for granting private service;
 - d) Reduced medical supplies;
 - e) Reduced EMS training costs;
 - f) Reduced capital equipment;
 - g) Reduced medic unit maintenance.

Following are the scenarios for changing the EMS delivery system evaluated by TriData:

EMS Scenario 1: Eliminate ALS Transports and Contract ALS/BLS Transport Service; Increase Staffing on Two Quints from Three to Four; Contract EMS Billing and Eliminate the Nurse Trainer

Estimated Savings - \$1.5M, predicated on the following changes:

- Elimination of 24 Firefighter/ Paramedics, but adding 6 Firefighter/ EMTs
- Reduction in overtime
- Contracting of EMS billing

- Elimination of Nurse Trainer position
- Fire station rental to private transport service
- EMS pass-through fee from private transport service
- Reduction of medical supply inventory
- Reduction of training costs
- Reduction of fleet maintenance costs
- Reduction of capital vehicle replacements
- Sale of four medic transports
- Loss of EMS revenue

In this option the City would contract for all transport service but maintain Firefighter/Paramedics on each of the City's engines and quints. Considering previous discussion about resource needs for fire suppression incidents and concurrent emergencies, the staffing on each of the City's two quints would be increased by one (from three to four), to make up for the elimination of fire personnel on the ALS ambulances. Increasing the staffing on quints would compensate for the loss of the four medic transports units. EMS billing would be eliminated because the private transport company would handle this. The elimination of a Nurse Trainer is justified because 24 fewer paramedics would be in the Department; the remaining could be trained under a contract provision.

Key aspects of this scenario include:

- One Firefighter/Paramedic is maintained at all times on fire units to maintain excellent ALS first response
- 24 Firefighter/ Paramedic positions are eliminated, but six less expensive Firefighter/ EMT's are hired to increase the staffing on two quints from three to four responders
- A pass-through fee is collected from any private ambulance provider to maintain the ALS first responder service
- The City should consider adopting a franchise fee for the 'rights' to provide transport service in Oceanside
- EMS billing by a private contractor would reduce costs and likely increase revenue.

Among the pros and cons of the City should consider if this scenario were adopted are:

Pros

- Eliminates 18 FTE positions, either by attrition or layoff
- Provides significant savings to the City
- Maintains the ALS first response program but with less costly transport

- Increases staffing on two fire units from three to four
- Allows the implementation of a more favorable contract to include ALS or BLS transport options
- Eliminates the cost of EMS billing
- Private transports are already used elsewhere in the County

Cons

- Requires a contract with a transport provider that could be difficult to execute and manage; considerable detail in the contract is also necessary
- Potential for the City to have less control over EMS delivery
- May not be accepted by neighboring communities in the boundary-drop program, thus eliminating any future consolidation possibilities
- The City loses the revenue generated from EMS transport fees
- If the City decides to return to an ambulance service staffed by City Firefighter/ Paramedics, it would need to compete against private companies for the contract

EMS Scenario 2: Eliminate ALS Transport Units and Contract ALS/BLS Transport Service; Add Two Quick Response Squads and Increase the Staffing by One on One Quint

Estimated Savings - None; slight additional cost based on the following:

- Elimination of Firefighter/ Paramedic positions, but the addition of Firefighter/ EMTs for two Squads
- Change in overtime costs
- Contracting of EMS billing
- Sale of four medic transport units
- Fire station rental to private transport
- EMS pass-through fee to private transport service
- Reduction of medical supply inventory (2 Units)
- Reduction of training costs
- Reduction of capital vehicle replacements
- Reduction of fleet maintenance costs
- Loss of EMS revenue to private transport provider
- Cost to purchase two squads

This option is similar to Option 1 in that transport service is contracted. However, to maintain suppression capabilities and take some of the response load off of fire units, two two-person squads are added along with one additional person on one of the City's two Quints (probably Quint 7 because it is the busiest and most centrally located). Under this scenario, the OFD continues to provide excellent ALS first response the same as in Scenario 1, but with two additional units on the street. Depending on the location and severity of call, two-person squads could handle the bulk of EMS calls. The potential exists that the sale of four transport units could pay for the purchase of two squads. This is the only scenario that actually costs more than the City is paying now, and therefore is probably not one the City wants to consider unless it wants to increase the level of service a little and still contract EMS transport.

Key aspects of EMS Scenario 2 are:

- 24 Firefighter/ Paramedic positions are eliminated by contracting the transport service, but 15 FTE positions are added back in to staff the two squads and add a fourth person to a quint.
- Adds two additional ALS response units over Scenario 1
- A pass-through fee is collected from any private ambulance provider to maintain the ALS first-response service (Note: One agency we are aware of obtains pass through fees provides approximately \$4,500 annually per engine company paramedic. The actual cost for paramedic rating, equipment and training and the private transport companies ability to obtain pass through funds through billing, should be a part of contract discussion to maximize cost reimbursement).
- During contract negotiation the City should explore the possibility of a franchise fee and fees

Pros

- Eliminates 9 FTE positions, either by attrition or layoff
- Maintains the ALS first response program but with private transport
- Increases the number of response units on the street without having to provided medical transport
- Increases staffing on one fire unit from three to four
- Allows the implementation of a more favorable contract to include ALS or BLS transport options
- Eliminates the cost of EMS billing
- Private transports are already used elsewhere in the County

Cons

- Costs more – no savings
- Requires a contract with a transport provider that could be difficult to execute and manage
- Potential for the City to have less control over EMS delivery
- May not be accepted by neighboring communities in the boundary-drop program, thus eliminating any future consolidation possibilities
- The City loses the revenue generated from EMS transport fees

EMS Scenario 2 Hybrid: Eliminate ALS Transport Units and Contract ALS/BLS Transport Service; Add Two Quick Response Squads but Keep the Same Staffing Level on Quints

Estimated Savings - \$400,000, predicated on the following changes:

- Elimination of 24 Firefighter/ Paramedic positions
- Addition of 12 Firefighter/ EMTs for 2 squads
- Reduction of overtime costs
- Contracting of EMS billing
- Sale of four medics
- Fire Station rental to private transport
- EMS pass-through fee to private transport service
- Reduction of medical supply inventory
- Reduction in training costs
- Reduction of capital vehicle replacement cost
- Reduction of fleet maintenance costs
- Loss of EMS revenue
- Cost to purchase two squad vehicles

This option is similar to Scenario 2 without the additional firefighter on one quint. The resulting staffing change is the elimination of 24 Firefighter/ Paramedics for four transport units now deployed with 6 Firefighter/Paramedics and 6 Firefighter/ EMTs added back in to staff two squads to replace the transport units. As with Scenarios 1 and 2 before, EMS billing is eliminated. A major savings with this option is the cost reduction associated with the capital

replacement and maintenance costs of four transport units, which we estimate to cost significantly more than the quick response squads.

The estimated annual savings if EMS Scenario 2 Hybrid is implemented is \$509,000 annually.

Pros

- Eliminates 12 FTE positions, either by attrition or layoff
- Additional cost savings over Scenario 2
- Maintains the ALS first response program but with private transport
- Increases the number of response units on the street without having to provide medical transport
- Eliminates the fourth person on one quint
- Allows the implementation of a more favorable contract to include ALS or BLS transport options
- Private transports are already used elsewhere in the County
- Eliminates the cost of EMS billing

Cons

- Requires a contract with a transport provider that could be difficult to execute and manage
- Potential for the City to have less control over EMS delivery
- May not be accepted by neighboring communities in the boundary-drop program, thus eliminating any future consolidation possibilities
- The City loses the revenue generated from EMS transport fees

EMS Scenario 3: Eliminate Two City Paramedic Transport Units and Contract for Additional BLS/ALS Transport Service; Add One Firefighter/ EMT to One of the City's Two Quints

Estimated Savings - \$400,000, predicated on the following:

- Elimination of 12 Firefighter/ Paramedic positions
- Addition of 6 Firefighter/ EMTs to increase staff on one quint
- Reduction in overtime costs
- Contracting of EMS billing

- Sale of two medic transport units
- Fire station rental to private transport service
- EMS service pass-through fee
- Reduction of medical supply inventory
- Reduction in training costs
- Reduction of capital vehicle replacement costs
- Reduction of fleet maintenance costs
- Partial loss of EMS revenue

Under this option the City would retain two of its paramedic staffed medic transport units supported and augment the service by contracting additional capacity from a private BLS/ALS transport provider. This option maintains the ability to have two Firefighter/ Paramedic staffed transport ALS units to augment on-scene staffing at fires, while also adding a fourth (and less expensive) Firefighter/ EMT to one Quint. In this scenario the City could contract EMS billing, or contract it out, whichever produces more revenue. Staffing-wise, 12 Firefighter/ Paramedic FTE positions are eliminated along with overtime due to the elimination of two ALS transports, and six Firefighter/ EMTs (plus overtime) are added back to staff the extra person on one Quint.

The estimated annual savings if this scenario were implemented is \$553,000.

Pros

- Eliminates six FTE positions, either by attrition or layoff
- Maintains two ALS transports
- Increases the staffing level to four on one fire unit
- Maintains almost the same number of response units on the street but with better ability to peak-load staff using a private contractor
- Allows the implementation of a more favorable contract to include ALS or BLS transport options
- Private transports are already used elsewhere in the County
- Allows the City to keep EMS revenue and pay a portion for the additional transport needs

Cons

- Requires a contract with a transport provider that could be difficult to execute and manage
- Potential for the City to have less control over EMS delivery
- May not be accepted by neighboring communities in the boundary-drop program, thus eliminating any future consolidation possibilities

EMS Scenario 3 Hybrid: Eliminate Two ALS Transports and Contract for BLS Transport Service; Contract EMS Billing

Estimated Savings - \$1.3 M, predicated on the following:

- Elimination of 12 Firefighter/ Paramedic positions
- Reduction of overtime
- Contracting of EMS billing
- Sale of two medic transport units
- Fire station rental to private transport provider
- EMS service pass-through fee
- Reduction of medical supply inventory
- Reduction of training costs
- Reduction of capital vehicle replacement costs
- Reduction of fleet maintenance costs
- Some loss of EMS revenue

Under the hybrid option to Scenario 3, two of the City's four paramedic staffed transport units would be maintained with additional transport capacity provided by a contract transport provider. The major difference is that no additional fire personnel are added to increase the staffing on one of the City's two Quints. The City would also contract its EMS billing function, which we estimate will save approximately \$284,000 annually, minus the fee to contract the service. Twelve FTE positions would be eliminated in the OFD, plus the cost to backfill these positions using overtime under the constant staffing model used by the OFD.

The estimated annual savings if this scenario were implemented is \$1.4 million.

Pros

- Eliminates 12 FTE positions, either by attrition or layoff
- Maintains two ALS transports
- Maintains a similar number of transport units on the street but with better ability to peak-load staff using a private contractor
- Allows the implementation of a more favorable contract to include ALS or BLS transport options
- Private transports are already used elsewhere in the County
- The City maintains most control of its EMS delivery system
- Allows the City to keep EMS revenue and pay a portion for the additional transport needs

Cons

- Requires a contract with a transport provider
- May not be accepted by neighboring communities in the boundary-drop program, thus eliminating any future consolidation possibilities
- The City loses some revenue generated from EMS transport fees to pay for the private contract

EMS Scenario 4: Eliminate Two ALS Transport Units and Add 1.5 City Operated Non-Safety BLS Transport Units Staffed by Non-Safety Personnel; Contract EMS Billing; Add fourth person to One Quint

Estimated Savings - \$1.0M, based on the following:

- Elimination of 12 Firefighter/ Paramedic positions
- Addition of 3 Firefighter/ EMTs to increase staffing on one quint
- Addition of non-safety paramedics and EMTs for BLS unit(s)
- Reduction in overtime costs
- Contracting of EMS billing
- Sale of two medic units
- Reduction of medical supply inventory costs
- Reduction in training costs
- Reduction in fleet maintenance costs

This option retains all EMS response and revenue in house, but reduces the number of ALS medic transport units from four to two. It also changes the staffing of OFD units to include non-safety BLS responders, which can be obtained at a lower cost. Because two Firefighter/Paramedic transports are eliminated and replaced by non-safety personnel, a fourth person is added to one of the Quints to ensure enough personnel are on scene at structure fires. To maintain adequate medical transport capabilities, four units (two ALS and two BLS) are maintained during the busiest hours of the day with three units (two ALS and one BLS) during the night when demand is lower. Medical billing is also eliminated in this scenario.

The estimated annual savings if this scenario were implemented is \$1.2 million.

Pros

- Eliminates 9 FTE Firefighter/ Paramedic positions, either by attrition or layoff
- Maintains two ALS transports
- Maintains a similar number of transport units on the street but with better ability to peak-load staff
- Allows the implementation of a more favorable contract to include ALS or BLS transport options
- Private transports are already used elsewhere in the County
- Allows the City to keep EMS revenue and pay a portion for the additional transport needs

Cons

- Requires a change in policy and staffing to add 12 non-safety personnel (six paramedics and six EMTs)
- The City maintains most control of its EMS delivery system
- May not be accepted by neighboring communities in the boundary-drop program, thus eliminating any future consolidation possibilities
- Requires a major change to the MOU

EMS Scenario 5: Peak-load staff EMS Transports by Staffing Two Units 24/7 and Four Units during Daylight Hours

Estimated Savings - \$550,000, predicated on overtime savings by reducing the staffing level from 7:00 pm to 7:00 am.

In this scenario the OFD would staff four ALS transport units during daytime hours but only two on most nights to reduce overtime. Of all the EMS scenarios evaluated, Scenario 5 is probably the easiest to implement. Under this option, staffing could be reduced each night when

less than 32 personnel are on duty. This option requires no major changes to the current OFD operation, either by contracting transport or by hiring non-safety personnel.

On most days the OFD has from two to as many as five (or more) personnel on overtime to maintain its constant minimum staffing of 32 positions, which includes 8 Firefighter/paramedics on each of four ALS transport units. In this scenario, the OFD would not fill four overtime slots for 12 hours each day (typically from 7:00 pm to 7:00 am) and would only staff two ALS transports during these hours. If 30 or even 32 personnel were available without using overtime, the OFD could staff a third or even fourth transport unit. Or, if 31 fire personnel were available without using overtime, the OFD could staff a third transport plus add a fourth person to one of the two Quints.

A benefit to this option is the ease with which it could be implemented without the need for a private transport contract. It also allows the OFD to gain experience with peak-load staffing and to determine more precisely the number of transport units needed during certain hours. This scenario also offers considerable flexibility to change the model if the situation changes without having to wait and change a contract with a transport provider.

We estimated the annual savings if this scenario were implemented to be \$552,000. Depending on the schedule and number of personnel off that affects overtime callbacks and cost, the savings could be less (or even more). The City would probably need to try this approach for at least a year, and then review the outcome to determine the potential costs savings going forward.

Pros

- Maintains at least two and sometimes three or four City-operated ALS transports
- Allows the OFD to gain experience with peak-load staffing while getting better at data analysis to determine the ideal deployment pattern
- Allows the City to keep EMS revenue
- Provides excellent flexibility
- Maintains the current deployment model used by other North County agencies under the boundary-drop system

Cons

- Requires a change to the MOU allow fewer than 32 responders on-duty
- May place additional demand on neighboring communities when demand increases above the norm
- Requires the OFD use data more effectively to determine service needs, which it has not had to do in the past

Additional Cost Savings – Fire Station Scenarios

As was mentioned previously there are very limited possibilities to eliminate stations or fire suppression capabilities in terms of engines or quints. The City only has eight stations with little in the way of redundancy. The most immediate need and one of our recommendations is to relocate Station 8, which from its temporary location is already making most of its responses into Vista, not Oceanside. That Oceanside has the benefit of automatic mutual aid under the boundary-drop system allows it to have only eight stations; if the agreement were to be eliminated the City could not achieve the good coverage that it has now without adding at least another station.

If however, the City faces an even more burdensome financial situation and must reduce its budget beyond the EMS changes suggested earlier, it could potentially merge Stations 1 and 2 into a single facility central to their existing locations. We presented the possible location in the response time chapter earlier. If this change were made the boundary-drop system must be retained because Carlsbad, not Oceanside, would be the closer fire station to most of south Oceanside. If Station 2 in Oceanside was eliminated, its district would be covered mostly by Carlsbad Station 1 and the system would not be affected so long as the boundary-drop system remained.

Under a scenario where the City decides to merge Stations 1 and 2, there are two possibilities. The first is to consolidate the stations and eliminate one fire engine (and crew) and in its place add a two-person squad to handle EMS first-response calls. In this scenario, Carlsbad would be the closest fire unit to much of south Oceanside with the second fire resource coming from the new location where Stations 1 and 2 were merged. The second resource (squad) would be required at the new station because the call volume, though not at the extreme, is still too high for one resource so a two-person squad would probably be the best choice to reduce the call load on the engine and maintain good response times. If Stations 1 and 2 are merged, capital funds to construct a new facility would be needed, thus any savings from personnel reductions would not be immediately realized. And, as stated earlier, it is imperative that the boundary-drop system must remain in place for this option to be feasible.

The anticipated cost savings if this option were implemented is \$600,000.

A second possibility is to consolidate the stations but instead of relying on the boundary-drop system to remain in effect region-wide, enter into a contract with Carlsbad to share the cost of its Station 1 and eliminate the engine currently at Station 2. In this way the City avoids the situation of having to address a problem if the other communities decided not to maintain the boundary-drop system.

Carlsbad already gets much of the EMS revenue because its ALS transport unit and not Oceanside's is closer to south Oceanside, thus it is to the City's advantage to make sure that a medical cost-sharing arrangement is part of any agreement. Under this scenario the ALS transport currently at Carlsbad Station 1 would handle a significant number of calls in south Oceanside as it already does, but the relocation of Station 1 in Oceanside would eliminate some of them because it would be closer.

By relocating Fire Station 1 and sharing the cost for the operation at the Carlsbad Station, Oceanside could then work out the details of the agreement such that revenue from the medical calls in south Oceanside are somehow returned by to the City. Another option is for Carlsbad to reduce the City's share of operating the station by the amount of ambulance fees collected in south Oceanside. Either method can work.

If Oceanside were to eliminate Station 2 and share the cost of Carlsbad Station 1 to include medical transport and fire service, savings could be generated. The City would be taking less risk since this option does not rely entirely on the boundary-drop system because the contract agreement with Carlsbad does give some security, so long as the agreement can be maintained.

The anticipated savings for this option is approximately \$700,000.

APPENDIX A. LEAVE ANALYSIS

| FTE Positions | Rank | Type of Leave | 2008 | 2009 | 2010 | Total | Average Hours /Position/Year | Average No. Shifts/ Person/ Year | No. 24-hour Shifts Covered by OT/ Year | OT Shifts to Cover Sick Leave | OT Shifts to Cover Vacation |
|---------------------------------|-----------------|---------------------------------|--------------|--------------|--------------|--------------|------------------------------|----------------------------------|--|-------------------------------|-----------------------------|
| 3 | Battalion Chief | Administrative | 0 | 12 | 96 | 108 | 12.0 | 0.5 | 1.5 | 6 | 35 |
| | | Bereavement | 0 | 0 | 48 | 48 | 5.3 | 0.2 | 0.7 | | |
| | | Injured On-Duty | 0 | 219 | 240 | 459 | 51.0 | 2.1 | 6.4 | | |
| | | Sick | 110 | 60 | 237 | 407 | 45.2 | 1.9 | 5.7 | | |
| | | Vacation | 727 | 1033 | 772 | 2532 | 281.3 | 11.7 | 35.2 | | |
| | | Holiday | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| | | Modified Duty/ Jury Duty/ Other | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| | | Sub-Total | 837 | 1324 | 1393 | 3554 | 394.9 | 16.5 | 49.4 | | |
| 24 | Captain | Administrative | 75 | 36 | 57 | 168 | 2.3 | 0.1 | 2.3 | 133 | 230 |
| | | Bereavement | 144 | 48 | 216 | 408 | 5.7 | 0.2 | 5.7 | | |
| | | Injured On-Duty | 2598 | 589 | 888 | 4075 | 56.6 | 2.4 | 56.6 | | |
| | | Sick | 2776 | 3269 | 3529 | 9574 | 133.0 | 5.5 | 133.0 | | |
| | | Vacation | 5342 | 5599 | 5597 | 16538 | 229.7 | 9.6 | 229.7 | | |
| | | Injured Off-Duty | 0 | 96 | 480 | 576 | 8.0 | 0.3 | 8.0 | | |
| | | Holiday | 2750 | 2265 | 2349 | 7364 | 102.3 | 4.3 | 102.3 | | |
| Modified Duty/ Jury Duty/ Other | 146 | 823 | 628 | 1597 | 22.2 | 0.9 | 22.2 | | | | |
| | | Sub-Total | 13831 | 12725 | 13744 | 40300 | 559.7 | 23.3 | 559.7 | | |
| 24 | Engineer | Administrative | 120 | 518 | 264 | 902 | 12.5 | 0.5 | 12.5 | 106 | 177 |
| | | Bereavement | 0 | 192 | 48 | 240 | 3.3 | 0.1 | 3.3 | | |
| | | Injured On-Duty | 1147 | 516 | 1276 | 2939 | 40.8 | 1.7 | 40.8 | | |
| | | Sick | 3005 | 2058 | 2547 | 7610 | 105.7 | 4.4 | 105.7 | | |
| | | Vacation | 4189 | 4363 | 4198 | 12750 | 177.1 | 7.4 | 177.1 | | |
| | | Injured Off-Duty | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| | | Holiday | 3733 | 2619 | 1069 | 7421 | 103.1 | 4.3 | 103.1 | | |

| FTE Positions | Rank | Type of Leave | 2008 | 2009 | 2010 | Total | Average Hours /Position/Year | Average No. Shifts/ Person/ Year | No. 24-hour Shifts Covered by OT/ Year | OT Shifts to Cover Sick Leave | OT Shifts to Cover Vacation |
|---------------|------------------------|---------------------------------|--------------|--------------|--------------|--------------|------------------------------|----------------------------------|--|-------------------------------|-----------------------------|
| | | Modified Duty/ Jury Duty/ Other | 442 | 10 | 36 | 488 | 6.8 | 0.3 | 6.8 | | |
| | | Sub-Total | 12636 | 10276 | 9438 | 32350 | 449.3 | 18.7 | 449.3 | | |
| 48 | Firefighter/ Paramedic | Administrative | 26 | 58 | 1630 | 1714 | 11.9 | 0.5 | 23.8 | 185 | 217 |
| | | Bereavement | 120 | 144 | 336 | 600 | 4.2 | 0.2 | 8.3 | | |
| | | Injured On-Duty | 1651 | 844 | 454 | 2949 | 20.5 | 0.9 | 41.0 | | |
| | | Sick | 4070 | 4229 | 5028 | 13327 | 92.5 | 3.9 | 185.1 | | |
| | | Vacation | 5095 | 5289 | 5271 | 15655 | 108.7 | 4.5 | 217.4 | | |
| | | Injured Off-Duty | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | | |
| | | Holiday | 7690 | 7223 | 4095 | 19008 | 132.0 | 5.5 | 264.0 | | |
| | | Modified Duty/ Jury Duty/ Other | 209 | 713 | 108 | 1030 | 7.2 | 0.3 | 14.3 | | |
| | | Sub-Total | 18861 | 18500 | 16922 | 54283 | 377.0 | 15.7 | 753.9 | | |
| Totals | | | | | | | | | | 429 | 659 |

Notes: A captain required back surgery from an on duty injury was on IOD from May-January (2009) was the reason for 1900+ hours of IOD overtime.

2010 Holiday hours for Engineer (1069) are significantly less because of a change in the 2010 MOU.

2010 hours for Administrative Leave (1630) was prompted by an abnormally high number of disciplinary issues resulting in investigations and personnel being placed off on Administrative Leave.

That the city would be required to pay an individual their salary while on administrative leave because of a disciplinary issue, plus pay overtime at time plus one-half for another individual to cover the vacant position should be assessed.

APPENDIX B. PERFORMANCE MEASUREMENT

Many fire departments measure their deployment performance based entirely on the NFPA 1710 standard. The problem with using this standard “carte-blanche” is that it assumes all areas need equal fire protection. Even if it were possible to provide truly equal fire protection, the reality is that urban, downtown areas have different fire protection needs than a more rural area. A rural area, for instance, does not need three ladder trucks within an 8-minute reach; some urban, downtown areas do.

The 1710 standard is oriented towards achieving a 6-minute total response time, a time at which fires are likely to expand rapidly (flashover), and defibrillated cardiac arrest patients have a markedly lower chance of survival. NFPA 1710 does not actually specify a total response time standard. Instead, it provides time and reliability standards for each of the time segments that comprise total response time (call-processing, turnout, and travel). For example, the standard specifies that for fires and special operations incidents, the first-arriving unit will have a travel time (time from the unit leaving the station to arrival at the emergency incident) of four-minutes 90 percent of the time. In this case, 4-minutes is the time standard, and 90 percent is the reliability standard. Although the NFPA 1710 standard is an excellent goal to work towards, few fire departments are able to completely meet the standard.

The standard is based on what is ideal and not necessarily what is realistic. For instance, to achieve a six-minute total response time, the original version of the standard specified a call-processing time of one minute, a turnout time of one minute, and a travel time of four minutes. It was subsequently realized that one-minute was not enough time for firefighters to get to their unit, don full turnout gear and leave the station. As a result, the 2010 version of the NFPA 1710 standard was revised to allow 80 seconds of turnout time for fire and special operations incidents.

Just as the standard itself was revised to reflect reality, it makes sense to consider whether the standard makes sense for all parts of the jurisdiction in its current form. Take for instance a rural, sparsely populated area. It may not be reasonable to expect a 4-minute travel time for 90 percent of incidents. The jurisdiction might consider specifying a 5-minute travel time for 70 percent of incidents to account for the area’s rural character.

Appropriate performance levels are very much based on the characteristics of individual planning areas. Response time and reliability goals should match a particular area’s risk characteristics, not just conform to a one-size-fits-all standard. For this to occur, fire departments should depart from just using NFPA 1710 and ISO standards and instead move toward a data-driven process of analyzing risk and response.

Assessing Deployment Performance

Deployment decisions concerning fire station and apparatus locations should be an ongoing process largely based on continual or periodic performance measurement. Because jurisdictional needs do change, the deployment change recommendations made in this study should be considered as a step in a continuing process. Going forward, the fire department needs to be regularly conducting neighborhood-level performance measurement for the process to be effective.

Police departments are usually decades ahead of fire departments when it comes to using technology and data to drive operations. Most police departments have several technical crime analysts who specialize in data analysis and mapping. Many fire departments should consider hiring a dedicated data analyst and begin to incorporate performance measurement into a regular (perhaps quarterly) review of deployment. The fire department culture, which is based on meeting standards, should reconsider its emphasis on static deployment (where unit locations and first-due areas rarely change) to one of dynamic deployment based on data-driven performance goals.

An excellent resource on how to measure performance and adapt deployment is the Center for Public Safety Excellence's (CPSE) Developing Standards of Cover Manual. One of the advanced, but effective techniques used by the manual is to measure the trade-off between unit availability (percentage of incidents where the correct unit handled the call) and response time performance (percentage of incidents below the response time goal).

Generally speaking, as the first-in correct unit for a particular area becomes less available (due to other calls, training, etc.), performance for that area decreases because units from other stations have to handle the call. How much of an impact reliability has on performance is largely dependent on how far away the nearest fire stations are. This type of analysis can be used to determine if a station needs an additional unit or might benefit from a first-due area adjustment. All fire departments should familiarize themselves with this performance measurement methodology and use it to gauge station and unit location performance.

Reporting Deployment Performance

After taking the time to establish deployment goals for each neighborhood or planning district and learning some of the more advanced CPSE analysis methodologies, the last step is to establish regular reporting mechanisms. We recommend that fire departments consider producing the following types of reports:

- **Monthly Deployment Performance Report** – This report should be distributed department-wide each month. Such a report serves several very important functions. First, it provides information and data feedback to those entering in incident data; getting a detailed report that shows workload by units and response time performance can provide firefighters the ability to gauge and challenge themselves to better performance (e.g. one engine crew that has had the slowest turnout time in the past few months makes it their goal to be in the top three engine companies for turnout time in the next reporting period). Also, putting out a monthly report provides an excellent error checking mechanism, as firefighters will be the first to notice and announce any problematic performance statistics. Finally, having somebody try and pull together some statistics with Excel for an annual report is asking for problems because you cannot truly be familiar with data only looked at once a year. Putting together monthly reports helps to ensure that the fire department is on top of its data collection and performance measurement.
- **Quarterly Report** – While the monthly report can be fairly short and limited to some simple workload and response time results, we recommend a more in-depth quarterly report. The report should be set up so that department leaders can review deployment performance for the entire system and each individual planning district. The report should be set up to note performance changes/trends in specific planning areas so that fire department officials are in a good position to recommend near- and long-term deployment modifications. We strongly recommend that this annual performance measurement report reflect most of the analysis types found in the CPSE Standards of Cover Manual.

APPENDIX C. EVALUATING UNIT WORKLOADS

The location of fire stations is only one factor in determining whether response-time goals will be achieved. The ‘busyness’ factor or workload is also important since units that are extremely busy may not be available for the next call, thus necessitating the response from a station further away. EMS workload is typically described as Unit Hour Utilization (UHU), which is discussed later in this section.

Through CAD systems, fire departments are able to keep detailed records about service times; these data are useful in determining the availability of a specific unit or station. Again, the concept of workload is not merely a count of how many calls to which a unit was dispatched. One unit can have fewer responses than another but remains on the scene longer on average (e.g. more working incidents), and so has a greater workload. Evaluating workload is important when looking at the overlaps in coverage to an area that may be required to achieve the response time goals adopted by the city/department and is part of the CFAI self-assessment process. An analysis of workload also can indicate whether a new station should be built or new apparatus purchased—or if current stations should be closed or units moved.

A fire/EMS system must incorporate the necessary redundancies based on whether adjacent stations or units are likely to be available for emergency response. Below are general guidelines developed by TriData to show the level of redundancy (overlap) necessary to achieve response-time goals. These were developed predicated on our experience of fire and EMS organizations.

1. **Very Low Workload** (<500 responses/yr) – Simultaneous calls are infrequent and unit availability usually is assured. Stations/units can be spaced at the maximum distance possible to achieve stated travel time objectives established by the community.
2. **Low Workload** (500-999 responses/yr) – Few calls will overlap and unit availability usually is assured. Stations/units can be spaced at the maximum distance possible to achieve stated travel time objectives established by the community.
3. **Moderate Workload** (1,000-1,999 responses/yr) – Some overlap of calls will occur, usually at peak demand periods; however, stations/units are usually available. Stations/units must be located with marginal overlap to achieve stated travel time objectives established by the community.
4. **High Workload** (2,000-2,999 responses/yr) – Additional overlap of calls will likely occur; however, stations/units will probably be available for emergency response. Stations/units must be located with significant overlap to achieve stated travel time objectives established by the community. This footprint usually achieves the best

- results in terms of cost efficiency and effectiveness of service delivery. (Overlap can be achieved with additional stations or additional units in existing stations.)
5. **Very High Workload** (3,000-3,999 responses/yr) – Overlapping calls occur daily, usually during peak demand periods, and working incidents are frequent. The closest station/unit may not be available, thus requiring the response of adjacent stations/units. Stations/units must be located with the significant overlap to achieve stated travel time objectives established by the community. (Overlap can be achieved with additional stations or additional units in existing stations.)
 6. **Extremely High Workload** (>4,000 responses/yr) – Overlapping calls may occur hourly, regardless of the time of day. The closest station/unit is likely to be unavailable thus requiring the response of adjacent stations/units. Frequent transfers or move-ups are required for the delivery system to meet demand. Stations/units must be located with redundancy (back-up units) to achieve stated travel time objectives established by the community. This footprint is usually found in very densely populated urban areas and is especially evident in EMS services located in urban areas with very high demand. (Overlap can be achieved with additional stations or additional units in existing stations.)

The 3,000-3,900 response level (*very high workload* category above) is the point at which units are often considered “busy” and their availability should be evaluated. This is a rough rule of thumb, not a fixed standard. At this point, response times often begin getting longer because of simultaneous call occurring in the same area.¹¹ As units become busier, the chances for overlap or simultaneous alarms increase, and second-due units begin to answer more calls. This causes a domino effect where unit B is dispatched to a call in unit A’s area because unit A is already engaged, causing unit B to be unavailable for the next call in its own area. Unit C must then respond to unit B or unit A’s area, and so forth.

Again, the 3,000-response threshold is just a rule of thumb. How much time a unit is unavailable due to being involved with another incident is better assessment of the impact of workloads on availability and response times. This is the second factor in workload, known as unit hour utilization (UHU).

Unit Hour Utilization

UHU is a calculation that estimates the amount of time a unit is occupied on emergency calls as a percentage of the total amount of hours a unit is staffed and available for response (a unit staffed full-time is available 8,760 hours per year). In other words, UHU measures the

¹¹ A “first-due” area is a certain geographic area of the overall fire department response jurisdiction assigned to a particular fire station.

percentage of on-duty time consumed by emergency service field activities. A high UHU means lower availability for calls. Poor availability negatively impacts response times.

The specific formula used to calculate the UHU for each unit is:

$$\text{UHU} = \frac{(\text{number of calls}) \times (\text{average call duration in hours})}{8,760 \text{ hours per year}}$$

UHU measures the percent of a unit's time in service that is spent running calls. There is other time that is *not* accounted for, however, which includes time for training, maintenance, and other preparedness-related functions. Public education efforts also are not included in the UHU calculation. In other words, when units are not engaged in emergency response, it does not mean they are not working.

UHU is used more in relation to EMS units than fire suppression units; although, evaluation of UHUs is useful to different extents in both cases.

While there is consensus within the industry on the importance of utilization rates and how to measure them, the interpretation of how indicative utilization rates are of overall system efficiency is debatable. Most believe that a UHU between 35 and 45 percent for EMS is good for economic efficiency. (This is more common with private ambulance providers.) If a UHU is greater than 45 percent, units often are not available and response times suffer. If a UHU is below 35 percent, units may not be well utilized, but response times may be high too often. Many communities choose to aim for a UHU in the 15 to 25 percent range to improve or maintain good response times. If a unit has a UHU of 40 percent, it will not be available for the next call 40 percent of the time. This is, of course, an average over the course of the day.

In order to develop an effective resource deployment plan, units must be available to respond to incidents most of the time. No amount of resource placement planning will improve system-wide response times if the responding units are not available.

APPENDIX D. INNOVATIVE APPROACHES TO INCREASED DEMAND FOR EMERGENCY MEDICAL SERVICES

Oceanside has one thing in common with most urban communities: The significant increase in medical calls handled by its fire department. In a recent study for the City of Portland, OR, we gathered information on the cities that are implementing the concept of smaller response vehicles to handle the increase demand of non-emergency medical calls. Because Oceanside also deals with this problem, and it's likely to increase, the information is included here for the City to consider.

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The concept of deploying smaller vehicles to handle medical calls, though not new, is only being used by a few departments. The reasons vary, but one possibility is that the fire service remains very traditional and even though medical responses often account for 70 or even 80 percent of a department's responses, the emphasis of fire officials is primarily fire suppression. This is because fire departments are affected by insurance company (ISO) and national standards such as those adopted by the National Fire Protection Association, more so than medical response standards.

For this project we gathered information on other large department's that are using the concept of rapid response vehicles. The programs, though the same concept, are referred to by other names to include 'Fly Cars', 'Transitional Response Vehicles, among them. We also included a discussion of the program used in Tualatin Valley, OR.

Mesa Fire Department, AZ – The Mesa Fire Department has been operating with a TVR program (Transitional Response Vehicle) for the past two years. These units were added to their response fleet to augment what they currently have, not replace any 4-person units. These vehicles are staffed with one Paramedic and one EMT and respond to BLS calls. If the TVR is available it will be dispatched to structure fires in their area. However, the main purpose of these TVR's is to handle low level BLS calls in order to keep the 4-person units available for serious calls as much as possible. At this time there are four TVR's which are staffed during peak call load hours only.

This program was instituted with much discussion by Mayor and Council over ways to affectively and economically respond to a growing number of low level BLS calls and a reduced budget. Mesa had twelve 4-person units handling over 2500 calls per year with 5 of those handling over 3000 calls yearly. These units have drastically reduced the number of responses from the busiest units.

Tualatin Valley Fire Department, OR – The “Car”, with one paramedic, is a cost-effective option for responding to situations that don’t require a traditional fire engine and four-person crew. The Car is outfitted with basic equipment and supplies, and a data terminal with computerized response maps and instantaneous information on every 9-1-1 call. The Car will respond to non-life threatening medical and public service calls such as abdominal pain, ground level fall, headache, odor investigation, sick person, fire alarms, and smoke detector problems. Although the majority of situations responded to by the Car are non-emergency (Code1), the Car can be upgraded to respond more quickly or the paramedic can call for more units if a situation worsens. In addition, the Car can be added to a cardiac incident if closer than other units or a fire when more resources are needed. The CARs based at fire stations are also deployed Tuesday through Friday, between the hours of 7:00am-5:00pm. The stations and schedule were determined after analyzing incident data to pinpoint exactly where, when, and how often non-emergency medical and public service calls occur.

Seattle, WA Area – In Woodinville, WA (and much of King County and Seattle) they have fire department BLS or ALS units in most fire stations. If only one crew is at the station they will respond in the ambulance (AKA Aid Car). If there is only an engine in the closest station the engine would go in addition to the aid car, but if there is an aid car in the closest station they would just respond in it, rather than an engine. This hybrid system allows company officers the option of taking the appropriate unit for the reported incident.

Overland Park Fire Department, KS – Overland Park Fire Department will deploy a two-person squad resource to improve response time performance measures and resource efficiency during times of increased call demand. The squad will be staffed and equipped to provide a range of capabilities including advanced life support, and fire response. Due to increasing call volumes and the impact of training requirements, the squad unit will be deployed during peak hours Monday through Friday.

Tucson Fire Department, AZ – The Tucson Fire Department (TFD) instituted a 2-person BLS response unit, referred to as an “Alpha Truck”, several years ago to handle Alpha level BLS calls. The 911 dispatch center in Tucson uses the *Claussen* Emergency Medical Dispatch (EMD) System for categorizing EMS calls according to their severity. An Alpha call is the lowest ranked EMS call in the system. This call type is a low non-emergency BLS response that most often does not require transportation to a medical facility.

These Alpha Trucks are staffed 24/7 with trained departmental FF/EMT’s and handle an average of 3,000 Alpha calls per unit per year. These units are also dispatched to structure fires, when they are available, to assist with search and rescue.

The Alpha Program is also one that is designed from its inception to provide assistance to frequent callers who use the 911 system for “non-emergency” purposes. It has been found by studying statistics kept on all EMS calls that most of these Alpha type calls are from citizens

who have no health insurance and no one else to turn to for help. To address this growing problem in our society today TFD has partnered with the local Health Department and Social Services to gather information on the specific needs of these callers. After each Alpha response a report is forwarded to the Health Department and Social Services so that a social worker can visit the caller, if needed, and provide them the services they need. This program has been successful in reducing the frequency of responding to these types of callers by close to 50 percent since most of these callers are now part of the Health Department or Social Service patient care system, no longer needed to use the 911 system for their health needs. This success has greatly reduced the strain on the overall 911 system; hospitals, dispatchers and emergency responders alike.

Future staffing of the Alpha Trucks with fully trained Firefighter/EMT's is a topic that has been recently discussed in Tucson. Training a Firefighter/EMT is very costly to any fire department as personnel costs account for over 80 percent of most budgets. One idea that surfaced was to staff these units with only trained EMT's. A department can hire an already trained EMT for considerably less than it cost to put a recruit through an Academy class then pay their salary. This new entry level classification can then become a pool of applicants a department can draw from when there are vacancies in the Firefighter ranks. The EMT will already be trained and will have worked in a Fire Department setting for a determined period of time prior to being eligible to transfer over to a future Academy class. The department also has an opportunity to evaluate the EMT to see if they have what it takes to move to the FF/EMT rank. This process will reduce the number of hours in recruit training if you do not have to include EMT as part of the initial recruit curriculum. It will also help recruits see what life in the fire department is all about and possibly weed out applicants who later find that life in the fire service is not for them.

Statistically it does not make sense to staff Alpha Trucks 24/7 when most of their calls happen from early morning to mid evening hours. With union contracts in place it is sometimes difficult to change a workers hours without negotiating these changes. Creating a new classification and spelling out work hours for that position allows a department to be free to hire these new employees and assign them to this new schedule.

Once such a program is in place the fire department should analyze data on the use of this program and the affects it has on reducing call volumes within the jurisdiction. This data may help determine future placement of apparatus; either to reduce companies or the need to relocate existing ones.

Due to budget cuts TFD has had to mothball the Alpha Program as it stood last year. Now they are staffing Alpha Units when there is available staffing or when there is sufficient overtime to do so. However, it is their intention to bring this program back or even expand it when economic times improve.

Looking across the country several other department were found to have different EMS response plans in place that help reduce staffing for the BLS type EMS calls. Several are listed here with a brief description of their particular operational plans. There are many more fire departments looking at this new type of EMS response system for the future.

Shreveport Fire Department, LA – The Shreveport Fire Department uses single paramedic rapid-intervention non-transport (SPRINT) units instead of full-sized fire engines on medical calls. The concept was built around the idea of using a more rapidly responding, fuel-efficient vehicle for EMS calls instead of fire engines. In addition these smaller units are able to get out of the station and onto scenes quicker using the SPRINT vehicle. Drivers are able to maneuver more ably through inner-city service areas that often have narrow streets and cars parked on each side, he said. It has been proven that these SPRINT vehicles are more economical to maintain and service than full-sized engines and could respond to medical calls quicker.

APPENDIX E. ILLINOIS FIRE DEPARTMENT TO LIMIT EMS RUNS¹²

Linda N. Weller - The Telegraph, Alton, Ill.

Posted: Mon, 09/26/2011 - 02:29am

Updated: Mon, 09/26/2011 - 02:29am

Sept. 25--ALTON -- In three weeks, Alton firefighters plan to further reduce the types of emergency medical runs they will make, limiting responses to critical cases, as determined by police and telecommunicators. "We have to make cutbacks in non-essential runs," Mayor Tom Hoechst said. "We are making 2,600 to 2,800 calls per year, which is eight or nine a day. I don't think we should be going on all of these calls. There is wear and tear on the trucks, and fuel is at close to an all-time high. This will be a cost-reduction strategy. My goal is that this is a fire department, first and foremost. People have abused it (EMS)." The change in the level of emergencies to which firefighters will respond goes into effect Oct. 17.

City officials also said during an interview Thursday with The Telegraph that cutting back on truck runs on city streets will put civilian motorists and pedestrians at less risk. A result will be less liability for the city, Alton Personnel Director David Miles said. AFD will begin responding to the most minor of medical calls, at "D" and "E" levels of a national rating system that runs from "A" (most critical, life-threatening) to "E," the most minor medical issues. The department already cut back on runs in light of its lower staffing levels and Alton's budget problems, with the forthcoming change going a step further. "We have been trying for years to be more efficient because of circumstances beyond our control," Alton Fire Chief Greg Bock said. "We took a good look at our operations, and EMS is a big part of that," Bock said. "We looked at EMS calls a few months ago and saw we were running non-life-threatening calls. EMS calls increase yearly, and we have become inundated with non-essential medical requests. Although it is our privilege to assist the citizens of Alton any way we can, we have opted for a level of response that will keep units available for the true, life-threatening emergencies" and fires. According to statistics Bock released at the beginning of the year, in 2010 AFD went to 2,296 EMS calls; four other types of EMS rescues; and 24 EMS medical assists, none involving vehicle crashes. In 2009, AFD responded to 3,033 EMS calls.

City officials already have met with representatives from Alton Memorial Ambulance Service and LifeStar Ambulance Service. They have a meeting scheduled Thursday with personnel from senior citizen housing complexes to discuss the changes, so the administrators can plan how to deal with non-emergency situations such as "lift assist" calls. Among such calls

¹² <http://www.firehouse.com/topic/leadership-and-command/illinois-fire-department-limit-ems-runs>

are uninjured people needing help getting up from falls or from a chair or bathtub. "We want to make sure we are not leaving anybody out on a limb," Bock said.

Hoechst, Bock and Deputy Fire Chief Mark Harris all stressed that ambulances from the two private companies in Alton still will respond to all emergency medical calls. If the services or police request EMS, such as in traffic crashes, AFD paramedics will respond. Firefighters also will go to crashes where fluid is leaking or extrications. "It is up to the police or dispatcher to determine the level of injury; they will evaluate all of the calls," Harris said. Bock said he and Police Chief David Hayes have been working together, along with officers and telecommunicators, to work out the new protocol, and more adjustments may be necessary along the way.

The procedure will be for a police officer or dispatcher taking a 911 call to go through a protocol of questions to determine the type and severity of the medical complaint. The fire officials declined to specify what types of calls to which AFD would respond -- or not respond. As an example, a frequent "trouble breathing" call could be life-threatening and requiring AFD response, or it could be a simple allergy. "It is broken up into different levels of response," Harris said. "We will only take the most critical calls. We don't want to run out the door for non-emergencies. We want to be there for life-threatening calls and fires." "The dispatchers at the Police Department are very capable and well-trained at emergency medical dispatching," Bock said. "The transition should be a smooth one. We believe the new configuration provides the best use of our available resources. We expect a few glitches, bumps in the road, but nothing we can't get over. If it works the way we think it will, our volume of calls will go down. This frees us up to reconfigure the truck maneuvers."

The fire chiefs said the change should not greatly affect the ambulance services, as their paramedics already respond to all of the calls. Doug Pytlinski, vice president of administration at Alton Memorial Hospital, agreed, also saying the hospital will continue working with Bock and Hoechst to mutually serve the community and work out any needed adjustments. "We are already going to all of the call-outs," Pytlinski said about the ambulances.

Pytlinski said Alton Memorial has five ambulances on duty during the day and four at night for its service area, and does not plan on adding to the fleet. The service has made some changes to smooth changeover in shifts for efficiency. Bock said the new, daily apparatus (truck) configuration resulting from the Oct. 17 change will be: one five-function 2003 Sutphen "quint" with four firefighters; Smeal Fire Apparatus aerial engine (pumper) with three personnel; Rescue 1, for EMS calls, technical rescue and other equipment for search and rescue, with two firefighters; and the commander's vehicle. "There will be a minimum of 10 people, with usually 12.4 (average) people per shift," Bock said, not counting the chief and deputy chief. "If we get calls back-to-back, the engine company from the other side of town will pull up the slack."

Mutual aid, particularly from the Godfrey Fire Protection District, also may play a part, if needed. Part of the efficiency with the setup is that if there is an absent firefighter, it will be more consistent and not require moving equipment around among vehicles, Bock said. Alton's firetrucks are aging and require frequent repairs from so many daily runs. "The mayor has given me leeway to look at new trucks, to replace a 15- to 17-year-old pumper we are now using," Bock said.

APPENDIX F. COUNTY CONSIDERS CHEAPER WAYS TO BILL FOR EMS¹³

February 07, 2011 10:56 AM

GRAHAM — Greensboro-based EMS Source has increased Alamance County's medical services transportation billing collection rate by 35 percent since 2009.

To conduct these services, EMS Source charged the county a 10-percent collection fee. The agency was hired to collect medical transportation bills after the county's in-house collection efforts fell short of the Alamance County Board of Commissioners' expectations.

EMS Source's contract with the county is scheduled to end on April 1 and county leaders said they are evaluating whether to renew the contract, provide the service in-house using county employees or find another agency to collect the bills for a fee lower than 10 percent.

For fiscal 2010, EMS Source was paid \$445,250 by Alamance County for its medical services transportation billing collections based on the 10-percent collection fee.

Alamance County Assistant County Manager Tim Burgess said on Wednesday that the county Board of Commissioners is scheduled to review a report that highlights the costs of collecting the medical services transportation bills in-house.

The report showed that it would require at least four county employees to collect the bills in-house. The salaries for these employees would be about \$141,440 combined. Burgess' report also calculated the cost for benefits, professional development, supplies, capital, audit, software, banking, postal and phones.

According to Burgess, it would cost about \$291,063 annually for the county to move the medical services transportation billing back in-house. The county will also evaluate additional agencies besides EMS Source to possibly do the work.

Burgess will ask the county Board of Commissioners for direction during the next board meeting scheduled for Monday night. If the board approves, the county will issue requests for proposal for collection services while still taking into consideration the in-house collection option.

Burgess said that the county did not conduct a request for proposal bidding process in 2009 before it hired EMS Source. The county isn't required by law to bid contracts for services, but the county decided it would be more financially feasible to bid out the EMS billing collection services this time, Burgess said.

¹³ <http://www.thetimesnews.com/articles/ems-40875-graham-bill.html>

Burgess' report showed that EMS Source charges a higher collection fee than most agencies. The county examined Macon County's recent request for proposal for EMS billing services to get a better understanding of the current market.

The numbers showed that EMS Source continued to charge a 10 percent collection fee while eight other collection agencies charged 7 percent or less. According to Burgess, Macon County hired National Reimbursement Group to collect its medical services transportation bills for a 4.9 percent collection fee.

"We hope to get a lower rate than where we are at now," Burgess said.

If the county Board of Commissioners approves, the bidding process could be completed by March. Alamance County Commissioners Linda Massey and Eddie Boswell said they plan to evaluate the in-house collection option but favor the county using an outside agency to continue the collections work at a lower collection fee rate.

Boswell said he doesn't want the county to experience a repeat of what happened with the collection rate when the service was conducted in-house.

"If the numbers work out, we could do it in-house," Boswell said. "I don't want to see the county have a hard time with its collections."

During fiscal years 2006 and 2007, Alamance County's in-house collection rate for EMS transportation billing was 34 percent. During the period, \$4,418,456 was billed and \$1,507,855 was collected.

EMS Source's collection rate from 2009 through 2010 was 69 percent. During the period, \$6,367,487 was billed and \$4,452,504 was collected by EMS Source.

Commissioner Tim Sutton said on Tuesday that the county could likely perform the collection duties in-house with two county employees but said the county would likely instead use another outside agency other than EMS Source to provide the service. Sutton said the county would likely be able to conduct the collection services in-house for about \$200,000 per year, less than Burgess' proposal.

After all of the requests for proposals are received, Burgess said he will report back to the county commissioners on how they want him to proceed in the process.

"We will look at both sides," Massey said. "I am glad to give 10 percent but we will look at information on who to hire on Monday. I want to go with what is feasible."

Alamance County's EMS Department provides transportation and paramedic care for local residents when needed. Burgess said the county charges for these services through Medicaid, Medicare and personal billing. During fiscal 2010, the county's EMS Department provided 14,863 transports for the public.

APPENDIX G. DEPLOYMENT OPTION COST ANALYSES

EMS Scenario 1: Eliminate ALS Transports and Contract ALS/BLS Service; Eliminate Nurse Trainer, Increase Staffing on Two Quint Units from Three to Four; Contract EMS Billing

| Cost Reductions/ Additional Revenue | |
|---|--------------------|
| 24 FF/ PM Positions | \$2,929,752 |
| Overtime | \$601,056 |
| Eliminate EMS Billing | \$159,500 |
| Eliminate Nurse Trainer | \$138,997 |
| Fire Station Rental to Private Transport | \$80,000 |
| EMS Service Pass-Through Fee | \$120,000 |
| Medical Supply Inventory (4 Units) | \$86,000 |
| Reduced Training Cost (24 Paramedic Classif) | \$9,300 |
| Reduced Fleet Maintenance Costs (4 Units) | \$80,000 |
| Eliminate capital \$\$ for medic replacements | \$124,000 |
| Sale of 4 Medic Transports | \$320,000 |
| Sub-Total | \$4,648,605 |
| Additional Costs | |
| 6 FF/EMT Positions | \$714,282 |
| Loss of EMS Revenue | \$2,123,118 |
| FF/EMT Overtime for 6 FF/EMT | \$138,264 |
| Contract ALS Training for Engine Companies | \$80,000 |
| Sub-Total | \$3,055,664 |
| Total Savings | \$1,592,941 |

EMS Scenario 2: Eliminate ALS Transport Units and Contract ALS/BLS Service; Add Two Quick Response Squads; Add 1 FF/PM/EMT to Quint

| Cost Reductions/ Additional Revenue | |
|---|--------------------|
| 24 FF/ PM Positions | \$2,929,752 |
| Overtime | \$601,056 |
| Eliminate EMS Billing | \$159,500 |
| Sale of 4 Medic Units | \$320,000 |
| Fire Station Rental to Private Transport | \$40,000 |
| EMS Service Pass-Through Fee | \$160,000 |
| Medical Supply Inventory (2 Units) | \$43,000 |
| Reduced Training Cost 6 Paramedics | \$2,325 |
| Eliminate capital \$\$ for medic replacements | \$124,000 |
| Reduced Fleet Maintenance Costs | \$40,000 |
| Sub-Total | \$4,419,633 |

| Additional Costs | |
|----------------------------------|--------------------|
| 6 FF/PM Positions for Squads | \$732,438 |
| 6 FF/EMT Positions for Squads | \$714,444 |
| Overtime for additional 6 FF/P | \$150,264 |
| Overtime for additional 6 FF/EMT | \$138,264 |
| 3 FF/EMT Positions for Quint | \$357,222 |
| Overtime for 3 FF/EMT on Quint | \$69,132 |
| Loss EMS Revenue | \$2,123,118 |
| Purchase two Squads | \$240,000 |
| Increased Fleet Maintenance Cost | \$64,000 |
| Sub-Total | \$4,588,882 |
| Total Loss | \$(169,249) |

EMS Scenario 2 Hybrid: Eliminate ALS Transport Units and Contract Service; Add Two Quick Response Squads; Maintain Current Quint Staffing

| Cost Reductions/ Additional Revenue | |
|---|--------------------|
| 24 FF/ PM Positions | \$2,929,752 |
| Overtime 24 FF/P | \$601,056 |
| Eliminate EMS Billing | \$159,500 |
| Sale of Medics | \$150,000 |
| Fire Station Rental to Private Transport | \$40,000 |
| ALS Service Pass-Through Fee | \$160,000 |
| Medical Supply Inventory (2 Units) | \$43,000 |
| Reduced Training Cost 18 Paramedic | \$7,000 |
| Eliminate capital \$\$ for medic replacements | \$124,000 |
| Reduced Fleet Maintenance Costs | \$333,000 |
| Sub-Total | \$4,547,308 |
| Additional Costs | |
| 6 FF/P Positions for 2 Squads | \$732,438 |
| 6 FF/EMT Positions for 2 Squads | \$714,444 |
| Overtime for additional 6 FF/P | \$150,264 |
| Overtime for additional 6 FF/EMT | \$138,264 |
| Loss EMS Revenue | \$2,123,118 |
| Purchase two Squads | \$240,000 |
| Increased Fleet Maintenance | \$64,000 |
| Sub-Total | \$4,162,528 |
| Total Savings | \$384,780 |

**EMS Scenario 3: Eliminate Two ALS Transports and Contract for BLS Transport Service;
 Add 1 FF/EMT to Each Quint**

| Cost Reductions/ Additional Revenue | |
|---|--------------------|
| 12 FF/ PM Positions (2 Transport Units) | \$1,464,876 |
| Overtime 12 FF/P | \$300,528 |
| Eliminate EMS Billing | \$159,500 |
| Sale of 2 Medic Transport Units | \$150,000 |
| Fire Station Rental to Private Transport | \$40,000 |
| EMS Service Pass-Through Fee | \$120,000 |
| Medical Supply Inventory | \$21,500 |
| Reduced Training Cost | \$4,300 |
| Eliminate capital \$\$ for two medic replacements | \$62,000 |
| Reduced Fleet Maintenance Costs (2 Units) | \$20,000 |
| Sub-Total | \$2,342,704 |
| Additional Costs | |
| Add 6 FF/EMT to one Quint Truck | \$714,282 |
| Overtime for 6 FF/EMT | \$138,264 |
| Lost 1/2 Revenue used 2010/11 Revenue | \$1,061,559 |
| Sub-Total | \$1,914,105 |
| Total Savings | \$428,599 |

EMS Scenario 3 Hybrid: Eliminate Two ALS Transports and Contract for BLS Transport Service; Contract EMS Billing

| Cost Reductions/ Additional Revenue | |
|---|--------------------|
| 12 FF/ PM Positions (2 Transport Units) | \$1,464,876 |
| Overtime 12 FF/P | \$300,528 |
| Eliminate EMS Billing | \$159,500 |
| Sale of 2 Medic Transport Units | \$150,000 |
| Fire Station Rental to Private Transport | \$40,000 |
| EMS Service Pass-Through Fee | \$120,000 |
| Medical Supply Inventory | \$21,500 |
| Reduced Training Cost | \$4,300 |
| Eliminate capital \$\$ for two medic replacements | \$62,000 |
| Reduced Fleet Maintenance Costs (2 Transport Units) | \$20,000 |
| Sub-Total | \$2,342,704 |
| Additional Costs | |
| Loss EMS Revenue (1/2) | \$1,061,559 |
| Sub-Total | \$1,061,559 |
| Total Savings | \$1,281,145 |

EMS Scenario 4: Eliminate Two ALS Transports and Add 1.5 City Operated Non-Safety ALS/BLS Transport Units Staffed by Non-Safety Personnel; Contract EMS Billing; Add fourth person to one quint

| Cost Reductions/ Additional Revenue | |
|--|--------------------|
| 12 FF/ PM Positions | \$1,464,876 |
| Overtime | \$300,528 |
| Eliminate EMS Billing | \$159,500 |
| Revenue from Engine Co. Paramedics | \$120,000 |
| Sale of Medics | \$150,000 |
| Medical Supply Inventory | \$21,500 |
| Reduced Training Cost | \$4,300 |
| Reduced Fleet Maintenance Costs (2 Units) | \$166,000 |
| Sub-Total | \$2,386,704 |
| Additional Costs | |
| 3 FF/EMT to One Quint Truck | \$357,141 |
| Overtime for 3 FF/EMT on Quint | \$69,132 |
| 6 non-safety Paramedics | \$366,000 |
| 6 non-safety EMT | \$439,200 |
| Cover Non-safety leaves | \$28,080 |
| Contract Funds Training Specialist | \$50,000 |
| Sub-Total | \$1,309,553 |
| Total Savings | \$1,077,151 |

EMS Scenario 5: Maintain Four ALS Transports Weekdays (0700-1900) and Two ALS Transports at Other Times

| Cost Reductions/ Additional Revenue | |
|---|------------------|
| *Theoretical overtime savings by only staffing 4 vacancies for 12 Hrs. | |
| \$45hr X 12hr. x 365days x 4 FF/P | \$788,400 |
| Sub-Total | \$788,400 |
| Additional Costs | |
| Vacancies by Captains or Engineers equal 1009 work shifts, which averages to 2 per shift but is not evenly distributed. Therefore savings may be at least 30% less. | |
| Sub-Total | \$236,520 |
| Total Savings | \$551,880 |

*Assumes the Department will experience at least 4 vacancies each day. Two medic units require 4 FF/P as currently configured. Therefore overtime would only hire back 4 positions from 7am to 7pm each day. Actual savings may be less because some of the assumed 4 vacancies may not occur as vacancies may be Fire Engineer or Fire Captain positions.