

■ ■

**FIRE DEPARTMENT  
EVALUATION  
FOR THE  
GROVELAND  
COMMUNITY  
SERVICES DISTRICT**

**Final Report**

*February 2, 2007*



# TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>Executive Summary .....</b>	<b>1</b>
Fire Deployment Recommendations in Brief .....	3
Desired Outcome B.....	4
Achieving the Desired Outcome.....	4
Deployment Strategy One: Increased Staffing .....	4
Deployment Strategy Two: Increased Staffing and Winter Fire Support.....	5
Deployment Strategy Three: Operate Two Stations .....	5
Suggested Phasing of Deployment Strategies.....	5
Part-Time Firefighter Program .....	6
Fiscal Summary .....	6
Policy Choices Discussion.....	8
California Department of Forestry (CDF) and the Tuolumne County Fire Department.....	9
<b>Section 1—Introduction and Background.....</b>	<b>11</b>
1.1 Report Organization.....	11
1.2 Background.....	12
1.3 Groveland Project Approach and Research Methods .....	12
1.4 Groveland Fire Department Background Information.....	13
1.5 Newer Legal Changes and Challenges to the Provision of Fire Services.....	15
1.6 Other Negative Pressures on Volunteer-based Fire Services .....	16
<b>Section 2—Standards of Response Cover (Deployment) Analysis.....</b>	<b>19</b>
2.1 General Fire Deployment Background Information .....	19
2.2 Groveland Fire Department Community Risk.....	21
2.3 Current Workload Statistics.....	22
2.3.1 General Fire Service Response Time Discussion .....	22
2.3.2 Groveland Response Statistics.....	24
2.3.3 Response Time Statistics Discussion.....	29
2.4 Staffing.....	30
2.4.1 What Must Be Done Over What Timeframe to Achieve the Stated Outcome Expectation? .....	30

2.4.2 Offensive vs. Defensive Strategies in Structure Fires Based on Risk Presented .....	31
2.4.3 Staffing in the Groveland Fire Department .....	32
2.4.4 Staffing Discussion .....	34
2.4.5 Station Location Configurations .....	37
2.4.6 Equipment Configurations and ISO Grading Issues .....	41
2.4.7 Regional EMS Issues .....	42
<b>Section 3—Groveland Department Review: Non-Deployment Functions .....</b>	<b>45</b>
3.1 General Administrative Review Information.....	45
3.2 Operations Systems.....	46
3.2.1 Daily Reports .....	46
3.2.2 Apparatus and Equipment Readiness.....	47
3.2.3 National Fire Apparatus Recommendations .....	48
3.2.4 Dispatch .....	53
3.2.5 Mutual Aid/Automatic Aid.....	54
3.2.6 Radio Communications.....	55
3.2.7 Pre-Incident Plans .....	56
3.2.8 Hydrant Maintenance.....	57
3.2.9 Training and Education.....	57
3.2.10 Fire Reports.....	59
3.2.11 Volunteer Firefighter Program.....	59
3.2.12 Fire Prevention Systems .....	61
3.2.13 Public Information .....	62
3.2.14 Public Education .....	63
3.2.15 Fire Investigation .....	63
3.2.16 Risk Management and Safety .....	64
3.2.17 Personnel Administration.....	67
3.2.18 Facility Maintenance.....	67
3.2.19 Overall Management Team and Headquarters Functions Observations....	68
3.2.20 Other Management Team and Headquarters Functions Recommendations.....	69

<b>Section 4—Fiscal Analysis.....</b>	<b>71</b>
4.1 Source of Fire Services Funding.....	71
4.2 Fire Service Revenue Projections .....	72
4.3 Fire Service Cost Projections Compared to Revenue .....	74
<b>Section 5—Recommended Solutions, Phasing Plan and Estimated Costs.....</b>	<b>79</b>
5.1 Deployment Plan Findings.....	79
5.2 Desired Outcomes.....	81
5.2.1 Desired Outcome A.....	82
5.2.2 Desired Outcome B.....	82
5.2.3 Desired Outcome C.....	82
5.3 Achieving the Desired Outcome.....	83
5.3.1 Deployment Strategy One: Increased Staffing .....	83
5.3.2 Deployment Strategy Two: Increased Staffing and Winter Fire Support....	84
5.3.3 Deployment Strategy Three: Operate Two Stations .....	85
5.3.4 Suggested Phasing of Deployment Strategies.....	86
5.3.5 Part-Time Firefighter Program .....	86
5.4 Deployment Strategies Discussion .....	87
5.5 Administrative Findings.....	88
5.6 Administrative Recommendations.....	88
5.6.1 Administrative Recommendations Costing Perspective.....	91
5.7 Fiscal Implications of Recommendations.....	91
5.7.1 Fiscal Findings .....	91
5.7.2 Fiscal Projections for Recommended Service Level Improvements .....	91
5.7.3 Fiscal Analysis for Deployment Strategy One.....	92
5.7.4 Fiscal Analysis for Deployment Strategy Two.....	92
5.7.5 Fiscal Analysis for Deployment Strategy Three.....	93
5.7.6 CDF as an Alternative.....	94
 <b>Appendix 1—Groveland Fire Station Photos</b>	
 <b>Appendix 2—Groveland Apparatus Photos</b>	
 <b>Appendix 3—Groveland Fire Department Statistics</b>	



## EXECUTIVE SUMMARY

Citygate Associates, LLC finds that the challenge in the community of Groveland is similar to that found in all small and emerging California communities: providing an adequate level of fire services. This community has not been immune from the “perfect storm” of consequences of over ten years of the State’s taking of local revenues, just as federal and state safety regulations increased the individual time commitment and employer cost burdens on volunteer fire departments. These pressures on volunteer fire departments, when combined with an increasingly two-income-based commuter society, have all but dried up the pool of available volunteer firefighters. Moreover, the demographics of the Groveland community, with its second homeowners and retirees, make the pool of potential volunteers smaller still. Fire department mutual aid is not the answer either, as Groveland’s geographic isolation makes fast response mutual aid to Groveland all but impossible.

The Groveland Community also needs to understand that positive changes in the provision of Groveland Fire Services have been under way for several years due the leadership of the current District General Manager and Fire Chief. They have acknowledged issues with the declining number of volunteers and have already taken positive steps to keep the Department’s services in alignment with community needs and fiscal realities. This Fire Master Plan is the next logical and necessary step, and it is in addition to the following understandings and improvements already made:

- ◆ The addition of a small number of career staff;
- ◆ The attempt to develop other types of volunteer recruitment programs;
- ◆ The strengthening of regional partnerships and mutual aid agreements;
- ◆ A focus on training and safety;
- ◆ Performing services the small staff can provide, such as fire inspections, public education and outdoor vegetation abatement, well and to industry standards;
- ◆ The maintenance of the fire apparatus has improved;
- ◆ An overall acknowledgement that changes in Groveland and the legalities in providing fire services means that the Groveland Fire Department needs to adapt as well.

Groveland is a slowly growing community. Because of the mountainous terrain, the only reliable nearby mutual aid comes from the California Department of Forestry and Fire Protection Groveland Station in the wildland fire season. Consequently, Groveland developed a locally operated fire department focused on structural fires and medical rescues. The Groveland Fire Department has an internal culture characterized by a sense of values and principles best described as transitional. In other words, the firefighters know they are in for a challenging time as they go from an all-volunteer culture to a combination department of volunteers and career members. The positive Groveland Fire Department culture is characterized by:

- ◆ A strong work ethic; the members take on new tasks and develop the necessary skills to do them.

- ◆ Commitment to the community they serve; they participate in community activities and focus on customer service to develop relationships within the community.
- ◆ Support for the Chief and respect by the Chief; they know that there are a number of things within the Department that need fixing, and they support the Chief's efforts to fix them.

The community can take pride in its fire department. Nevertheless, the community must realize that through no lack of effort or fault of the firefighters, they have, at best, a first aid or “small fire” fire department. This department can handle a fire at its incipient stage, a single patient in a medical emergency, and it can perform routine straightforward vehicle crash extrications. Without prompt mutual aid, the community should not expect successful outcomes to anything as complex as serious room and contents fires, multi-casualty medical emergencies, or complex multi-vehicle crash extrications.

Citygate evaluated all aspects of the Department during the “listening sessions” with citizens, employees and volunteers, as well as the thorough fire department review. A number of main themes emerged. Some of these deserve specific and particular consideration. Others require only the regular, ongoing attention they currently receive.

Citygate finds that the Groveland Community Services District Fire Department's fire, rescue, and emergency medical services (EMS) are currently *marginal* for the needs of a small, and possibly growing community. In addition, these services are under increasing pressure from area growth, declining volunteer availability, and the fiscal capacity of a small Community Services District to provide fire, rescue, and emergency medical services outcomes more typical of suburban areas that new residents might have come from, expecting comparable services to be provided.

With regard to their fire services, the Community Services District residents need to know that, at best, their Fire Department will be a modest event fire agency even with some additional fire department growth. It will be many decades, if ever, before this community will be economically large enough to have the weight and depth of fire services required to stop large, significant fires that may already be spiraling out of control when 911 is called. As will be discussed further, mutual aid from neighboring fire departments will not provide a full and adequate response force to “major” fires. This creates the need for good fire prevention and community-wide understanding that there is zero tolerance for unwanted fires. This is because a department with the capabilities of a mid-sized city such as the City of Manteca, for example, does not exist in Groveland to help control fires. What regional mutual aid may do is to arrive in time to prevent the spread of a fire beyond the building of origin or sufficiently slow a vegetation fire so that it will not grow to catastrophic proportions.

Due to its size, the Groveland Fire Department will always need to operate a “combination” fire department. This is an agency that relies on a volunteer or “reserve” firefighter force, including part-time paid “call” firefighters that supplement the small amount of full-time career firefighters. A fire department in Groveland relying only on the services of full-time career firefighters would require an extraordinarily high supplemental tax levy. This is substantially higher than what will be required to support a “combination” fire department to provide adequate fire, rescue, and emergency medical service to Groveland area residents.

Unfortunately, over the last decade, no one could foresee the forces that would decay volunteer fire services at the same time that the Groveland community is considering modest, planned growth. The result, due to inadequate District revenue sources and the decrease of volunteer firefighter resources, is a thin layer of fire protection for the community of Groveland.

The Community Services District has options to provide basic fire, rescue, and Mountain Community EMS services. While small, the Groveland area does need a year round fire department, but not at the size of a larger suburban area. The Department will always be made up of a combination of volunteers and career staff. What the Groveland area does need from its fire services is the following:

- ◆ An initial firefighting force that can keep small fires small;
- ◆ A total firefighting force (on-duty plus recalled volunteers) that can slow the escalation of the emergency, while more distant mutual aid resources can arrive;
- ◆ The ability to deliver basic emergency medical services;
- ◆ An organizational structure that provides command at incidents and training for the volunteer and career forces;
- ◆ A department that can provide ongoing fire inspections to commercial and industrial properties and public education programs to residents to be fire safe and thus also lowering the frequency and severity of fires;
- ◆ A fire department that can also help the District residents prepare and partially respond effectively during times of large disasters in the community or region.

There are options and resources available to the community and District to meet these needs, while still providing other necessary community services.

Meeting these needs may require phasing an improvement in fire service over several years. It will require creativity, such as fostering a different type of volunteer firefighter program and implementing a part-time firefighter program. While delivering adequate basic fire and medical services is not beyond the reach of the community and District residents, an improvement in fire service will require more revenue than is currently available to the District. Developing additional revenue may include the establishment by the District of revenue mechanisms that require new development to pay its fair share of extending fire service at an adequate level to developing property. It may also require that the District find additional general revenue sources in addition to the Department maintaining a viable volunteer force.

### ***FIRE DEPLOYMENT RECOMMENDATIONS IN BRIEF***

In the recommendations section of this document (Section 5), Citygate reviews the national guidelines on fire services deployment and compares those to the needs and findings for Groveland. In Section 5, Citygate also outlines three **different** potential desired outcomes: Desired Outcome A, B, and C. Each of the three different potential outcomes represents a different level of fire service provided by Groveland. Of the three different potential desired outcomes, Citygate recommends that **Desired Outcome B** be adopted. This is because Citygate believes that (as stated in Desired Outcome B) an **emerging** suburban level of outcome that

confines building fires to the **building** of origin is the best-fit choice for Groveland. Desired Outcome B is as follows:

## Desired Outcome B

**Emerging** suburban areas outcome:

- ◆ Building fires are confined to the **building** of origin;
- ◆ EMS patients are given paramedic care, but some critical patients (stopped hearts) will likely not survive due to longer initial response times and the fact that hospitals are not close-by;
- ◆ Wildland fires are stopped at less than 8-acres, with modest building damage.

This is accomplished via a 10-12 minute, 90 percent Response Time for the first-due unit (2-3 firefighter crew) and all units (9-10 firefighters) on-scene within 15-20 minutes.

## Achieving the Desired Outcome

To meet this **Desired Outcome B** Citygate has designed the following deployment phasing strategies to meet Groveland's needs. Each strategy represents a gradual increase in service and each strategy requires an increased level of fiscal support and planning lead time to accomplish. (These strategies are each reviewed in greater detail in Section 5.) These strategies are outlined in the text below and in the corresponding table presented on the page 6:

### Deployment Strategy One: Increased Staffing

#### *Increase the Career Staffing Daily from 2 to 3 Firefighters*

Citygate recommends that at a minimum, the Groveland Community Services District needs to increase the career staffing at the present fire station from the current 2 line personnel per shift up to 3 per shift. This increase will reduce the amount of overtime required of staff by ensuring that a *minimum* of 2 are on duty each day with appropriate overtime usage required when one of the three personnel is off on sick leave, vacation, injury or due to a position vacancy. With 3 personnel assigned to each duty shift, there will be days when there is no vacation or sick leave and all 3 personnel are on-duty. Additionally, volunteers can still supplement this staffing when available.

In addition, Citygate recommends hiring an Administrative Captain II as part of this and all succeeding recommended improvement levels. This position will assist the Fire Chief with administrative workload, the training program, the volunteer program, and most importantly, provide a trained Incident Commander when the Fire Chief is unavailable.

Citygate's fiscal analysis of the current District revenues clearly reflects that there is insufficient revenue to support this minimal service level increase. Even if the District were to allocate all of its annual property tax that will need to be used in future years to maintain the current level of parks services, this would still not be sufficient to close the projected deficit.

## Deployment Strategy Two: Increased Staffing and Winter Fire Support

*Increase the Career Staffing Daily from 2 to 3 Firefighters AND Contract with CDF for an “Amador” Plan Engine Crew Over the Winter Months*

A fire fighting force of only 2 or 3 people is unable to adequately control a fire that has gone beyond the stage of a small kitchen stove problem. Nor can firefighters enter a burning building to fight a fire effectively without four firefighters on the scene. A major medical emergency or large vehicle accident also requires more than 2 to 3 firefighters to handle it effectively. Presently, the District relies upon CDF and Forest Service resources to back them up. However, in the non-peak fire season, CDF downsizes its force in the area. Under an Amador Plan, CDF would continue to staff the nearby station at a nominal cost to the local agency. CDF has provided some preliminary costs of approximately \$54,000 to \$129,000 per year to fund this Amador Plan. As with the prior strategy, current and projected revenue is inadequate to support this fire service level improvement.

## Deployment Strategy Three: Operate Two Stations

*Operate Two Stations: One Staffed Daily with 3 Career Firefighters and the Second Staffed Daily with 2 Career Firefighters*

The firefighters in the current District station take more than 8 minutes to respond to an emergency in the northeastern areas of the District such as Pine Mountain Lake and the airport. This shortcoming certainly applies to the proposed Long Gulch Ranch area as well. This was recognized in the development analysis for Long Gulch Ranch. This two-station configuration would provide quicker response to the more distant areas of the District and provide four line personnel at the scene of an emergency within a reasonable amount of time. This level of service is really the minimum needed by the Groveland community to have a reasonable expectation of positive outcomes from modest fire and emergency medical responses. Again, current and projected property tax and special fire assessment revenue are not adequate to support this level of service.

## Suggested Phasing of Deployment Strategies

These deployment strategies are now presented in the following table based on the amount of planning lead time and the amount of fiscal increase required. Citygate has also outlined a possible timeframe for each of these strategies to occur should additional revenues be made available:

<b>Deployment Strategy</b>	<b>When</b>	<b>Career F/Fs Per Day</b>	<b>Career F/Fs Total</b>
Strategy One	2008	3 in One Station*	9
Strategy Two	2009	3 in One Station w/2-CDF in Winter	9 plus CDF staffing
Strategy Three	2010	5** in Two Stations	15

\*Station One – 1 Captain, 2 Engineers

\*\* Station One & Two – 1 Captain, 2 Engineers, 2 Firefighters

Note: In a one-station system, the Engineer needs to be replaced with a certified driver when that position is off due to vacation, sick leave etc. Its better to staff with two certified operators instead of have firefighters act out of class.

### Part-Time Firefighter Program

If a significant number of volunteers cannot be recruited, trained and maintained from the Groveland population to supplement the career firefighters, then the District should consider a Part-Time Firefighter program. Such a program employs young men and women who are studying in the Community College system to become firefighters. Once they obtain their basic Firefighter One Certification, they can be employed as part-time, limited duration employees as they complete their studies. They can be paid hourly, non-benefited wages comparable to those found in the local service industry. Thus, instead of a generic job during college, they gain firefighting work experience, and the fire department can gain additional staffing that can be scheduled and depended upon to supplement the small career staff and regular volunteer force.

On days when there is no vacation or sick leave and there are 3-career personnel on duty, the part-time position (if used) raises the staffing to four. On days when there are only 2-career members on-duty, the part-time position becomes the third crew member, and IF there also is a volunteer available for evening or weekend duty, then four members are on the crew.

Providing a part-time firefighter to supplement the career firefighters could cost in the range of \$12 to \$20 per hour, depending upon the level of experience of the individual. In addition, initial equipment costs will average \$10,000 for each person, depending upon the amount of equipment the District may already have available.

With this cost range, the District might therefore expect to pay \$120,000 to \$200,000 per year to cover one shift assignment 24/7/365 from a part-time firefighter. If the District only used this type of position during times when there is an extraordinarily high injury vacancy rate or during the high fire season, the cost would be somewhat less. How much the District chooses to use part-time personnel depends not only on the availability of District funds, but also the availability of people to fill the part-time positions. These costs are half to two-thirds the cost of hiring another full-time position and represent a cost effective way of increasing staffing above the daily minimum recommended in all three deployment strategies.

### **FISCAL SUMMARY**

Citygate’s fiscal findings are summarized as follows:

The community’s current budget and audited financial statements were reviewed to obtain a picture of both the current capacity to fund improved fire and EMS services as well as the future

fiscal capacity to provide adequate service to areas expected to develop throughout the community planning area.

*Any further improvement in the fire service level and the ability to provide service to newly developing areas will be dependent upon establishing benefit assessment districts or some similar form of revenue program. Even with the expected addition of new homes in the Groveland community, both within the present developed area as well as potentially in the Long Gulch Ranch development, the current property tax and assessment rates will not return sufficient revenue to add to or improve the present level of fire and EMS service.*

Both the projected cost of current and recommended service levels and projected available revenue are reflected in tables in the Fiscal Analysis section of this report, Section 4. These tables clearly demonstrate that the District cannot continue to support the present low level of service with present property tax and assessment revenue. Reserves are now being used to make up the revenue shortfall. At the current level of service and rate of expenditure, the reserves will be exhausted in two years.

The deficit situation faced by the Fire Fund portion of the District budget is illustrated below, where projected expenses represent the current level of service.

**Projected Expenses at the Current Service Level and Current Salary and Benefit Levels**

Fiscal Year	Projected Revenue	Projected Expense	Surplus / Deficit
2007-08	\$ 994,517	\$ 1,147,713	\$ (153,196)
2008-09	\$ 1,055,461	\$ 1,216,576	\$ (161,115)
2009-10	\$ 1,170,448	\$ 1,289,571	\$ (119,123)
2010-11	\$ 1,292,943	\$ 1,366,945	\$ (74,002)
2011-12	\$ 1,423,229	\$ 1,448,962	\$ (25,733)
2012-13	\$ 1,561,802	\$ 1,535,900	\$ 25,902
2013-14	\$ 1,709,140	\$ 1,628,054	\$ 81,086
2014-15	\$ 1,865,745	\$ 1,725,737	\$ 140,008
2015-16	\$ 2,032,145	\$ 1,829,281	\$ 202,864

\*Revenue is only current year and excludes use of any prior year reserves

\*\* Expenses exclude major capital replacement such as fire engines

If the District chooses to implement one of the three deployment strategies (One, Two, or Three) described above, the comparative cost in the 2007-08 fiscal year is reflected in the table below:

Level of Service	2007-08 Estimated Cost	2007-08 Estimated Revenue	Annual Deficit
<b>Current:</b> 1 Station: 2 Daily Staff	\$1,147,713	\$994,517	\$ (153,196)
<b>Strategy One:</b> 1 Station: 3 Daily staff	\$1,764,926	\$994,517	\$ (770,409)
<b>Strategy Two:</b> 1 Station: 3 Daily Staff + CDF in Winter Season	\$1,911,609	\$994,517	\$ (917,092)
<b>Strategy Three:</b> 2 Stations: 5 Total Daily Staff	\$2,473,008	\$994,517	\$(1,478,491)

The more extensive tables in Section 5 of this report illustrate that even with the build-out of Long Gulch Ranch and Pine Mountain Lake, substantial deficits continue for all three optional improvements in fire services. The projected deficit ends only by continuing the current service level, and then not until 2013.

### Policy Choices Discussion

First, Groveland must understand there are no Federal or State regulations directing the level of fire service response times and outcomes. The body of regulations on the fire service provides that *if fire services are provided at all, they must be done so with the safety of the firefighters and citizens in mind*. Given this state of regulation, small agencies are challenged to properly staff, train and equip a safe and effective response force.

Citygate will point out that continuing to rely on volunteers is problematic for several reasons. Existing career staffing is very thin and subject to shortages caused by leave and injury. Thus, the first strategy, as in any policy choice, is to do nothing different. Citygate feels this will lead to burnout and excessive turnover in the small career staff. With the decline in volunteers, there is the very real possibility that at some times of the week, Groveland Fire may not be able to effectively respond to major fires or serious medical emergencies.

If these issues compel the CSD Board to provide a higher level of service than the existing system, then Citygate recommends a modest increase of career staffing along with a new part-time and renewed volunteer firefighter programs. Such a modest increase in staffing programs will be cost-effective and affordable, IF the community sees the value in having more than a token fire and emergency medical response force.

If the community desires improved outcomes on modestly sized emergencies and improved response times east and north of the Lake, with or without the Long Gulch Ranch plan, then a second *staffed* fire station is necessary. This will improve northern response times and cause four (4) career firefighters at a minimum to be on-duty in the community, double what occurs currently.

The CSD also can contract for some additional services from the California Department of Forestry and Fire Protection (CDF). It can also totally contract out all services. Citygate

recommends that Groveland CSD consider the modest cost increase for the CDF wintertime staffing plan (commonly known as an “Amador” Plan).

If the CSD feels that the challenges of providing fire services within the current regulatory framework, as described in this report, exceeds its capabilities, then the CSD could ask CDF for a full contract for service proposal to consider.

### California Department of Forestry (CDF) and the Tuolumne County Fire Department

Both agencies need each other’s help in the Groveland area. Groveland may not be able to keep wages and benefits competitive in order to retain qualified employees. Even if Groveland can, the employees will have less career exposure to emergencies and training than would a state employee. Many small fire departments are disappearing into larger agencies due to the regulations and costs of providing effective training, safety programs and leadership. This is why many local governments, large and small, choose to contract with CDF for all-risk, year-round fire and medical services.

Some fire agencies do not have their own resources, but instead contract with CDF to staff their stations. These contracts range from one-station departments in suburban and rural California to entire contract cities or counties. These contracts range in size from cities such as Pismo Beach and Temecula to the counties of Napa and Riverside plus many of the cities in Riverside County. This works well for many fire agencies because CDF guarantees full staffing of the stations at all times, with fully trained and equipped firefighters. The headquarters staff supports the station and provides on-scene incident command whenever needed, regardless of vacation schedules and sick leave, etc.

A typical contract with CDF is known as a Schedule A. Based on CDF costing approaches throughout the state, Citygate estimates the cost of providing fire service to the Groveland area, with constant full-time staffing of the fire station with 3 CDF fire personnel, will cost approximately the same as the District is projected by Citygate to pay for fire service with its own department minimum staffing of 2 on duty daily and usually 3, depending upon the staff’s leave schedule, sick and worker injury time off and department vacancies. Thus the CDF option would represent a slightly higher level of service, since CDF would guarantee 3-person staffing at all times, whereas a Groveland 3-person staffed station would be reduced to 2 on occasion as a result of sick leave and vacation schedules.

This cost comparison includes Groveland CSD providing station and equipment maintenance and the District providing a dedicated Fire Marshal position to undertake local fire prevention activities such as inspections and public education programs (plan checking is now handled and could continue to be handled by the County Fire Marshal). The District would continue to be responsible for the replacement of equipment, although it has not currently included this cost in its annual budget as noted elsewhere in this report.

There are significant pros and cons to contracting all fire services to the State of California, listed in Section 5.7.6 of this report. Cost is not the only determining factor in this policy choice. Many communities want to employ their personnel directly and have very tight policy direction over programs and service levels. Other communities that view fire as a regional issue, typically have had trouble retaining and paying qualified firefighters or chief officers and see benefits for them to contract out services to either a county fire department such as Ventura County, or to CDF. There is no one right choice, it is only an option. Some of these fire service contracts have

very explicit performance terms for the local officials to hold the contractor to; others are very vague and only request a broad level of fire services for a given expense. Again, local needs dictate the outcome, there is not a one size fits all solution.

Citygate recommends that as Groveland considers the issues and service level recommendations in this Master Plan and Fire Services Study, it could ask CDF for a formal operational and cost proposal to provide both full Schedule A Fire and EMS response services and the more modest winter season Amador Plan. During the ensuing public policy debate, a final decision on how to operate and fund the Department can be made. If necessary, the appropriate fiscal measure can then be put before the residents knowing that both independent and State contract services have been thoroughly reviewed.

# SECTION 1—INTRODUCTION AND BACKGROUND

## 1.1 REPORT ORGANIZATION

This Master Plan report is structured into the following sections that group appropriate information together for the reader.

This Volume (Volume 1) includes:

- Section 1** Introduction and Background: Background facts about Groveland's current Fire Services.
- Section 2** Standards of Response Cover (Deployment) Analysis: An in-depth examination of the Fire Department's deployment ability to meet the community's risks, expectations and emergency needs.
- Section 3** Groveland Department Review: Non-Deployment Functions: A review of the fire department's non-emergency operations and headquarters functions.
- Section 4** Fiscal Analysis: A fiscal explanation of Master Plan costs.
- Section 5** Recommended Solutions, Phasing Plan and Estimated Costs: A recommendations and conclusions section.

Separately attached:

- Volume 2** In-depth Response Statistics Appendix

As information is presented in each of the above sections, this report will cite findings and make recommendations, if appropriate, that relate to each finding. All of the findings and recommendations will be sequentially numbered throughout the first four sections of this report. These same findings and recommendations will be completely listed, in order, in Section 5 of this report to provide a comprehensive summary.

This Master Plan report provides technical information about how fire services are provided, legally regulated, and how Groveland currently operates. This Master Plan then presents this information in the form of recommendations and policy choices for the Groveland leadership and community to discuss.

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

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

While this report and technical explanation can provide a framework for the discussion of fire services for Groveland, neither this report nor the Citygate consulting team can make the final

decisions or cost out in detail every possible alternative. Once final Master Plan choices are given policy approval, staff can conduct any final costing and fiscal analysis.

## **1.2 BACKGROUND**

This project involved the development of a Fire Services Master Plan. This Plan involved the study of the fire services risk within the area served by the Groveland Community Services District Fire Department, which serves the communities of Groveland and Big Oak Flat as a community-operated function. In this report, the term Department will be used when referring to the fire agency itself, and the term District will be used when referring to the Community Services District. Otherwise, the term community will be used if referring to the general geographic area.

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

The challenges facing the community and District are not unique. Since the Proposition 13 property tax limitation measures and subsequent further limitations on local government taxation authority, smaller jurisdictions such as the District, find the property tax rate and other sources of local government revenue will not support modern fire services at a level desired by many communities. This is not the District's fault. The Groveland Fire Department and the Community Services District both function within the highly restrictive fiscal rules that govern local government finance in California.

Just as the District cannot control State fiscal policy, it could not know that a two-income, commuter-based society, along with increased safety regulations, would all but end forever volunteer fire services in most of California. Thus, the plan of operating a less expensive, mostly all-volunteer fire department supported by a tiny tax rate has become broken. Small fire districts throughout California are now faced with the need for career firefighters to replace volunteers as well as to meet new state laws and OSHA safety and training regulations. These combine to make it necessary for departments that were once nearly all-volunteer to become "combination" departments more heavily reliant upon career firefighters. Additionally, geographic factors isolate this particular community from fire mutual aid partners. At the same time, the demographics of Groveland's mostly older, active adult or second-homeowner population work against having a large recruiting pool. Finally, the few available volunteers face an ever-increasing training commitment.

## **1.3 GROVELAND PROJECT APPROACH AND RESEARCH METHODS**

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

In a subsequent site visit, Citygate team members followed up on this information by conducting focused interviews of key community leaders and District Board members. In addition, we interviewed the District General Manager, the Fire Chief, and line personnel. We reviewed demographic information about the community, proposed developments, and managed growth projections. As we collected and understood information about the District and Department, Citygate obtained electronic map and response data from which to model current and projected fire services deployment. The goal was to identify the location(s) of stations and crew quantities required to serve the District and greater community at build-out.

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

Once Citygate understood the needs of the community and what the current fire department could and could not do, we requested the District obtain a cost estimate of various service options from the California Department of Forestry and Fire Protection (CDF), which also provides contract fire services in some areas of Tuolumne County. The CDF services and costs were compared to the District's operations so the District and its Directors can make the most informed, long-term decision on how to provide fire services.

#### **1.4 GROVELAND FIRE DEPARTMENT BACKGROUND INFORMATION**

The Groveland Community Services District has an area of 14.7 square miles. The 2005 population within the District was approximately 5,000 residents. During summer, the population swells up to over 8,000 on weekends. There is, of course, an out-migration of residents during the workweek and some in-migration of employees to Groveland area businesses. Population growth rate is currently low at 1.4 percent yearly<sup>1</sup>.

The Community Services District has no direct control over the County General Plan, which was last updated in 1996. Land Use control is a responsibility of Tuolumne County. Consistent with the County General Plan, the District could grow if the Long Gulch Ranch proposal receives approval. This would add 372 new homes. If the current population rate remains consistent, this would add 600-900 full- or part-time residents to the District's population.

Thus, a likely build-out *residential* population of the District is in the range of 6,000. People having medical problems or causing fires primarily drive calls for service. The Department also serves a "mobile" population in the business district and on the highway. Any significant new commercial or industrial development added to this "mobile" population could generate more calls for service during the developments' operating hours. At approximately one call for service for every ten persons in population, the Long Gulch Ranch development would increase call volume by approximately 60-90 annual calls for service.

As the mapping portion of the fire services assessment shows, the Department is geographically isolated in terms of close-by mutual aid. The available mutual aid response from other agencies,

---

<sup>1</sup> Data from Population, Employment, Poverty and Demographics from the U.S. Census, Groveland-Big Oak Flat CDP, California. Sonoran Institute, Tucson AZ. October 18, 2004 and interviews of Groveland CSD staff.

other than the two engines staffed by CDF during the fire season, is too far away to be of primary response use. The Priest Grade on Highway 120 leading into Groveland adds significantly to the isolation of this community. Groveland will call upon neighboring departments through the Tuolumne County mutual aid system for catastrophic, greater alarm fires or multiple-unit highway responses. This means that for fire defense, the District residents are dependent on the Groveland Fire Department deployment system to keep fires small until mutual aid can arrive.

Groveland is in an area that is subject to vegetation fires. The hilly terrain, incursion of flammable vegetation and the generally difficult road system make wildland fires the most serious threat for conflagration should a fire escape the building of origin or the ignition occurs outside. During the winter months, a catastrophic fire escaping the building of origin is unlikely except for closely spaced buildings; but due to the size of the Groveland Fire Department and the lack of staffing, most deep seated fires will destroy the building of origin unless stopped at the incipient (small) stage.

The Groveland Fire Department started as an all-volunteer operation in the early nineteen hundreds. The citizens of Groveland formed the Groveland Community Services District in 1953. The District was successor to the Groveland Sewerage and Water District. In addition to its water and sewerage tasks, the District also added garbage collection, parks, and street lighting, as well as providing “Protection against fire.”<sup>2</sup> Given the strong volunteer force at that time and the small size and growth expectations of what is now the District, the leadership over the decades never anticipated the need for a tax structure to pay for many, if any, full-time, career firefighters. Long-time residents may remember this as “yesterday;” but growth occurred and Proposition 13 left special districts that relied on property taxes especially vulnerable, and the pressures on the volunteers decimated their ranks. This left the District with no choice but to start a career-staffed fire department and to ask the property owners to assess themselves to pay for it.

In 1986, the District hired its first full-time fire chief and assessed its first parcel assessment. In 1988, the District hired its first full-time firefighter and constructed Fire Station #1 on State Route 120 in the center of Groveland. In 1990, the District went back to the voters and requested a second parcel assessment. This, too, passed with a two-thirds majority and generated about \$80,000 per year from 1990-1994. The District hired its second firefighter in 1990. The District hired its first full-time engineer in 1995. By 1999, the staff was 1 fire chief, 3 engineers, and 11 volunteers. In 2000, the District increased the staffing by hiring three full-time firefighters. Using reserve funds earmarked for an engine purchase, the District purchased its first new fire engine. In 2001, the property owners approved another assessment. The assessment now brings in approximately \$250,000 annually to the District.

The Department operates today from one 18-year-old station near the geographic center of the District. This facility is adequate for the needs of the Department, but will need to be expanded in the future with quarters for additional shift personnel and office space for the Chief and Citygate-recommended Assistant Chief. The Department also has two satellite stations, one at the western boundary of the District at Big Oak Flat and one in the northeastern portion of the District at the airport. Neither of these facilities is anything more than a small garage for single apparatus storage.

---

<sup>2</sup> Interviews of CSD Staff and provided background documents

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

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

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

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

2. May 2001 National Staffing Guidelines – The National Fire Protection Association (NFPA) Standard on Career Fire Service Deployment was issued five years ago. While advisory to local governments, as it starts to become locally adopted and used, it develops momentum, forcing adoption by neighboring communities. NFPA #1710 calls for four-person fire crew staffing, arriving on one or two apparatus as a “company.” The initial attack crew should arrive at the emergency within four minutes travel time, 90 percent of the time, and the total effective response force (first alarm assignment) shall arrive within eight minutes travel time, 90 percent of the time. NFPA #1720 for Combination and Volunteer departments requires no time minimum, but calls for assembling a “safe, effective force” before beginning fire attack. For Groveland, this is consistent with the 2-in/2-out requirements that require safety first.
3. October 1999 California OSHA Changes – Governor Davis signed Assembly Bill 1127, authored by Assembly member Steinberg, into law (Chapter 615, Statutes of 1999). AB 1127 makes changes to twelve (12) sections of the California Labor Code. Except for one statutory change to Labor Code Section 98.7, all of the changes to AB 1127 involve the California Occupational Safety and Health Act (Labor Code Section 6300 et seq.).

This legislation made all of the OSHA regulations applicable to local government, including fines and a huge increase in criminal penalties under Cal/OSHA. Individual managers and supervisors (*Fire Chiefs – Incident Commanders*) may now be fined up to \$250,000 and be imprisoned for up to four years for failure to take appropriate safety precautions. Criminal fines range up to a maximum of

\$3.5 million for corporations and limited liability companies (Labor Code 6423 and 6425). This makes experience, training, and education critical for supervisors and necessitates that the fire agency have an effective, well-documented training program.

This “sea change” in personal and agency liability means that not just any firefighter can, or should, be an Incident Commander on significant, sustained incidents. Along with increasing firefighter deaths nationally with Federal OSHA citations to fire commanders, the trend starts for significant training and certification of Incident Commanders (Fire Chiefs and other chiefs).

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

Most departments feel that it takes 100-120 hours of training per year to meet safety minimums, and the initial 100-120 hours of training time should occur before a volunteer goes on a single incident.

These increased regulatory changes, coupled with all the other socioeconomic factors to be discussed next, mean that volunteer firefighter programs dry up due to lack of members. Additional training and additional responses mean a significant time commitment for “true” volunteers, who are serving for love of community and to give something back.

### **1.6 OTHER NEGATIVE PRESSURES ON VOLUNTEER-BASED FIRE SERVICES**

All-volunteer-based fire departments are under great pressure today to maintain an adequate roster. The reasons for this are not unique to Groveland and are placing pressure on small community volunteer systems across the State and nation. They include:

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

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

Also problematic for Groveland to field more volunteers is the community’s small population and average resident age in the mid-fifties. There are simply not that many physically fit (for firefighting) residents available.

Another type of volunteer is also possible – that is an active, retired person, who while not able to handle physical firefighting, can lend support in the areas of delivering public education and in conducting less complicated fire prevention and wildland vegetation abatement inspections.

Some of the area’s residents may be retired firefighters and/or emergency medical personnel. They could lend *outside* support at emergencies, but only from a safe area where they would not need protective clothing or need to meet the required safety training and physical requirements. If the Department chooses to do this, it should consider the program carefully due to the possibility of worker’s compensation claims liability. The Department should also understand that this type of volunteer must agree to work outside the hazard zone.

Another issue that must be addressed with any use of volunteers is that they must be trained, supervised and their programs managed. As this Master Plan will discuss, the current Groveland Fire Department staffing of only 7 career personnel, of which only 2 or 3 are on-duty each day, are hard pressed to keep up with the current programs, much less develop and supervise new ones.



## SECTION 2—STANDARDS OF RESPONSE COVER (DEPLOYMENT) ANALYSIS

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

### **2.1 GENERAL FIRE DEPLOYMENT BACKGROUND INFORMATION**

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

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

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

The Standard of Response Cover process consists of eight parts:

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

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

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

Given the need for crews to be stationed throughout a community for prompt response instead of all crews responding from a central fire station, communities such as Groveland are faced with neighborhood equity of response issues. When one or more areas grow beyond the reasonable travel distance of the nearest fire station, the choices available to the elected officials are limited: add more neighborhood fire stations, or tell certain segments of the community that they have longer response times, even if the type of fire risk found is the same as other areas. The situation is different for the rural fire district area, as many of those residents know they live far apart and isolated from typical suburban fire, police and ambulance services.

The level of service choice for the Groveland area is more challenging as many of the newer residences in the lake and airport areas are occupied as second homes or by full-time, but retired residents. Many of these residents came from urban or suburban areas that have timely and significant fire and EMS response services. Some of these residents seeing the Groveland Fire Station may not understand that the fire department's staffing and fiscal support is significantly less than the urban area that they came from. Thus, they expect the same level of fire services as their prior community. Additionally, the visitors traveling the highway to and through the CSD to other destinations, such as Yosemite National Park, may also expect adequate fire services when they require a response, not understanding that the District can only field a small crew. Long-time Groveland residents who may willingly accept living in a rural mountain community with limited services and the resultant lower taxes may view this level of service situation very differently.

Understandably, the leaders and residents of the community may expect, to varying degrees, that the Department should operate fire, rescue, and EMS services to handle daily emergencies and that catastrophic emergencies would naturally be beyond the ability of a small community fire department. However, some of the new residents may not understand that a small community fire department cannot handle everything that perhaps a larger suburban or metropolitan department would. When residents see nice housing with suburban spacing, and small town retail stores or restaurants, they forget that they are in a "small community" and may see the area just like their last community. Typically, long-time rural residents understand, without being

told, that they have moved beyond the reasonable and timely economic reach of urban or even suburban level police, fire and EMS services.

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

Thus, Citygate tailored the deployment recommendations in this report to Groveland's unique needs, and did not take from other agencies or national recommendations.

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

## **2.2 GROVELAND FIRE DEPARTMENT COMMUNITY RISK**

The community mostly contains a mix of single-family dwellings, some small businesses, and retailers. Most of the businesses are in older buildings concentrated along the main thoroughfare, Highway 120. In the last five years there has been very slow, managed growth. Both newcomers to the community, as well as long-term residents, may not realize the community assets that are at risk today in such a vibrant and diverse small community. The Groveland Fire Department is charged with responding to a variety of emergencies, from fires to medical calls to special hazards and transportation emergencies. Here is a partial inventory of the types of risk demographics in addition to the visible homes and business buildings:

- ◆ A slowly increasing population, primarily retirees
- ◆ Highway accidents on Highway 120 and county roads in a mountainous area as a half million visitors to Yosemite National Park traverse the Groveland area.
- ◆ A significant Urban/Wild Land Interface, where grass, brush, and trees abuts all developed areas
- ◆ Some hazardous materials storage, use, and release, including industrial and transportation on Highway 120
- ◆ Commercial buildings, some of which are smaller in size and not as tightly zoned as in urban areas
- ◆ A small, but busy general aviation airport
- ◆ An aviation-oriented subdivision where some of the homeowners maintain small hangers and significant airplane collections
- ◆ The road system is without a grid network and has the lake in the middle of the service area, which consequently increases fire department response times
- ◆ The potential for some additional growth, pending the approval of the Long Gulch Ranch and other developments:

- 372 dwelling units in Long Gulch Ranch
- 850 in-fill dwelling units in the Pine Mountain Lake area
- Pine Mountain Lake Units 14 and 16 could yield another 100 dwelling units
- The proposed Big Oak Flat housing project is 160 dwelling units.

The significance of the above information is that Groveland continues to be a community in transition from a rural low-density residential area with very little demand for emergency services to a small suburban community with a resultant increase in people and buildings. Some of the private airport area hangers are larger than some of the commercial buildings in the town center. Given aviation parts and fuels, these represent a more serious firefighting challenge than a typical barbershop fire would in a small commercial building.

## **2.3 CURRENT WORKLOAD STATISTICS**

### **2.3.1 General Fire Service Response Time Discussion**

Today, the best recommendations for fire service delivery measures come from the Commission on Fire Accreditation International and the National Fire Protection Association. Instead of measuring average response time, they recommend that a percent of completion performance goal for first-due units and the total number of units needed for significant building fires be designed to meet risk in each community. These goals are measured from the time of 911-call receipt to units on the scene. A typical way to state them is, “for structure fires in an average risk area, the first unit shall be on-scene within 7 minutes of the time of call, 90 percent of the time. For first alarm assignments in average risk areas, the entire effective firefighting force shall arrive within 11 minutes, 90 percent of the time.”

The National Fire Protection Association (NFPA) Deployment Guideline #1710 for a full career fire department recommends that an all-risk initial intervention unit (pumper or ladder) will arrive at the scene of a critical emergency in 6 minutes or less from the time of call receipt in fire dispatch 90 percent of the time. This includes:

- ◆ 60 seconds or less dispatcher processing time
- ◆ 60 seconds or less fire crew turnout time
- ◆ 4 minutes road travel time.

NFPA #1710 also recommends that the balance of a first alarm assignment for building fires arrive within 8 travel minutes, or 10 minutes from the time of fire dispatch receipt.

The NFPA recommends a 4-minute *travel* time goal for the first-due units. This is very appropriate for the built-up, traffic-congested suburban areas. However, the recommendations of NFPA #1710 may not be as appropriate for rural home areas if the desired outcome is less, such as to confine the fire in a rural area house to the home of origin, instead of the room of origin as in an urban-suburban area.

Nationally, there are no rural fire response expectations. NFPA #1720 for volunteer and/or combination fire services does not recommend response times, but focuses on safe practices

when enough staffing does finally reach the scene. However, if the fire or EMS event outcome goal (confine the fire to the room of origin, stabilize and transport medical patients) is the same for a rural area as a suburban area, then the 4- and 8-minute deployment travel times as stated by NFPA #1710 are still necessary, as fires do not burn more slowly in rural areas.

The Insurance Services Office (ISO) Fire Department Grading Schedule would like to see fire stations spaced in suburban areas 1.5 miles apart, which given travel speeds on surface streets, is a 3- to 4-minute road travel time. The ISO evaluates fire protection on a 10-point scale with a Class 1 department being the best (Stockton) to Class 10 being no appreciable fire response at all. In rural areas, the ISO for Class 8 protection requires a 5-mile road response distance 85 percent of time for the first-due engine and the staffing ability to deliver fire streams of 200 gallons per minute continuously for 20 minutes within five minutes of arrival. The Groveland District is so large, not even this goal can be met in the outer edges.

More importantly, within the Standards of Response Coverage process, and for the greater Groveland area, positive outcomes are the goal, and from that crew size and response time can be calculated to allow efficient fire station spacing. Emergency medical incidents have situations with the most severe time constraint. In a heart attack that stops the heart, a trauma that causes severe blood loss, or in a respiratory emergency, the brain can only live 8 to 10 minutes maximum without oxygen. Events other than heart attacks can cause oxygen deprivation to the brain. Heart attacks make up a small percentage; drowning, choking, trauma constrictions or other similar events have the same effect. In a building fire, a small incipient fire can grow to involve the entire room in an 8- to 10-minute time frame. In a vehicle extrication situation, the goal of trauma medicine is to stabilize the patient in the field and get them to the trauma surgeon inside of one hour. If fire service response is to achieve positive outcomes in severe EMS situations, incipient fire situations, and technically challenging extrications, *all* the crews must arrive, size-up the situation and deploy effective measures before brain death occurs or the fire leaves the room of origin. Otherwise, the golden hour is lost.

It should also be noted that the quality of care and timeliness of response is important in the Groveland area, where the residential average age is in the mid-fifties due to the increasing second homeowner and retiree residents.

Given that the emergency started before it was noticed and escalates through the steps of calling 911 to units arriving on-scene, there are three “clocks” that fire, rescue, and emergency medical crews must work against to achieve successful outcomes:

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

Somewhat coincidentally, in all three situations above, the first responder emergency crew must arrive on-scene within 5 to 7 minutes of the 911 phone call to have a chance at a successful

resolution. Further, the follow-on (additional) crews for significant emergencies must arrive within 10 minutes of receiving the 911 call.

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

Thus, from the time of 911 receiving the call, an effective deployment system is *beginning* to manage the problem within 7 to 8 minutes total reflex time. This is right at the point that brain death is becoming irreversible, the fire has grown to the point to leave the room of origin and become very serious, and the golden hour is at fifty minutes.

Thus, the District Board needs to adopt a response time policy that is within the range to give the situation hope for a positive outcome. Sometimes the emergency is too severe before the Fire Department even receives a call. However, with an appropriate response time policy and a well-designed system, only issues like bad weather, poor traffic conditions, or multiple emergencies will slow down the response system. A properly designed system will give the citizen the hope of a positive outcome for their tax dollar expenditure.

Given the District's setting in a rural area, with housing densities more typical of suburban communities, Citygate feels that a 7- to 11-minute response goal 90 percent of the time from the receipt of the 911 call with a small career crew would meet many of the emergency needs of the area. Such a response goal would be slightly longer than a suburban one, but not as long as a pure rural goal of 5 plus miles travel distance.

### 2.3.2 Groveland Response Statistics

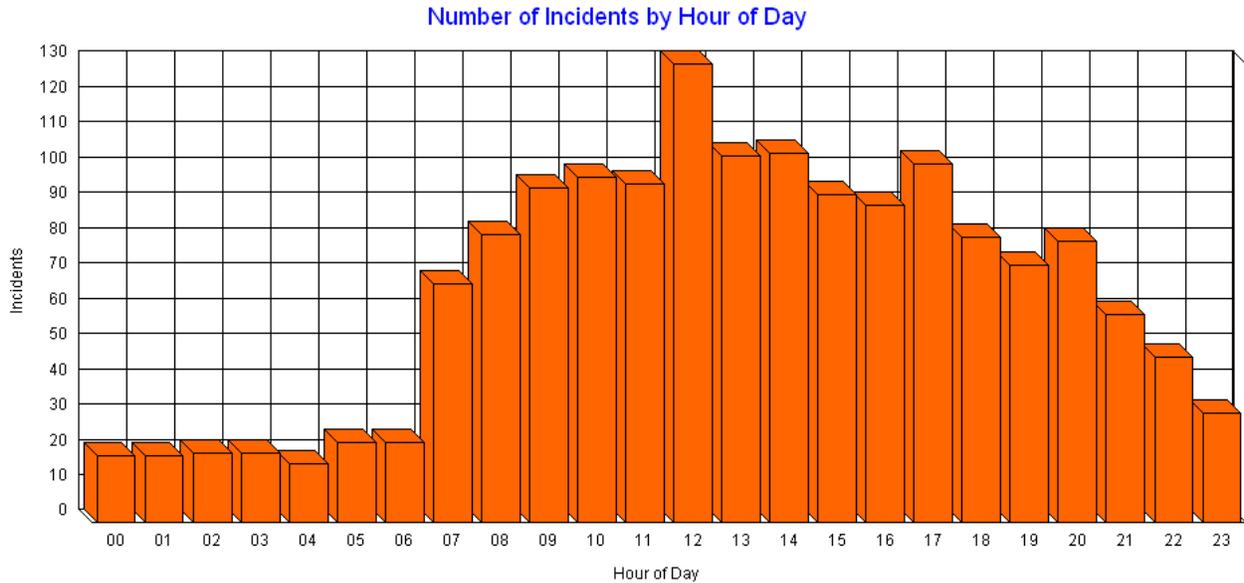
A review of fire services should include how the response system has performed in the past. Response distance can be projected on maps to estimate what *should* occur, but only an analysis of prior response statistics will say what *did* occur. Fire departments are required to report response statistics in a format published by the U.S. Fire Administration called the National Fire Incident Reporting System (NFIRS). The private sector develops software to do this reporting to state and federal specifications. Nationally, the system is now on version #5. To its credit, the Department was an early adopter of this system and has three years of data on-line. This is unusual to find in small departments.

The federal system does not have the data elements to track volunteer response time and quantity. The system was built to track apparatus movements only. Many agencies, Groveland included, do not typically track the time it takes for a volunteer to reach the station or scene when called out. Unless the volunteers are paid a stipend on a per call basis, there are also few reasons for the agencies to even track how many showed up. For these reasons, the data review below has to focus on the movements of apparatus. The responsiveness of volunteers has to be measured by interviewing the career staff and examining the limited written logs available that

track response for the volunteer stipend payment to get a feel for when and how many volunteers tend to respond.

In the most recent 12-months from July 2005 thru June 2006, the Groveland Fire Department responded to 536 incidents or approximately 1.4 incidents per 24-hour day. **6.22 percent** of Groveland incidents occurred when other incidents were underway. The “time of call” entered in the Fire Department records system is the time of fire crew notification from the County Communications center. The process of answering and processing a 911 call typically takes 45-90 seconds before the fire or ambulance crew can be alerted.

Groveland incidents occur following a predictable pattern for most departments by hour of day:



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

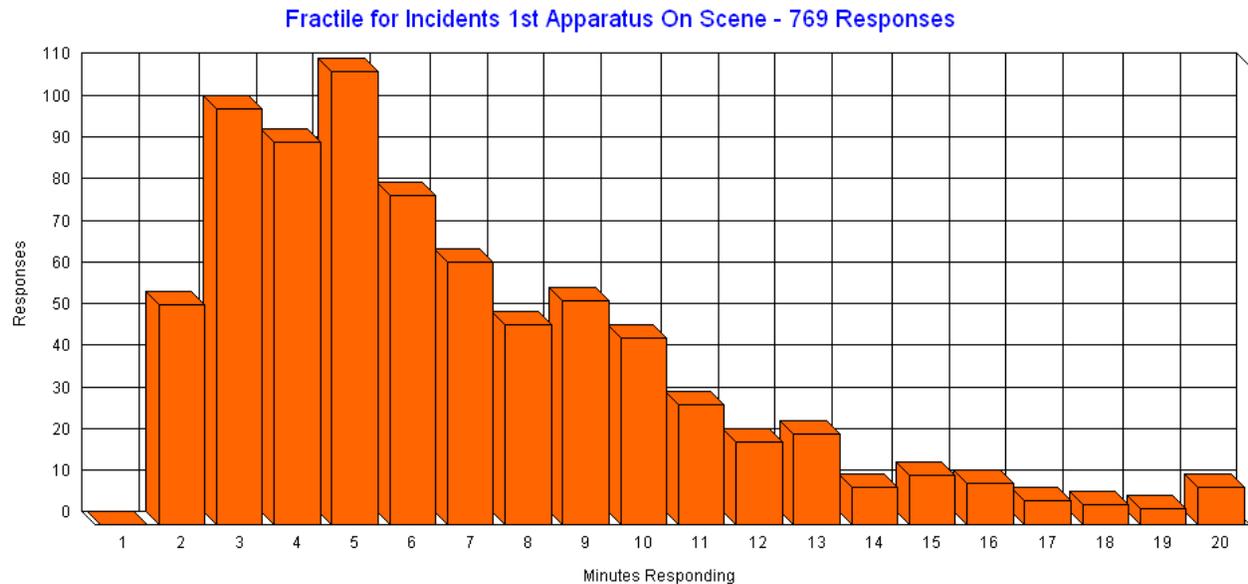
<u>Property Type</u>	<u>Count</u>
EMS call, excluding vehicle accident with injury	858
Public service assistance (water leaks etc.)	241
Vehicle accident with injuries	67
Smoke scare, odor of smoke	53
Public service (helping the elderly etc.)	51
Vehicle accident, general cleanup	24
Passenger vehicle fire	21
Authorized controlled burning	20
Forest, woods or wildland fire	19
Unauthorized burning	18
Gas leak (natural gas or LPG)	12
Dispatched & canceled en route	11
Building fire	9
Power line down	9
Assist police or other governmental agency	9
Structure fire, other (conversion only)	8

Alarm system sounded due to malfunction	8
Chimney or flue fire, confined to chimney or flue	7
Fireworks explosion (no fire)	7
False alarm or false call, other	7
Mobile property (vehicle) fire, other	6
Natural vegetation fire, other	5
Brush, or brush and grass mixture fire	5
Overheated motor	5
Water or steam leak	5
Animal problem	5

Here are the top property types receiving service from the Groveland Fire Department during the 36-month data period. Property types with fewer than 5 responses were eliminated from the list.

<b><u>Property Type</u></b>	<b><u>Count</u></b>
1 or 2 family dwelling	803
Fire station (victim arrived at station via private auto)	204
Highway or divided highway	159
Residential street, road or residential driveway	91
Multifamily dwellings	44
Forest, timberland, woodland	20
Open land or field	19
Hotel/motel, commercial	14
Fixed use recreation places, other	13
Food and beverage sales, grocery store	13
161 Restaurant or cafeteria	12
Bar or nightclub	10
Elementary school, including kindergarten	10
Dock, marina, pier, wharf	9
Variable use amusement, recreation places	8
Business office	8
Campsite with utilities	8
Vehicle parking area	8
Aircraft loading area	8
Vacant lot	7
Lake, river, stream	7
Street, other	7
Service station, gas station	6
High school/junior high school/middle school	5
Aircraft taxi-way	5

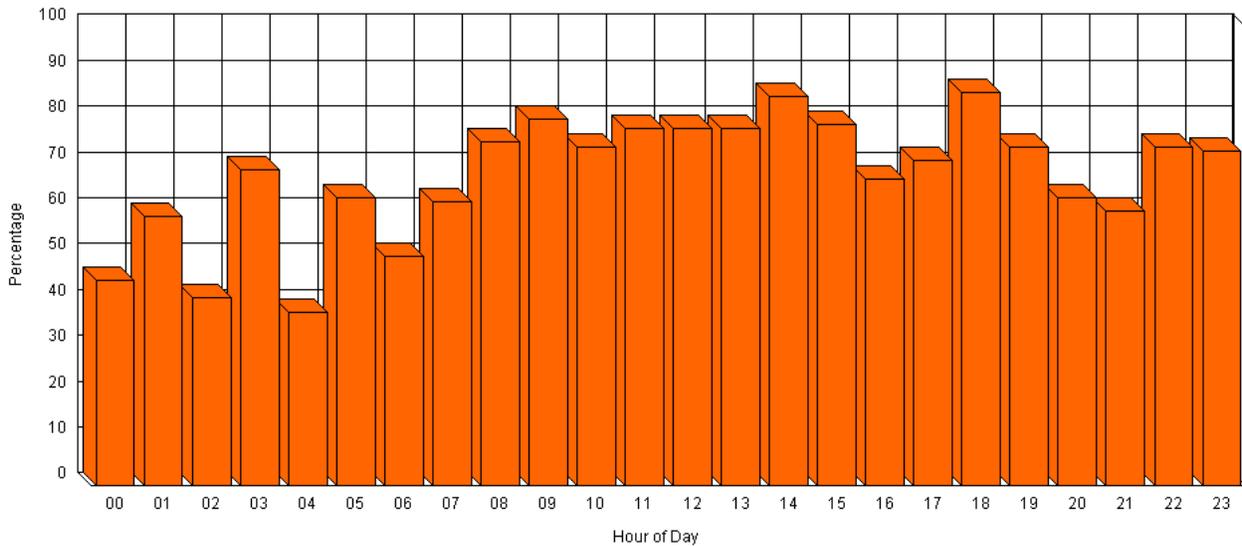
Below is a summary of the Fire Department’s response to those incidents. This data includes all calls for service, emergency and public assists. Typically, the Groveland Fire Department has the same crew travel times to each type of call. The first chart illustrates the number of incidents (y-axis) responded to per minute (x-axis) of total response time:



A 7-minute goal is ideal for a fully-staffed, career department with good station placements. In this data from the District, the 5-minute response time segment shows the largest number of responses. Responses at 4 minutes are greater in number than responses at 6 minutes. Responses at 3 minutes are greater in number than responses at 7 minutes. This tends to indicate a solid number of responses close to the fire station. Outside the central District area, however, responses, while fewer in number, are very long in response time.

The graph on the next page illustrates the percentage of compliance with a 7-minute first apparatus on scene goal. Notice this is fairly flat, indicating a high level of compliance across the 24-hour day. The graph illustrates the percentage of compliance (0 – 100% on the y-axis) with a 7-minute response time goal by hour of the day on the x-axis. Notice incidents that occur early in the morning are less likely to meet a 7-minute response time objective:

Hourly Compliance Percentage for 1st Apparatus On Scene at 7 Minutes



While many fire departments track “average response time,” it is not highly regarded as a performance measurement. One of the most commonly used criteria to measure response effectiveness is fractile analysis of response time in which the percent of desired goal completion is measured across minutes of response time. For example, a service goal might be to, “respond within 5 minutes, 90 percent of the time.”

Below are several fractile analysis measures of incidents in Groveland. Normally, all but a couple of incidents would have response times less than 12 minutes. However, response patterns in Groveland do involve incidents where the first arriving apparatus takes a significant time to reach the scene.

The following are fractile measures of Groveland’s response effectiveness for fire and EMS calls. For all incidents, the 90 percent first apparatus arrival is not reached until 10:00 (10 minutes). However, when responding to fire and EMS incidents, the 90 percent threshold is reached in 11:00 minutes. It could be that fire and EMS emergencies are slightly more likely to occur further away from the fire station than “other” incidents.

There are 993 Incident records being analyzed, fire and EMS emergencies only:

- 1st Apparatus On Scene <= 00:00:00 .0% (0)
- 1st Apparatus On Scene <= 00:01:00 22.6% (224)
- 1st Apparatus On Scene <= 00:02:00 27.9% (277)
- 1st Apparatus On Scene <= 00:03:00 38.0% (377)
- 1st Apparatus On Scene <= 00:04:00 47.2% (469)
- 1st Apparatus On Scene <= 00:05:00 58.2% (578)
- 1st Apparatus On Scene <= 00:06:00 66.2% (657)
- 1st Apparatus On Scene <= 00:07:00 72.5% (720) – Typical, desirable suburban response goal*
- 1st Apparatus On Scene <= 00:08:00 77.3% (768)
- 1st Apparatus On Scene <= 00:09:00 82.8% (822)
- 1st Apparatus On Scene <= 00:10:00 87.3% (867)
- 1st Apparatus On Scene <= 00:11:00 90.2% (896) – Groveland performance***
- 1st Apparatus On Scene <= 00:12:00 92.2% (916)

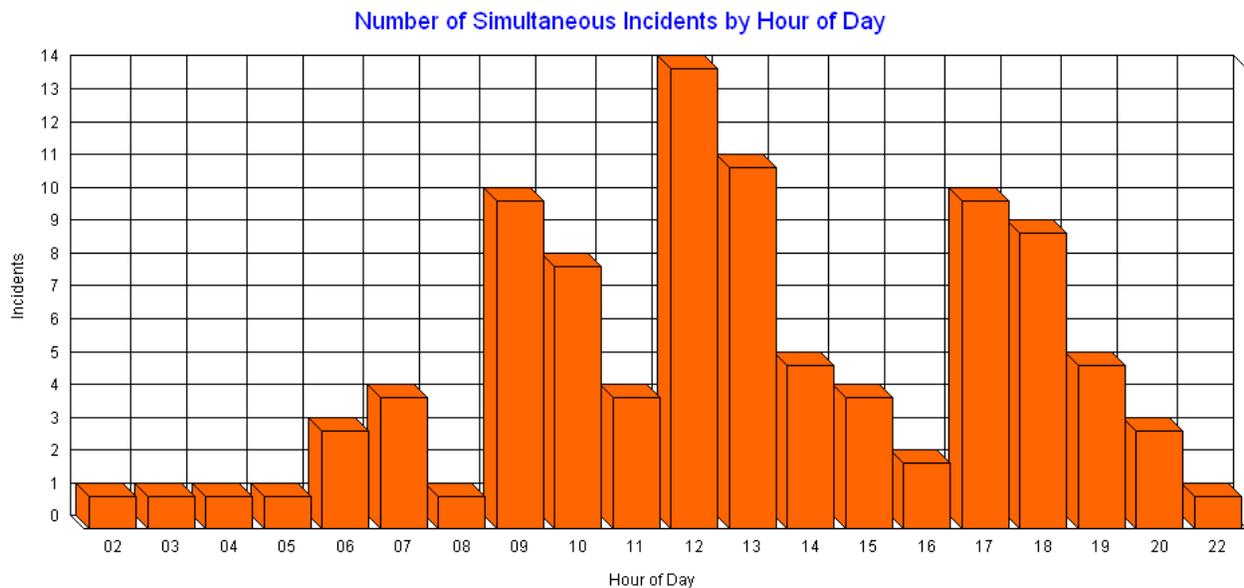
1st Apparatus On Scene <= 00:13:00 94.5% (938)  
 1st Apparatus On Scene <= 00:14:00 95.4% (947)  
 1st Apparatus On Scene <= 00:15:00 96.6% (959)  
 1st Apparatus On Scene <= 00:16:00 97.6% (969)  
 1st Apparatus On Scene <= 00:17:00 98.2% (975)  
 1st Apparatus On Scene <= 00:18:00 98.7% (980)  
 1st Apparatus On Scene <= 00:19:00 99.1% (984)  
 1st Apparatus On Scene <= 00:20:00 100.0% (993)

Obviously incidents occurring at the same time tax fire department resources more than those occurring when there is no other fire department response activity. Examining study data for the 36-month period shows 6.22 percent of incidents occurred when Groveland was already engaged in other response activity. This is a low level of simultaneous alarms as compared to busy suburban departments that can see a simultaneous rate of 25-40 percent in a 3-5-station department.

Here is the breakdown by number of incidents:

At least 2 Incidents occurring at the same time	6.22%
At least 3 Incidents occurring at the same time	.38%

The graph below illustrates the hourly distribution (x-axis) of simultaneous (6.22 percent) incidents by quantity per hour (y-axis). The graph roughly approximates normal incident activity.



### 2.3.3 Response Time Statistics Discussion

Overall, the response performance of the Groveland system is reasonably good for a one-station department serving an area of almost 15 square miles. In the core area of the community along Highway 120, response times are good. In the area of Pine Mountain Lake, especially east of the lake, response times suffer.

**Finding #1:** *The response times in the District for a first-due unit are long, reflective of a rural level of effort and the fact that the District is too geographically large to serve from one station and still have a significant number of incidents in the more distant areas result in a positive outcome.*

Thus, the time performance of the Department is due to physical location and luck. The one station is located in the population density center, and people drive calls for service, not buildings and rural ranches or open space.

The troublesome aspects for the community and District are the low staffing and how a simultaneous call rate of **6.2 percent** can really hurt a 2-firefighter, 1-engine response system. Groveland Fire staff is now confronted with decisions on what to respond to, or how to get clear of one incident to attend to another. They *do* get to all incidents, but not with the same response times.

Part of the reason that the **6.2 percent** simultaneous call rate is not worse is that, demographically, most calls are medical. Out-of-service time on a call is a function of how significant the call is. Since most medical calls are handled in less than 20 minutes, the chance of a second call occurring is less than during a 2-hour fire event.

It should be mentioned that out-of-service times are in the “field” times. Upon return to the station, time for decontamination, clean-up repair or replacement of tools and hose also can influence unit availability times. As call volumes increase, this factor plays a more significant role in the community’s ability to meet its response time goals.

As the community has grown away from the “Community Core” along Highway 120 and a single fire station, and as traffic congestion goes from none to some, there is naturally an increase in calls for service. The challenge for the Groveland area is that being a small community with a combination fire department, there are not nationally recommended response times.

**Policy Question:** *Therefore, the policy issue for the Community Services District Board in a fire services discussion is what level of outcome for different types of emergencies is desirable and cost-effective for a community of Groveland’s size?*

### 2.3.4 Desired Outcomes

Once policy makers choose outcomes, then the response system can be designed with staffing and station locations to accomplish the desired outcomes. These issues will be addressed later in recommendations section (Section 5) of this study.

## 2.4 STAFFING

### 2.4.1 What Must Be Done Over What Timeframe to Achieve the Stated Outcome Expectation?

Fires and complex medical emergencies require a timely, coordinated effort in order to stop the escalation of the emergency. In this phase of the Standards of Response Coverage process, time

studies determine how many personnel are required over what time frame to achieve the stated outcome expectation. Once the tasks and time to accomplish them to deliver a desired outcome are set, travel time and thus station spacing can be calculated to deliver the requisite number of firefighters over an appropriate timeframe.

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

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

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

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

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

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

Considering the level of risk, the Incident Commander will choose the proper strategy to be used at the fire scene. The Incident Commander must take into consideration the available resources (including firefighters) when determining the appropriate strategy to address any incident. The strategy can also change with conditions or because certain benchmarks (i.e., “all clear”) are achieved or not achieved.

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

The decision to operate in a **defensive** strategy indicates that the offensive attack strategy, or the potential for one, has been abandoned for reasons of personnel safety, and the involved structure has been conceded as lost (the Incident Commander makes a conscious decision to write the structure off). The announcement of a change to a defensive strategy means all personnel will withdraw from the structure and maintain a safe distance from the building. Officers will account for their crews. Interior lines will be withdrawn and repositioned. Exposed properties will be identified and protected.

Additionally, for safety, Federal and State Occupational Health and Safety Regulations (OSHA) mandate that firefighters cannot enter a burning structure past the incipient or small fire stage, without doing so in teams of 2, one team inside and one team outside, ready to rescue them. This totals a minimum of 4 firefighters on the fireground to initiate an interior attack. The only exception is when there is a known life inside to be rescued.

Many fire department deployment studies using the Standards of Response Coverage process, as well as NFPA guidelines, arrive at the same fact – that an average (typically defined by the NFPA as a modest single-family dwelling) risk structure fire needs a minimum of 14-15 firefighters, plus one commander. The usual recommendation is that the first unit should arrive

on-scene within 6 minutes of call receipt (1-minute dispatch, 1-minute crew turnout, and 4-minute travel), 90 percent of the time. The balance of the units should arrive within 10 minutes of call receipt (8-minute travel), 90 percent of the time, if they hope to keep the fire from substantially destroying the building.

For an extreme example, to confine a fire to one room in a multi-story building requires many more firefighters than in a single-story family home in a suburban zone. How much staffing is needed can be derived from the desired outcome and risk class. If the community desires to confine a one-room fire in a residence to the room or area of origin, that effort will require a minimum of 14 personnel, which means that every significant fire in the Groveland Fire District requires *a significant volunteer response and mutual aid*. This number of firefighters is the minimum needed to safely conduct the *simultaneous* operations of rescue, fire attack, and ventilation plus providing for firefighter accountability *in a modest, one fire hose line fire*. A significant fire in a two-story residential building or a one-story commercial or multi-story building would require at a minimum, an additional two to three Engines and an additional Truck and Chief Officer, for upwards of 12 plus additional personnel. A typical auto accident requiring multiple-patient extrication or other specialty rescue incidents will require upwards of 10 firefighters plus the chief for accountability and control. These staffing needs come from a process called “critical tasking” that will be reviewed below in Section 2.4.4.

### 2.4.3 Staffing in the Groveland Fire Department

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

#### **2 Career Suppression Person + 1 Command Chief** (Chief from home outside business hours):

1 Engine with 1 Engineer, and 1 Firefighter

The Department staffing plan has evolved over the last few years to meet the changing needs in the community and the decline of volunteer firefighter availability. The District added modest career firefighter staffing as the pressures on volunteer firefighters eroded their availability and the frequency of calls for service grew. Today, the Department fields two (2) career firefighters per day (6-total on payroll) at Station 1. These personnel are firefighter-emergency Medical Technicians and Fire Apparatus Engineers. Volunteers supplement this staffing, with greater availability on evenings and on weekends than during the normal workweek.

For full-time management the District added a career Fire Chief, a volunteer Assistant Chief. The County Fire Department handles new construction plan checks and inspections, but Groveland has adopted the state fire code and is responsible for the on-going fire safety inspections of other than residential buildings. Groveland Fire does not have a dedicated Fire Marshal position; new construction plan check services are provided by the County/CDF Fire Department. Groveland must handle on-going inspections and public education. The Groveland Fire Chief serves as management and field incident commander. When out-of-town for training or personal leave, there is no trained, certified backup chief officer.

Any single significant incident or two incidents at once require the callback of any available career firefighters who live in the area and volunteers. One of the engineers works part-time as a fire inspector. Tuolumne County, through its CDF fire contract, performs new construction building plans checks, arson investigations, and more complex prevention tasks.

The Groveland volunteer firefighter program suffers from problems that are similar to other similar jurisdictions. These include falling membership and role identification issues as the career staff performs more duties previously done by volunteers. This is a nationwide situation common to fire departments that convert from all volunteer staffing to a combination department that also uses a limited number of career staff. An additional complication to Groveland's ability to raise a high number of volunteers is that less than ten percent of the community population consists of males between the ages of nineteen and forty-five. This is the prime group for volunteer staffing. In order to have a volunteer force of thirty members, a reasonable number for a community of the size of Groveland, it would require one out of every ten members of this target group to become a trained and responding member of the volunteer force.

This demographic noted from census data is borne out by the fact that currently there are only 10 volunteer firefighters on the roster with 8 being very active. There is also a medically retired firefighter serving as a volunteer, part-time Assistant Chief. He performs administrative tasks, which benefit the Department greatly. He volunteers more than forty hours a week, manages the Department's Cadet Program, conducts classroom training, helped institute the pre-fire planning program and assists the Fire Chief with special projects. Given his medical status, he cannot participate in safety-regulated activities.

As the availability of volunteer firefighters dwindled, Groveland responded by starting the transition to a combination department that uses a small career force. In 1986, the District hired its first full-time fire chief, and in 1988, hired its first full-time firefighter. By 1999, the staff was 1 fire chief, 3 engineers, and 11 volunteers. In 2000, the District increased the staffing by hiring three full-time firefighters and moved to an initial 24/7/365 schedule of having two career firefighters always on-duty.

The Groveland volunteer force has no set authorized strength. Each volunteer receives a stipend of \$20 per emergency call as a small offset of his or her expenses. Two of them are Emergency Medical Technicians I (EMT I), and there are two certified to drive and operate fire apparatus. Seven members regularly respond to incidents are "active members."

When volunteer firefighters are available for scheduled duty shifts, they can provide a 3rd and/or 4th firefighter on the engine. However, given an active volunteer count of 8, this likely can only occur once or twice per month, per member. Additional off-duty and volunteer personnel can respond from home to the station, and from the station bring any necessary equipment and themselves to the scene of the emergency. However, the volunteer response is inconsistent and low, requiring mutual aid on significant fires primarily from the local CDF station during the fire season and from great distances the rest of the year. In the past decades, the volunteers were needed to respond maybe once or twice monthly; currently, they can be needed to respond upwards of several times a week.

With 6 full-time paid firefighters, of which there are two on duty each day, there are not enough of these full-time positions yet to make a dramatic difference in the total number of firefighters and volunteers responding to an incident. Staffing response from the Department's records indicates that structure fire staffing for recent incidents including the Fire Chief is as follows:

- ◆ From 2003 through July 2006, during the daytime, the Department averaged 7.1 people on structure fires. During the winter, the average structure fire response was 5 firefighters.

- ◆ Volunteer callback overall was 3.0 firefighters per incident. Two occurrences (16 percent) had zero callback. The high headcount incident was six, which occurred twice. The typical count was two to four. Interestingly, the 3 daytime structure fires averaged 2.6 volunteer firefighters. Therefore, at night, the Department is still averaging only 3.1 volunteers per callback.
- ◆ On the combined total fire call types, the Department is averaging 6 people per fire, including the Fire Chief.
- ◆ On these fires, they received a mutual aid company 9 times or 2.3 percent, all from CDF. This illustrates the isolation Groveland has from reliable mutual aid outside of the Groveland CDF station.

The leadership in the Groveland Fire Department understood these changes and adapted as the volunteers roster waned. They have tried different volunteer recruitment strategies with varying success. While these have helped, they also have limitations. The Department competes for a small number of likely personnel in a very limited geographic area. Additionally, given the high average age of the residents due to the desirability of the area for second homes and retirees, some of the residents will not qualify physically for firefighting.

**Finding #2:** *There is not a sufficiently large and dependable volunteer force to supply an adequate number of volunteer firefighters. If all the volunteers responded with the on-duty career personnel, there would be a structure fire staffing to 14 to 15. The likelihood of this occurring, as we can see from the historical record, is virtually impossible, so an inadequate response force to a significant building fire still exists.*

#### 2.4.4 Staffing Discussion

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

As discussed previously, the volunteer system is under severe pressure and is failing across the western states, especially during the 40-hour workweek. Two-income families mean less available time for potential volunteers to offer their services. More people work outside of their residential communities and are not available to respond to emergencies during that time. According to the National Volunteer Firefighter Council, the number of volunteer firefighters nationally has decreased approximately 12 percent since 1985. Finally, the safety training standards impose over 100 hours per year of training time on a volunteer, plus time for emergencies. This time commitment is simply becoming too much for most people, other than young adults in community college working towards a career in the Fire Service.

As stated earlier in this section, national norms indicate that 15 or so firefighters, including an incident commander, are needed at significant building fires, if the expected outcome is to contain the fire to the room of origin and to be able to simultaneously and safely perform critical

tasks. The reason for this is that the clock is still running on the problem after arrival, and too few firefighters on-scene will mean the fire can still grow faster than the efforts to contain it.

To illustrate how and why 15 firefighters are needed to accomplish the outcome objective of confining the fire to the room of origin, the following table illustrates the necessary typical tasks carried out by four engine/truck companies in a full **career** suburban department with staffing of three firefighters per unit:

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

Here, for example, is a critical task time study from a full career department that can get this many firefighters on the fireground within 10 minutes of receipt of the 911 call. Notice the time to complete critical events shown in grey, **after arrival**, with even this many firefighters dispatched. The scenario was a two-story, single-family dwelling fire, with approximately 500 square feet of fire involvement. No condition existed to override the OSHA 2-in-2-out safety requirement:

Structure Fire Incident Tasks	Task Time	Time Since Arrival	Time From 911 Call
1 <sup>st</sup> Engine/ Medic on scene (hydrant)			6:09
Report on Conditions	:15	:15	6:24
Hydrant Line laid by 1 <sup>st</sup> in Engine	:46	:46	6:55
2 <sup>nd</sup> Engine/Chief on scene - assigned F/F Rescue/Command			7:16
Smoke Blower at front door	1:52	1:52	8:01
Size-Up, walk around completed	2:06	2:06	8:15

Structure Fire Incident Tasks	Task Time	Time Since Arrival	Time From 911 Call
BC Assumes Command	2:07	1:00	8:16
Pre-connected hose line to door (charged)	3:27	3:27	9:36
Rapid Intervention Crew (RIC) established and Accountability at Command Post	3:54	2:47	10:03
Truck on scene - assigned ventilation			10:36
Utilities secured	4:45	3:38	10:54
Attack Line Advanced - "Interior"	4:49	4:49	10:58
Search Group established - enters (medic team)	4:49	4:49	10:58
RIC - Back up line pulled - charged	5:58	5:58	12:07
3 <sup>rd</sup> Engine on scene - assigned RIC support			12:08
1 <sup>st</sup> ladder to roof	6:17	1:50	12:16
3 <sup>rd</sup> Engine at back up line - Officer checks building	6:50	1:09	12:59
Truck crew to roof	7:37	3:10	13:46
Ventilation complete	8:29	4:02	14:38
Primary Search - "All Clear"	8:45	8:45	14:54
Fire found and contained - loss stopped	10:08	10:08	16:17
Truck crew assigned - Salvage	5:43	10:10	16:19
Secondary Search completed	10:54	10:54	17:03
Incident Control - clock stopped	10:24	10:59	17:08
<b>Total Personnel Needed:</b>	<b>15</b>		

The time to complete the above tasks with two (2) firefighters on-scene will be so much longer, that the fire will *substantially* destroy the dwelling. Initially, with only 2 responders from Groveland and maybe 4 to 6 volunteers from home by about minute 12 to 15, the fire will destroy the dwelling if the first 2 to 4 firefighters are forced to conduct a rescue, delaying firefighting. Limited staffing can only do one thing safely at a time: rescue comes first, followed next by limiting the fire spread to adjoining buildings if they are immediately threatened, followed by firefighting in the involved building.

What the Groveland Fire Department currently needs, at a minimum, is an “incipient” or small fire, fire department. An agency this size can control small fires on arrival and handle basic, one- or two-patient medical emergencies without mutual aid help. Fires that are significant upon detection, in older un-sprinklered buildings, will grow beyond the limited staffing in the Groveland region.

What a small department cannot do is to control a fire that is significant at the time of discovery, handle multiple medical patients on one emergency, perform challenging technical rescues, or handle two or more calls for service at once. A small community, incipient fire, fire department,

is not an all-risk, handle-everything-itself agency. Unfortunately, when the public sees a fire station, they do not understand that the one fire engine is understaffed and not backed-up by others in the community. A one-person duty crew does not make a fully capable fire department.

The Groveland Fire Department needs, for the anticipated future, to have a “combination” system of a small career staff on-duty 24/7/365, so that even if no volunteers or mutual aid resources are available, a small crew can handle a simple emergency, or keep the public from further injury while mutual aid or the volunteers can respond.

**Finding #3:** *Based on its small size and with continued fire prevention and public education, an adequate level of service for a rural community such as Groveland would be a small, phased increase in staffing. The problem is that an increase in staffing for the Long Gulch Ranch Development needs to precede the development of the tax base to support it.*

#### 2.4.5 Station Location Configurations

The Groveland Fire Department is served today by one fire station in the southern community area. As part of this fire services study, it is appropriate to understand what the proposed site does and does not cover, IF there are any coverage gaps, and what, if anything, to do about them at the build-out of the community. In brief, there are two geographic perspectives to fire station deployment:

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

To analyze first-due fire unit travel time coverage for this study, Citygate used a geographic mapping tool from ESRI Mapping Corporation called *Network Analyst* that can measure travel distance over the street network. Citygate ran several deployment map studies and measured their impact on various parts of the community. The time measure used was the Insurance Service Office 1.5-mile recommendation for first-due fire companies and 2.5-mile service for second-due companies and ladder trucks.

1.5-miles driving distance equates to 3.5 - 4 minutes travel time over the road network, which is consistent with the current national norms that a suburban outcome *career* staffed engine should have a first-due unit response goal of 7 minutes, 90 percent of the time from the time the 911 call is answered. (These 7 minutes includes a minute for dispatcher reflex time, 2 minutes for crew turnout time and 4 minutes for travel time.) The maps effectively show the area covered within 7 minutes for the first-due engine that the Fire Department provides today.

Note: The following two maps are graphically presented on pages 39 and 40.

### *Map #1 – Current Station Location*

This map (found on page 39) shows almost all of the District limits with existing streets and the perimeter area of the Long Gulch Ranch proposed future growth area.

The streets and zone in green is the area that the current station can cover in a suburban outcome recommended response time of 4-minutes driving distance. The staffed station can only quickly cover the town and Highway 120 area. The orange area displays the 8-minute driving distance multiple-unit coverage (if it existed). For suburban outcomes, the entire effective firefighting force (first alarm) would arrive in 8-travel minutes.

It is apparent from this exhibit that the northeast side of the lake, as well as the airport and Long Gulch Ranch areas, is outside even an 8-minute travel time from Station One.

### *Map #2 – Coverage Areas for an Additional Station*

This map (found on page 40) models the 4- and 8-minute driving coverage when a second staffed station is added near the airport to augment Station One. Since the Long Gulch Ranch plan proposed a station near the airport and the District already has a small station at the airport, and given the underserved area northeast of the Lake, Citygate chose to model the effect of a second station near the airport.

A second fire station can cover in 4 minutes the underserved area northeast of the lake and complete 8-minute drive time coverage to the District limits. This would almost double the developed streets that could be reached by one fire crew in 4 travel minutes, which would deliver suburban outcomes.

**Finding #4:** *The Groveland Fire Department cannot effectively serve the areas northeast of the lake from only one staffed fire station. The travel times to this area are beyond desirable outcomes for serious fires, cardiac arrest or major trauma patients.*

A second station site as the community grows northeasterly significantly improves:

- ◆ Northeast side response times;
- ◆ Multiple-unit coverage to the entire community;
- ◆ Adds more career staffing.

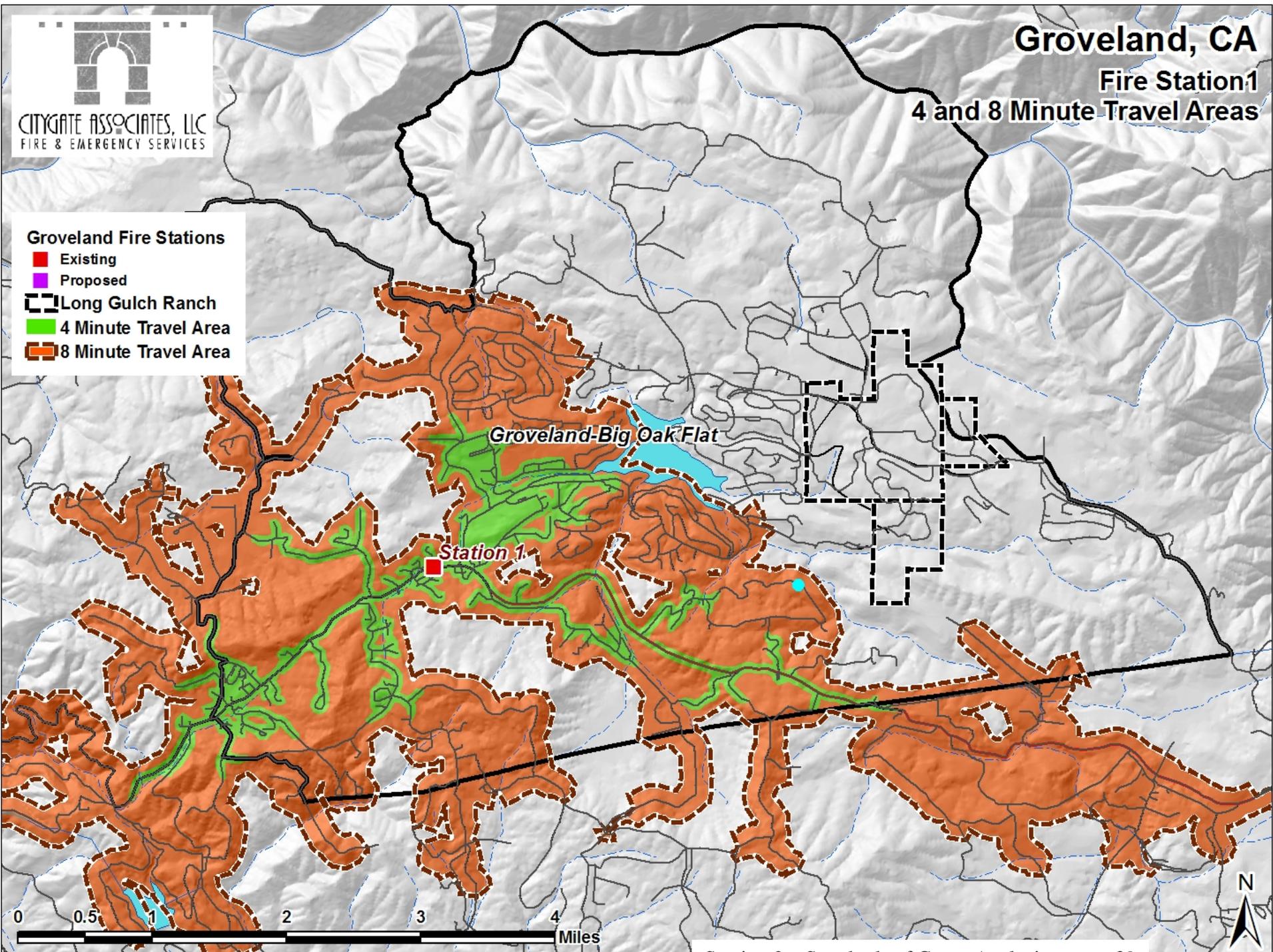
**Finding #5:** *The surrounding rural area in the Fire District will never develop into a densely populated area and will remain mostly light-density residential building types. As such, given the current planning approvals, it will not be cost effective for the Groveland District area to have three or more fire stations.*



# Groveland, CA

## Fire Station 1 4 and 8 Minute Travel Areas

- Groveland Fire Stations**
- Existing
- Proposed
- Long Gulch Ranch
- 4 Minute Travel Area
- 8 Minute Travel Area

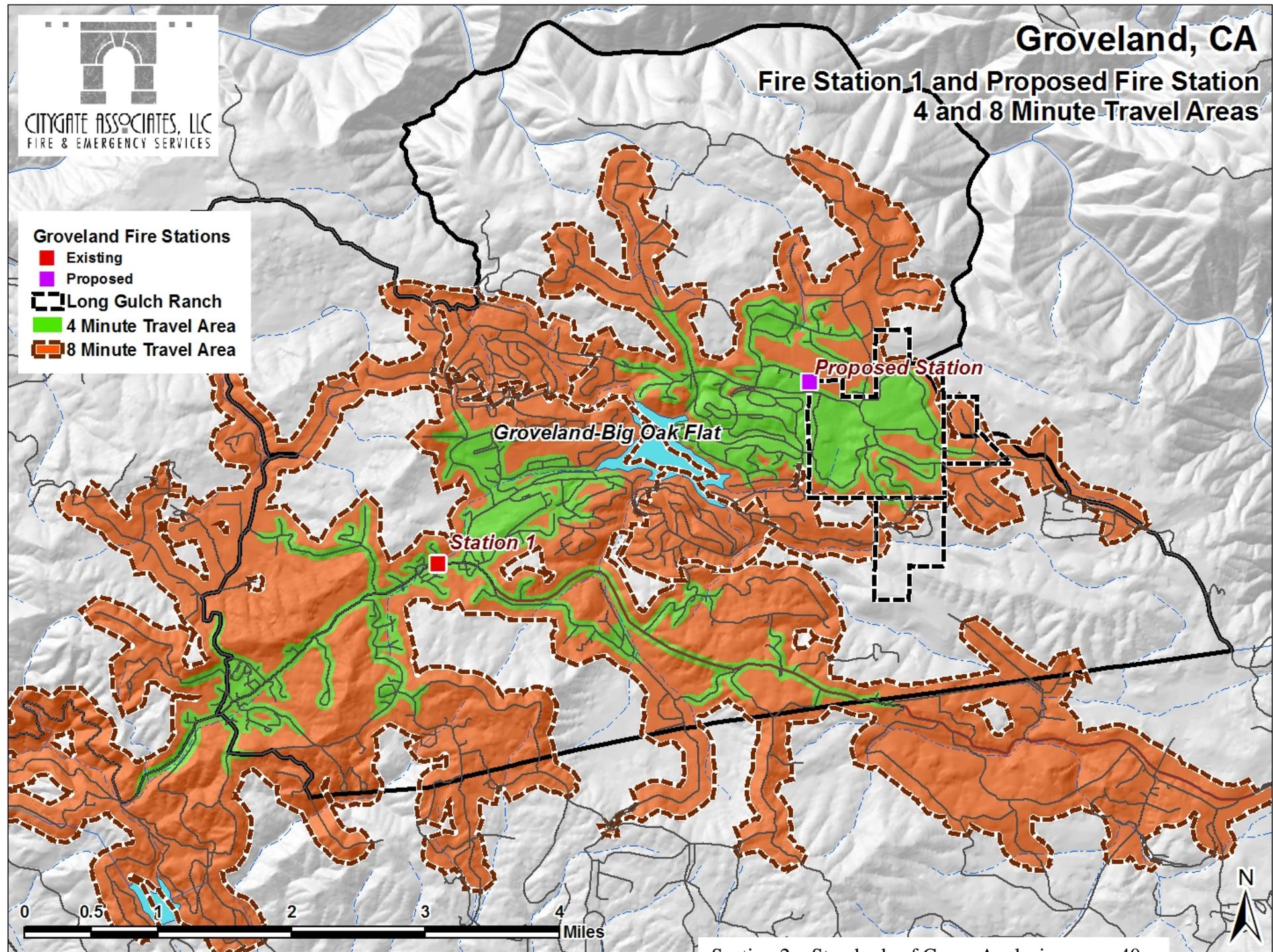




# Groveland, CA

## Fire Station 1 and Proposed Fire Station 4 and 8 Minute Travel Areas

- Groveland Fire Stations**
- Existing (Red square)
- Proposed (Purple square)
- Long Gulch Ranch (Dashed black outline)
- 4 Minute Travel Area (Green fill)
- 8 Minute Travel Area (Orange fill)



## 2.4.6 Equipment Configurations and ISO Grading Issues

After a review of staffing and station location issues, the next most important capital asset the community has is its fire equipment. There are many different types: pumpers in different sizes, grass fire units, ladder trucks, ambulances and specialty units. The mainstay is the pumper, which delivers standard building fire tools. The pumper is the one item a department must have, and the primary asset the Insurance Service Office requires.

Currently, the Groveland Fire Department has one year 2000 Engine (Pumper) that can pump up to 1,000 gallons per minute (GPM) and one 1986 Engine that can pump up to 1,000 GPM. There are also other small fire units.

The Insurance Service Office Grading for the community of Groveland was Class 5 in their last review of the Department (a decade ago). The scale ranges from 1 to 10, with Class 10 being no fire protection and Class 1 being the best metropolitan department. Smaller size suburban cities are usually graded Class 3 to 5. The grading schedule looks at such things as water mains, water tank supply, fire alarm system, staffing and equipment, etc. Therefore, at a Class 5, the community of Groveland was – and is – a modest fire department with a good community water storage and distribution system in the developed areas. The ISO would want to see the Department be able to maintain a 3,000 GPM fire flow for three hours, which would somewhat handle a middle-size commercial building fully involved in fire. The Department's two front-line pumpers plus the reserve pumpers and water main system can supply this flow. Given the Department's low career and volunteer staffing, the Class 5 Grade was assigned.

While the Grading Schedule is very tenured in the United States, the insurance industry over the last ten years has adapted how they use it. Most companies today write homeowners' policies from a fire perspective in a class "banding" system: Class 1-3; Class 4-6; Class 7-9; and Class 10. This reduces the premium impact when a fire agency moves only one ISO class number. Additionally, fire risk today as a percentage of the homeowners' premium has decreased to about 15-25 percent of the whole homeowners' policy premium, representing for some homeowners as little as about plus or minus \$100 per year of their total premium payment. Most premium dollars paid out as claims by insurance companies actually go to other hazard peril liabilities such as hail storms. Finally, State Farm Insurance no longer uses the Fire Grading Schedule, they underwrite per zip code using their own internal data and methods. The result of the changes in how the insurance industry uses ISO ratings is that improvements or decreases in the ISO rating for a fire agency will only have a minimal dollar impact on the annual homeowner liability coverage premiums.

**Watch Out Point:** *In October 2006, the ISO was scheduled to re-grade the Department. As of this report, the ISO delayed the survey, so no results are in. However, in reviewing the Department's staffing quantities, Citygate will be surprised if the Department maintains a Class 5 rating, and a Class 6/7 is much more likely, given the community growth and low firefighter staffing, both career and volunteer. The community should not expect an improvement to ISO Class 3 or 4.*

An emerging issue (to be reviewed elsewhere in this Master Plan) is for the Department to replace, in a timely manner, its fire apparatus. While the pumpers can pump a sustained flow,

there are not enough firefighters to handle hose lines to deliver it. As has been discussed, the average age in the community is older, precluding the development of a high number of volunteers. The volunteer program would have to be fully staffed with a proven ability and reliability over a long period of time (years) to supply more than a token force in fairly short order to convince the ISO that volunteers warrant an improvement in ISO rating. The volunteer response will always be needed to supplement the career staffing, not replace it.

#### 2.4.7 Regional EMS Issues

A reoccurring issue for the Groveland Fire Department in planning fire and emergency medical services is, once again, geographic isolation. While building fires can be mitigated with fire sprinklers and grass fires kept small with fuel reduction programs (weed abatement and public education), there is no acceptable built-in mitigation for health problems. There is a crisis of health insurance coverage in the United States today. As more people are employed in service industries at hourly wages without benefits, this problem will worsen. The under-insured or uninsured use the 911 and hospital system as their health care of last resort. If the ill person does not have health insurance, they are typically sicker before they call 911, which results in a Fire Department response.

Since the mid-1970s and a television show called “Emergency!” the public perception has come to be that all 911 services are at the advanced life support or paramedic level. This is, again, an expensive service for small cities and rural communities to maintain. The typical paramedic initially has over 1,200 hours of training as compared to about 120 hours of emergency medical technician (EMT) training. Then, there is continuing education and on-going medical quality assurance programs. There is also a skill retention issue when the paramedics do not handle enough serious calls for service. This can be overcome to some degree with more training, but again, at an increased expense.

For advanced life support (paramedic) services, the County of Tuolumne contracts with Tuolumne County Ambulance Company, a subsidiary of Manteca Ambulance. They station one unit in Groveland, housed near the fire station.

All the Groveland career firefighters are certified to the level of Emergency Medical Technician 1 (EMT 1). The EMT-Firefighters also are certified and use automatic external defibrillators (AEDs). The Department performs basic life support until the arrival of the paramedic ambulance that serves the general Groveland area. When the ambulance is transporting and out of Groveland, the ambulance company does not move another paramedic ambulance into the area. The next closest paramedic advanced life support unit is in Coulterville. During transport, Groveland is without advanced life support coverage. Two hospitals are in the Sonora area: Tuolumne General Hospital, which is considering reducing services; and the newer Sonora Regional Medical Center. The regional trauma centers are in Modesto. Air Med is the current flight care provider and works out of Columbia Airport.

**Finding #6:** *The current level of Firefighter-EMT and private ambulance paramedic care is well designed and appropriate to risks in the community, except for the distant response of a second or back-up ambulance.*

Where does this type of system leave Groveland if the ambulance contractor ever ceases ambulance operations? Any smaller private ambulance company today operates in a very tight,

fragile set of financial circumstances, all of which need to balance. Any one issue could break this balance and put the company financially under: a devastating blow that takes away too many of the owners, retirement with no buyers, or not enough paying transports. Should this happen, with or without notice, the first line of responsibility is Tuolumne County EMS Agency, which under the provisions of State law, regulates ambulance operations in franchise zones. If the current contractor or an approved successor failed to continue, then the County would have to try to find another operator, at least temporarily. If the reason for the current contractor's failure were lack of revenue, then the County would need to consider a subsidy to continue operations.

The paramedic coverage in Groveland is adequate for one emergency at a time, or an auto accident with three or less patients. If the District wanted to increase its paramedic coverage, the County Emergency Medical Agency could explore with Groveland Fire the application of the EMT II classification for firefighters in the Groveland area. This is consistent with California Code of Regulations Title 22, Social Security Division 9, Pre-hospital Emergency Medical Services Chapter 3, and Emergency Medical Technician-II.

This classification for Emergency Medical Technician II was specifically developed for rural populations and permits the practitioner to apply *some* advanced life support and drug therapies without going through the full licensure process of a full paramedic license. With no back-up ambulance and the nearest second advanced life support fifteen miles away, such a move would improve the level of service without the cost of a full paramedic program in the Fire Department. It would be particularly beneficial to the senior population demographic in Groveland.

However, before this option can be explored or become a Citygate Master Plan recommendation, the Groveland CSD will have to act on other recommendations in this Master Plan to modestly increase the number of firefighters so that some, not all, could be trained to this higher level. With a greater roster count, the CSD could have at least one on-duty per day to back-up the ambulance service.

Why not a Fire Department paramedic ambulance? First, the cost per hour for a Fire Department paramedic is higher than a private employee. Second, if there was not enough ambulance type revenue to completely support the firefighter ambulance staffing cost, then basic fire operations would be forced to subsidize the ambulance operation. Third, if the ambulance crew were counted as an essential part of daily fire staffing that could respond to "fire calls," every time they transported a patient to a distant hospital, the Department's staffing would be reduced. Given these issues and the fact that the County's operator can maintain an ambulance in the Groveland area, Citygate does not see a need for the Fire Department to add an ambulance.



## **SECTION 3—GROVELAND DEPARTMENT REVIEW: NON-DEPLOYMENT FUNCTIONS**

The first two sections of this report and planning effort described background material and how the current deployment system operates in Groveland. They described in detail the current response system and needs for a fire and emergency medical response in the Groveland community. The other aspect to fire services is the administrative functions that support and facilitate the emergency response system.

Section 3 reviews these administrative functions such as supervision, training, fire apparatus etc. in order to complete the review of fire services and allow an integrated set of recommendations, because any deployment change recommendations need to be properly supported by administrative functions.

### ***3.1 GENERAL ADMINISTRATIVE REVIEW INFORMATION***

The Groveland Fire Department needs to continue to work closely with the California Department of Forestry and Fire Protection (CDF) and United States Forrest Service (USFS) Fire Department. All three agencies need each other in the Groveland area in order to provide a more complete response as well as to help ensure firefighter safety and add robust command control.

The Fire Department leadership, in addition to using volunteer and career firefighters, needs to look at other models, such as a part-time firefighter program, and develop this part-time fire fighter model for the Department in addition to continuing with the long-standing volunteer system.

The current staffing for the fire prevention program, once a building is constructed, is provided by on-duty firefighters. The community could assist in a volunteer capacity. In this case, the demographics work in the Department's favor. The Department could recruit, train, and deploy the large group of retirees as volunteers in prevention. The volunteers could ensure code compliance, particularly the Public Resources Code requiring vegetation clearance around structures. Selected volunteers with advance training could perform less intensive inspections of businesses.

As the community wrestles with some limited growth, the Department needs to ensure that its needs are met by proper planning on the County's behalf and that its staffing (career and volunteer) keeps pace with the community's growth. A zero-square-footage sprinkler ordinance in all new occupied buildings and a program to retrofit older buildings with sprinklers would help control the severity of fires in new buildings. Even with that in place, there will still be a need for the basic minimum level of staffing, which the Department struggles to provide today, as has been described elsewhere in this study.

Due to the Groveland's fire-prone vegetation environment, training should include a strong emphasis on firefighting in the wildland/urban interface. The training program should pay particular attention to firefighter safety and wildland fire behavior. The Department conducts frequent drills of both career and volunteer members with the CDF and USFS personnel in Groveland, as well as attending training courses on wildland fire behavior and firefighting techniques.

## **3.2 OPERATIONS SYSTEMS**

The operations system covers a multitude of activities. For the purposes of this Master Plan, the consultant interviewed staff, inspected the apparatus, equipment and facilities, examined some documents and conducted “listening sessions” with career and volunteer firefighters. The consultant reviewed the daily reports of activities and fire reports, examined the readiness of fire apparatus and equipment, reviewed the emergency incident dispatch system, evaluated the standard response plan and pre-fire planning program, appraised the training program and volunteer fire programs. All of these are important components of a fire department operation and are critical to ensuring that needed resources can respond quickly and effectively.

### **3.2.1 Daily Reports**

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

#### *Issue:*

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

#### *Observations:*

The Department maintains a daily handwritten logbook that records all major activities and emergency responses.

The chief makes a weekly written report to the District Manager.

The Department uses the National Fire Incident Reporting System (NFIRS) and makes a quarterly download report to the Office of State Fire Marshal to record incidents.

The District has a computer-based management information system used for training and apparatus maintenance records.

The Department has an unfilled full-time clerical position.

While the incident reports are computerized, the Department does not yet use a full featured computerized records management system. Such a system would help record events such as employee training and fire prevention activities, make compiling reports less work and take less time than a paper-based system.

#### *Commendations:*

The Department participates in the NFIRS program that provides accurate information about the fire problems that the District faces. This participation allows the District access to data that can provide direction for the fire prevention activities as well as demonstrate the critical needs of the District.

**Recommendation #1—Daily Reports:**

A computer-based management information system software program would greatly enhance the Department’s record management and add considerable efficiency to their leanly staffed administrative functions.

The Department should purchase one of these systems. There is a learning curve associated with their use, and as the firefighters gain familiarity with the system, the Department can implement more of the system. Citygate recommends starting with a basic program for routine administrative reports, personnel scheduling and the training scheduling/class hours per person module. Other modules typically are fire inspection tracking, protective clothing, tool and equipment repairs and pre-incident planning.

**3.2.2 Apparatus and Equipment Readiness**

*Issue:*

Does the District operate and safely maintain fire apparatus appropriate to the needs of the Groveland area?

*Explanation:*

The fire service generally groups fire apparatus into two categories. An engine company’s primary function is to pump and deliver water and to perform basic firefighting functions. A truck company’s crew performs the laddering of buildings, overhaul to ensure the fire is completely out, ventilation procedures to remove smoke and hot lethal gasses, forcible entry into secured buildings, search of buildings for victims and perform rescues, and salvage operations to remove valuable property from the fire building. In Groveland, the engine companies must perform all these tasks as the community’s size and fire risks do not require a specialized ladder truck apparatus, except possibly in very infrequent circumstances. Other types of apparatus include water tenders whose main function is to carry large quantities of water, squads or rescue companies which carry a variety of rescue and emergency medical equipment, and other auxiliary apparatus.

To be effective, fire apparatus must be of proper design, well equipped with the proper hose, appliances, tools, ladders, and paraphernalia necessary to do the complex work of firefighting, rescue, emergency medical, and public service type assignments. There should also be a system of testing, maintenance, and repair, which ensures a high state of readiness of apparatus, and critical equipment. Groveland also has a terrain and climate issue. Fire Apparatus in the District must be of adequate design to reach all response areas in all likely weather conditions.

*Observations:*

Some of the Department apparatus is outdated and some is ill suited for the Department’s tasks. While it is not the task of Citygate to develop fire engine specifications for the Department, future design must incorporate certain basic functional aspects. New engines should include adequate angle of approach and departure and turning radius for the winding roads and hills; sufficient power to climb hills readily; automated labor saving features that partially make up for

lack of staffing; and configuration to easily attack wildland as well as structure fires in all weather conditions.

While the Department has structure fire pumpers and a rescue unit, for use in wildland fires it employs older, heavy-duty pick-up truck type units that carry very limited water. While Groveland Fire Department is not the primary wildland fire response agency (CDF and Forest Service are), Groveland Fire does respond to and have the possibility of wildland fires in its jurisdiction. To provide a more capable wildland fire attack, Citygate also recommends that the Department purchase at least one “Type 3” wildland engine as part of its fleet. Such an apparatus carries 500 gallons of water, has a larger pump, and carries more hand tools and a 3-4-person crew in an enclosed cab. On and or off-duty personnel could staff this engine and use it to attack moving vegetation fires as well as assist with exposure protection from structure fires.

The District’s mechanic is not a certified fire mechanic. The California Fire Chiefs Association and Fire Apparatus manufactures sponsor a multi-class instructional program that trains mechanics in the fire-specific apparatus systems, such as pumps, water valves and foam systems

*Commendations:*

The Department performs the basic, required preventative maintenance for fire apparatus. All apparatus receives a daily, weekly, and monthly check. Firefighters report and record the daily check on a Daily Apparatus Log. Operators report the weekly and monthly checks on a Miscellaneous Information report. Apparatus receive preventative maintenance from a District mechanic. The Department records preventative maintenance as well as repairs on the District’s vehicle maintenance management information program. The District’s mechanic assists the Department with some minor repair and maintenance work. An outside vendor performs complex or specialty fire apparatus repairs.

Apparatus operators have at least a regular Class B driver’s license.

### 3.2.3 National Fire Apparatus Recommendations<sup>3</sup>

To maximize fire fighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities. In the United States, the principal guidance on fire apparatus design, safety and maintenance has been the standard published by the National Fire Protection Association (NFPA) known as Standard #1901.

In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus built prior to 1991 might have few of the safety upgrades required by the 1991 and subsequent editions of the NFPA fire department apparatus standards.

---

<sup>3</sup> National Fire Protection Association (NFPA) Standard For Automotive Fire Apparatus #1901, 2003 Edition.

As stated in #1901:

*Because the changes, upgrades, and fine tuning to NFPA 1901 since 1991 have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to firefighters by keeping pre-1991 fire apparatus in first-line service.*

*The 1991 edition of the NFPA fire department apparatus standards included, among many other things, requirements for fully enclosed riding areas, stronger aerial ladders, auxiliary braking systems, reflective striping, improved warning lights, and no roof-mounted audible warning devices. The 1991 editions have been recognized as the benchmark from which the new, improved apparatus have evolved. It is recommended that only apparatus that meet the 1991 or later editions of the NFPA apparatus standards or that are refurbished in accordance with NFPA 1912 be permitted to operate in first-line service, to ensure that the latest improvements and upgrades are available for the firefighters.*

*It is recommended that apparatus built to meet the 1979 or 1985 edition of NFPA 1901 (or equivalent ULC standards) be placed in reserve status and upgraded to incorporate as many features of the post-1991 fire apparatus as possible (see Section D.3). Apparatus not built to NFPA apparatus standards or manufactured prior to 1979 (over 24 years old) should be considered for upgrading or replacement.*

NFPA # 1901 Goes on to discuss the above pivotal advice:

*It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. How long that is depends on many factors. Some of those factors are mileage, quality of the preventative maintenance program, quality of the driver training program and rules enforcement, quality of the original builder and components, availability of parts, and custom or commercial chassis to name a few. In the fire service, there are fire apparatus with 8 to 10 years of service that are just plain worn out. There are also fire apparatus that were built with quality components, that had excellent maintenance, and that have responded to a minimum number of runs that are still serviceable after 20 years. Most would agree that the quality and timeliness of maintenance are perhaps the most significant factors in determining how well a fire apparatus ages.*

NFPA 1901 offers the following advice where an older, but low mileage fire apparatus is to be considered for upgrading:

*Any apparatus, whether in first-line or reserve service, should be upgraded as necessary to ensure that the following features are included as a minimum:*

- (1) Fully enclosed seating is provided for all members riding on the fire apparatus.*
- (2) Warning lights meet the current standard.*
- (3) Reflective striping meets the current standard.*

- (4) *Slip resistance of walking surfaces and handrails meets the current standard.*
- (5) *A low voltage electrical system load manager is installed if the total continuous load exceeds the alternator output.*
- (6) *Where the GVWR is 36,000 lb (16,000 kg) or more, an auxiliary braking system is installed and operating correctly.*
- (7) *Ground and step lights meet the current standard.*
- (8) *Noise levels in the driving and crew compartment(s) meet the current standard.*
- (9) *Engine belts, fuel lines, and filters have been replaced in accordance with the manufacturers' maintenance schedule(s).*
- (10) *Brakes, brake lines, and wheel seals have been replaced or serviced in accordance with the manufacturers' maintenance schedule.*
- (11) *Tires and suspension are in serviceable condition.*
- (12) *All horns and sirens are relocated from the roof to a position as low and as far forward as possible.*
- (13) *Seat belts are available for every seat and are new or in serviceable condition.*
- (14) *Sign plates are present stating no riding on open areas.*
- (15) *A complete weight analysis shows the fire apparatus is not over individual axle or total GVW ratings.*
- (16) *The fire pump meets or exceeds its original pump rating.*
- (17) *Alternator output meets its rating.*
- (18) *Water tank and baffles are not corroded or distorted.*
- (19) *A transmission shift pump interlock is present and working properly on vehicles equipped with an automatic transmission.*
- (20) *All loose equipment in the driving and crew areas is securely mounted to prevent its movement in case of an accident.*
- (21) *The radiator has been serviced in accordance with the manufacturers' maintenance schedule and all cooling system hoses are new or in serviceable condition.*
- (22) *If so equipped, the generator and line voltage accessories have been tested and meet the current standard.*
- (23) *If equipped with an aerial device, a complete test to original specifications has been conducted and certified by a certified testing laboratory.*

*Fire department administrators and fire chiefs should exercise special care when evaluating the cost of refurbishing or updating an apparatus versus the cost of a new fire apparatus. A thorough cost-benefit analysis of the “value” of upgrading*

or refurbishing a fire apparatus should be conducted. In many instances, it will be found that refurbishing costs will greatly exceed the current value of similar apparatus.

Apparatus not built to NFPA apparatus standards or manufactured prior to 1979 (over 24 years old) should be considered for upgrading or replacement.

Citygate's Fire Chiefs in their experience have followed the advice of NFPA #1901. They agree with the overall advice to replace apparatus older than 1979, and to place, as soon as possible, into reserve or upgrade equipment purchased between 1979 and 2002. The table below outlines the type and ages of the Groveland fire apparatus.

### Groveland Fire Department Fleet Inventory

Unit Identity	Manufacturer / Model	Model Year	Assignment	Prime Mover Capacity	Notes
780	Dodge Ram Pickup	1999	Chief's Vehicle	Gasoline	
780A	Ford Bronco	1990	Assistant Chief's Vehicle	Gasoline	
781	Ford F-150	1980	Utility	Gasoline	
782	American La France	1971	Front line engine	Diesel 1250 GPM pump 500 gallon tank	Purchased used in 1986
783	Chevrolet	1973	Wildland engine Type 4	Gasoline 100 GPM pump 120 gallon tank	Received from Forest Service (surplus) 1987
785	Ford	1992	Wildland engine Type 4	Gasoline 100 GPM pump 200 gallon tank 10 gallons foam	Used for rescue work. Rescue gear moving to E-787
786	Van Pelt	1959	Reserve engine	Gasoline 750 GPM pump 500 gallon tank	Purchased 1982-
787	Freightliner 112	2000	Front line engine	Diesel 1000 GPM pump 750 gallon tank	
788	Grumman	1986	Front line engine	Diesel 1000 GPM pump 750 gallon tank	

*Photos of the above equipment are located in the Apparatus Photo Appendix to this report*

It is apparent that:

- ◆ Three units noted in grey shading, including a front line pumper and wildland unit pre-date 1979 and should be replaced as soon as possible unless they can very cost-effectively be upgraded;
- ◆ Three units noted in *underlined italic* font were built to the 1979 or 1985 standards and should have critical safety systems upgraded per NFPA #1901, if cost effective;
- ◆ The light duty chief's and utility vehicles are not covered by NFPA #1901 and can stay on the road if proven safe and cost-effective to operate.

In this study, Citygate did not employ an independent mechanic to ascertain the condition of each apparatus and its safety and firefighting systems. That is what the District repair and inspection program does to ensure the apparatus meets State Vehicle Codes for safe operation for the era in which it was designed. What Citygate does know from the above age review, a superficial inspection, and Citygate's experience with the NFPA recommendations is the following.

**Finding #7:** *The fire apparatus are older than in typical suburban service and will continue to present challenges for cost-effective repair and "up time" given their age.*

**Finding #8:** *The Department does not have an adequate wildland fire type apparatus. The current, older Type IV units carry too little water for sustained fire attack in more than a small residential lot size grass fire situation. While CDF and the Forrest Service are responsible for wildland fire fighting, the homes in Groveland would be better served if Groveland also operated a more capable Type III wildland fire apparatus that carried a crew of 3-4 in an enclosed cab and carried 500 gallons of water and at least a 500-gallon per minute pump.*

*Commendations:*

The Department has an apparatus maintenance program. The required daily, weekly, and monthly checks are adequate to ensure a well-maintained fleet. Attention to these details is what ensures that the aging apparatus functions reliably:

### **Recommendation #2—Fire Apparatus:**

- 2.1 A one-station Fire Department should operate the following minimum fire apparatus:
  - One Front Line Pumper (2 with a second station)
  - One Reserve Pumper
  - One Type III Wildland Pumper
  - One small rescue/utility apparatus
- 2.2 The Department should obtain the funding to reduce its fleet, to operational necessity and at that time, remove from service the pre-1979 apparatus.
- 2.3 The District should send one of their mechanics to the State Fire Training Mechanics Academy leading toward eventual certification. This would improve repair turn around times to have the repairs done locally, instead of being contracted out to a fire equipment vendor in the Valley.

Implementing the above recommendations will mean:

- ◆ Retiring three pre-1979 apparatus;
- ◆ Placing the 1984 Pumper into Reserve status;
- ◆ Replace when possible the two Type IV wildland units with one (1) new Type III Wildland unit;
- ◆ Plan for the replacement of the 1984 Reserve Pumper when it turns 25-years old in 2009, as past that point the availability of parts and the cost of repairs will likely be prohibitive;
- ◆ If a second fire station is opened and staffed, new development via impact fees or a similar mechanism should pay for a second (2) front line structure pumper.

#### **3.2.4 Dispatch**

For dispatch services, the Department contracts with the Tuolumne County Fire Department along with other fire agencies in the County. CDF then actually provides the dispatching. This effective and long-running operation helps to move fire mutual aid units around the county in a coordinated manner. When Groveland has to call for help, the communications center manages the mutual aid response plans.

Dispatching for the fire service consists of the following five steps: [1] receiving the call; [2] determining what the emergency is; [3] verifying the emergency location; [4] determining what resources are required to handle the call; and [5] notifying the units that are to respond. Fire dispatchers must do this quickly and flawlessly every time. The fire dispatch center maintains status of responding units, noting their arrival times, return times and “in quarters” times. They also track the time of containment and control of the incident.

*Issue:*

Does the Department dispatch system provide accurate dispatching service to the Fire Department?

*Observations:*

Tuolumne County provides emergency dispatching for the Department. Tuolumne County contracts with the CDF for dispatching services. Actual dispatching is through the CDF's dispatch center in San Andreas in Calaveras County.

CDF uses Altiris Computer Aided Dispatch system (CAD) to dispatch and track resources. The Department finds this system adequate to meet its needs.

Through the agreement with Tuolumne County and thus CDF, the Department has access to at least thirteen tactical and command channels for use on the fireground. Channel selection depends on the type of incident and involved agencies.

The county will probably start charging the Department \$15,000 per year for dispatch services starting in 2007.

*Commendations:*

Utilizing a regional fire dispatch service, such as the Department does, is a best practice.

**Recommendation #3—Dispatch:**

Citygate recommends that the Department continue its relationship with the county dispatch center. Even with the nominal charge of \$15,000, the District is receiving services at a cost less than it could provide them separately.

### 3.2.5 Mutual Aid/Automatic Aid

Since only the very largest cities have sufficient resources to handle almost every call, fire departments developed mutual aid systems to assist each other when their needs exceed the capabilities. Departments build their mutual aid agreements upon the concept of reciprocity; that is, "I will take care of you this time if you will take care of me next time." As long as the give and take of the agreement stays fairly even, it works very well. In California virtually all fire departments are signatory on the California Master Mutual Aid Agreement, which creates a tremendous depth of capability for any jurisdiction that suffers a calamitous fire. A special case of mutual aid is automatic aid, whereby adjoining jurisdictions assist each other with their closest resources, which may be closer to the emergency than the jurisdiction's own resources.

*Issue:*

Does the Department maintain a sufficient mutual aid and automatic aid system with other jurisdictions? Are the agreements written and current?

*Observations:*

Other than the California and County Master Mutual Aid Agreement, the Department has some mutual aid agreements for areas near the airport, and with Smith Station and Moccasin Departments. Some of these are in the process of review by the Department and its partner agencies.

The Department participates, with other local government departments, in the Tuolumne County Fire Chiefs Association.

The Department receives mutual aid from CDF, the US Forest Service, Tuolumne County Fire Department (a CDF local government operation), and other Tuolumne County local government fire agencies under the State and County Mutual aid plans.

Mutual aid for Groveland, with the exception of CDF (seasonal staffing), Smith Station Volunteer Fire Department, and the US Forest Service (seasonal staffing), must travel up the Priest Grade on Highway 120. This geographic limitation means extended driving times for departments that are relatively close to Groveland in miles as noted in the table below:

### Closest Mutual Aid Fire Stations

Station	Station Number	Agency	Type	Distance to Groveland
Groveland		CDF	Career/Seasonal	0.5 miles
Smith Station	63		Volunteer	6 miles
Buck Meadows	42	US Forest Service	Career/Seasonal	9 miles
Moccasin	62		Volunteer	9 miles <sup>◇</sup>
Chinese Camp	61		Volunteer	17 miles <sup>◇</sup>
Jamestown	76	Jamestown FPD	Volunteer	23 miles <sup>◇</sup>
Sonora	75	City of Sonora	Combination	25 miles <sup>◇</sup>
Sonora	59	CDF	Combination	25 miles <sup>◇</sup>
Green Springs	4468	CDF	Career	25 miles <sup>◇</sup>
Blanchard	4456	CDF	Career	30 miles <sup>◇</sup>
Columbia College	79	Columbia Comm. College	Combination	30 miles <sup>◇</sup>
Columbia	74	Columbia FPD	Combination	30 miles <sup>◇</sup>

There are additional fire agencies in Tuolumne County that are more distant.

<sup>◇</sup> Must ascend Priest Grade en-route to Groveland

### 3.2.6 Radio Communications

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

*Issue:*

Is the current radio communications system adequate for the needs of the Department?

*Observations:*

The Department uses the Tuolumne County Fire Radio Plan. This plan has four major groups of frequencies organized by general response type and area. Group 1 appears to be primarily for fires and emergencies in Tuolumne County. It has 14 frequencies. Group 2 appears to be for

fires on adjacent jurisdictions, CDF Madera Mariposa Merced Unit, US Forest Service and Yosemite National Park. It also has 14 frequencies. Group 3 is a Groveland CSD group; it has four frequencies. Group 4 is a tactical group and has 13 tactical frequencies.

The FCC-mandated narrow banding issue is alive and well in Groveland as elsewhere in the country. Groveland Fire has already converted 90 percent of its apparatus and handheld radios to the narrow band technology. The remaining 10 percent of the radios are currently funded for replacement by March 2007. Narrow banding is the technical process that changes the way that radios work to provide agencies more VHF frequencies to utilize. The Federal Communications Commission requires that all VHF radio systems will have to be narrow banded. All State, Cities, Counties, and Governmental agencies that are FCC, VHF license holders must do this. The requirement first appeared in 1998 and became a mandate in 2003. Narrow band systems will eventually improve or enhance overall VHF radio systems.<sup>4</sup>

The radio frequency plan for Tuolumne County appears to be adequate to meet the needs of the Department.

### 3.2.7 Pre-Incident Plans

A pre-incident plan is one of the most effective tools for aiding the fire department in effectively controlling a fire or other emergency incident. This is particularly true in major commercial and industrial facilities that have complex construction and fire protection systems. They also pose a safety threat to firefighters and occupants alike. Pre-incident planning ensures that firefighters know as much as they can about a facility's construction, occupancy, and fire protection systems before an incident occurs.

#### *Issue:*

Does the Department have a program that provides pre-incident plans of the major commercial and industrial facilities?

#### *Observations:*

Department personnel have developed some Pre-Incident Plans. This is a project in its infancy. The Pre-Incident Plans contain complete information about floor plans access points, utility shut-off's and fire hydrant locations. About 80 percent have building diagrams included. The plan is to develop a Pre-Incident Plan for every building or facility of consequence.

The Department does not have a Pre-Incident Plan book or other filing system for apparatus or command officers.

---

<sup>4</sup> In February 2003, the FCC ordered the re-farming process to start. Spectrum re-farming is the splitting of radio channels. This will cut the channels in half and free up a new channel on every frequency for another user. This first happened in 1963 to create many of the radio channels in use today. Public Safety has until 2018 to narrow band their radio systems, but the FCC has tinkered with the laws of economics. Any new radio design approved by the FCC after January 2005, can only have narrow band operation. These new radios will not even work on the old system. After 2008, FCC prohibits the sale of new wide band radios.

*Commendations:*

The Department recognized the value of pre-incident planning and has started on a project to develop it.

*On-going Efforts:*

The Department should continue to develop the Pre-Incident Plans for all structures and situations that are either large in size, of importance to the community, or unique with regards to the fire combat challenges. Pre-Incident Plans will increase the combat power of the available forces by speeding up the intelligence gathering and planning phase of an incident, allowing the firefighters to make correct critical decisions earlier when the incident is smaller.

The Department should add a diagram to the Pre-Incident Plans as this will help fire ground commanders visualize the challenge they face at an incident. This also makes the Pre-Incident Plan a valuable training tool. The National Fire Academy has formats available. Fire information management software usually has a Pre-Incident Plan tool or supplement.

### 3.2.8 Hydrant Maintenance

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

*Issue:*

Does the Department have an inspection and routine maintenance system that ensures a reliable delivery of water from hydrants at their rate fire flow?

*Observations:*

The Fire Department has done no hydrant inspections for the last two years.

The Water Department arm of the CSD has started this year an on-going inspection and flushing program.

### 3.2.9 Training and Education

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

*Issue:*

Is there an effective training program in the Department?

Is there an effective education program in the Department?

What percent of employees are in a certification process? What percent are certified at their level?

Training is the keystone to effective emergency response. During emergency operations, time is always of essence and an effective training program can mean the difference between a fire contained to the area of origin and one that causes great damage or the difference between effective CPR that starts on time and a patient that dies.

*Observations:*

The training program is coordinated by one of the career firefighters under the direction of the Fire Chief. For this work, the Fire Engineer receives a special duty adjustment of 15 percent onto his base wage. The training officer has been taking the appropriate classes to get his Training Officer certification from the State Fire Training System; he needs an additional 8 hours of course work to complete this. Completion of his certification will help ensure that the training delivery meets the recommended best practices of the State Fire Training System.

Career staff trains for two hours each day on selected subjects.

Volunteers receive training bi-weekly for three hours.

The training budget increased last year to \$15,000 from the previous year's \$1,300. This is a substantial increase in commitment to training.

The District developed a top quality confined space rescue prop for the use of the Fire Department and other departments in the District that encounter confined space issues.

The Department maintains an extensive training library.

*Commendations:*

Everyone in the CSD leadership understands the value of training and are funding improvements as fast as funding allows.

The District Classification and Compensation System recognizes and supports a training position.

Three members of the career staff of Department are CPR instructors.

The substantial increase in training budget should assist the Department with recruitment of both volunteer and career firefighters as well as further professionalize the Department.

The Department maintains an appropriate fire-service training library.

*On-Going Effort:*

In addition to the above programs, as previously already recommended, a fire service, computer-based management information system would also be of great help with training. It would allow management to inventory the training by individuals, determine the outside training class needs of its firefighters based on the inventory, schedule training and maintain the appropriate records.

### 3.2.10 Fire Reports

Fire reports provide the information about the causes, damage, injuries and deaths from fires that fire protection statisticians, fire officers, planners, fire protection engineers and architects use to make the world safer from fire. The U.S. National Fire Incident Reporting system (NFIRS), the largest and most detailed fire incident database in the world, provides a standard format for data collection, enabling aggregation of and comparisons across stations, communities and states. NFIRS meets the needs of both the people collecting the data and the people who use it.

*Issue:*

Is the fire report system compliant with the Federal National Fire Incident Reporting System (NFIRS)?

*Observations:*

The reporting system is NFIRS compliant.

*Commendations:*

The Department uses the appropriate fire reporting system that meets best practices.

### 3.2.11 Volunteer Firefighter Program

In rural combination departments such as the Department in Groveland, the role of volunteers or reserve firefighters is to make up the balance of firefighters required to properly staff incidents. This is the role of the volunteers in the Department. Consequently, when the Department responds to an incident with one engine staffed with two firefighters and a chief officer responds in a command vehicle, the volunteers should make up the remaining required ten firefighters.

The Department, like most fire departments in rural and suburban America, has its roots in the volunteer fire service. As the demands for service increase and the requirements for training multiply, fire departments, including this Department, rely more heavily on career-staffed fire companies. As this transition occurred, many volunteers became career firefighters for the District; some volunteers left the Department due to increased commitment requirements and some stayed in a volunteer role.

*Issue:*

Do sufficient volunteer firefighters respond to a structure fire to ensure the required number of supplemental personnel?

What is the proper role of the volunteer fire component of the Department?

*Observations:*

The Department maintains neither minimum nor maximum number of volunteers. There are ten volunteers on the roster; of which eight are very active. Each volunteer receives a small stipend to offset expenses.

Two of the volunteers are EMT-I's and provide Basic Life Support.

Two of them have Class B licenses and drive fire department response vehicles.

Two volunteers expressed interest in becoming qualified to operate apparatus.

There is a volunteer Assistant Chief. He is a medically retired former career fire officer. He assists the chief with special projects, Fire Department administration, and the Cadet Program. He also assists with training in the classroom setting and supports the Pre-Incident Planning Project. He does not respond to incidents in a command or active firefighting function.

In order for the volunteer firefighters to provide sufficient combat force for an involved room and contents fire in a structure, the Department needs at least thirty volunteers on the roster. Coincidentally, the Insurance Services Office (ISO) counts every three volunteers as equivalent to one career firefighter on duty.

If a significant number of volunteers cannot be recruited, trained and maintained from the Groveland population, then the District should consider a Part-Time Firefighter program. Such a program employs young men and women who are studying in the Community College system to become firefighters. Once they obtain their basic Firefighter One Certification, they can be employed as part-time, limited duration employees as they complete their studies. They can be paid hourly, non-benefited wages comparable to those found in the local service industry. Therefore, instead of a generic job during college, they gain firefighting work experience and the fire department can gain additional staffing that can be scheduled and depended upon to supplement the small career staff and regular volunteer force.

A part-time program would be valuable as a supplement to a volunteer program, because it is not realistic to expect that there are substantially more people interested in being volunteer firefighters in Groveland than represented in the current volunteer program. A 20- to 30-member volunteer program cannot reliably provide one or two firefighter positions 24/7/365. With an on-duty minimum staffing of 2 at a fire station being the bare minimum necessary to provide even a rudimentary emergency response, using volunteers and part-time employees when they are available to increase the on-duty staffing to 3 or more, will make a significant improvement in emergency response.

**Recommendation #4—Volunteer Firefighter Program:**

- 4.1 The Department should continue its efforts to recruit, train, and retain volunteers. The National Volunteer Fire Council [www.nvfc.org](http://www.nvfc.org) maintains a website that supports volunteer fire recruiting, training, and retention efforts.
- 4.2 The Department should consider constructing a Part-Time Firefighter (PTF) program that will provide non-career staff that can supplement, but not replace, the need for the minimum of 2 career firefighters in each station. These staff can be very useful at the emergency scene when more than the career staff minimum is needed.

**Recommendation #4** (Continued)

- 4.3 A part-time program would be valuable as a supplement to a volunteer program, because it is not realistic to expect that there are substantially more people than represented in the current volunteer program interested in being volunteer firefighters in Groveland. A 20-member volunteer program cannot reliably provide one firefighter position 24/7/365. With an on-duty minimum staffing of 2 at a fire station being the bare minimum necessary to provide even a rudimentary emergency response, using volunteers and part-time employees when they are available to increase the on-duty staffing to 3 or more, will make a significant improvement in emergency response.
- 4.4 The Department should try to recruit new volunteers from other Divisions of the Groveland CSD.

### 3.2.12 Fire Prevention Systems

Fire prevention includes any activity that decreases the incidence and severity of uncontrolled fire. Usually the methods used by the fire service focus on inspection, which includes engineering, code enforcement, public information, public education, and fire investigation.

*Issue:*

Does the Fire Department have fire prevention programs commensurate with the risks and needs in the Groveland Community?

*Observations:*

The District has adopted the California Uniform Fire Code, which is part of the California Uniform Code set.

There is no current, regular, fire code inspection program, although currently the Department is pre-emergency planning all the commercial buildings in order to be more effective in the event of a fire or other emergency. This program also works as an inventory of the community's fire risk and will help organize the code inspection effort. Once the Department finishes the pre-emergency planning effort, they will engage in a vigorous inspection program.

The career Fire Engineer who is currently in charge of fire prevention has only been able to complete part of the required training necessary to operate a prevention program. While he was scheduled many times to take the remaining course work, the limited staffing prevented this. This situation points out, once again, the very tenuous nature of the staffing of the Department. Staffing is the issue that restricts small departments from achieving even modest program improvements that could eventually lead to significantly more effective programs. Groveland's ability to deliver fire prevention services commensurate with the risk will not increase until resolution of the staffing issue, providing some type of additional help occurs. Fire prevention programs depend upon a trained cadre of firefighters to oversee the effort.

Because Groveland is entirely within the CDF State Responsibility Area and wildland fires and fire prevention are a CDF responsibility, the community must adhere to applicable sections of

the Public Resources Code. These include standards of construction, access, water supply, and hazard reduction.

Tuolumne County Fire Department, through its CDF contract, performs new construction plans review and inspections for new construction. The Groveland Fire Department, under the Fire Code, has the responsibility to conduct maintenance inspections on commercial buildings over their operating life once the County issues the Certificate of Occupancy when construction is completed.

The Pine Mountain Lake Safety Control Officer conducts hazard reduction and defensible space inspections enforcing Public Resources Code Section 4291 within the Pine Mountain Lake subdivision.

Tuolumne County does other code enforcement, and when applicable, the Department personnel accompany the county's inspector.

*Commendations:*

The Department should continue with its current initiatives. It does recognize the need for prevention, outdoor fuel abatement and public education programs.

**Recommendation #5—Fire Prevention Systems:**

- 5.1 The Department needs to complete the fire prevention training for the assigned employee as soon as possible. This is another example of the small fire department circumstance. Groveland Fire Department has all the same responsibilities of a larger organization without the training or staff to properly carry out these responsibilities. The Fire Code requires maintenance inspections of commercial buildings over their life span.
- 5.2 Once a second manager is hired and the Fire Chief has help in operating the Department's many programs, the Department should utilize the talents of the population to assist with its inspection program. A "Volunteers in Prevention" (VIP) program would be most beneficial. These volunteers, drawn from the large retiree population, could conduct defensible space/hazard reduction inspections. This training is fairly simple and straightforward. Properly trained, they could assist with other Fire Code inspections, freeing up the career staff to conduct the more complex inspections that require a significant training investment.

3.2.13 Public Information

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

*Issue:*

Is the public information system effective in providing information about the Fire Department and providing information about fire prevention?

*Observations:*

Given the small number of career staff, the Fire Chief is the Public Information Officer for the Department, providing information to the community on an as needed basis.

On large incidents, the County (CDF) assists with this task.

### 3.2.14 Public Education

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

*Issue:*

Does the Department have an effective public education program that takes advantage of opportunities for exposure?

Does the public education program recognize the changing role of the fire service by broadening its scope?

*Observations:*

There is a small public education program. School visits are done in cooperation with CDF. The on-duty crew does it on an *ad-hoc* basis when they see a need or there is a specific citizen request.

There is a Fire Cadet program in cooperation with the local high school. Classes are held at the fire station and are supported by career staff. This is supported by a Special Duty position and compensation per the CSD Classification and Compensation Plan.

The Department participates in parades and other community activities; however, these activities, while publicizing the Department, have no fire prevention or community risk reduction focus.

**Recommendation #6—Public Education:**

The Department should initiate two public education programs:

- 6.1 In the fall, during fire prevention week, the Department should host an open house with a structure fire or other community risk reduction focus timed for the winter as its theme.
- 6.2 In the spring, in cooperation with CDF, the Forest Service and Yosemite National Park, the Department should conduct a prevention program that emphasizes outdoor hazard reduction, evacuations and defensible space.

### 3.2.15 Fire Investigation

Preliminary and subsequent fire investigations of all fires are essential to understand the sources of the community's fire problems. Accidental fires may reveal weaknesses in the codes, in the

building inspection process, or in other aspects of processes. Suspicious fires may reveal an arson problem.

Arson fires, in particular, are often the most destructive of fires. Arsonists may start fires for many reasons: profit, insurance, thrill, reputation, or other psychological reasons. If a community has an arson problem, and most do, the investigation requires the combined efforts of the fire investigators, police department, and prosecuting attorneys. Investigators need adequate and up-to-date training in both investigative techniques and investigation law.

*Issue:*

Does the community have an effective fire investigation program in place, and if so, who is responsible?

*Observations:*

The Department does preliminary investigation of all fires. In obvious cases, it does the follow-up work to close the case.

After preliminary investigation, if the origin of the fire cannot be determined, or is suspicious, CDF does the complex case follow-up work and investigates arson cases.

For arson cases, the Department can activate the Countywide Arson Task Force.

*Commendations:*

The fire investigation program is adequate to meet the Department's needs.

### 3.2.16 Risk Management and Safety

Given the increasing focus of the Occupational Health and Safety Administration (OSHA) in regulating safety in the fire service and all local government operations, the Groveland CSD and Fire Department understand the need for risk management and safety programs.

Firefighters are in a high-risk occupation. Experts who have examined mortality and morbidity statistics of the fire service agree that during emergency operations it is the most hazardous occupation in the country. An effective risk management program is an essential component of a fire department that adheres to best practices.

National Fire Protection Association (NFPA) 1500 is the umbrella standard for the occupational safety and health program for the fire service. It outlines the required components of a model program, including an organizational statement, organizational structure and a safety and health committee. It also spells out the need for a scene safety officer, department safety and health officer, and training and education programs. It has chapters on fire apparatus, tools and equipment, protective clothing and equipment, emergency scene operations, facility safety, medical requirements for firefighters, a member assistance program, and critical incident stress management. A quality risk management program is an investment in the members of the fire department and demonstrates to them that the community cares that at the end of their shifts and the end of their careers they continue to live healthy and prosperous lives.

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

*Issue:*

Is there an effective risk management program in the Department?

Cal-OSHA is taking a hard look at the fire service and its compliance with safety and health guidelines. A fire department can take a number of steps to enhance the safety and health of its employees. Cal-OSHA conducts educational inspections of facilities to ensure compliance. These are “no-fault” consultative visits and can help ensure that the department is meeting Cal-OSHA requirements and make corrections in areas of deficiency. In addition, best practices for fire service risk management require adherence to the conditions set forth in *NFPA 1500, Standard on Fire Department Safety and Health Program* and *NFPA 1521, Standard on Fire Department Safety Officer*. NFPA 1500’s Component Analysis Chart recommends the fire department’s risk management plan contain the following elements:

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

*Observations:*

A cursory review of the sections of the District’s current Employee Handbook indicates that the following sections are present. This is not an in-depth analysis of the Fire Department’s safety and health program. Some elements of the Safety section may be adequate as written; others may need additional work to be complete.

- ◆ Fire department organizational statement—there is a District organizational statement and organization chart.
- ◆ Risk management plan—there is a District Risk Management Plan under Section 501 Safety.
- ◆ Safety and health policy—there is a District policy statement. In addition, there are policy statements throughout the section that refer to obedience to the rules, reporting of safety violations and workplace hazards.
- ◆ Roles and responsibilities—the safety manager is responsible for the program.
- ◆ Occupational safety and health committee—there is a “labor management” safety committee. The policy is silent on the composition of this committee and its meeting frequency.
- ◆ Training and education—There is a statement that employees and supervisors receive periodic workplace safety training.
- ◆ Accident prevention—the section outlines a process for employees to make suggestions for safety improvements.
- ◆ Accident investigation, procedures, and review—the section concludes with a requirement for reporting injuries and accidents.

Citygate’s review of the Safety section of the employee Handbook indicates the remaining sections suggested by NFPA 1500 are missing. Simply because they are missing from this document does not necessarily mean that the District or the Fire Department should develop a completely new document. The District or Fire Department may have other writings that cover these areas. In some cases, a simple declarative sentence in the current document may be sufficient and some of these items may not be applicable due to the small size of the fire organization.

*Commendations:*

The District schedules at least one Cal-OSHA consultation inspection for the entire District per year. In 2006, the District was a Cal-OSHA Golden Gate Award recipient for its safety program.

**Recommendation #7—Risk Management and Safety:**

The District should use the primary elements of NFPA Standard 1500, Standard on Fire Department Occupational Safety and Health Program, 2007 Edition as a best practice model for the *Fire Department* risk management plan components.

### 3.2.17 Personnel Administration

While there is a District Human Resources Department that is responsible for most personnel issues, some parts of the human resources system reside in the Department. These parts include disciplinary processes, overtime management and some records and files.

#### *Issues:*

Does the District maintain personnel and members' medical files at a Human Resources Department?

#### *Observations:*

The District Human Resources Department is the repository of all personnel and medical files for employees.

#### *Commendations:*

The District does appreciate the need for and operates a personnel administration system with the requisite personnel rules, classification and compensation system and lines of authority.

### 3.2.18 Facility Maintenance

Fire stations, fire training facilities, and fire dispatch centers are among the largest capital expenditures that a community can make. While most of these buildings and facilities have at least a fifty-year life expectancy, proper maintenance will ensure that longevity.

#### *Issue:*

Are there routine maintenance procedures for the Department's facilities, including land, buildings, and grounds?

Do facilities meet the requirements of the California Essential Services Building Act as of July 1, 1986?

Do facilities meet the requirements of the Americans with Disabilities Act?

#### *Observations:*

The Department has three facilities. They include the Headquarters Station 1, the station at Big Oak Flat and the station at the Airport.

The facilities appear to be adequately maintained by Department and District personnel.

The headquarters station is 4,400 square feet, built in 1988. Although it has no drive-through parking stalls, it appears to be adequate for apparatus storage. The Department needs to expand the office space, training area and crew quarters if any increases are made in the number of career or volunteer personnel using the station on a 24-hr per day basis. Expansion will require meeting the conditions of the Americans with Disabilities Act for public access and the Essential Services Act due to the size of the structure (over 4,000 square feet).

The Big Oak Flat and Airport Stations are essentially garages that store one piece of apparatus each. The Department stores Engine 786, the 1959 International/Van Pelt, at the Big Oak Flat Station. The Department stores a wildland type 4 fire apparatus, Engine 783, a 1973 Chevrolet

obtained in 1987 from the Forest Service, at the Airport Station. The intent of the storage at these two locations is that if a volunteer or off-duty career firefighters lives in the area, (which currently happens sparsely) he or she can respond with that piece of apparatus, perhaps arriving at the scene more quickly. In addition, the airport station provides some semblance of protection for the County-operated airport, which has approximately 13,000 take-offs and landings per year. Neither of these stations is open to the public and is only 525 square feet in area. Consequently, they do not come under the Americans with Disabilities Act or California Essential Services Act.

Photos of these three buildings are contained in the Stations Photo Appendix to this report.

#### *Commendations:*

Given the pressing needs of this Department in so many arenas, the fact that they maintain facilities so well, when it is normally a low priority as compared to emergency response preparedness, is to their credit.

#### **Recommendation #8—Facility Maintenance:**

- 8.1 Once the staffing elements of this Master Plan are decided upon by the CSD Board of Directors, develop a comprehensive plan to remodel the headquarters station to meet the current and future needs of the Department.
- 8.2 Due to their small size, age and cost of keeping repaired and safe, close the satellite facilities at the Airport and Big Oak Flat.

#### 3.2.19 Overall Management Team and Headquarters Functions Observations

The Department’s polices, procedures and safety programs are started, but not complete. There is not enough staff to properly develop them.

The career staff has very little time in grade and certifications for the positions they hold. They need mentoring and technical coaching. Citygate finds they have the right attitudes, and we have seen them interact in very positive ways with customers. Attitude, work ethic, and cultural sensitivity cannot be trained; the Department has good employees. What they need is a coach and mentor that can walk them through first-time issues with which they have no experience. The State has mandated the same training and safety practices for volunteers as for career firefighters. Therefore, for the District, there is no going back to the “good old days.” There is no safe harbor from these challenges.

The Department’s volunteer firefighter program suffers from problems that are similar to other similar jurisdictions, namely falling membership due to increased training hours requirements. This is a nationwide situation. The Department leadership, in concert with selected volunteer and career firefighters, needs to look at other models, such as a part-time firefighter program, and develop a new model.

The fire prevention program is weak and understaffed.

The District only has two reasonable choices: operate fire services appropriately under the appropriate Federal and State Safety Regulations, or contract out fire services to a larger agency like the California Department of Forestry and Fire Protection. To do otherwise creates the

possibility of inadequate service, and in a worst-case situation, creates significant, if not serious, liability issues for the District.

### 3.2.20 Other Management Team and Headquarters Functions Recommendations

There are many regulatory mandates on fire services today. Any volunteer or career Fire Chief in a small agency without support staff (in addition to line firefighters) can be overwhelmed with the workload. If demands on the Groveland Fire Chief's time does not permit enough timely progress on continuing the solid start in building up the Department, or if the District desires a faster completion to some of its fire administration tasks such as a fire department health, safety and risk management plan, the District could consider:

**Recommendation #9—General Fire Administration:**

Given the recent quantity and quality of retired Fire Chiefs and Training Officers, the Department should hire a recently retired *administratively experienced chief officer* consultant/contractor person on a limited hourly basis to assist the Fire Chief in completing the building of the administrative foundation of a career Department. The California Fire Chiefs Association system could help advertise for such a temporary position.



## SECTION 4—FISCAL ANALYSIS

### 4.1 SOURCE OF FIRE SERVICES FUNDING

The District functions with two separate types of services. Sewer and Water services are funded wholly from user fees and grants. These services are called “Enterprise Funds” because they are intended to be operated and paid for in the same manner as would be done by a private enterprise. State law prohibits the District from charging more for these sewer and water services than it costs to provide them and prohibits the District from using the sewer and water fee revenue to provide some other type of service, such as fire protection.

Fire and Parks/Recreation services are funded through a combination of permit and user fees, property taxes, special assessments and grants. While the District can set permit and user fees to recover the full cost of issuing fire permits and the full cost of using District Park/Recreation services, it cannot charge more than this full cost. Like other districts and cities, the District receives very little money from the permits and fees and relies almost exclusively on property tax and special assessment revenue to pay for services other than sewer and water.

In California, property tax revenue is limited to 1 percent of the assessed valuation, unless there are voter approved overrides. Assessed valuation can only increase a maximum of 2 percent per year on any property, unless the property has been sold and the selling price is the principal source of information to establish a new assessed valuation. All of the government agencies, such as cities, counties and special districts such as Groveland, share this 1 percent based on a formula established after the passage of Proposition 13 in 1978. As a product of this formula, the District receives only about 13 percent of the total property tax revenue collected from property located within the District. In Fiscal Year 2004-05 the State of California required the District, along with cities and counties, to give the State a part of their property tax revenue to help balance the State budget. This was called ERAF, which referred to a complex swapping of revenue between agencies that resulted in the District losing revenue. The ERAF annual loss effectively ended for the District in FY 2005-06. A voter-approved initiative now prevents the State from permanently taking away such revenue from the District.

A voter approved special fire assessment began in Fiscal Year 2002-03, with an assessment of \$60 for each single-family home and other properties paying an amount based upon their “equivalence” to a single-family home. For instance, vacant property pays less while apartment buildings pay more. The assessment was lowered in the next year and has been increased each year thereafter to its present \$74.70 for each single-family home. The history of the special fire assessment rate and associated revenue is reflected in the table below.

### Special Assessment History

Fiscal Year	Total Special Assessment Revenue	Assessment Used in the Water Fund	Assessment Used in the Fire Fund	Special Assessment Rate for Single Family Dwelling (EDU)
2002-03	\$ 193,036		\$ 193,036	\$ 60.00
2003-04	\$ 169,636		\$ 169,636	\$ 55.00
2004-05	\$ 250,574	\$ 11,439	\$ 239,135	\$ 71.73
2005-06	\$ 260,409	\$ 10,646	\$ 249,763	\$ 73.27
2006-07*	\$ 272,753	\$ 11,150	\$ 261,603	\$ 74.70

\*2006-07 is the budgeted amount, while prior years are actual receipts.

The fire special assessment district expires in 2012. It will need to be renewed if assessment district revenue is to be collected after that year.

Over the past five years and for the current fiscal year, the District has chosen to allocate its annual property tax revenue as shown in the table below. The District does have the legal discretion to determine how to divide the property tax revenue among the various District activities, although it will be later noted that the current allocation between Parks and Fire Services leaves an insufficient amount to fund fire services.

### Property Tax History

Fiscal Year	Total Property Tax Revenue	Property Tax Used for Utilities	Property Tax Used for Parks	Property Tax Used for Davis-Grunsky	Property Tax Used for Fire
2001-02	\$ 637,631	\$ 225,689	\$ 68,961	\$ 10,717	\$ 332,264
2002-03	\$ 710,539	\$ 305,406	\$ 85,413	\$ 14,589	\$ 305,131
2003-04	\$ 718,184		\$ 137,660	\$ 8,911	\$ 571,613
2004-05	\$ 558,265			\$ 10,046	\$ 548,219
2005-06	\$ 617,732			\$ 10,297	\$ 607,435
2006-07*	\$ 898,488		\$ 150,729		\$ 747,759

*Note:* The lower years of property tax revenue in 2004-05 and 2005-06 represent the ERAF shift of property tax to the state.

*Note:* Years in which the “cell” in the table above is empty, are years in which no property taxes were allocated to these uses.

\*2006-07 is the budgeted amount, while prior years are actual receipts.

#### **4.2 FIRE SERVICE REVENUE PROJECTIONS**

The Groveland Community Services District has allocated property tax, special assessment and other revenue to fund the fire services during the past five years, and the estimate for the current fiscal year, as reflected below.

## Fire Services Revenue

Fiscal Year	Assessed Valuation	Property Tax Revenue	Special Assessment Revenue	Other Revenue	Total Revenue
2001-02	\$ 449,500,835	\$ 332,264*	0	\$ 46,907	\$ 379,171
2002-03	\$ 475,847,275	\$ 305,131*	\$ 193,036	\$ 3,511	\$ 501,678
2003-04	\$ 509,747,946	\$ 571,613	\$ 169,636	\$ 23,353	\$ 764,602
2004-05	\$ 555,331,847	\$ 548,219**	\$ 239,135	\$ 139,133	\$ 926,487
2005-06	\$ 625,272,711	\$ 607,435**	\$ 249,763	\$ 21,157	\$ 878,355
2006-07***	\$ 710,233,802	\$ 747,759	\$ 261,603	\$ 4,500	\$ 1,013,862

\*A portion of the property tax was allocated to Water services: FY 2001-02 \$225,889 and FY 2002-03 \$305,406.

\*\*ERAF shift of property tax to the State during these years lowered the District property tax revenue.

\*\*\*2006-07 is the budgeted amount, while prior years are actual receipts.

The \$1,013,862 in revenue projected for the current 2006-07 fiscal year is clearly insufficient to fund the projected \$1,082,748 in fire service expenses. The District is projected using \$68,886 in prior year reserves to close the gap, reducing overall projected reserves to \$493,311. In another section of this report, Citygate notes the need to replace fire equipment, and this reserve is all that is available for this purpose. Yet, if additional revenue is not made available to the fire service just to cover annual operating costs at current service levels, these reserves will be gone within two years and no money will then be available either to sustain the present level of service or to replace equipment.

With this current gap between revenue and expenses in the Groveland Fire Service, the critical issue for Groveland, as for other districts, cities and counties, is whether future revenue will keep pace with changing costs of providing services. For some services, such as park maintenance, an existing park and its associated costs may be adequate to serve not only the present population, but also the community into the foreseeable future. However, other services such as fire services have a more direct relationship to the number of people living in the districts or cities and the number of houses and commercial property to be protected.

Fire and emergency medical response provided by the GCSO Fire Department are directly related to population, because about two-thirds of the calls for service in any fire district are for medical services. Also, as the population increases, the calls for service will increase. For many of these calls, the speed of response is critical to a successful outcome for the person in need. Elsewhere in this report, Citygate has recommended the level of service needed to serve the community. However, the question then becomes will the projected revenue support the services, if present revenue cannot support even the current inadequate fire services?

Citygate has reviewed the past growth in the community, the plans for future new development and in-fill of current properties, and the long-term trends in changing property values and assessed valuation in California, and has projected the revenue that the District can expect to have available to support fire services. These projections are based on the following assumptions:

- ◆ The first homes in the Long Gulch Ranch development will be occupied in early 2009. If that development is delayed, it will postpone about \$50,000 in anticipated property-related revenue in the table below in each year from the 2009-10 fiscal year forward.
- ◆ Approximately 5 percent of the properties will sell each year (lower than Citygate’s experience in other communities of about 7-8 percent annual turnover).
- ◆ Property values will increase about 5 percent per year, affecting the assessed value of homes that sell.
- ◆ 32 new residential units will be completed each year in the Long Gulch Ranch Development.
- ◆ The present assessments are continued past 2012 and that the assessment rate is adjusted based to approximately match a 3 percent annual inflation rate, approximately the same as has been experienced in the western region of the nation over the past ten years.

### Projected Property Tax and Fire Service Revenue

Fiscal Year	Property Tax Revenue	Less Allocation of Property Tax to Parks	Special Fire Assessment Revenue	Less Allocation of Assessment Revenue to Water	Other Revenue	Total Revenue
2007-08	\$ 952,397	\$ (247,793)	\$ 283,398	\$ (11,485)	\$ 18,000	\$ 994,517
2008-09	\$ 1,009,541	\$ (255,227)	\$ 294,437	\$ (11,830)	\$ 18,540	\$ 1,055,461
2009-10	\$ 1,117,975	\$ (262,884)	\$ 308,446	\$ (12,185)	\$ 19,096	\$ 1,170,448
2010-11	\$ 1,233,464	\$ (270,771)	\$ 323,132	\$ (12,551)	\$ 19,669	\$ 1,292,943
2011-12	\$ 1,356,422	\$ (278,894)	\$ 338,370	\$ (12,928)	\$ 20,259	\$ 1,423,229
2012-13	\$ 1,487,281	\$ (287,261)	\$ 354,231	\$ (13,316)	\$ 20,867	\$ 1,561,802
2013-14	\$ 1,626,502	\$ (295,879)	\$ 370,739	\$ (13,715)	\$ 21,493	\$ 1,709,140
2014-15	\$ 1,774,569	\$ (304,755)	\$ 387,919	\$ (14,126)	\$ 22,138	\$ 1,865,745
2015-16	\$ 1,931,995	\$ (313,898)	\$ 405,796	\$ (14,550)	\$ 22,802	\$ 2,032,145

*Note:* Revenue is only current year and excludes use of any prior year reserves

#### **4.3 FIRE SERVICE COST PROJECTIONS COMPARED TO REVENUE**

In projecting the cost of fire service for the District, there are several very important caveats. First, the current salary and benefit levels are substantially below those being paid in fire departments just a few miles down into the Valley area; and while this disparity may continue in the short-term, the longer-term impact Citygate has seen in similar situations is a frequent turnover of employees who leave for better paying positions. The impact on the small Groveland Fire Department would then be frequent vacancies and new employees who are much less experienced and require substantial training. Below is a table illustrating the 2006 base annual

salary difference between top step firefighters in various nearby Valley communities compared to Groveland.

<b>City or Agency</b>	<b>Groveland</b>	<b>Ceres</b>	<b>Merced</b>	<b>Turlock</b>
Firefighter Base Annual Salary at Top Step	\$35,500	\$53,736	\$51,528	\$50,952

Second, the present level of service is inadequate. As discussed elsewhere in this report, the present staffing level of only 2 persons on duty at any time and a total firefighter work force of 6 line personnel, means that on average each person works an additional two extra 24-hour shifts per month and the Fire Chief is occasionally required to work as a line firefighter to fill in for vacancies. If there are long terms absences, vacancies, illness or injury this overtime rate is likely to increase due to the limited number of available volunteers as discussed elsewhere in this report. This is a level of overtime work that can be sustained in the short-term, but in the long-term, based on our experience in managing fire departments, will likely create greater fatigue that may adversely impact work quality and worker compensation injury claim rates.

Third, the District is not budgeting an annual amount for major equipment replacement, and so expenditure projections in this report use only the current Operation and Maintenance and minor capital replacement/repair budget for FY 2006-07 as the baseline from which to project future costs. It should be clearly understood that the projected expenditures do not include funding for replacing fire engines.

Fourth, over a 10- to 20-year period, annual fire operating costs in other agencies in California increase at an average of about 3 percent per year higher than the rate of inflation due to the type of equipment and long-term salary and benefit cost trends. This increase has been used in all of the cost projections within this report. And although in the short term, the increase may be lesser or greater depending upon year-to-year budget decisions by elected officials, the long-term cost trend seen in other agencies is expected to hold true in Groveland as well. Costs in the various tables in this report, therefore represent long-term averaging and not a precise year-to-year prediction of costs that will be included in the annual budget for any given year.

Below, the projected operating costs of the current level of service (a single fire station with 2 line personnel on duty) at the present salary and benefit level are compared to projected revenue. This is followed by a projection reflecting the costs at a salary and benefit level that closes about half of the gap between Groveland and some nearby fire agencies.

In both cases, the current revenue does not support the present inadequate level of service until several years after projected tax revenue from the Long Gulch Ranch Development begins. Even then, the additional Long Gulch Ranch revenue is only sufficient to support the present inadequate level of service with little additional revenue to support the added staff and equipment need generated by that development. Again, the expenditure projections do not include funding for replacing fire engines. A front line Type I engine will cost approximately \$350,000 at current prices. The present 7-year-old Type 1 engine would normally be expected to be shifted in reserve status and replaced on the frontline by a new engine in about 8 more years for a total front line service of about 15 years.

### Projected Expenses at Current Salary and Benefit Levels

Fiscal Year	Projected Revenue	Projected Expense	Surplus / Deficit
2007-08	\$ 994,517	\$ 1,147,713	\$ (153,196)
2008-09	\$ 1,055,461	\$ 1,216,576	\$ (161,115)
2009-10	\$ 1,170,448	\$ 1,289,571	\$ (119,123)
2010-11	\$ 1,292,943	\$ 1,366,945	\$ (74,002)
2011-12	\$ 1,423,229	\$ 1,448,962	\$ (25,733)
2012-13	\$ 1,561,802	\$ 1,535,900	\$ 25,902
2013-14	\$ 1,709,140	\$ 1,628,054	\$ 81,086
2014-15	\$ 1,865,745	\$ 1,725,737	\$ 140,008
2015-16	\$ 2,032,145	\$ 1,829,281	\$ 202,864

*Note:* Revenue is only current year and excludes use of any prior year reserves

*Note:* Expenses exclude major capital replacement such as fire engines

### Projected Expenses at a Higher Salary and Benefit Level (+20%)

Fiscal Year	Projected Revenue	Projected Expense	Surplus / Deficit
2007-08	\$ 994,517	\$ 1,273,961	\$ (279,444)
2008-09	\$ 1,055,461	\$ 1,350,399	\$ (294,938)
2009-10	\$ 1,170,448	\$ 1,431,423	\$ (260,975)
2010-11	\$ 1,292,943	\$ 1,517,308	\$ (224,365)
2011-12	\$ 1,423,229	\$ 1,608,346	\$ (185,117)
2012-13	\$ 1,561,802	\$ 1,704,847	\$ (143,045)
2013-14	\$ 1,709,140	\$ 1,807,138	\$ (97,998)
2014-15	\$ 1,865,745	\$ 1,915,566	\$ (49,821)
2015-16	\$ 2,032,145	\$ 2,030,500	\$ 1,645

*Note:* Revenue is only current year and excludes use of any prior year reserves

*Note:* Expenses exclude major capital replacement such as fire engines

The Long Gulch Ranch development will have a clear impact on the need for additional fire and medical emergency response services from the District. Not only will it make it important to have a second fire station with associated staffing, but also a new fire engine with appropriate funding arrangements for long-term replacement. All of the costs, including staffing will be needed much sooner than any substantial amount of revenue will begin to come from this new housing development. Section 5.7 of this report contains two tables. The first provides the cost of Citygate’s minimum recommended level of service, which is inadequate to also provide a reasonable response time to emergencies in the new development area. Another table provides the cost of staffing two fire stations in the District, one of which would provide a much more timely response to the Long Gulch Ranch area.

In 2009, the year Citygate has used to project the first occupancy and flow of associated revenue to the District, there is a deficit of \$1,608,223 per year projected in the Fire Department budget to operate two stations compared to a projected deficit that year of \$812,622 for operating only one station. Again, these deficits do not include or even reflect the cost of accumulating funds for replacing fire engines. Clearly, the District should consider addressing the fire services funding issue with the Long Gulch Ranch developers prior to approving any development agreement for the project.



## SECTION 5—RECOMMENDED SOLUTIONS, PHASING PLAN AND ESTIMATED COSTS

### 5.1 DEPLOYMENT PLAN FINDINGS

As this study has identified and measured, the Groveland Fire Department is *insufficiently* staffed with enough career and volunteer firefighters to address more than small fires and 1 to 2 patient EMS incidents. The current staffing, while similar to other agencies its size that all suffer from a lack of funding and volunteers, does not mean that Groveland has the staffing to handle moderate to severe emergencies. No agency so staffed does. The Groveland volunteer program is alive and has undergone some positive changes. However, given the living and job locations of the available volunteers, this program can no longer replace the need for, nor significantly supplement, the career staffing.

Citygate's Deployment Findings for Groveland as noted in Section 2 and 3 were:

- Finding #1:** *The response times in the District for a first-due unit are long, reflective of a rural level of effort and the fact that the District is too geographically large to serve from one station and still have a significant number of incidents in the more distant areas result in a positive outcome.*
- Finding #2:** *There is not a sufficiently large and dependable volunteer force to supply an adequate number of volunteer firefighters. If all the volunteers responded with the on-duty career personnel, there would be a structure fire staffing to 14 to 15. The likelihood of this occurring, as we can see from the historical record, is virtually impossible, so an inadequate response force to a significant building fire still exists.*
- Finding #3:** *Based on its small size and with continued fire prevention and public education, an adequate level of service for a rural community such as Groveland would be a small, phased increase in staffing. The problem is that an increase in staffing for the Long Gulch Ranch Development needs to precede the development of the tax base to support it.*
- Finding #4:** *The Groveland Fire Department cannot effectively serve the areas northeast of the lake from only one staffed fire station. The travel times to this area are beyond desirable outcomes for serious fires, cardiac arrest or major trauma patients.*
- Finding #5:** *The surrounding rural area in the Fire District will never develop into a densely populated area and will remain mostly light-density residential building types. As such, given the current planning approvals, it will not be cost effective for the Groveland District area to have three or more fire stations.*
- Finding #6:** *The current level of Firefighter-EMT and private ambulance paramedic care is well designed and appropriate to risks in the community, except for the distant response of a second or back-up ambulance.*

As was stated in the beginning of this study, there are no national or state requirements for a minimum level of fire services, other than to provide them safely if done at all. Two sources do exist to assist local elected officials in making fire service level of effort decisions: (1) the National Fire Protection Association Standard #1720 on Volunteer Fire Services Deployment and (2) the Commission on Fire Accreditation’s Standards of Response Cover Process.

As stated in NFPA #1720:

- (1) *NFPA #1720 Section 4.3.1 the fire department shall identify minimum staffing requirements to ensure that a sufficient number of members are available to operate safely and effectively.*
- (2) *NFPA #1720 Section 4.3.2 Table 4.3.2 shall be used by the Authority Having Jurisdiction (AHJ) to determine staffing and response time capabilities, and the fractal accomplishment of that for reporting purposes as required in Section 4.4.2.*

*NFPA #1720 – Table 4.3.2 Staffing and Response Time:*

<i>Demand Zone</i>	<i>Demographics</i>	<i>Staffing and Response Time – FF/Minutes</i>	<i>Percentage of Completion</i>
<i>Special risks</i>	<i>Authority Having Jurisdiction (AHJ)</i>	<i>AHJ</i>	<i>90</i>
<i>Urban</i>	<i>&gt;1000 people/mi.<sup>2</sup></i>	<i>15/9</i>	<i>90</i>
<i>Suburban</i>	<i>500–1000 people/mi.<sup>2</sup></i>	<i>10/10</i>	<i>80</i>
<i>Rural</i>	<i>&lt; 500 people/mi.<sup>2</sup></i>	<i>6/14</i>	<i>80</i>
<i>Remote*</i>	<i>Travel dist ≥ 8 mi.</i>	<i>4</i>	<i>90</i>

*\* Upon assembling the necessary resources at the emergency scene, the fire department should have the capability to safely commence an initial attack within 2 minutes 90 percent of the time.*

Thus, the guidance of NFPA # 1720 is that rural fire services would typically have at least 6 firefighters arrive within 14 minutes, 80 percent of the time. The Department does not usually achieve this level of response, or even the remote level of effort to deliver 4 firefighters in a short timeframe.

The Commission on Fire Accreditation in its Standard of Response Cover Manual recommends the use of this trigger points table for when to add additional fire stations:

<b>Choices</b>	<b>Distance</b>	<b>Response time</b>	<b>Percent of calls</b>	<b>Bldg inventory</b>
Maintain status quo	All Risks WITHIN 1.5 miles	First-due Co. is within 4 minutes total reflex time, 90 percent of the time.	100 percent in district	Existing inventory and infill.
Temporary facilities and minimal staffing	Risks 1.5 to 3.0 miles from existing station	First-due Co. exceeds 4 minutes travel time 10 percent of the time, but never exceeds 8 minutes.	More than 10 percent of calls are in adjacent area	New area has 25 percent of same risk distribution as Initial area.
Permanent station Needed	Risk locations exceeding four miles from the station	First-due Co. exceeds 4 minutes travel time, 20-25 percent of the time; some calls less than 8 min.	More than 20-25 percent of calls are in outlying area	New area has 35 percent of same risk distribution as in initial area of coverage
Permanent station Essential	Outlying risk locations exceeding five miles from the first station	First-due Co. exceeds 4 minutes travel time 30 percent of the time. Some calls less than 10 minutes	More than 30 percent of calls are in outlying area	New area has 50 percent of same risk distribution as in Initial area.

The above table is designed to help career departments or departments that have a sizable number of volunteer firefighters determine when to add one or more stations as growth expands beyond the first or “core” station. Even though Groveland is not a larger department in terms of sheer size or of having a sizable volunteer force, this table still offers advice that the fire unit travel distances for responses east of and north of the lake meet the trigger points for another fire station.

Whether a second, partially staffed station is needed in Groveland leads to a discussion of desired outcomes for the Groveland Fire System as a whole. Once the outcome is chosen for a given fire or medical event, then the response system can be designed backwards from the outcome point on the time clock. Earlier in this study in the deployment analysis section, the concept of speed and weight of attack was used to illustrate that a given number of firefighters must arrive within a defined timeframe if a given outcome such as “confine the fire to the room of origin” is to be achieved.

**5.2 DESIRED OUTCOMES**

In the absence of clear Federal or State regulations to guide the Groveland CSD Directors on establishing a level of service, this Master Plan uses the deployment guidance noted above, the deployment findings from Section 2 of this study, and Citygate’s experience across a variety of western communities to offer the following three different desirable level of service choices:



### 5.2.1 Desired Outcome A

#### Typical suburban outcome:

- ◆ Building fires are confined to the **room** of origin;
- ◆ EMS patients are given paramedic care with great outcomes and hospitals are close-by;
- ◆ Wildland Fires are stopped at less than 5-acres, with no building damage.

This is accomplished via a 7-minute, 90 percent Response Time for the first-due unit (3-4 F/F crew) and all units (15+ F/F's) on-scene within 11 minutes.

**OR**

### 5.2.2 Desired Outcome B

#### Emerging suburban areas outcome:

- ◆ Building fires are confined to the **building** of origin;
- ◆ EMS patients are given paramedic care, but some critical patients (stopped hearts) will likely not survive due to longer initial response times and the fact that hospitals are not close-by;
- ◆ Wildland fires are stopped at less than 8-acres, with modest building damage.
- ◆ This is accomplished via a 10- to 12-minute, 90 percent Response Time for the first-due unit (2 to 3 firefighter crew) and all units (9 to 10 firefighter crew) on-scene within 15 to 20 minutes.

**OR**

### 5.2.3 Desired Outcome C

#### Rural areas outcome:

- ◆ Building fires are confined to the **parcel** of origin;
- ◆ EMS patients are given paramedic care, but some critical patients (stopped hearts) will likely not survive and hospitals are not close-by. Treating multiple patients can overwhelm the initial crew;
- ◆ Modest to Severe wildland fires cannot be stopped, modest building damage will likely occur and regional mutual aid will be required to stop the fire.

This is accomplished via a 10 to 12-minute, 90 percent Response Time for the first-due unit (2 firefighter crew) and all units (12+ volunteers and mutual aid) on-scene within 20 to 40 minutes may usually be expected to provide.

**Citygate believes that of the desired outcome choices listed above, the Groveland CSD should strive to deliver Desired Outcome B through a combination of limited career staffing, mutual aid agreements, part-time firefighters and volunteers.**

**Desired Outcome B** is recommended for three reasons:

1. The community economic base is not large enough to support a high level of service and suburban levels of outcome;
2. Groveland as a community will probably not again have the demographics to deliver a sizeable volunteer fire force;
3. As such, Desired Outcome C cannot be considered as it depends on enough volunteers to keep serious fires from escaping the property of origin.

Citygate believes that communities such as Groveland are best served by a quicker, although small, career and volunteer force that can keep fires small if the fire service receives notification of the emergency early. This is the most cost effective strategy – deploy a small career “quick reaction force” to keep events small. Then, back that force up with a small volunteer force and mutual aid agreements for moderate size emergencies. Serious emergencies that exceed the local 20-minute combination response system will grow possibly to catastrophic size, requiring massive mutual aid. However, with prevention programs and a quick response force, the probability of such an event occurring is kept to a minimum.

### **5.3 ACHIEVING THE DESIRED OUTCOME**

To meet this **Desired Outcome B** Citygate has designed the following deployment phasing strategies to meet Groveland’s needs. Each strategy represents a gradual increase in service and each strategy requires an increased level of fiscal support and planning lead time to accomplish. These strategies are outlined in the text below and in the corresponding table presented on page 86.

#### **5.3.1 Deployment Strategy One: Increased Staffing**

##### *Increase the Career Staffing Daily from 2 to 3 Firefighters*

While the current 6 career firefighters can continue to cover for each other’s training, vacation, and sick leaves, this requires each employee to work and accumulate overtime. Presently, on average each employee works an additional two or three 24-hour shifts per month. This is acceptable if all the career positions are filled. However, when there is a vacancy or long-term illness/injury, the remaining employees have to work even more overtime, which can increase fatigue, decrease job performance, increase the potential for injury and higher worker compensation claims, and reduce the opportunity for personal time off. With a 3-career firefighter per day system, the minimum staffing each day would be “two,” with one position on some type of leave 30-50 percent of the time. Three-person staffing also provides a deeper pool for overtime coverage and emergency callback.

Another advantage is that on shifts when all 3 on-duty firefighters are actually available, if the emergency occurs during the day when the Fire Chief is in the Department, or if the Fire Chief is able to respond from home during off hours, then 4-firefighters are able to respond to building fires and be immediately able to comply with safety laws for entering burning buildings without waiting for any of the volunteers. If the District wants to fund a higher level of service than the minimum recommended here, and guarantee a minimum staffing on duty of 3 firefighters per day rather than the 2 minimum daily staffing recommended here, the District should hire an

additional three fire engineers at an annual cost of approximately \$344,064 (in addition to the costs presented in this study) at current salaries and benefits and including associated equipment, training a other firefighter related on-going expenses.

It is not recommended that the District consider using part-time firefighters or volunteers to provide leave time coverage as a means of ensuring a minimum staffing of 2 or even 3 on-duty each day. Adequate fire service can only be provided by having a minimum number of well-trained and experienced firefighters on duty. Substituting volunteers or part-time fire interns to cover for career staff on leave, significantly reduces the quality/effectiveness level of the firefighting force that is already at a minimum number. Three experienced firefighters assigned to duty each day will, in most instances, provide an assured daily emergency response force of two Groveland career firefighters.

Hiring an Administrative Captain II as a second manager is recommended as not only part of Deployment Strategy One, but also each of the successive two options. Over the long-term, it is potentially unsafe and ineffective to ask a single Chief Officer to run the Department, develop and deliver training, plus be credentialed and operate as an emergency Incident Commander 24/7/365 without relief.

As previously mentioned in this report, Incident Commanders are now held to safety standards that require training and experience. To ask a less trained line staff to backfill for the Fire Chief in his absence opens the District and that individual to liability exposure should something go wrong that adequate command could have prevented. It is to his personal credit that the current Fire Chief has been able to do so for so long. However, he needs training and vacation time away from the District. During these periods, there is not a second in command or credentialed Incident Commander. Additionally, larger emergencies will require more than one Incident Commander, and Groveland is a long way for a second duty chief to respond via mutual aid.

### 5.3.2 Deployment Strategy Two: Increased Staffing and Winter Fire Support

*Increase the Career Staffing Daily from 2 to 3 Firefighters AND Contract with CDF for an “Amador” Plan Engine Crew Over the Winter Months*

While CDF resources may be available during the fire season to supplement Groveland fire responses, during the winter months CDF closes or reduces staffing at many of its stations. It is very cost-effective for local agencies to cost share wintertime staffing with the California Department of Forestry and Fire Protection (CDF) to keep a CDF station open and provide a year-round CDF presence.

This deployment option would add an engine company staffed with two to three firefighters during the winter months at the Groveland CDF Station. During the declared fire season both engines assigned to the Groveland CDF Station will automatically respond (if available) to calls for service in the District for fires and when called for other incidents. During this time of year, the staffing is three firefighters on each engine. Public Resources Code Section 4143 gives discretion to the local CDF Unit Chief to staff seasonal stations on a year-round basis if the local government agency, in this case the District, covers the fixed costs. Under this deployment option, the District would contract with CDF, through a cooperative agreement, to keep the Groveland CDF Station open year-round. Normally, the Groveland Station is open only during

the declared fire season. Availability of the CDF crew to assist Groveland during the fire season depends on CDF's calls for service.

Contracting with CDF for Amador Plan fire service is the second best action that the District can take. It would not resolve the inadequate distribution of resources to provide timely response northeast of the lake, but it would reliably provide a more effective response force during the non-fire season part of the year. This is in addition to the regular CDF force frequently available during fire season. This is more cost effective than attempting to provide this added staff coverage with Groveland volunteer or part-time personnel only, since the CDF personnel are career, well-trained, and have greater job stability than do part-time employees. The Headquarters staffing under this deployment option would be as recommended in Deployment Strategy One: Fire Chief, and Assistant Fire Chief.

### 5.3.3 Deployment Strategy Three: Operate Two Stations

*Operate Two Stations: One Staffed Daily with 3 Career Firefighters and the Second Staffed Daily with 2 Career Firefighters*

Groveland has two problems: (1) total daily staffing and (2) the distribution of this staffing across the community for prompt response. Even without the Long Gulch Ranch expansion, this study has shown there is a very long response time to the areas past the lake. Should the Long Gulch Ranch expansion occur, Citygate strongly recommends a second station in the District be staffed 24/7/365 with each station staffed with a minimum career crew “on duty” each day of two. These personnel can respond quickly to medical calls and small fires. On larger incidents, the first responding station can begin to assess the situation while the second station and any available volunteers respond.

As with Deployment Strategy One, in order to ensure that a minimum of 2 career, line firefighting personnel are on duty at each station at all times, a third career firefighter should be assigned daily to one of the stations to provide vacation, sick leave, injury coverage and coverage when there are positions vacant and recruitment is underway. It can normally be expected that at least one firefighter from the daily staffing of 4 at the two stations will be on some type of leave at least 60 percent of the time and that this third career firefighter will help ensure a minimum daily on-duty staffing of two career personnel at each of the two stations.

To control costs, and to provide daily leadership for the crews when the managers are not available, Citygate recommends the Station One staffing consist of a Fire Captain, Fire Engineer, and a Firefighter (serving as the roving position to cover for sick leave and vacation). At Station Two, the crew can be an Engineer/Apparatus Operator and one Firefighter. The Captain at Station One would be responsible for daily supervision for both crews. Many suburban departments with three to five persons per crew would operate with a Fire Captain on each crew. Given the light call for service volume in Groveland and only having two crews, it is probable that on any serious emergency, the Station One Captain also will have responded and can effectively supervise four firefighters. When the volunteers are needed at a larger emergency, the will the Incident Commander will also be needed to safely manage more than one to three personnel at a smaller emergency.

To ensure that there is a minimum staffing of 2 career firefighters are on duty at each of the stations most of the time, even when some firefighters are off on sick/injury leave or vacation,

this Deployment Strategy Three needs to staff each shift with five firefighters for a total of 15 in the Department plus the Assistant Chief and Fire Chief. Additionally, the District could develop a roster of off-duty part-time firefighters who can be hired as needed to fill in for absences the career personnel cannot cover. This might occur when there is an extraordinary amount of injury-related leave or long-term position vacancies or to raise the per crew staffing on high fire danger days.

As with Deployment Strategies One and Two, adequate fire service can only be provided by having a minimum number of well-trained and experienced firefighters on duty. Substituting volunteers or part-time firefighters to cover for career staff on leave, significantly reduces the quality/effectiveness level of the firefighting force that is already at a minimum number.

Deployment Strategy Three also includes hiring an Assistant Fire Chief, as discussed in Deployment Strategy One.

### 5.3.4 Suggested Phasing of Deployment Strategies

These deployment strategies are now presented in the following table based on the amount of planning lead time and the amount of fiscal increase required. Citygate has also outlined a possible timeframe for each of these strategies to occur.

<b>Deployment Strategy</b>	<b>When</b>	<b>Career F/Fs Per Day</b>	<b>Career F/Fs Total</b>
Strategy One	2008	3 in One Station*	9
Strategy Two	2009	3 in One Station w/2-CDF in Winter	9 plus CDF staffing
Strategy Three	2010	5** in Two Stations	15

\* Station One – 1 Captain, 2 Engineers

\*\* Station One & Two – 1 Captain, 2 Engineers, 2 Firefighters

Again, the increase of additional career firefighters will not mean that there will be 3 or 5 (with two stations) firefighters on duty 24/7/365. Depending on vacation, sick leave and training leave, this will occur some of the time. Having the third person per shift will spread the overtime burden across more people to always maintain two career firefighters per crew on duty.

If the District chooses and can afford in addition to the career staffing increases in Strategy Three, the District could further increase staffing and augment its force with an Amador Agreement with CDF as recommended in Strategy Two and/or use Groveland part-time firefighters.

### 5.3.5 Part-Time Firefighter Program

For each of the deployment strategies above, if funds are available, the Department should consider constructing a Part-Time Firefighter (PTF) program that will provide *non-career* staff who can supplement, but not replace, the need for the minimum of 2 career firefighters in each station recommended in Deployment Strategies One through Three above. This addition can be very useful at the emergency scene when more than the career staff minimum is needed.

On days when there is no vacation, sick leave or off-site training and there are 3-career personnel on duty, the part-time position raises the staffing to four. On days when there are only 2-career members on-duty, the part-time position becomes the 3<sup>rd</sup> crew member, and IF there is also a volunteer available for evening or weekend duty, then four members are on the crew.

Providing a part-time firefighter to supplement the career firefighters could cost in the range of \$12 to \$20 per hour depending upon the level of experience of the individual. In addition, initial equipment costs for each person will average \$10,000 each depending upon the amount of equipment the District may already have available.

With this cost range, the District might expect to pay \$120,000 to \$200,000 per year to cover one shift assignment 24/7/365 from a part-time firefighter. If the District only used this type of position during times when there is an extraordinarily high injury vacancy rate or during the high fire season, the cost would be somewhat less. How much the District chooses to use part-time personnel depends not only on the availability of District funds, but also the availability of people to fill the part-time positions. These costs are half to two-thirds the cost of hiring another full-time position and represents a cost effective way of increasing staffing above the daily minimum recommended in all three deployment strategies.

A part-time firefighter program would be valuable as a supplement to a volunteer program, because it is not realistic to expect that there are substantially more people than represented in the current volunteer program interested in being volunteer firefighters in Groveland. A 20 to 30 member volunteer program *cannot* reliably provide a firefighter position 24/7/365. With an on-duty minimum career staffing of 2 at a fire station being the bare minimum necessary to provide even a rudimentary emergency response, using volunteers and reserve/part-time firefighters when they are available to increase the on-duty staffing to 3 or more, will make a significant improvement in emergency response.

If funding does not permit 24/7/365 staffing, then the priority should be to staff a part-time position during the 40-hour workweek, when volunteer callback is at its lowest, particularly during the wildland fire season.

These part-time personnel do not need to live in the area. The principal focus group for potential recruitment is fire science students from Columbia College who need career experience while attending classes beyond that of achieving Firefighter One Certification. This certification qualifies them for part-time shift work while they complete their Associates Degree, and are applying for full career positions. To recruit qualified personnel, the Department should pay well above the “market rate.” In fact, the Department should consider these as part-time, un-benefited employees, and pay them an hourly rate at least competitive with a service industry job. To avoid Reserve firefighters turning into full-time employees without benefits and representation, the hours per year and years in the program should be limited.

#### **5.4 DEPLOYMENT STRATEGIES DISCUSSION**

Given its current staffing situation, the Groveland Fire Department provides a rural to remote level of service as described in NFPA #1720 depending on the actual number of firefighters that show up in a useful timeframe. Sometimes Groveland cannot field even a “remote” area level of service calling for 4 Firefighters to arrive at a greater than 14-minute response time. If this assessment compels the CSD Board to provide more than the existing system, then Citygate

recommends a modest increase of career staffing along with part-time and volunteer firefighters. Such a modest increase in staffing programs will be cost-effective and affordable, IF the community sees the value in having more than a token response force.

If the community desires improved response times east and north of the lake, with or without the Long Gulch Ranch plan, then a second *staffed* fire station is necessary. This will improve northern response times and cause four (4) career firefighters at a minimum to be on-duty, double what occurs currently.

The CSD also can contract for some additional services from the California Department of Forestry and Fire Protection (CDF) or totally contract out all services to CDF. Citygate recommends that Groveland CSD seriously consider the modest cost increase of a CDF Amador Plan for the CDF wintertime staffing of a CDF station.

If the CSD feels that the challenges of providing fire services within the current regulatory framework as described in this report exceeds its capabilities, then the CSD could ask CDF for a formal full contract for service proposal to consider. This will provide the CSD with a firm cost quote and clearly described level of service from CDF. This proposal can then be compared with the cost, service level feasibility/reliability and liability of Groveland continuing with its own fire department.

## **5.5 ADMINISTRATIVE FINDINGS**

In addition to multiple observations about the Fire Department's Administrative functions, Citygate's Administrative Findings were:

**Finding #7:** *The fire apparatus are older than in typical suburban service and will continue to present challenges for cost-effective repair and "up time" given their age.*

**Finding #8:** *The Department does not have an adequate wildland fire type apparatus. The current, older Type IV units carry too little water for sustained fire attack in more than a small residential lot size grass fire situation. While CDF and the Forrest Service are responsible for wildland fire fighting, the homes in Groveland would be better served if Groveland also operated a more capable Type III wildland fire apparatus that carried a crew of 3-4 in an enclosed cab and carried 500 gallons of water and at least a 500-gallon per minute pump.*

## **5.6 ADMINISTRATIVE RECOMMENDATIONS**

Based on Citygate's observations and findings in the administrative section, our recommendations are:

*Recommendation #1 Daily Reports:*

A computer-based management information system software program would greatly enhance the Department's record management and add considerable efficiency to their leanly staffed administrative functions.

*Recommendation #2 Fire Apparatus:*

- 2.1 A One-Station Fire Department should operate the following minimum fire apparatus:
  - One Front Line Pumper (2 with a second station)
  - One Reserve Pumper
  - One Type III Wildland Pumper
  - One small rescue/utility apparatus
- 2.2 The Department should obtain the funding to reduce its fleet, to operational necessity and at that time, remove from service the pre-1979 apparatus;
- 2.3 The District should send one of their mechanics to the State Fire Training Mechanics Academy leading toward eventual certification. This would improve repair turn around times to have the repairs done locally, instead of being contracted out to a fire equipment vendor in the Valley.

*Recommendation #3 Dispatch:*

Citygate recommends that the Department continue its relationship with the county dispatch center. Even with the nominal charge of \$15,000, the District is receiving services at a cost less than it could provide them separately.

*Recommendation #4 Volunteer Firefighter Program:*

- 4.1 The Department should continue its efforts to recruit, train, and retain volunteers. The National Volunteer Fire Council [www.nvfc.org](http://www.nvfc.org) maintains a website that supports volunteer fire recruiting, training, and retention efforts.
- 4.2 The Department should consider constructing a Part-Time Firefighter (PTF) program that will provide non-career staff that can supplement, but not replace, the need for the minimum of 2 career firefighters in each station. These staff can be very useful at the emergency scene when more than the career staff minimum is needed.
- 4.3 A part-time program would be valuable as a supplement to a volunteer program, because it is not realistic to expect that there are substantially more people than represented in the current volunteer program interested in being volunteer firefighters in Groveland. A 20-member volunteer program cannot reliably provide one firefighter position 24/7/365. With an on-duty minimum staffing of 2 at a fire station being the bare minimum

necessary to provide even a rudimentary emergency response, using volunteers and part-time employees when they are available to increase the on-duty staffing to 3 or more, will make a significant improvement in emergency response.

- 4.4 The Department should try to recruit new volunteers from other Divisions of the Groveland CSD.

*Recommendation #5 Fire Prevention Systems:*

- 5.1 The Department needs to complete the fire prevention training for the assigned employee as soon as possible. This is another example of the small fire department circumstance. Groveland Fire Department has all the same responsibilities of a larger organization without the training or staff to properly carry out these responsibilities. The Fire Code requires maintenance inspections of commercial buildings over their life span.
- 5.2 Once a second manager is hired and the Fire Chief has help in operating the Department's many programs, the Department should utilize the talents of the population to assist with its inspection program. A "Volunteers in Prevention" (VIP) program would be most beneficial. These volunteers, drawn from the large retiree population, could conduct defensible space/hazard reduction inspections. This training is fairly simple and straightforward. Properly trained, they could assist with other Fire Code inspections, freeing up the career staff to conduct the more complex inspections that require a significant training investment.

*Recommendation #6 Public Education:*

The Department should initiate two public education programs:

- 6.1 In the fall, during fire prevention week, the Department should host an open house with a structure fire or other community risk reduction focus timed for the winter as its theme.
- 6.2 In the spring, in cooperation with CDF, the Forest Service and Yosemite National Park, the Department should conduct a prevention program that emphasizes outdoor hazard reduction, evacuations and defensible space.

*Recommendation #7 Risk Management and Safety:*

The District should use the primary elements of NFPA Standard 1500, Standard on Fire Department Occupational Safety and Health Program, 2007 Edition as a best practice model for the Fire Department risk management plan components.

*Recommendation #8 Facility Maintenance:*

- 8.1 Once the staffing elements of this Master Plan are decided upon by the CSD Board of Directors, develop a comprehensive plan to remodel the headquarters station to meet the current and future needs of the Department.

- 8.2 Due to their small size, age and cost of keeping repaired and safe, close the satellite facilities at the Airport and Big Oak Flat.

*Recommendation #9 – General Fire Administration:*

Given the recent quantity and quality of retired Fire Chiefs and Training Officers, the Department could hire a recently retired *administratively experienced chief officer* consultant/contractor person on a limited hourly basis to assist the Fire Chief in completing the building the administrative foundation of a career Department. The California Fire Chiefs Association system could help advertise for such a temporary position.

### 5.6.1 Administrative Recommendations Costing Perspective

Many of the above general administrative recommendations can be worked at with little cost as resources and time allows. Some, such as a records management system and apparatus, do carry costs, but until the basic level of service policy choices are made as to how to staff and deploy the Groveland Fire Department into the future, it is speculative to estimate them at this juncture.

## **5.7 FISCAL IMPLICATIONS OF RECOMMENDATIONS**

### 5.7.1 Fiscal Findings

The District's current budget and audited financial statements were reviewed to obtain a picture of both the current capacity to fund improved fire and EMS services as well as the future fiscal capacity to provide adequate service to areas expected to develop throughout the community planning area.

*Continuing to support the present fire service level, or any further improvements in the fire service and the ability to provide service to newly developing areas, will be dependent upon establishing benefit assessment districts or some similar form of revenue program. Even with the expected addition of new homes in the Groveland community, both within the present developed area as well as potentially in the Long Gulch Ranch development, the current property tax and assessment rates will not return sufficient revenue to add to or improve the present level of fire and EMS service.*

The projected cost of current service levels and projected available revenue are reflected in tables in the Fiscal Analysis section of this report, Section 4. These tables clearly demonstrate that the District cannot continue to support the present very low level of service with present property tax and assessment revenue.

### 5.7.2 Fiscal Projections for Recommended Service Level Improvements

The present level of fire service in the Groveland community is inadequate for more than very small, one-at-a-time emergencies. Citygate has recommended improvement in three levels, each representing an increasing higher level of service. While these levels are discussed and described elsewhere, a brief summary follows along with a projection of the cost compared to anticipated revenue. In each case, the projected costs are based on the current salary and benefit level, which we note above is not competitive with fire agencies in the Central Valley or CDF.

Nevertheless, even at this current level of personnel expense, the District will not have adequate revenue to support improved service levels. *Also recall that the revenue projections do include the assumption that the Long Gulch Ranch Project will be developed.*

### 5.7.3 Fiscal Analysis for Deployment Strategy One

#### *Increase the Career Staffing Daily from 2 to 3 Firefighters*

Citygate recommends that at a minimum, the Groveland Community Services District needs to increase the staffing at the present fire station from the current 2 line personnel per shift up to 3 per shift. This increase will reduce the amount of overtime required of staff by ensuring that a minimum of 2 are on duty each day with the normal and appropriate overtime required when someone is off on sick leave, or vacation, injured, in training or due to a position vacancy. In addition, Citygate recommends hiring an Assistant Chief as part of this and all succeeding recommended improvement levels. The table below reflects the expected costs compared to anticipated District fire service revenue and clearly reflects that there is insufficient revenue to support this minimal service level increase. Even if the District were to allocate all of its approximately \$165,000 in annual property tax that is currently used for Parks services, this would not be sufficient to close the projected deficit.

#### **Strategy One: 1 Station Staffed by 3 Persons**

<b>Fiscal Year</b>	<b>Projected Revenue</b>	<b>Projected Expense</b>	<b>Surplus / Deficit</b>
2007-08	\$ 994,517	\$ 1,764,926	\$ (770,409)
2008-09	\$ 1,055,461	\$ 1,870,822	\$ (815,361)
2009-10	\$ 1,170,448	\$ 1,983,071	\$ (812,623)
2010-11	\$ 1,292,943	\$ 2,102,055	\$ (809,112)
2011-12	\$ 1,423,229	\$ 2,228,178	\$ (804,949)
2012-13	\$ 1,561,802	\$ 2,361,869	\$ (800,067)
2013-14	\$ 1,709,140	\$ 2,503,581	\$ (794,441)
2014-15	\$ 1,865,745	\$ 2,653,796	\$ (788,051)
2015-16	\$ 2,032,145	\$ 2,813,024	\$ (780,879)

*Note:* Revenue is only current year and excludes use of any prior year reserves

*Note:* Expenses exclude major capital replacement such as fire engines

### 5.7.4 Fiscal Analysis for Deployment Strategy Two

#### *Increase the Career Staffing Daily from 2 to 3 Firefighters AND Contract with CDF for an “Amador” Plan Engine Crew Over the Winter Months*

A fire fighting force of only 2 or 3 people is unable to adequately control a fire that has gone beyond the stage of a small kitchen stove problem. Nor can firefighters enter a burning building to effectively fight a fire without four firefighters on the scene. A major medical emergency or

large vehicle accident also requires more than 2 to 3 firefighters to handle it effectively. Presently the District relies upon CDF and Forest Service resources to back them up, but in the non-peak fire season, CDF downsizes its force in the area. Under an Amador Plan, CDF would continue to staff the nearby station at a nominal cost to the local agency. CDF has provided some preliminary costs of approximately \$54,000 to \$129,000 per year to fund this Amador Plan. The table below reflects the expected costs compared to anticipated District fire service revenue. As with the prior strategy, current and projected revenue is inadequate to support this fire service level improvement.

**Strategy Two: 1 Station Staffed by 3 Persons  
with CDF Amador Plan Winter Supplement**

<b>Fiscal Year</b>	<b>Projected Revenue</b>	<b>Projected Expense</b>	<b>Surplus / Deficit</b>
2007-08	\$ 994,517	\$ 1,911,609	\$ (917,092)
2008-09	\$ 1,055,461	\$ 2,026,306	\$ (970,845)
2009-10	\$ 1,170,448	\$ 2,147,884	\$ (977,436)
2010-11	\$ 1,292,943	\$ 2,276,757	\$ (983,814)
2011-12	\$ 1,423,229	\$ 2,413,362	\$ (990,133)
2012-13	\$ 1,561,802	\$ 2,558,164	\$ (996,362)
2013-14	\$ 1,709,140	\$ 2,711,654	\$(1,002,514)
2014-15	\$ 1,865,745	\$ 2,874,353	\$(1,008,608)
2015-16	\$ 2,032,145	\$ 3,046,814	\$(1,014,669)

*Note:* Revenue is only current year and excludes use of any prior year reserves

*Note:* Expenses exclude major capital replacement such as fire engines

**5.7.5 Fiscal Analysis for Deployment Strategy Three**

*Operate Two Stations: One Staffed Daily with 3 Career Firefighters and the Second Staffed Daily with 2 Career Firefighters*

The firefighters in the current District station take more than 8 minutes to respond to an emergency in the northeastern areas of the District, and this shortcoming certainly applies to the new Long Gulch Ranch area as well. This was recognized in the development analysis for Long Gulch Ranch. This two-station configuration would provide quicker response to the more distant areas of the District and provide four line personnel at the scene of an emergency within a reasonable amount of time. This level of service is really the minimum needed by the Groveland community to have a reasonable expectation of positive outcomes from modest fire and emergency medical responses. The table below reflects the expected costs compared to anticipated District fire service revenue. Again, current and projected property tax and special fire assessment revenue are not adequate to support this level of service.

### Strategy Three: 2 Fire Stations, Staffed by 2/3 Persons

Fiscal Year	Projected Revenue	Projected Expense	Surplus / Deficit
2007-08	\$ 994,517	\$ 2,473,008	\$(1,478,491)
2008-09	\$ 1,055,461	\$ 2,621,388	\$(1,565,927)
2009-10	\$ 1,170,448	\$ 2,778,671	\$(1,608,223)
2010-11	\$ 1,292,943	\$ 2,945,391	\$(1,652,448)
2011-12	\$ 1,423,229	\$ 3,122,114	\$(1,698,885)
2012-13	\$ 1,561,802	\$ 3,309,441	\$(1,747,639)
2013-14	\$ 1,709,140	\$ 3,508,007	\$(1,798,867)
2014-15	\$ 1,865,745	\$ 3,718,487	\$(1,852,742)
2015-16	\$ 2,032,145	\$ 3,941,596	\$(1,909,451)

*Note:* Revenue is only current year and excludes use of any prior year reserves

*Note:* Expenses exclude major capital replacement such as fire engines

#### 5.7.6 CDF as an Alternative

Some fire agencies do not have their own resources, but instead contract with CDF to staff their stations. This approach works well for agencies that have difficulty recruiting and retaining employees, whose employees have limited on-duty exposure to emergencies and training needed to keep up their skills and who need full-time incident command (chief officer) availability. Many smaller departments like Groveland are contracting with a larger agency or CDF to overcome these difficulties, because CDF or a larger neighboring fire agency guarantees full staffing at all times of the stations, with fully trained and equipped firefighters. Supporting the station is the headquarters staff that provides on-scene incident command whenever needed, regardless of vacation schedules and sick leave, etc.

A typical contract with CDF is known as a Schedule A. Based on CDF costing approaches throughout the state, Citygate estimates the cost of providing fire service to the Groveland area, with constant full-time staffing of the fire station with 3 CDF fire personnel, will cost approximately the same as the District is projected by Citygate to pay for fire service with its own department minimum staffing of 2 on duty daily and usually 3, depending upon the staff's leave schedule, sick and worker injury time off, and department vacancies. Thus, the CDF option would represent a slightly higher level of service, since CDF would guarantee 3-person staffing at all times, whereas a Groveland 3 person staffed station would be reduced to 2 on occasion as a result of sick leave and vacation schedules.

This cost comparison, includes Groveland CSD providing station and equipment maintenance and the District providing a dedicated Fire Marshal position to undertake local fire prevention activities such as on-going inspections and public education programs (plan checking is now and could continue to be handled by the County Fire Marshal). The District would continue to be responsible for the replacement of equipment, although it has not currently included this cost in its annual budget as noted elsewhere in this report.

*CDF Advantages - the advantages to contracting with CDF under Schedule A are:*

- ◆ This is a dedicated, contracted for, Fire Company that will not be pulled out to operate elsewhere in the County or state, unless called for as part of County mutual aid policy as the Groveland unit is currently.
- ◆ It guarantees minimum staffing with backup by fully trained staff in the event of vacancies due to illness, training, injury or personnel turnover.
- ◆ It provides guaranteed round-the-clock chief officer coverage, which the District cannot now provide with its Fire Chief as the sole chief officer.
- ◆ Due to it being able to spread out headquarters costs, such as training, regionally and statewide, CDF contracts typically do not charge the full, normal overhead cost burden to local government. The State figures that some of its costs would exist with or without the few additional local government contracted for positions.

*CDF Contract Disadvantages:*

- ◆ Many communities choose to retain their own fire service largely due to issues of local control.
- ◆ Once the District contracts with CDF, they cannot control the future salary and benefit levels to be paid by CDF, which affects future contract costs. Over the last five years, the statewide CDF employee costs have risen more to the level of coastal/urban California, not the more rural county levels. This is why some smaller counties are now having issues with their fire costs rising faster than the local revenue does.
- ◆ The local agency does not control how long an employee will work in that community fire station as employees are moved around for career advancement and training. Some CDF employees do stay a long time and live locally, others do not.
- ◆ The District's Fire Chief becomes the CDF Unit Chief and or their designee. Some of these Chiefs stay a long time and know their local elected officials really well; others transfer more often due to career advancement and retirements. Thus there is no local control on keeping a well-respected Unit Chief.

*Contracting Fire Services Policy Perspectives:*

- ◆ Each local government agency weighs the advantages and disadvantages based on their own perspective and understanding of their local situation. For example, Merced County operated its own Fire Department for many years and then switched to CDF because it was less expensive. Tulare County recently canceled its CDF contract and started up its own Fire Department, although at a lower level of service, because they did not feel they could afford the CDF contract and that it did not give them sufficient local decision-making control.
- ◆ In the Pismo Beach area there are four cooperating and adjoining agencies, one of which contracts with CDF because the cost is lower and the service level higher than they had experienced with their own Fire Department, while the neighboring

agencies are not interested in a CDF contract because they perceive the issue of local control to be paramount to them.

- ◆ Conversely, Napa and Riverside counties contract with CDF for fire service because it is less expensive and they do not want the burden of dealing with fire issues, which become the responsibility of CDF under the contract. In the south Santa Clara County area a dependent Fire District contracts with CDF for fire service while an adjoining city contracts with the county fire district and another adjoining city operates its own fire department. Thus, the choice of contracting with CDF or operating your own Fire Department is decided differently by each agency.

There are obviously mix-and-match alternatives that might involve CDF operating one fire station in the community while the District operates the second. The key issue is for the District to decide fundamentally if contracting with CDF for all or a portion of fire service, whether Schedule A or Amador staffing, is attractive. If so, then the District needs to obtain a formal quote from CDF. A contract for service also can include explicit performance measures (response time, staffing levels, etc.) and the types of administrative services to be provided, such as fire prevention and public education. Some agencies prefer a very specific approach; some agencies have just asked for a broad service level and left the details to the larger fire agency.

Administratively, CDF is unable to provide a firm service cost quote without a formal request from the District and a clear “scope of service request” from the District. The quote, while then prepared by the local CDF Unit, will need final approval from the state CDF headquarters that the contract meets formal CDF standards.

After considering the policy issues of operating their own fire services versus contracting them to CDF and finding that there is at least interest in determining an actual cost and level of performance, then the Groveland CSD Board of Directors could:

**Recommendation #10—CDF Services:**

Ask CDF for a formal operational and cost proposal to provide both full Schedule A (Full Contract Services) Fire and EMS response services and the more modest winter season Amador Plan. During the ensuing public policy discussion, a final decision on how to operate and fund the Department can be made. If necessary, an appropriate fiscal measure can then be put before the residents knowing that both Groveland independent and State contract services have been thoroughly reviewed.

---

**APPENDIX 1**

**GROVELAND FIRE STATION PHOTOS**



Groveland Fire Station 1



Groveland Fire Station 3 – Outside the Airport



Groveland Fire Station 3 – Big Oak Flat Side of District



**APPENDIX 2**

**GROVELAND APPARATUS PHOTOS**





Front Line Structure Fire Pumper Unit #787



Front Line Fire Structure Pumper Unit # 788



Front Line Fire Pumper Unit # 782



Reserve Structure Fire Pumper Unit #786



Wildland Type IV Patrol Unit #783



Light Rescue Unit #785



Utility Unit #781



Fire Chief Unit #780



Volunteer Asst. Chief Unit #780A



**APPENDIX 3**

**GROVELAND FIRE DEPARTMENT  
STATISTICS**



# GROVELAND FIRE DEPARTMENT STATISTICS

## Dataset Identification

The Groveland Fire Department has furnished NFIRS 5 data for 1,575 incidents dated from 7/1/2003 through 6/30/2006. Supplemental CAD data was not available.

Here is the inventory of records used for this three-year analysis:

Incidents records	1,575
Apparatus records	2,628

## Data Quality

Groveland is using the current NFIRS 5 incident-reporting standard.

Dataset strengths include the following:

1. Use of NFIRS 5 Incidents plus optional Apparatus module
2. Regular use of incident narratives by company officers

Dataset weaknesses include the following:

1. No tracking of seconds in NFIRS 5 time fields
2. Possibly inaccurate time stamp recording in NFIRS 5 records
3. No use of Districts in District field.
4. Use of optional census tract would provide additional analysis opportunities

## Demand for Service

The years of available data breaks down as follows:

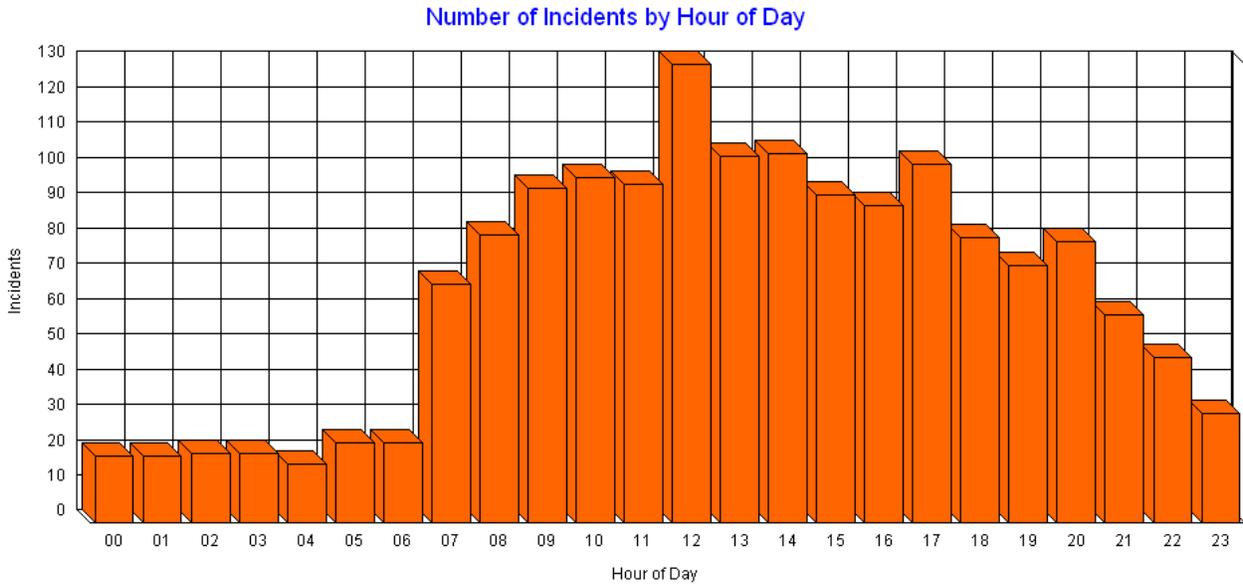
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Incidents	536	503	536
Fire & EMS	380	301	350
Fire	47	27	27
Structure Fire	6	5	3
EMS	333	274	323

This trend analysis shows no steady increase in any call type.

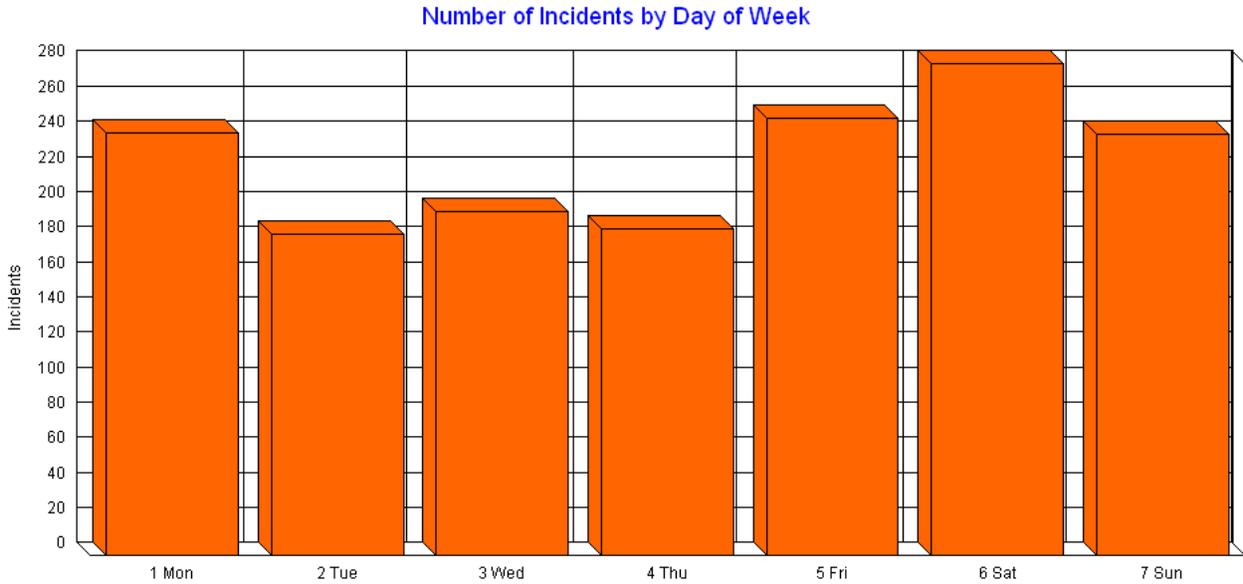
## Chronological Distributions

The following graph illustrates the number of incidents by hour of the day, day of week and month of year for the three years of data. Notice a minimal number of incidents in the early morning. After 7:00am the number of incidents rises dramatically through the late morning

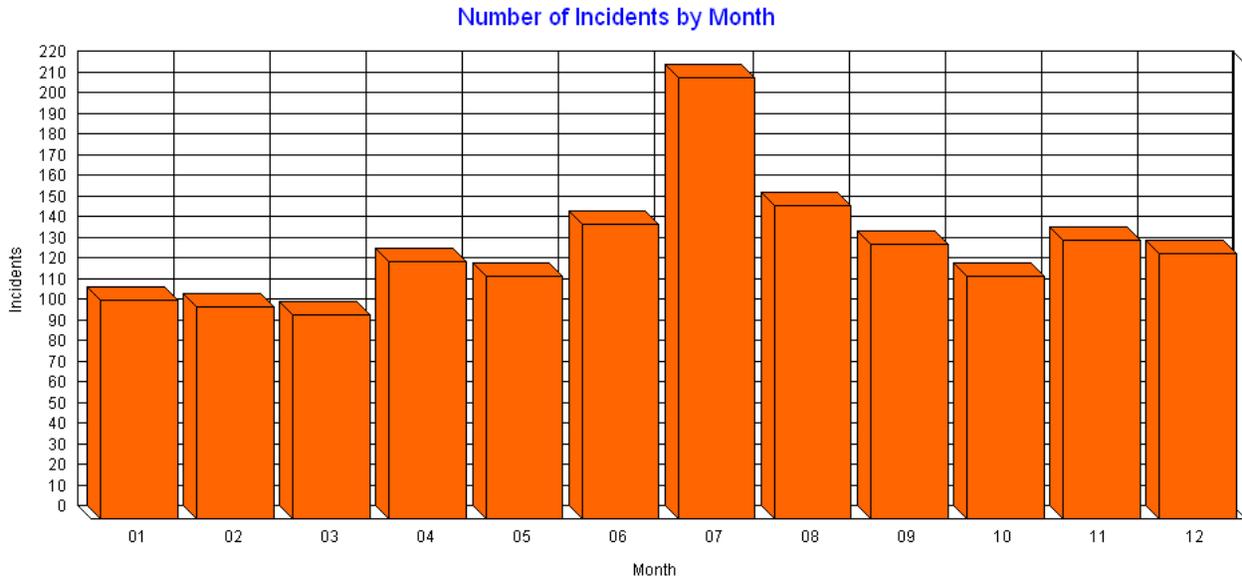
remaining fairly consistent through an evening drop-off. This response graph is a fairly typical representation of fire department activity.



The number of incidents tends to be at a minimum on Tuesday, Wednesday and Thursday. There is a slight increase in incident activity on Saturday. This trend is illustrated in the following graph.



The following graph illustrates the monthly number of incidents. While monthly totals remain fairly consistent there is a spike in incident activity in July.



Below is a list of the top incident types for the year period. Incident types with fewer than 5 responses were eliminated from the list.

<b>Incident Type</b>	<b>Count</b>
321 EMS call, excluding vehicle accident with injury	858
550 Public service assistance, other	241
322 Vehicle accident with injuries	67
651 Smoke scare, odor of smoke	53
553 Public service	51
463 Vehicle accident, general cleanup	24
131 Passenger vehicle fire	21
631 Authorized controlled burning	20
141 Forest, woods or wildland fire	19
561 Unauthorized burning	18
412 Gas leak (natural gas or LPG)	12
611 Dispatched & canceled en route	11
111 Building fire	9
444 Power line down	9
551 Assist police or other governmental agency	9
110 Structure fire, other (conversion only)	8
735 Alarm system sounded due to malfunction	8
114 Chimney or flue fire, confined to chimney or flue	7
243 Fireworks explosion (no fire)	7
700 False alarm or false call, other	7

130 Mobile property (vehicle) fire, other	6
140 Natural vegetation fire, other	5
142 Brush, or brush and grass mixture fire	5
442 Overheated motor	5
522 Water or steam leak	5
541 Animal problem	5

Incident types can be measured a different way. Here we rank the top ten incident types by the number of staff hours committed. Combining 110 Structure fire, other with 111 Building fire results in this grouped category holding second place to EMS.

<b>Incident Type</b>	<b>Staff Hours</b>
321 EMS call, excluding vehicle accident with injury	1,322.25
550 Public service assistance, other	480.56
110 Structure fire, other (conversion only)	467.92
322 Vehicle accident with injuries	451.05
141 Forest, woods or wildland fire	217.57
561 Unauthorized burning	162.92
111 Building fire	157.14
463 Vehicle accident, general cleanup	105.51
553 Public service	100.67
651 Smoke scare, odor of smoke	91.97

Here are the top property types receiving service from the Groveland Fire Department during the 36-month data period. Property types with fewer than 5 responses were eliminated from the list.

<b>Property Type</b>	<b>Count</b>
419 1 or 2 family dwelling	803
888 Fire station	204
961 Highway or divided highway	159
962 Residential street, road or residential driveway	91
429 Multifamily dwellings	44
669 Forest, timberland, woodland	20
931 Open land or field	19
449 Hotel/motel, commercial	14
110 Fixed use recreation places, other	13
519 Food and beverage sales, grocery store	13
161 Restaurant or cafeteria	12
162 Bar or nightclub	10
213 Elementary school, including kindergarten	10
898 Dock, marina, pier, wharf	9
120 Variable use amusement, recreation places	8
599 Business office	8
935 Campsite with utilities	8
965 Vehicle parking area	8
974 Aircraft loading area	8

936 Vacant lot	7
946 Lake, river, stream	7
960 Street, other	7
571 Service station, gas station	6
215 High school/junior high school/middle school	5
973 Aircraft taxi-way	5

Here we rank the top ten property types by the number of staff hours consumed. The staff hour ranking roughly follows the number of incidents by property type.

<b>Property Type</b>	<b>Staff Hours</b>
419 1 or 2 family dwelling	2,101.53
961 Highway or divided highway	548.26
888 Fire station	316.91
962 Residential street, road or residential driveway	229.63
931 Open land or field	145.10
935 Campsite with utilities	113.42
669 Forest, timberland, woodland	103.75
519 Food and beverage sales, grocery store	97.84
429 Multifamily dwellings	89.77
965 Vehicle parking area	58.67

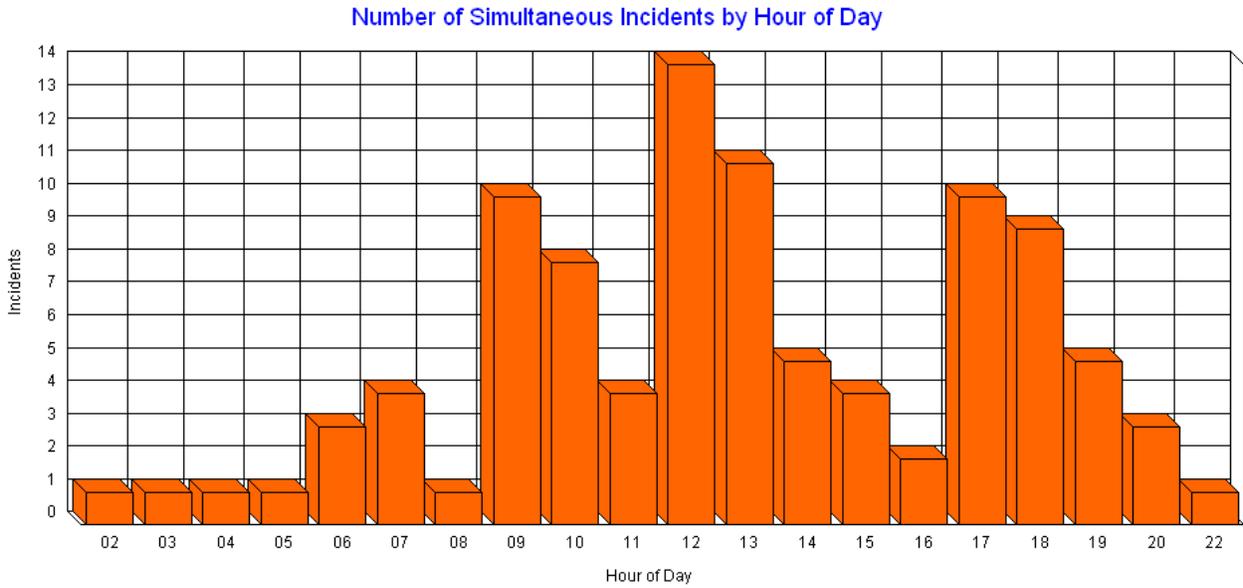
### Simultaneous Incident Activity

Obviously incidents occurring at the same time tax fire department resources more than those occurring when there is no other fire department response activity. Examining study data for the 36-month period shows 6.22% of incidents occurred when Groveland was already engaged in other response activity. This is a low level of simultaneous alarms.

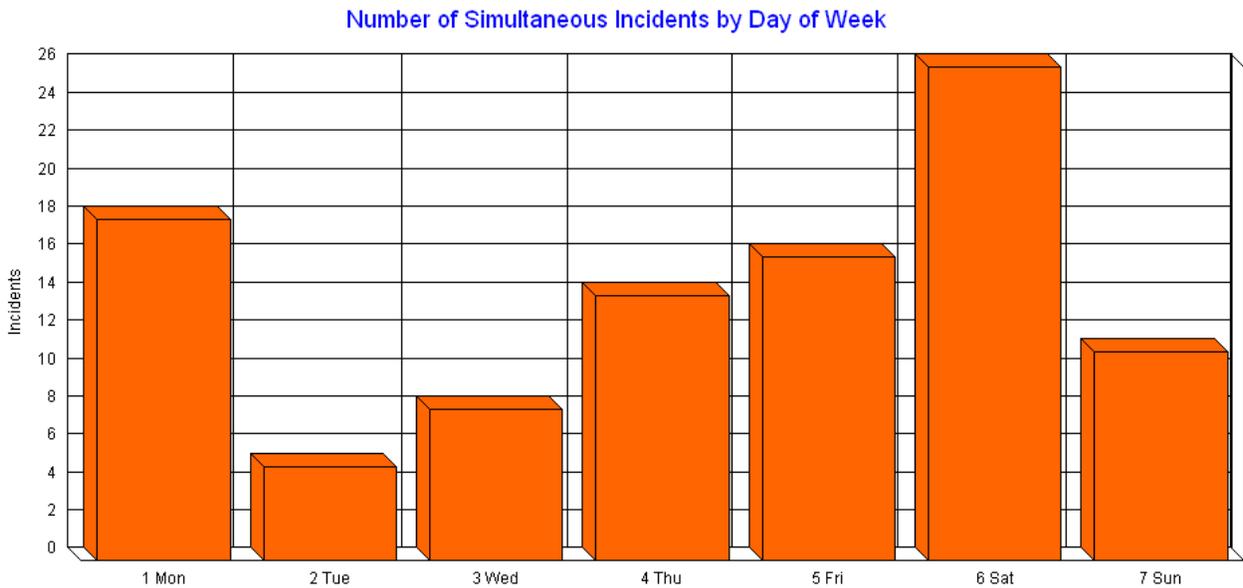
Here is the breakdown by number of incidents:

At least 2 Incidents occurring at the same time	6.22%
At least 3 Incidents occurring at the same time	.38%

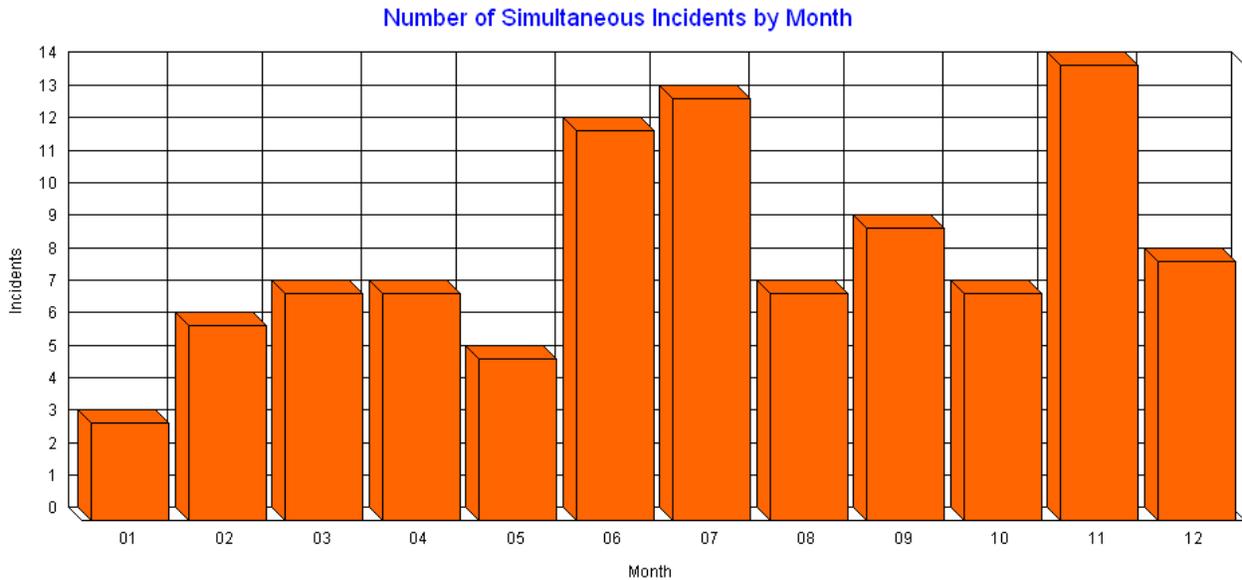
The graph below illustrates the hourly distribution of simultaneous (6.22%) incidents. The graph roughly approximates normal incident activity.



The occurrence of simultaneous incidents is greatest on Saturday consistent with the day having the greatest number of incidents.



Surprisingly, the number of simultaneous incidents peak in November, followed by July. November has a relatively average incident count while more incidents occurred in July than any other month.



While these numbers reveal some interesting simultaneous activity trends at only 6.22% simultaneous incident activity is not an overwhelming factor in Groveland.

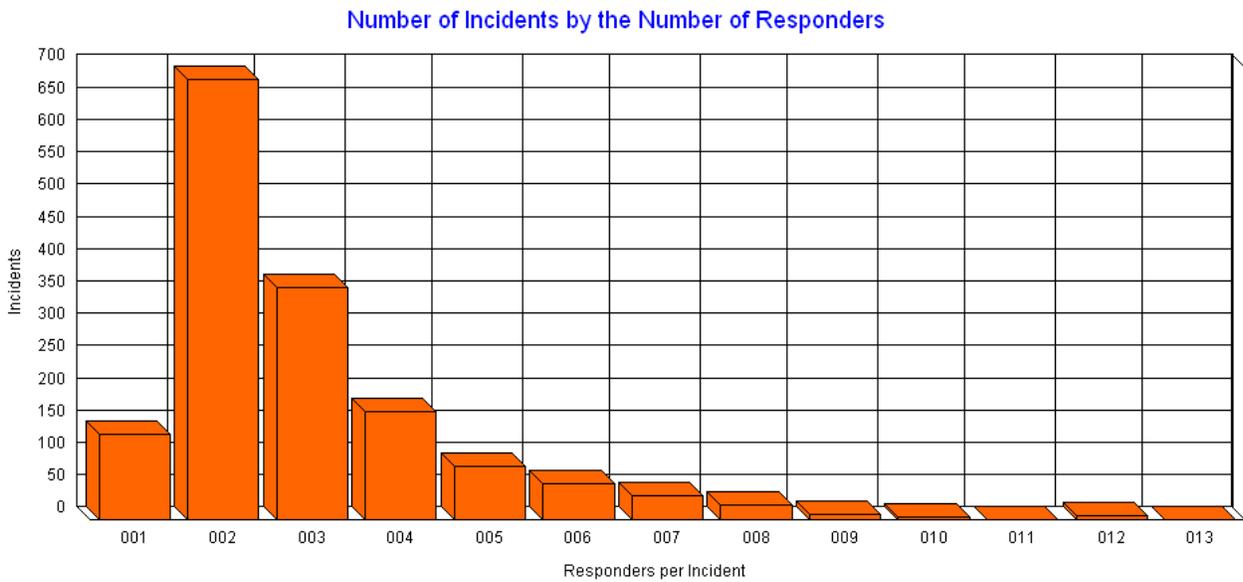
One factor increasing simultaneous incident activity is the duration of incidents. The longer an incident takes to resolve the more likely simultaneous incidents are to occur.

This numeric chart illustrates the top incident types in the three-year dataset. Notice the average duration (in minutes) for EMS incident types is roughly similar to other incident types. Most fires have much longer average durations.

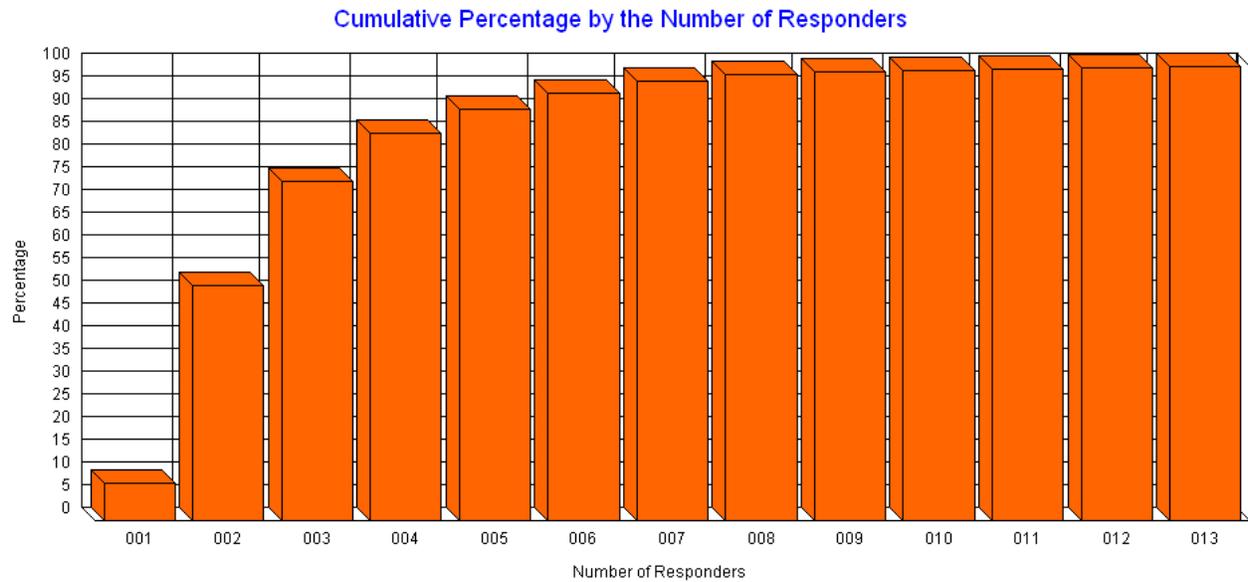
<b>Description</b>	<b>Count</b>	<b>Average</b>
321 EMS call, excluding vehicle accident with injury	858	<b>33.62</b>
550 Public service assistance, other	241	42.72
322 Vehicle accident with injuries	67	68.00
651 Smoke scare, odor of smoke	53	29.49
553 Public service	51	36.14
463 Vehicle accident, general cleanup	24	66.09
131 Passenger vehicle fire	21	34.29
631 Authorized controlled burning	20	25.26
141 Forest, woods or wildland fire	19	102.43
561 Unauthorized burning	18	95.33
412 Gas leak (natural gas or LPG)	12	30.92
611 Dispatched & canceled en route	11	13.74
111 Building fire	9	124.22
444 Power line down	9	76.01

551 Assist police or other governmental agency	9	67.89
110 Structure fire, other (conversion only)	8	403.63
735 Alarm system sounded due to malfunction	8	37.26
114 Chimney or flue fire, confined to chimney or flue	7	46.72
700 False alarm or false call, other	7	38.44
243 Fireworks explosion (no fire)	7	29.71
130 Mobile property (vehicle) fire, other	6	89.18
522 Water or steam leak	5	63.41
142 Brush, or brush and grass mixture fire	5	48.80
140 Natural vegetation fire, other	5	34.40
541 Animal problem	5	33.00
442 Overheated motor	5	18.01

Let us see how simultaneous incidents affect staffing requirements. The following graph illustrates the number of incidents by the number of responders. Notice more incidents require 2 or 3 responders than any other numbers of responders.

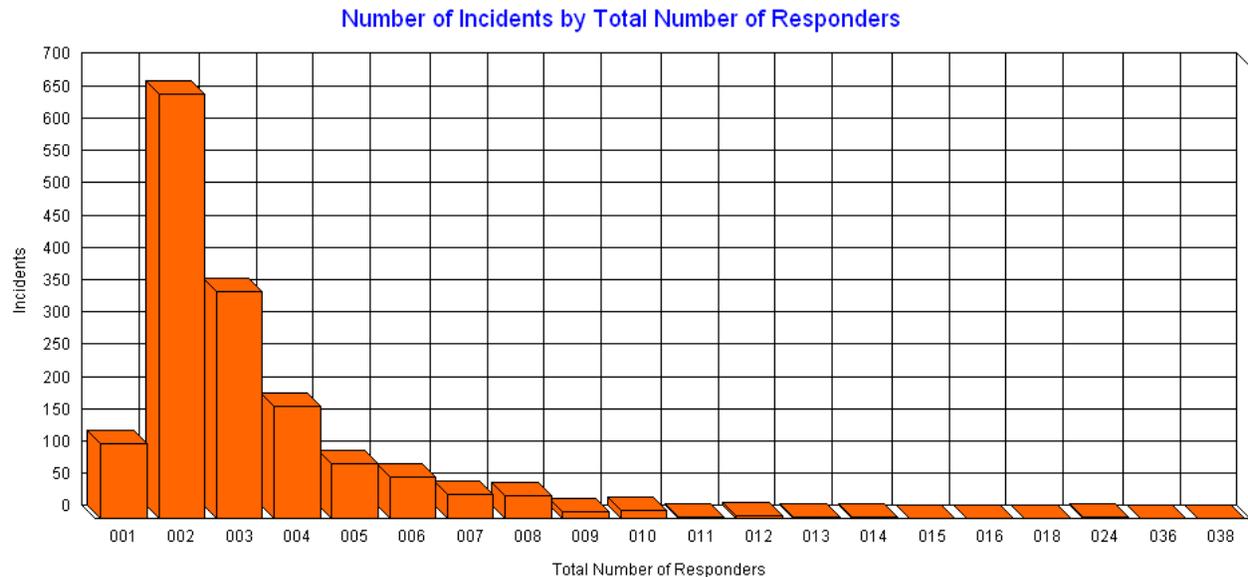


Here is a cumulative view. Notice 95% of all incidents can be covered with a gross staffing level of 6 personnel. This figure does not take geography or simultaneous incidents into account.

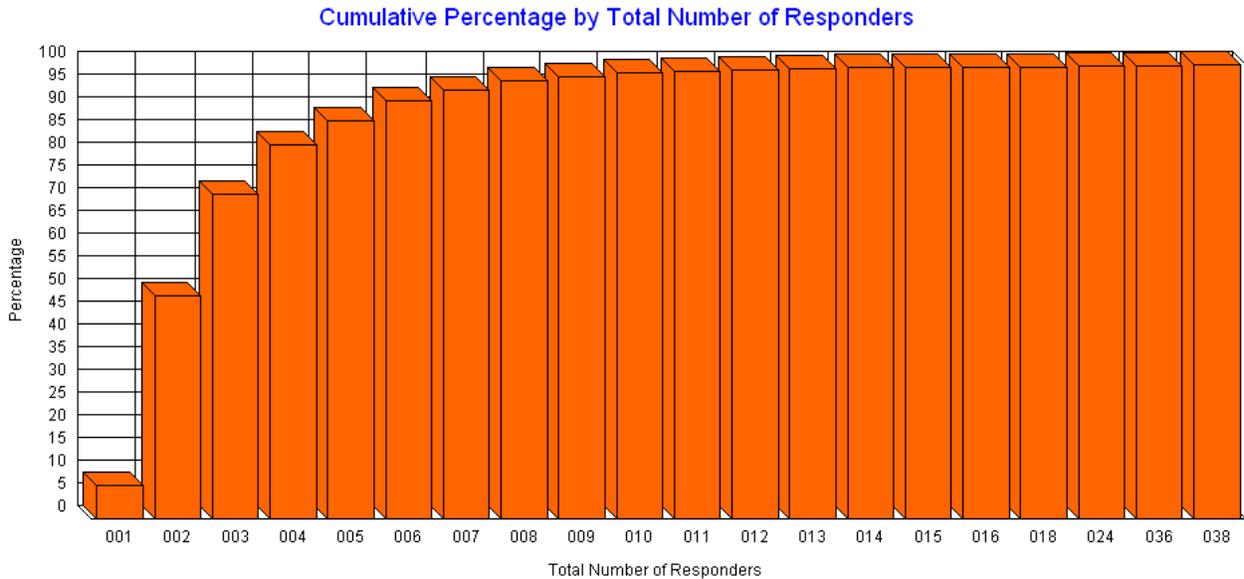


Now let us shift so rather than measuring responder requirements by the incident we measure total responders required when incident overlap (simultaneous incidents) are considered.

The next graph illustrates the number of incidents by the total number of personnel required. Again, spikes occur at 2 and 3 responders.



Now here is the cumulative view.



Here we see rather than 6 responders, the frequency of simultaneous incidents pushes the total number of responders required to cover 95% of incidents up slightly to 7 responders. This is a small, but measurable increase. Again, this is simply a gross staffing figure that does not take geography into account.

### Interdepartmental Aid

During 36-months of available data aid types breakdown as follows:

<u>Aid</u>	<u>Count</u>
1 Received	79
2 Automatic Aid Received	6
3 Given	199
4 Automatic Aid Given	1
N None	1,290

Data suggests the Groveland Fire Department, over the 36-month period, was more likely to give aid than receive it. When interdepartmental aid is totaled it was given roughly 70% of the time and received 30% of the time.

### Department Aid Report for Groveland Fire Department

Total Incidents: 1,575

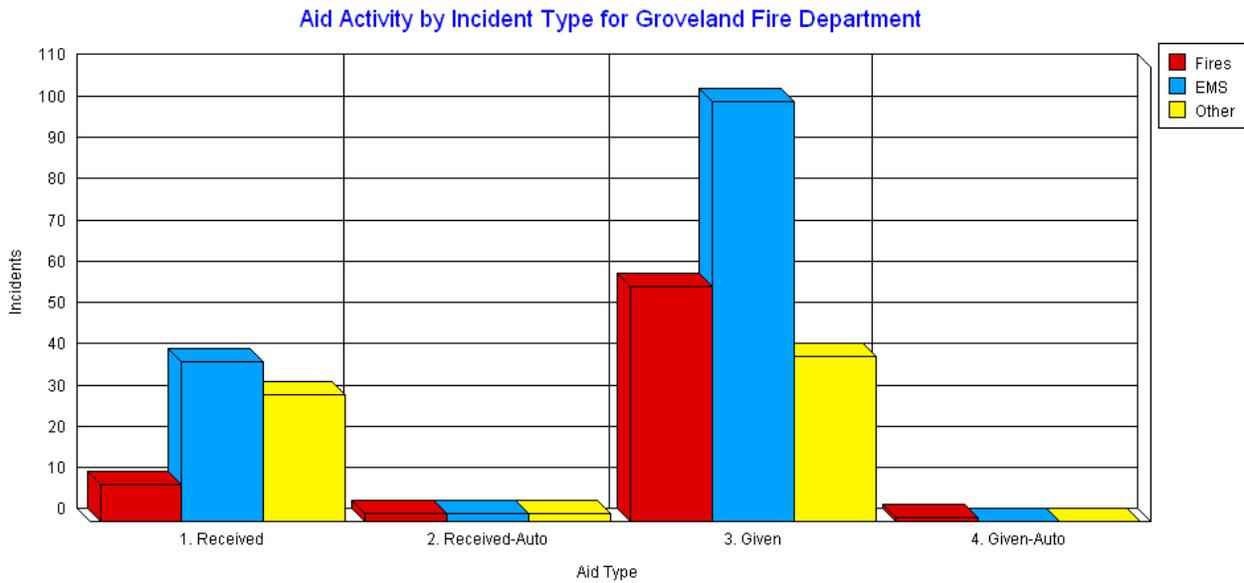
Incidents Involving Aid: 285 Percentage: 18.10%

Aid Incidents for Fires: 69 Percentage: 24.21%

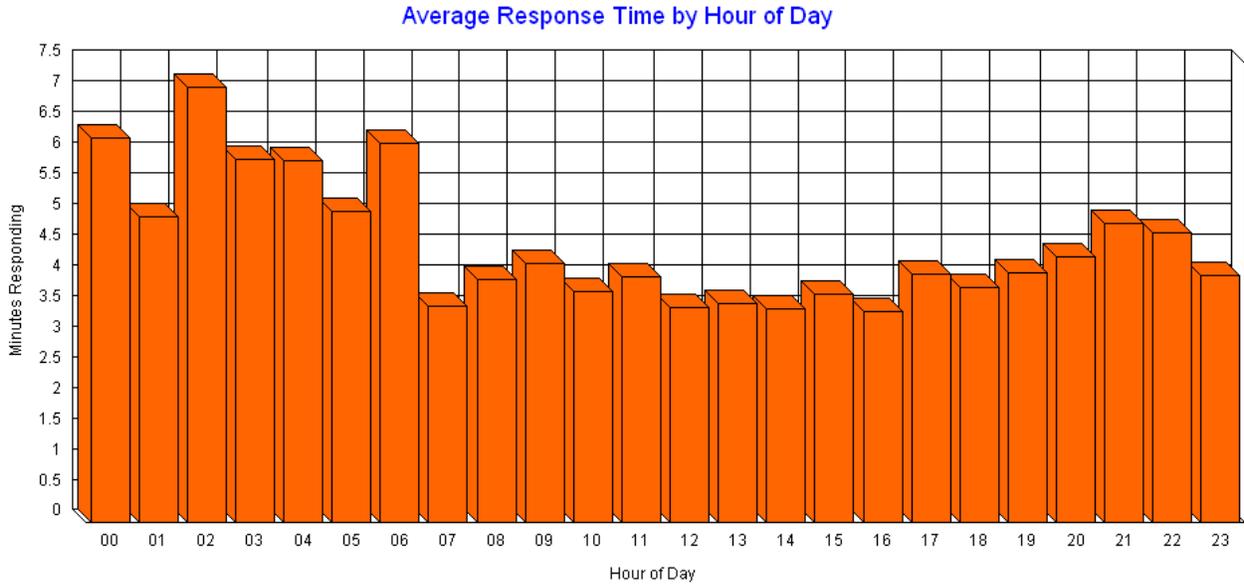
Aid Incidents for EMS: 143 Percentage: 50.18%

Aid Incidents for Others: 73 Percentage: 25.61%  
 Incidents Involving Aid Received: 85 Percentage: 29.82%.  
 Incidents Involving Requested Aid Received: 79 Percentage: 27.72%  
 Incidents Involving Automatic Aid Received: 6 Percentage: 2.11%  
 Incidents Involving Aid Given: 200 Percentage: 70.18%.  
 Incidents Involving Requested Aid Given: 199 Percentage: 69.82%  
 Incidents Involving Automatic Aid Given: 1 Percentage: .35%  
 Incidents Involving Other Types of Aid Given: Percentage: .00%

Here is a breakdown in graph form.

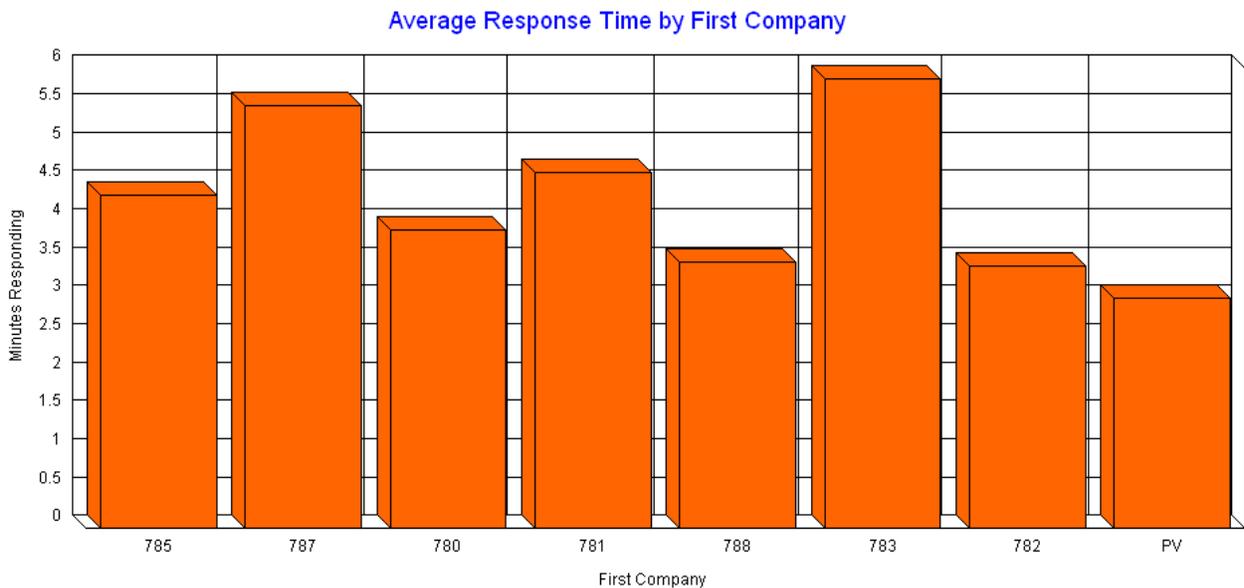


Fire department performance can be measured by monitoring response time. Here is the breakdown of average response times by hour of the day. Only responses with a response time greater than zero and less than 12 minutes were included in this calculation.



Notice Groveland does not experience longer average response times during high-traffic or commuting hours. Longer response times are more closely correlated with early morning hours before 7:00 AM.

The graph below illustrates the average response time by first apparatus to reach the scene.



The number of first arrivals determines the order of the companies on the graph. Companies with the highest number of first arrivals are listed first.

## Response to Demands for Service

While many fire departments track average response time it is not highly regarded as a performance measurement. One of the most commonly used criteria to measure response effectiveness is fractile analysis of response time.

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

Below is a fractile analysis of the three-year dataset. Because Groveland data does not track seconds in time fields, this fractile is broken down into one-minute segments and progressively covers response times greater than 0 and less than 20 minutes.

One peculiar aspect of this breakdown is that 30.5% of all incidents had a response time of 60 seconds or less. This is highly unusual since it generally takes between one and two minutes for a fire crew to simply don their protective gear and assemble on their apparatus to begin their response.

There are 1,528 Incident records being analyzed – *for ALL Call types, including non-emergency*

The following table lists the minute, followed by the fractile measure, and finally the call count that accumulates per minute of response:

1st Apparatus On Scene <= 00:00:00	.0%	(0)
1st Apparatus On Scene <= 00:01:00	30.5%	(466)
1st Apparatus On Scene <= 00:02:00	35.7%	(546)
1st Apparatus On Scene <= 00:03:00	44.1%	(674)
1st Apparatus On Scene <= 00:04:00	51.4%	(785)
1st Apparatus On Scene <= 00:05:00	63.3%	(967)
1st Apparatus On Scene <= 00:06:00	69.6%	(1,064)
1st Apparatus On Scene <= 00:07:00	74.8%	(1,143)
1st Apparatus On Scene <= 00:08:00	79.3%	(1,212)
1st Apparatus On Scene <= 00:09:00	83.3%	(1,273)
<b>1st Apparatus On Scene &lt;= 00:10:00</b>	<b>89.3%</b>	<b>(1,364)</b>
1st Apparatus On Scene <= 00:11:00	91.8%	(1,403)
1st Apparatus On Scene <= 00:12:00	93.4%	(1,427)
1st Apparatus On Scene <= 00:13:00	95.0%	(1,451)
1st Apparatus On Scene <= 00:14:00	96.2%	(1,470)
1st Apparatus On Scene <= 00:15:00	97.3%	(1,487)
1st Apparatus On Scene <= 00:16:00	98.1%	(1,499)
1st Apparatus On Scene <= 00:17:00	98.5%	(1,505)
1st Apparatus On Scene <= 00:18:00	99.0%	(1,513)
1st Apparatus On Scene <= 00:19:00	99.3%	(1,517)
1st Apparatus On Scene <= 00:20:00	100.0%	(1,528)

Median 1st Apparatus On Scene 00:04:00 (4 minutes)

Average 1st Apparatus On Scene 00:04:49 (4.82 minutes)

The fractile breakdown changes if the unusual 1-minute or less responses are eliminated.

There are 1,062 Incident records being analyzed. *For ALL Call types, including non-emergency*

1st Apparatus On Scene <= 00:00:00 .0% (0)  
1st Apparatus On Scene <= 00:01:00 .0% (0)  
1st Apparatus On Scene <= 00:02:00 7.5% (80)  
1st Apparatus On Scene <= 00:03:00 19.6% (208)  
1st Apparatus On Scene <= 00:04:00 30.0% (319)  
1st Apparatus On Scene <= 00:05:00 47.2% (501)  
1st Apparatus On Scene <= 00:06:00 56.3% (598)  
1st Apparatus On Scene <= 00:07:00 63.7% (677)  
1st Apparatus On Scene <= 00:08:00 70.2% (746)  
1st Apparatus On Scene <= 00:09:00 76.0% (807)  
1st Apparatus On Scene <= 00:10:00 84.6% (898)  
1st Apparatus On Scene <= 00:11:00 88.2% (937)  
**1st Apparatus On Scene <= 00:12:00 90.5% (961)**  
1st Apparatus On Scene <= 00:13:00 92.7% (985)  
1st Apparatus On Scene <= 00:14:00 94.5% (1,004)  
1st Apparatus On Scene <= 00:15:00 96.1% (1,021)  
1st Apparatus On Scene <= 00:16:00 97.3% (1,033)  
1st Apparatus On Scene <= 00:17:00 97.8% (1,039)  
1st Apparatus On Scene <= 00:18:00 98.6% (1,047)  
1st Apparatus On Scene <= 00:19:00 99.0% (1,051)  
1st Apparatus On Scene <= 00:20:00 100.0% (1,062)

Median 1st Apparatus On Scene 00:06:00 (6 minutes)

Average 1st Apparatus On Scene 00:06:52 (6.87 minutes)

The percentage of incidents reached at 6:00 minutes falls from 69.6 to 56.3. Rather than reaching 90% compliance at 10-minutes it's delayed to 12-minutes. Certainly, this is a "worst-case" scenario because the eliminated times are more likely to represent shorter responses than longer response times.

Now, let us reduce the set of incidents to include only **fire & EMS**. In following fractile Groveland's response effectiveness decreases slightly when responding to fire and EMS incidents. For all incidents the 90% first apparatus arrival is not reached until 10:00 (10 minutes). However, when responding to fire and EMS incidents the 90% threshold is reached in 11:00 minutes. It could be that fire and EMS emergencies are slight more likely to occur further away from the fire station than "other" incidents.

There are 993 Incident records being analyzed for FIRE & EMS CALLS

1st Apparatus On Scene <= 00:00:00 .0% (0)  
1st Apparatus On Scene <= 00:01:00 22.6% (224)  
1st Apparatus On Scene <= 00:02:00 27.9% (277)

1st Apparatus On Scene <= 00:03:00 38.0% (377)  
 1st Apparatus On Scene <= 00:04:00 47.2% (469)  
 1st Apparatus On Scene <= 00:05:00 58.2% (578)  
 1st Apparatus On Scene <= 00:06:00 66.2% (657)  
 1st Apparatus On Scene <= 00:07:00 72.5% (720)  
 1st Apparatus On Scene <= 00:08:00 77.3% (768)  
 1st Apparatus On Scene <= 00:09:00 82.8% (822)  
 1st Apparatus On Scene <= 00:10:00 87.3% (867)  
**1st Apparatus On Scene <= 00:11:00 90.2% (896)**  
 1st Apparatus On Scene <= 00:12:00 92.2% (916)  
 1st Apparatus On Scene <= 00:13:00 94.5% (938)  
 1st Apparatus On Scene <= 00:14:00 95.4% (947)  
 1st Apparatus On Scene <= 00:15:00 96.6% (959)  
 1st Apparatus On Scene <= 00:16:00 97.6% (969)  
 1st Apparatus On Scene <= 00:17:00 98.2% (975)  
 1st Apparatus On Scene <= 00:18:00 98.7% (980)  
 1st Apparatus On Scene <= 00:19:00 99.1% (984)  
 1st Apparatus On Scene <= 00:20:00 100.0% (993)

Median 1st Apparatus On Scene 00:05:00 (5 minutes)  
 Average 1st Apparatus On Scene 00:05:22 (5.36 minutes)

Here is a breakdown when incidents are narrowed down to **structure fires**.

There are 13 Incident records being analyzed.

1st Apparatus On Scene <= 00:00:00 .0% (0)  
 1st Apparatus On Scene <= 00:01:00 7.7% (1)  
 1st Apparatus On Scene <= 00:02:00 7.7% (1)  
 1st Apparatus On Scene <= 00:03:00 7.7% (1)  
 1st Apparatus On Scene <= 00:04:00 7.7% (1)  
 1st Apparatus On Scene <= 00:05:00 7.7% (1)  
 1st Apparatus On Scene <= 00:06:00 15.4% (2)  
 1st Apparatus On Scene <= 00:07:00 38.5% (5)  
 1st Apparatus On Scene <= 00:08:00 38.5% (5)  
 1st Apparatus On Scene <= 00:09:00 53.8% (7)  
 1st Apparatus On Scene <= 00:10:00 61.5% (8)  
 1st Apparatus On Scene <= 00:11:00 69.2% (9)  
 1st Apparatus On Scene <= 00:12:00 69.2% (9)  
 1st Apparatus On Scene <= 00:13:00 69.2% (9)  
 1st Apparatus On Scene <= 00:14:00 69.2% (9)  
 1st Apparatus On Scene <= 00:15:00 84.6% (11)  
**1st Apparatus On Scene <= 00:16:00 92.3% (12)**  
 1st Apparatus On Scene <= 00:17:00 92.3% (12)  
 1st Apparatus On Scene <= 00:18:00 92.3% (12)  
 1st Apparatus On Scene <= 00:19:00 100.0% (13)

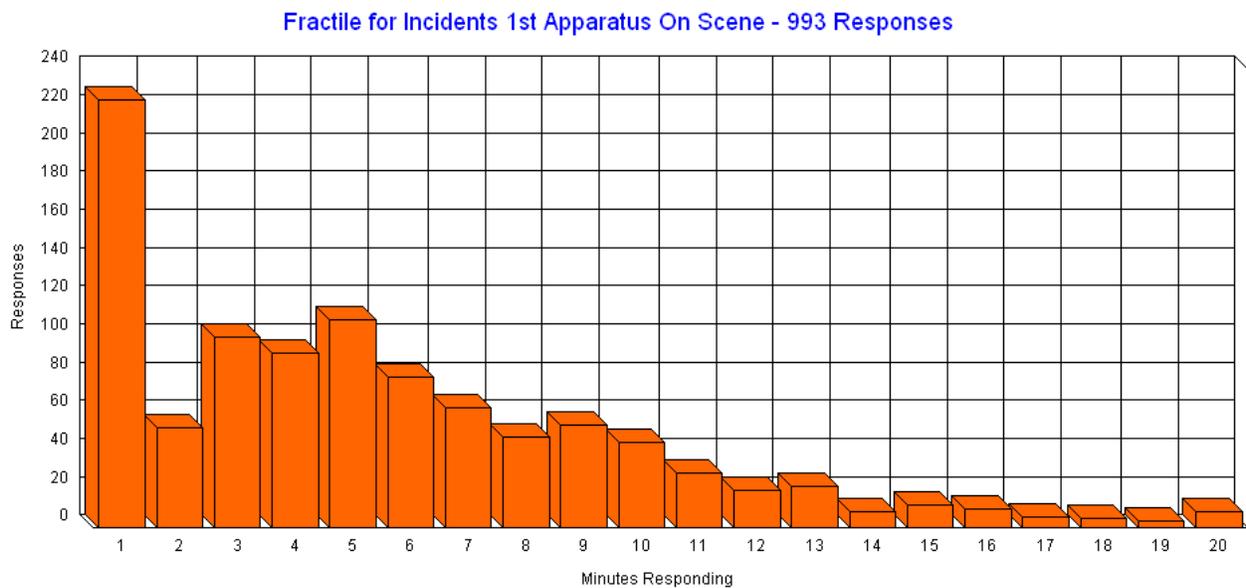
1st Apparatus On Scene <= 00:20:00 100.0% (13)

Median 1st Apparatus On Scene 00:09:00 (9 minutes)

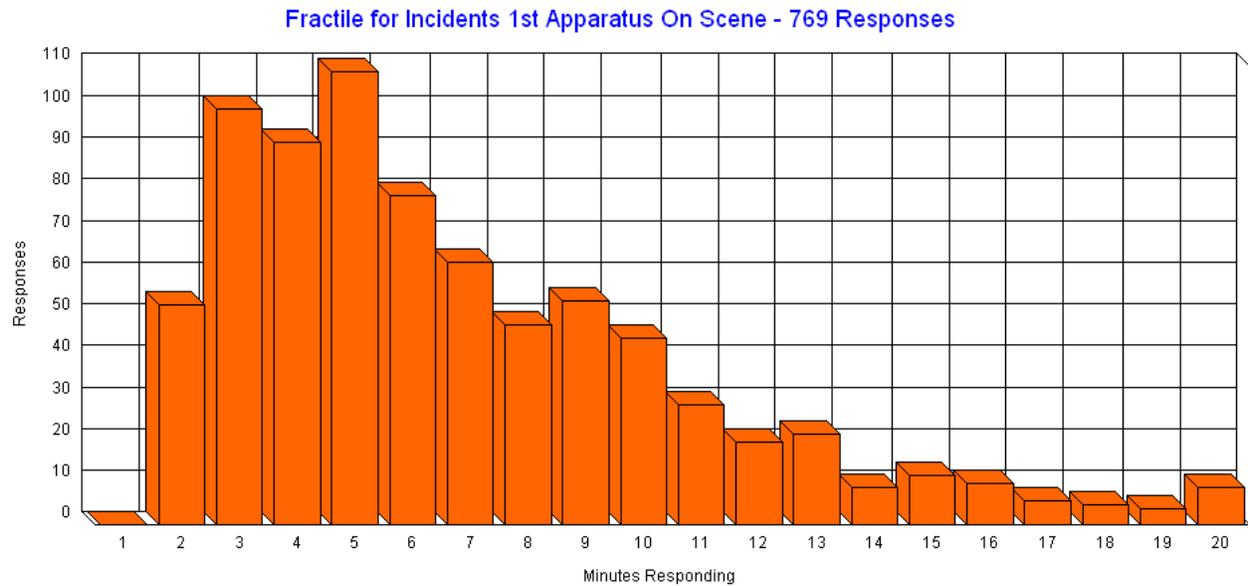
Average 1st Apparatus On Scene 00:10:00 (10 minutes)

Given the relatively few number of structure fire incidents it's difficult to assume any broad response time trends.

Here is a fractile graph for **fire and EMS** incidents. Notice this graph records responses of 1-minute or less have the highest number of incidents than any other minute segment of response time. This is highly unusual and suggests the possibility response times may be inaccurately recorded or transcribed. Since this is a critical measurement of fire department performance the transcribing of timestamps should be reviewed and if necessary updated with timestamps that include seconds.



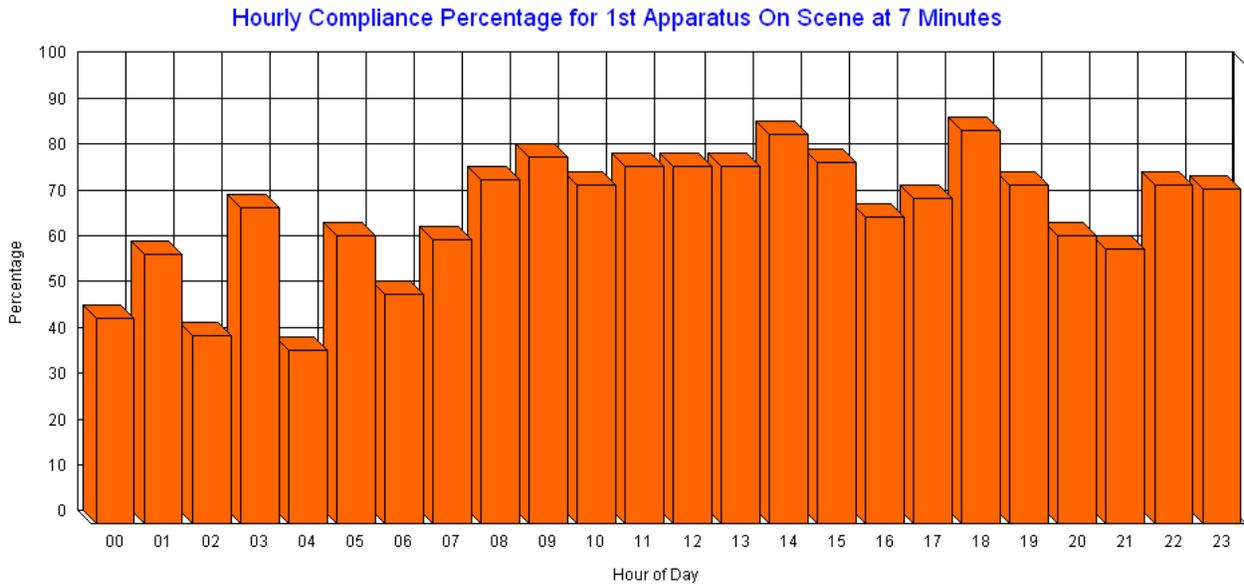
As we did earlier here is the same graph with response times of 1-minute or less eliminated from the incident set. Again, this is for fire & EMS responses only.



Here we can see a graph more in line with expectations. Notice the 5-minute response time segment shows the largest number of responses. Responses at 4-minutes are greater in number than responses at 6-minutes. Responses at 3-minutes are greater in number than responses at 7-minutes. This tends to indicate a solid number of responses close to the fire station. Outside the central district core, however, responses while fewer in number can be very long in duration.

We can look at this same set of response statistics in a different way. The concept here is called “Compliance”. Compliance measures the percentage of time a response time goal (in this case of 7 or 6 minutes) is met.

Here is a graph illustrating the percentage of compliance (0 – 100%) with a 7-minute response time standard by hour of the day. Notice incidents that occur early in the morning are less likely to meet a 7-minute response time objective.



Here is the same graph this time testing compliance with a standard of 6-minutes to the arrival of the first company. Again poorest performance is documented before 07:00.

