CITYGATE ASSOCIATES, LLC
FOLSOM (SACRAMENTO) MANAGEMENT CONSULTANTS

DEVELOPMENT OF A LONG-RANGE STRATEGIC PLAN FOR THE CITY OF DIXON FIRE DEPARTMENT

Final Report

VOLUME 1 OF 2

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

CITYGATE ASSOCIATES, LLC
FIRE & EMERGENCY SERVICES

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EXECUTIVE SUMMARY

Citygate Associates, LLC finds that the Dixon Fire Department (hereinafter referred to as the Department) fire and emergency medical services (EMS) are currently adequate for the needs of a small city, but are under increasing pressure from area growth, declining volunteer availability, and the fiscal capacity of a small city and fire district to provide safety services at levels more typical of suburban areas closer to metropolitan areas.

What the City and Dixon Fire Protection District (hereinafter referred to as the District) residents need to know regarding their fire services is that their Department will, at best, even at City build-out, be an incipient or small fire agency able to handle only more routine emergencies, because the community will not be economically large enough in the foreseeable future to have the weight and depth of fire services to stop large, serious fires that may already be spiraling out-of-control when 911 is called. As will be discussed further, even 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. The City needs strong fire codes such as requiring built-in protection (fire sprinklers), public education programs and a community understanding that fires cannot be tolerated because a department with the resources of the City of Vacaville, for example, does not exist in Dixon to control the local problem. What regional mutual aid can and will do is arrive in time to prevent the spread of fire beyond the building of origin to catastrophic proportions.

Citygate finds that due to its size and the fact that Dixon is geographically too distant from supplemental mutual aid, the Department always will need to operate a "combination" fire department, which is an agency that relies on a volunteer or "reserve" firefighter force that supplements the amount of full-time career firefighters. A fire department relying only on the services of full-time career firefighters would incur an extraordinarily high cost, substantially higher than what will be required to support a "combination" fire department to provide adequate fire and emergency medical service to Dixon area residents.

Citygate finds that the previous studies about the District have been accurate in explaining their service delivery challenges and the fact the District does not have the tax rate to support enough additional firefighters (full- or part-time) to make a real and noticeable difference in protecting the District.

The City of Dixon is to be commended for making several improvements over the decades as demand for service has grown in fiscally challenging times. These have been adding 18 career firefighters, two Assistant Chiefs, two clerical positions, a code enforcement position, modernization of the fire apparatus, including the purchase of a 105-foot ladder truck. Many new programs from paramedics to public education have been added.

Unfortunately, over the last decade or more, there has been in Dixon, as well as nationwide, a decay of volunteer fire services just as positive, controlled growth has occurred. This problem was identified early on in the community and several attempts to alleviate or counter the volunteer firefighter decline problem were attempted with some to no success. The result is that the City is now minimally protected due to limited City and inadequate District revenue sources along with the decrease of volunteer fire fighter resources.

Citygate does find that the City and District have options to provide ***basic*** fire and EMS services. While not needing a full-time paid-only firefighter agency providing all the advanced services of

a metropolitan or major suburban fire department, the area *does need to continue maintaining a department that can provide*:

- 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;
- A department that can enforce the fire codes in new construction to state-of-the-art to mitigate the frequency of large fires that will rapidly outstrip the ability of a small fire department;
- A department that can provide ongoing fire inspections to commercial and industrial properties and public education programs to residents to be fire safe, thus also lowering the frequency and severity of fires;
- Finally, a fire department that can also help the City and District residents prepare and respond effectively during times of large disasters in the City or region.

Citygate finds that there are options and resources available to the City and District to meet these six goals, while still providing other necessary City services. Meeting these goals will require phasing over some years and creativity, such as fostering a renewed volunteer program. Continuing to deliver basic fire and medical services is not beyond the reach of the City and District residents, but fundamentally, it *could* require additional revenue if the Department cannot maintain a viable volunteer force, especially during the 40-hour Monday-through-Friday work week period.

Citygate's key recommendations are summarized as follows:

1. As soon as possible, the Department should develop a Reserve, or Paid Call Firefighter (PCF) program. These personnel would be scheduled as the 4th crewmember, supplementing the existing 3-person crew on each engine 24/7/365, funding and quantity allowing. If funding does not permit 24/7/365 staffing, then the priority should be to staff the 4th position per crew during the 40-hour workweek when volunteer callback is at its lowest.

   These personnel do not need to live in the area, and need career experience while attending fire science community college classes and applying for full career positions. To recruit qualified personnel, the Department should pay well above the "market rate" and in fact consider these part-time, non-benefit employees, and pay them an hourly rate competitive with a service industry job similar to Starbucks. To avoid paid-call firefighters turning into full-time employees without benefits and representation, the hours per year and years in the program should be limited. This system also provides a potential hiring pool of known candidates with abilities for future career positions.

   The authorized thirty-five volunteers is a sufficient number for some or all of the volunteers to work a 12- or 24-hour shift once per month with some flexibility built into the program. It would be unrealistic to expect that there are substantially more people interested in being volunteer firefighters in Dixon. It also needs to be remembered that volunteers are not "free." They need training,

protective equipment and a small stipend. Annually, this runs to about $1,500 per volunteer per year on the average.

At build-out of the City's current General Plan, the Department should operate 3 engines per day, staffed with 3 firefighter career crews each. This would deliver an initial response force of nine (9) firefighters and one Chief Officer. The third crew could staff the ladder truck, rescue and/or grass fire unit. Depending on funding and market availability, one or more of the units could be staffed with a PCF position bringing that unit to a 4-person crew.

2. The City and District would benefit from a southwest station located in the City itself, where the majority of the calls for service are. Citygate finds the proposed 2nd station site is an excellent response time location, given the west side street network.

3. The Department needs to work closely with the Human Resources Director and the HR staff, to develop a consensus risk management plan. This plan should meet the best practices for fire departments as outlined in National Fire Protection Association Standard (NFPA) 1500 Standard on Fire Department Occupational Safety and Health Program, 2002 Edition, and the requirements of the California Occupational Health and Safety Administration (Cal-OSHA). The Department lacks this very important component of their program, and it is made doubly important by the fact that the Department routinely handles structure fires with slightly over half the recommended staffing levels found in national fire industry guidelines.

4. The fire prevention program, while meeting all best practice parameters, is operating at about the maximum level it can with the current staff. Merging the Code Enforcement more closely into the Fire Marshal's arena through cross-training, hiring another fire inspector, and upgrading the ¾-time receptionist to full-time to assist with paperwork, would dramatically increase effectiveness. Other organizational options with other City Departments could also be explored.

5. As the Department expands to two stations, the Department should give strong consideration to adding a third chief officer below the Fire Chief. This model would utilize one Assistant Chief for Operations, one for Prevention, and one for Training/Administration.

BACKGROUND

This project involved the study of the fire services risk within the area served by the Department, which serves the City of Dixon as a traditional city-operated function and serves, via contract, the District. In this report, when speaking about the fire agency itself, the term Department will be used. Otherwise, the report will state City or District if speaking to a specific geographic area. This study and resultant planning recommendations was commissioned to evaluate the current capacity of the Department to respond to emergency fire and medical incidents within its area, and review other related operational issues. This study also reviewed the City/District service relationship and offers insights into any challenges and opportunities. In its entirety, this analysis, findings and recommendations will allow the City Council and District Board to make

informed policy decisions about the level of fire and EMS services desired and how best to deliver and fund them.

The challenges facing the City and District are sadly not unique. Since the Proposition 13 property tax limitation measures and subsequent further limitations on local government taxation authority, smaller incorporated areas such as the City find the property tax rate and other sources of local government revenue will not support modern fire services. This is not the City's or District's fault. They cannot control the State taking historical local government revenues, nor could they 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. So, the plan of operating a less expensive, mostly all-volunteer fire department supported by a limited tax rate has become broken. Additionally, geographic factors isolate the City from close-by fire mutual aid partners while the quantity and cost of housing limit the potential market for volunteer firefighters as the training commitment requirements on volunteer firefighters increase.

The Department, the City of Dixon and the District all function within the highly restrictive fiscal rules that govern local government finance in California. A review of the budgets, revenue sources, expenditure patterns and annual financial audits makes it abundantly clear that the District and City do not have the fiscal resources to significantly increase their current staffing beyond the present level. The City does have the fiscal capacity, in cooperation with the District, to meet the current capital building and equipment needs of the Department.

This fiscal assessment is important, because the staffing of the Department is inadequate to provide a reasonable likelihood of containment for a well-involved residential fire, and is certainly inadequate if fire forces are needed to rescue occupants at the same time. This situation is exacerbated by a growing frequency of simultaneous fire service emergency calls and the lack of resources to adequately handle even two overlapping emergencies in the District. Additionally, for commercial building fires, even the daily staffing is inadequate to provide a minimally acceptable response to anything but the smallest and already well contained fire in any one of the large industrial buildings and operations in and around the Department area.

The reason that this is not a crisis in the City and District is a combination of four factors: luck; smaller fires due to fire prevention and a quick response occurring; aggressive initial attack when the fire is small; and excellent public education. Plus, many of the homes and commercial buildings in the City are relatively new, unlike the older cites in the eastern United States. Given the positive role of the Department in the community and the absence of devastating fires, there was little to no public turnout for input to this study effort. The citizens probably either feel protected or do not know how thin that protection is, or they assume upon seeing a fire station and engine that a fully capable fire department exists. Most citizens and even fewer voters actually understand the fiscal limitations on smaller government agencies today.

PROJECT APPROACH AND RESEARCH METHODS

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

Citygate team members then followed up in a site visit on this information by conducting focused interviews of key City leaders, District Board members, plus Department managers and line personnel. We reviewed demographic information about the City, such as its General Plan, proposed developments and managed growth projections. As information about the City and District area was collected and understood, 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 that would be needed to serve the City and greater District areas at build-out.

Once an understanding of the Department service area with its fire and EMS risks was gained, 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 meet reasonable expectations at a small city/district level of expense.

STANDARDS OF COVER ANALYSIS

DIXON FIRE DEPARTMENT BACKGROUND INFORMATION

The City of Dixon is 7.4 square miles, with a 2005 population of approximately 17,000 residents. The Dixon Fire Protection District (hereinafter referred to as the District) is 312 square miles surrounding the City with a population of approximately 5,500. Thus, the Dixon Fire Department (hereinafter referred to as the Department) serves a total population of about 22,500. There is, of course, an out-migration of residents during the workweek and some in-migration of employees to Dixon area businesses.

The City has been and will continue to focus on infill development under its adopted Growth Program. The City is not likely to grow significantly via annexation, given its policy and agricultural area protection laws in the County areas. City staff estimates, based on current approvals, about 200 new dwelling units per year of all types will be constructed as the City grows from its housing units of 6,313 to 8,074 in the year 2014. The majority of the City is zoned for residential use and will stay that way to build-out. Given its growth strategies, the City will have a build-out resident population of approximately 22,000.

Given the Williamson Act protection of the agricultural lands in much of the District, and County growth measures, it is not likely the District area will show growth on more than an occasional large, parcel-based, low density residential development.

Thus, a likely build-out *residential* population of the City and District is in the range of 25,000 to 27,000. Calls for service are driven primarily by people having medical problems or causing fires. The Department also serves a "mobile" population in the business areas and on the freeway. Any significant new commercial or industrial development in the northeast area of the City that adds to this “mobile” population could generate more calls for service during the developments’ operating hours.

As the mapping portion of the fire services assessment will show, the Department is geographically isolated in terms of close-by mutual aid. The mutual aid response from Vacaville or UC Davis is too far away to be of primary response use. These departments have been and are used for greater alarm fires or multiple incidents and some freeway responses. Given the rural nature of this part of Solano County, and the sheer size of the District, there are no close-by fire districts to the north and south that can provide timely mutual aid. The mutual aid from Vacaville and UC Davis also depends on Highway 80, which can be very congested at times and/or closed by natural disasters, requiring the use of longer alternate routes. This means that for fire defense, the City and District residents are dependent on the Department deployment system to keep fires small until mutual aid can arrive.

As the City’s General Plan acknowledges, the City is in a seismic zone and also can experience modest flooding events during extreme weather conditions, amplifying the dependence of the City on the District for an adequate first response to emergencies.

The Department started as an all-volunteer operation in the mid eighteen hundreds, and formal City/District cooperation started in 1926 with joint purchasing of fire apparatus. Given the strong volunteer force at that time and the small size and growth expectations of what is now the City area, the leadership over the decades since cooperation started never planned for the tax rate

to pay for much, if any, full-time career firefighters. Long-time residents may remember this as "yesterday," but many years have passed with significant development in a now emerging suburban City, which is faced with technical pressures on volunteer fire services.

For many years, the Department has served the District area by contract. Under the terms of this agreement, the District, which only receives property tax and interest on reserves, pays the City 90 percent of its annual property tax revenue. As property tax revenue increases each year, the amount paid to the City increases as well. The balance of the annual District revenue goes to modest operating expenses and for fire apparatus replacement. The 1986 District/City contract inception funding was solely by a portion of the ad valorem taxes collected within the District boundaries ($.03 per $1.00). Two previous attempts in the early to mid-1990s to increase the rate have failed to achieve the required two-thirds voter approval. To make matters worse, at the time Proposition #13 passed in 1978 the District had a very low tax rate, which Proposition #13 then capped. There are no other viable revenue streams available to the fire district. Cities can use other General Fund revenues sources, such as sales and property taxes. Special Districts are limited to changing their tax rate or using a real property-based benefit assessment, either of which has to receive voter approval. Even if a fire district charged fees for services such as fire prevention inspections, fees cannot raise enough money to sustain suppression operations.

The City operates from one modern station today in the northern portion of the City. This facility is well planned and will meet the needs of the Department at City/District build-out. The facility also provides space for training and the City/District emergency operations disaster plan command functions (EOC). This facility will need to expand as the Department and jurisdictions grow.

The Department has a modest fleet of fire equipment that totals eight vehicles that meet its current operational needs. There are four other command and support vehicles. The District currently owns two fire units, both relatively recent large capacity water tenders for rural firefighting water supply. The City and District have always used savings or limited debit in past years to pay for facilities and equipment. The District is not in danger of not being able to pay its current obligations. Overall, the newer station and equipment are capable and meeting the Department's needs. As the City grows to the south, this Master Plan will confirm the need for a second station in the City.

The Department, over the last decade plus, added career firefighter staffing as the pressures on volunteer firefighters eroded their availability and the frequency of calls for service grew. Today, the Department fields five career firefighters per day (18 total on payroll) at the single fire station. Two of these personnel are firefighter/paramedics. Volunteers supplement this staffing, with greater availability on evenings and on weekends than during the normal workweek. There is a career Fire Chief and two Assistant Chiefs, one of whom serves as Fire Marshal. The three chiefs serve as management and field incident commanders. Any single serious incident or two incidents at once require the callback of any available volunteers and off-duty career firefighters.

The Department's response to hazardous materials incidents is supported by the Sacramento Fire Department's Hazardous Materials Team. While Solano County maintains a team, it is comprised of several agencies relying on individual call back of off-duty personnel. Sacramento's team is constantly staffed and is in closer proximity to the City and District.

The City also operates a code enforcement function out of the Department with one Code Compliance Technician.

In March 2006, the volunteer force consisted of 22 volunteers, which included only 1 certified heavy fire apparatus driver/operator. There were 14 additional volunteer recruits going through physicals, to be followed by a 24-hour academy, given on a part time basis. As of December 2006, 7 volunteers have already left the Department to pursue other jobs. Also, there are approximately 4 of the current volunteers who have attended driver/operator classes, but are still in the process of being signed off on Department apparatus. However, even with five drivers, the Department will have problems fielding drivers for additional apparatus during the 40-hour workweek period when many volunteers are away at work or school.

DESCRIPTION OF RISK AND FIRE SERVICES

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 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 calls, the analysis could miss over-worked companies. If we do not use risk assessment for deployment, and just 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 is expected of the response agency?
3. Community Risk Assessment – what assets are at risk in the community?
4. Critical Task Time Study – what must be done over what timeframe to achieve the stated outcome expectation?
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 serious 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, enough firefighters must be assembled in a reasonable time frame 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, cities such as Dixon 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 few: 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 the residents know they live far apart and isolated from typical suburban fire, police and ambulance 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 Dixon, how the Department is staffed and deployed today, and then modeled those parameters using geographic mapping and response statistical analysis tools. The models were then compared to growth patterns in the City of Dixon so that the study can recommend changes if any in fire services to the Department's service area.

Thus, the deployment recommendations in this report are tailored to Dixon's unique needs, and were not taken from other agencies or national recommendations.

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

DIXON FIRE DEPARTMENT COMMUNITY RISK

The City area contains an appropriate mix of housing types, some small businesses as well as a few very large businesses and retailers. In the last decade there has been steady, managed growth. Both newcomers to the community, as well as long-term residents may not realize what community assets are at risk today in such a vibrant and diverse small city. The Department is charged with responding to a variety of emergencies from fires to medical calls, to special

hazards and transportation emergencies. Approximately 80 percent of the building stock in the City is single-unit homes, the majority being built since 1970. Here is a partial inventory of the types of risk demographics in addition to the visible homes and business buildings:

- An increasing population, including the very young and the elderly
- Freeway accidents on Interstate 80
- A modest Urban Wild Land Interface, where grass abuts developed areas
- Some hazardous materials storage, use and release, including transportation on I-80
- Multi-family construction up to three stories
- Low intensity commercial buildings
- Low intensity industrial parks.

To its credit, the City and Department have taken a very proactive approach to controlling these risks through adopting state-of-the-art building and fire construction codes, providing limited fire inspections, and conducting public education programs. Examples of this are the fire sprinkler ordinance where all buildings larger than 4,000 square feet are fire sprinklered and the use of public education programs to help homeowners with open space fuel mitigation and alternative landscaping plans to control the spread of grass fires into developed areas. Commercial buildings also are required to install automatic fire sprinkler systems and automatically report any activation.

However, humans have a tendency to cause fires, have medical problems, and get into accidents etc. As the City grows, so will the number of Department incidents, in direct proportion to population. Given the modest nature of the City at build-out, requiring residential fire sprinklers in all residential structures would be a huge positive step for the City to make in controlling the need for a more heavily staffed fire department.

Risk Finding

The City is a well planned, largely residential community with average fire and EMS risks typical to many western suburban communities. The City has properly used construction codes to limit risks. However, there is enough quantity and diversity of risks remaining that the citizens need an "all risk" fire and EMS response system to handle small, day-to-day emergencies. Greater emergencies will be of such low frequency and probability that the volunteer response and/or regional mutual aid system will have to assist the Department forces to control severe events.

Understandably, the leaders and residents of the City all expect to varying degrees that the Department should operate fire and EMS services to handle daily emergencies and that catastrophic emergencies would naturally be beyond the ability of a small city fire department. However, some of the new residents may not understand that a small city fire department cannot handle everything that perhaps a larger suburban or metropolitan department would. When residents see nice housing with suburban spacing, and name brand retail stores or restaurants, they forget that they are in a "small city" and may see the area just like their last city. Typically, however, they do not understand that they have moved beyond the reasonable and economic reach of metropolitan levels of fire and EMS services that they have become accustomed to.

CURRENT WORKLOAD STATISTICS

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 serious 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 as follows: "For structure fires in an average risk area, the first unit shall be on-scene within 6 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 10 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

*One problem identified over the years since NFPA #1710 was published is that the step of crew turnout time takes up to 2-minutes, 90 percent of the time due to the required safety clothing that must be donned.

NFPA #1710 also recommends 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. It is not as appropriate for the rural home areas. Nationally, there are no rural fire response standards. Even 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. 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. In rural areas, the ISO for Class 8 requires a 5 road mile response 85 percent of time for the first-due engine and 200 gpm continuously for 20 minutes within five minutes of arrival. The 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 Dixon 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. If fire service response is to achieve positive

outcomes in severe EMS situations and incipient fire situations, ***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.

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 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.
2. When the heart stops in a heart attack, the brain starts to die from lack of oxygen in 4 to 6 minutes and brain damage becomes irreversible at about the 10-minute point.
3. In a trauma patient, severe blood loss and organ damage becomes so great after the first hour that survival is difficult if not impossible. The goal of trauma medicine is to stabilize the patient in the field and get them to the trauma surgeon inside of one hour.

Somewhat coincidently, in all three situations above, the first responder emergency crew must arrive on-scene within 5 to 7 minutes of the 911 call to have a chance at a successful resolution. Further, the follow-on (additional) crews for serious emergencies must arrive within 10 minutes.

The three event timelines above start with the emergency occurring. It is important to note the fire or medical emergency continues to deteriorate from the time of inception, not the time the fire engine actually starts to drive the response route. It is hoped that the emergency is noticed immediately and the 911 system is activated. This step of awareness – calling 911 and giving the dispatcher accurate information – takes, in the best of circumstances, 1 minute. Then 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 and the fire has grown to the point to leave the room of origin and become very serious. Thus, the City and District and leaders need 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 Department is called in. However, given 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. Thus, a properly designed system will give the citizen the hope of a positive outcome for their tax dollar expenditure.

Fire Department Response Statistics

A review of fire services should include how the response system has preformed 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 their credit, the City was an early adopter of this system and has several years of data on-line, which 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, including Dixon, 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 to get a feel for when and how many volunteers tend to respond.

The Department has furnished NFIRS 5 data for 1,900 incidents dated from 01/01/2005 through 12/31/2005. This 1-year collection of data includes 3,865 apparatus responses obtained from the same NFIRS 5 data set. Data from the regional dispatch center operated by the sheriff was not available for this study due to problems with the dispatch center Computer Aided Dispatch (CAD) system. The "time of call" entered then in the Department records system is the time of fire crew notification. Without the actual time of the 911 call receipt, and the time the crew actually starts to drive to the emergency, it is not possible to determine how long the dispatch and crew turnout time are taking. Even with this information from the dispatch system, there are time records to indicate total time performance from alerting the Department to the arrival of the first unit on-scene, and this time gives an excellent indicator of performance against the desired goal.

The following data, unless otherwise noted is for Department operations for the City and District combined. During 2005, the Department responded to an average of 5.2 incidents per day, of which the fire and medical workload percentages are:

All Incidents:	1,900	
EMS	1,087	57.21%
Building Fires	22	1.15%
Auto, Outdoor & Misc Fires	159	8.37%
Other	632	33.27%

Below is a list of the top fire incident types extracted from the provided fire incident data including more types than summarized above. Incident types with fewer than 5 responses were eliminated from the list.

Incident Type	**Count**
EMS call, excluding vehicle accident with injury	845
Dispatched and canceled en route	171
Motor vehicle accident no injuries	118
Vehicle accident with injuries	111
Grass fire	57
No incident found on arrival of incident address	42
Unauthorized burning	37

Incident Type *(Continued from previous page)*	**Count**
Assist police or other governmental agency	33
Assist invalid	31
Passenger vehicle fire	30
Authorized controlled burning	23
Alarm system sounded due to malfunction	21
Good intent call, other	21
Smoke detector activation, no fire - unintentional	20
Brush, or brush and grass mixture fire	19
Building fire	19

Here are the top types of property receiving services from the Department. Property types with fewer than 5 responses were eliminated from the list:

Property Type	**Count**
1 or 2 family dwelling	711
Highway or divided highway	233
Residential street, road or residential driveway	114
Street, other	95
Open land or field	85
Multi-family dwellings	77

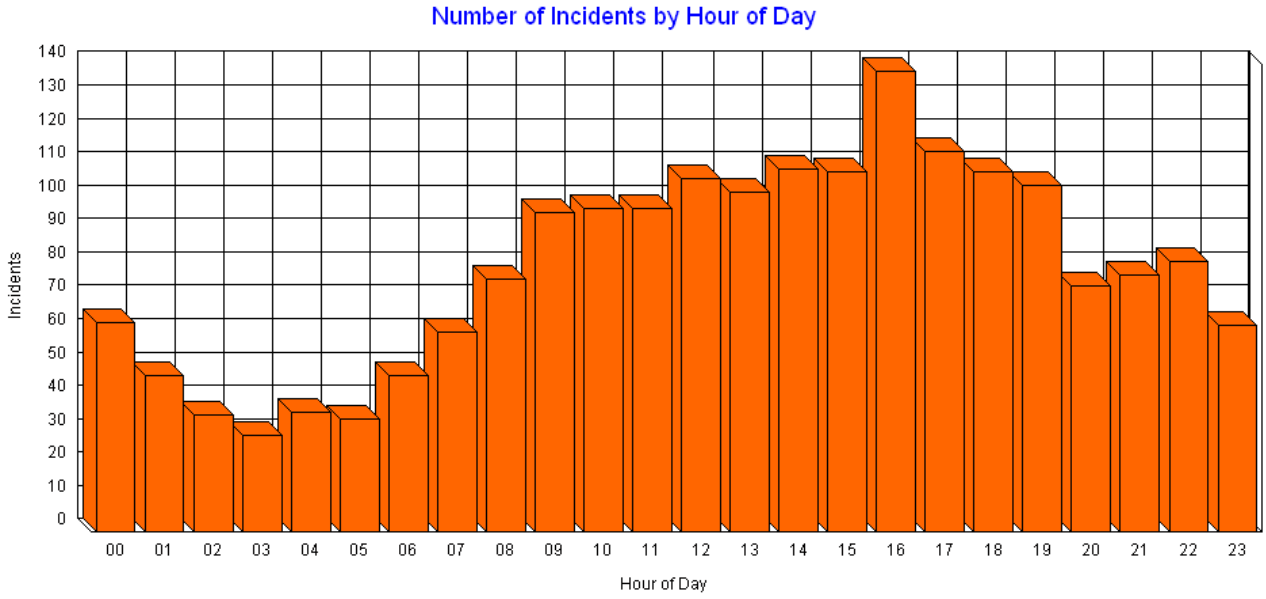
Interdepartmental Aid

Mutual Aid responses breakdown as follows:

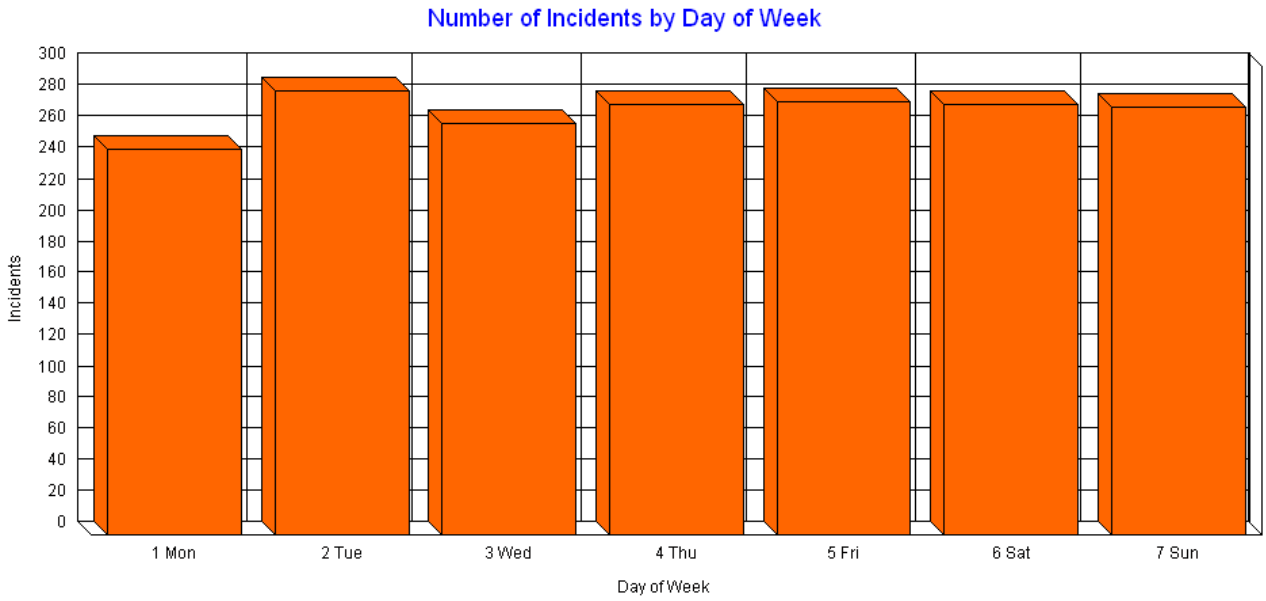
Description	**Count**
Mutual Aid- Received	32
Mutual Aid- Given	27
Automatic Aid- Received	60
Automatic Aid- Given	79

The Department's Mutual Aid system is fairly balanced with 106 responses involving aid given while 92 responses involved receiving aid from other agencies. 10.42 percent of all incidents involve aid, either given or received.

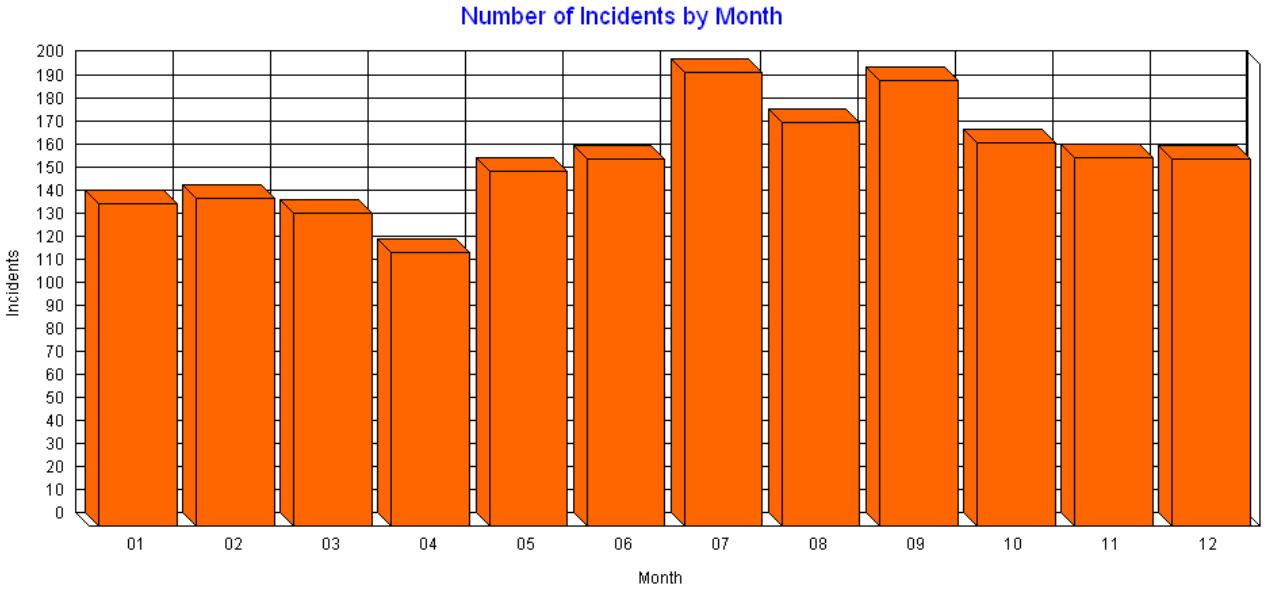
The graph below displays the departments call for service workload by each hour of the day. The chronological distribution below is fairly typical for fire department operations, where calls for service climb as people become more active during daylight and early evening hours.



The number of incidents remains generally level by day of week as seen below. Monday has the fewest number of incidents.

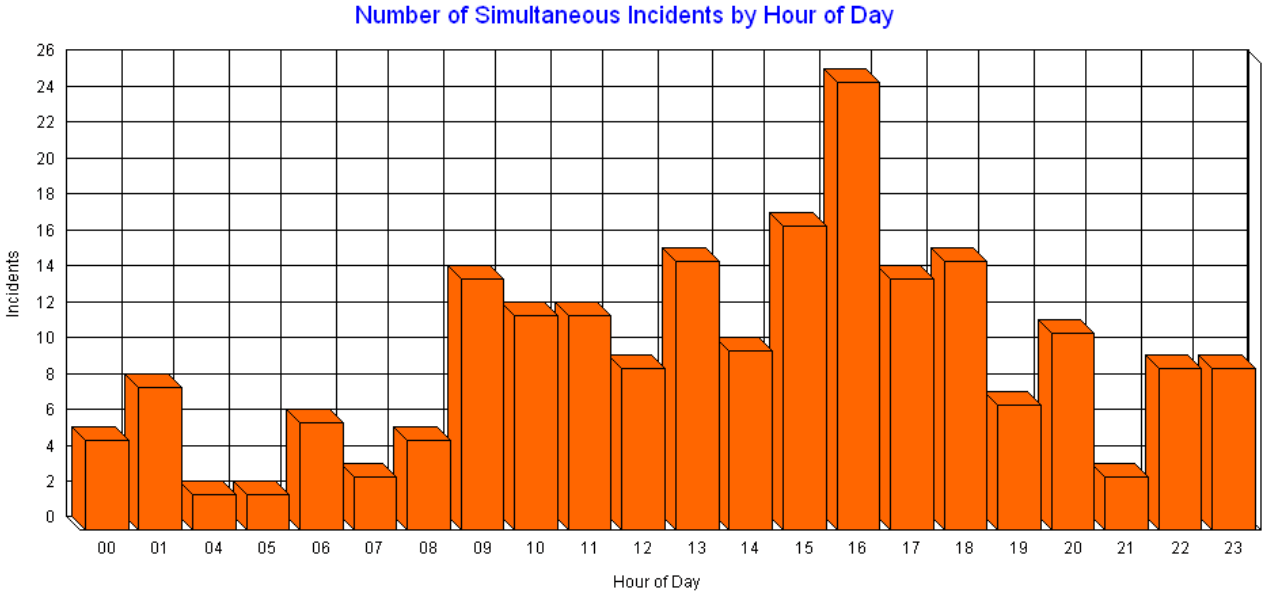


The following graph illustrates incident numbers by month. Notice incident activity tends to rise during the late spring and summer, with incidents peaking in July.

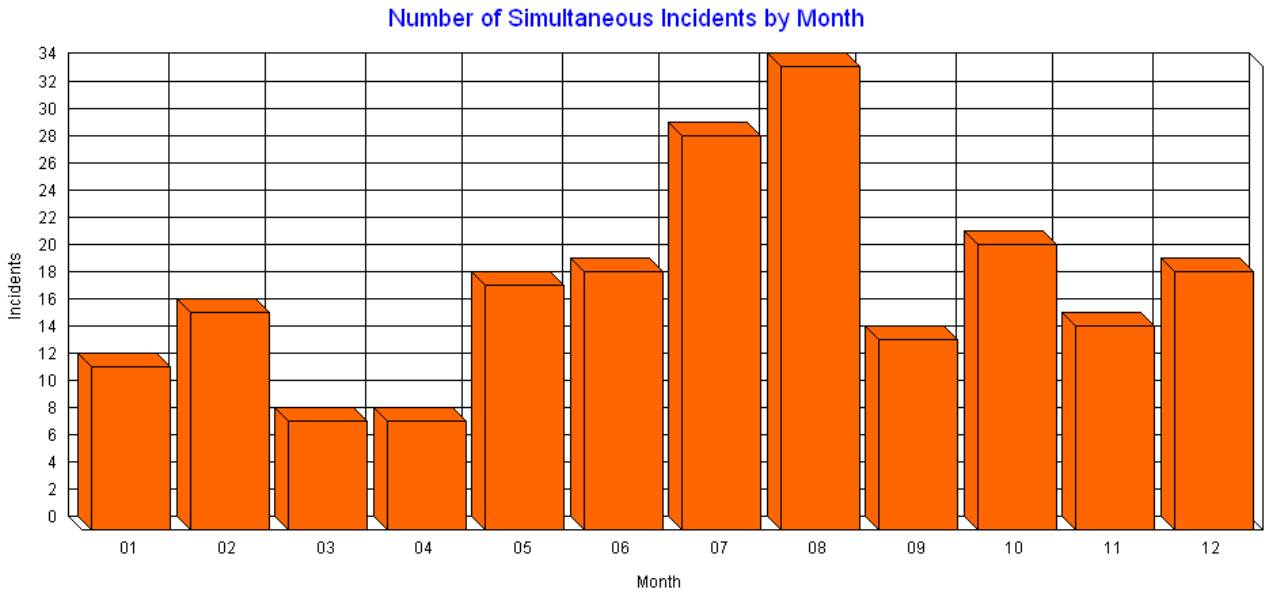


Obviously, incidents that occur at the same time tax fire department resources more than those occurring when there is no other fire department response activity. Examining incident data for 2005 shows 11.21 percent of incidents occurred when Dixon was already engaged in other response activity. 1.15 percent of incidents occurred when two or more incidents were underway.

This graph illustrates the hourly distribution of simultaneous incidents roughly follows the distribution frequency of incidents in general. This means the percentage of simultaneous incidents remains relatively constant during a 24-hour day. Notice the peak activity between 4:00 pm and 5:00 pm.

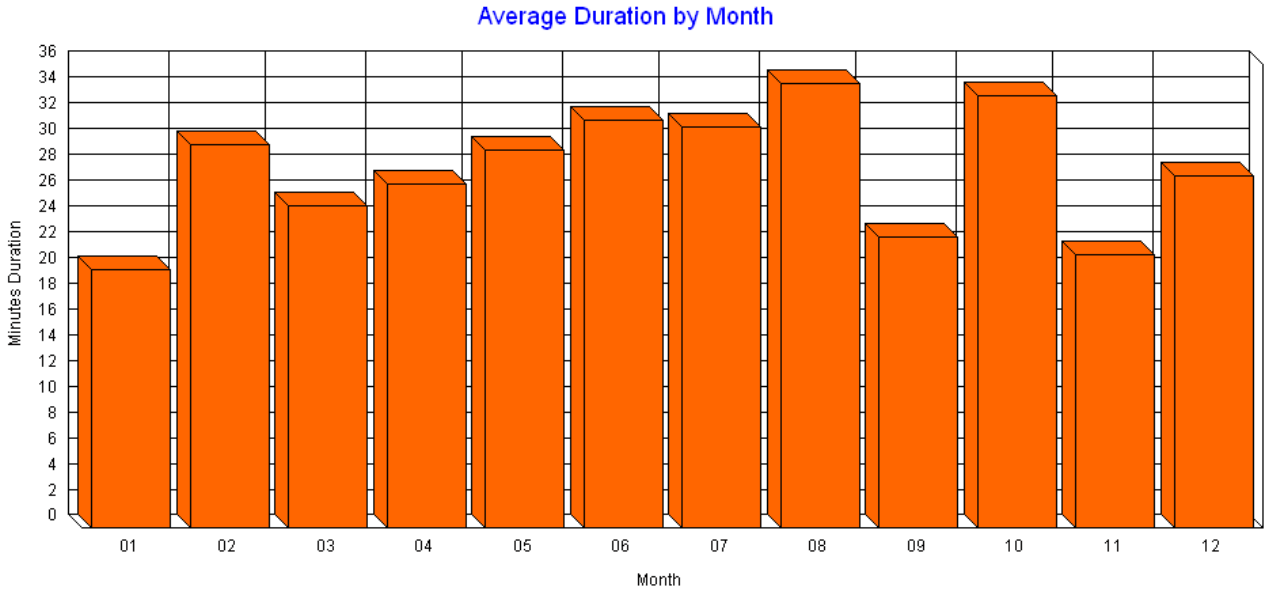


The number of simultaneous incidents rises sharply in July and August; however, September does not have an unusual number of incidents.



While the instance of simultaneous activity obviously increases with incident activity, it also increases with incident duration, as well. If the average duration of responses increase, then the chances of having a call for service occurs while another is underway also increase.

The following chart illustrates average duration of incidents by month. Notice how a rise in average duration occurs in August and October. This elevation of duration may result from longer duration fires such as grass fires in these two months.



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 in which the percent of desired goal completion is measured. Below is a fractile analysis of incidents. Normally, all but a couple of incidents would have response times less than 12 minutes. However, response patterns in the District do involve incidents where the first arriving apparatus takes a significant time to reach the scene out in the more remote District area.

Below is the data for <u>all</u> incidents in both the combined City and District:

There are 1,898 Incident records being analyzed.

1st Apparatus On Scene <= 00:03:00 11.6%
1st Apparatus On Scene <= 00:04:00 27.5%
1st Apparatus On Scene <= 00:05:00 44.7%
1st Apparatus On Scene <= 00:06:00 55.2%
1st Apparatus On Scene <= 00:07:00 62.5% – NFPA Career Dept. Recommendation
1st Apparatus On Scene <= 00:09:00 71.9%
1st Apparatus On Scene <= 00:10:00 76.1%
1st Apparatus On Scene <= 00:11:00 79.3%
1st Apparatus On Scene <= 00:12:00 83.0%
1st Apparatus On Scene <= 00:13:00 86.0%
1st Apparatus On Scene **<= 00:14:00 89.5%** – Actual 90% Performance

Below are the separate fractile response measures for the District only. (Does not include the City measurement districts 40 or 41 and the Freeway district, 71:

There are 744 Incident records being analyzed.

1st Apparatus On Scene <= 00:03:00 2.6%
1st Apparatus On Scene <= 00:04:00 4.6%
1st Apparatus On Scene <= 00:05:00 7.8%
1st Apparatus On Scene <= 00:06:00 12.7%
1st Apparatus On Scene <= 00:07:00 18.9% – NFPA Career Dept. Recommendation
1st Apparatus On Scene <= 00:08:00 27.9%
1st Apparatus On Scene <= 00:09:00 34.2%
1st Apparatus On Scene <= 00:10:00 43.2%
1st Apparatus On Scene <= 00:11:00 50.3%
1st Apparatus On Scene <= 00:12:00 58.6%
1st Apparatus On Scene <= 00:13:00 65.9%
1st Apparatus On Scene <= 00:14:00 74.4%
1st Apparatus On Scene <= 00:15:00 80.8%
1st Apparatus On Scene <= 00:16:00 85.9%
1st Apparatus On Scene <= 00:17:00 88.6%
1st Apparatus On Scene <= 00:**18:00 91.6%** – Actual 90% Performance

The Department, being a combination department comprised of career and volunteer personnel, utilizes current best practice fractile performance measures. As mentioned at the beginning of this section, the recommendation for career departments in urban-suburban areas is to place the **first unit on-scene within 7 minutes, 90 percent of the time**. In looking at the data above, it is

obvious that the sheer size of the District is pulling all Department response times to a longer measure.

To check this size of response area theory, here is the response time data for all responses in District 40 and 41, which is all the **City of Dixon**:

There are 1,077 Incident records being analyzed:

1st Apparatus On Scene <= 00:03:00 18.4%
1st Apparatus On Scene <= 00:04:00 44.6%
1st Apparatus On Scene <= 00:05:00 72.0%
1st Apparatus On Scene <= 00:06:00 85.7%
1st Apparatus On Scene <= 00:**06:30 90.4**% – Actual 90% Performance
1st Apparatus On Scene <= 00:07:00 93.6% – NFPA Career Dept. Recommendation

This performance is markedly better and indicative of a career response in a suburban area with an appropriately located fire station. It also has to be noted that for this study, the actual time of the 911 call receipt at the Sheriff's regional communication center was not available. The first time in the Dixon records is when they are notified. Thus, it is unknown how long the Sheriff's center takes answering, processing and alerting the Department. National expectations are that the dispatch step will take one (1) minute, for 90 percent of the calls. If this is the level of performance in the Sheriff's center, then one minute must be added to the total times in this section. For example, the 6:00 minute, 90 percent performance above, is actually 7:00 minute performance *from the caller's perspective.*

Here are the response time measures for all fires in the City:

There are 44 Incident records being analyzed:

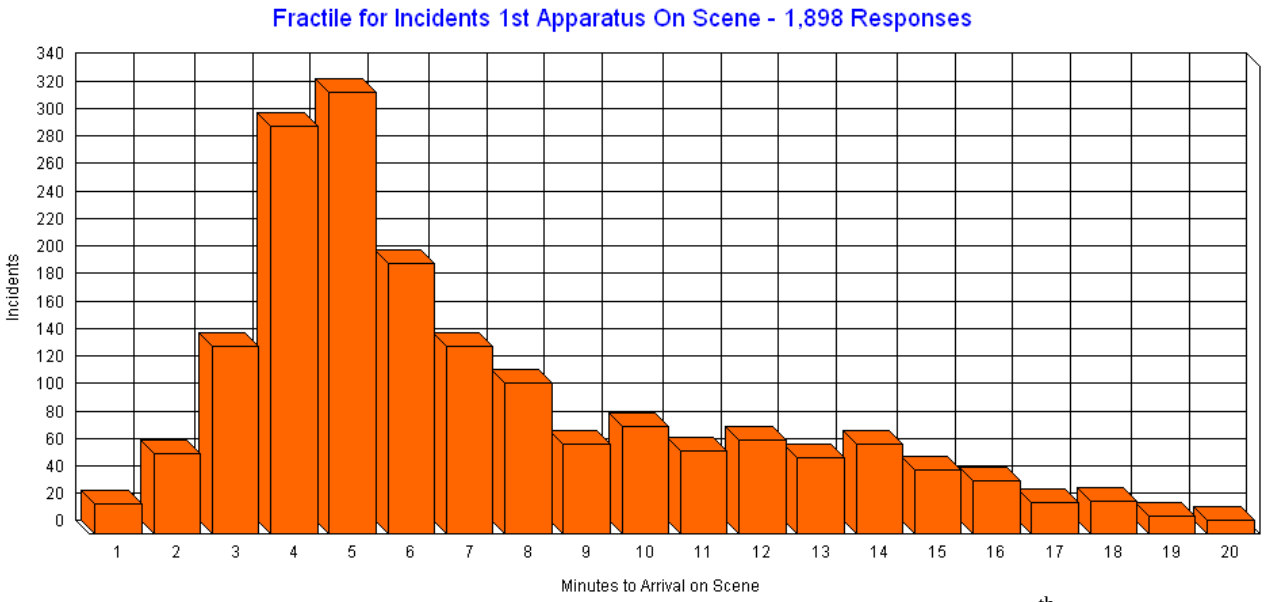
1st Apparatus On Scene <= 00:03:00 16.3%
1st Apparatus On Scene <= 00:04:00 30.2%
1st Apparatus On Scene <= 00:05:00 62.8%
1st Apparatus On Scene <= 00:06:00 76.7%
1st Apparatus On Scene <= 00:**07:00 90.7%** – NFPA Career Dept. Recommendation

Here is the City data for a limited number of structure fires:

There are 9 Incident records being analyzed:

1st Apparatus On Scene <= 00:04:00 22.2%
1st Apparatus On Scene <= 00:05:00 66.7%
1st Apparatus On Scene <= 00:06:00 88.9%
1st Apparatus On Scene <= 00:07:00 88.9% – NFPA Career Dept. Recommendation
1st Apparatus On Scene <= 00:08:00 88.9%
1st Apparatus On Scene <= 00:09:00 88.9%
1st Apparatus On Scene <= 00:**09:45 88.9%** – Actual 90% Performance
1st Apparatus On Scene <= 00:10:00 100.0%

These fractile response times can also be viewed graphically. Here is a graph illustrating the number of responses by minute for the entire City and District NFIRS 5 data set for 2005:



Notice how more responses have the first apparatus arrive on the scene in the 5th minute than at any other minute in the response spectrum. This is relatively fast and denotes the majority of the calls for service being in the City. Note, however, the graph declines gradually through minute 18. This gradual decline in the number of incidents at longer response time minutes indicates a significant number of incidents with very long response times out in the District.

Department-wide response times also are affected by responses to the freeway, where two units are sent, and frequently the initial reported location from a cell phone caller to the CHP is wrong, so the units have to re-route back to another on-ramp to finally arrive on-scene:

Reporting District 71 – Freeway:

There are 79 Incident records being analyzed:

1st Apparatus On Scene <= 00:05:00 21.8%
1st Apparatus On Scene <= 00:06:00 41.0%
1st Apparatus On Scene <= 00:07:00 51.3% – NFPA Career Dept. Recommendation
1st Apparatus On Scene <= 00:08:00 71.8%
1st Apparatus On Scene <= 00:09:00 75.6%
1st Apparatus On Scene <= 00:10:00 85.9%

Geographic Distribution

Dixon tracks calls by sub-districts in NFIRS 5, where the Department can examine incident types by reporting district, which is a zone smaller than a first-due fire company response area. There are only ***three*** measurement districts in the City; all the others listed below are outside of the City in the Fire District:

District	Count	Fire	EMS	Other
40-City	765	36	515	214
41-City	312	8	210	94
01-Dist.	163	15	89	59
02-Dist.	86	13	51	22
03-Dist.	84	19	42	23
71-City	79	6	43	30
10-Dist.	66	10	37	19
05-Dist.	49	9	16	24
70-Dist.	47	9	26	12
72-Dist.	44	10	21	13
06-Dist.	43	19	12	12
08-Dist.	37	6	10	21
09-Dist.	17	4	4	9

Notice how fire activity does not track with EMS activity. District "06" for example has 19 fires and only 12 EMS incidents even though EMS incident are almost 10 times more likely to occur. District "03" also has a disproportionate amount of fire activity.

Here is the breakdown of average response time by district:

District	Count	Average	Common Area Name
40-City	765	4.03	City, NE of Almond
41-City	312	5.25	City, SW of Almond
01-Dist.	162	12.54	Allendale (west of I-505)
02-Dist.	86	8.80	Dixon/Winters
03-Dist.	83	8.06	Dixon/Davis
71-City	79	7.04	I-80
10-Dist.	66	13.93	Allendale
05-Dist.	49	11.90	Dixon/Elmira
70-Dist.	47	9.54	I-80
72-Dist.	44	9.91	I-80
06-Dist.	43	13.10	Maine Prairie
08-Dist.	37	13.59	I-505
09-Dist.	17	8.25	I-80 East of Kidwell

This measurement district breakdown of average response time explains the fractile graph measuring the number of incidents by the minute of first apparatus arrival. Notice in districts 40 and 41, which are in the City of Dixon only, the response time averages 4 to 5 minutes. This explains why the chart peaked at 5 minutes. These two districts are by far the busiest. However, the third busiest district has a 12.5-minute average response time. This, and other districts with similar averages, explains why the fractile chart had a slow decline as the number of minutes rises.

Since fires disproportionately tend to take place outside of districts 40 and 41, the time it takes the first apparatus to arrive on the scene is greater. Some of the rural districts have more fires than EMS calls for service because the dwelling unit and population count is actually very low in the agriculture areas.

Response Time Statistics Discussion

Overall, the response performance of the District system is very good for a one-station department serving an area of 300 square miles. The total response time begins to tell the story, but there are actually two different stories:

1. The response times in the City are good;
2. The response times in the District are long, reflective of a rural level of effort.

The reason for this is explained in Map #5, where most of the calls for service in a five-year period were in the Dixon city limits, close to the one fire station.

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

What is troublesome for the City and District is the limited staffing and how a simultaneous call rate of **11 percent** really challenges a 6-firefighter, 2-engine response system. Dixon Fire staff confronted weekly, if not daily, with decisions on what to respond to, or how to get clear of one incident to attend to another.

Part of this reason that the 11 percent simultaneous call rate is not worse is that demographically, most calls are medical. As seen in the following table, out-of-service time on a call is a function of how serious 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.

Incident Type	Count	Average Time Committed
EMS call, no auto accident	845	21.72
Motor vehicle accident no injuries	118	24.52
Vehicle accident with injuries	110	39.70
Grass fire	57	55.15
Passenger vehicle fire	30	48.78
Brush, or brush and grass mixture fire	19	71.05
Building fire	19	148.62

It should be mentioned that these 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 volume increases, this factor plays a more significant role in the City's ability to meet it response time goals.

As the community has grown away from the "City Core" and a single fire station, and traffic congestion goes from none to some, there is naturally an increase in calls for service. The challenge for the Dixon area is that being a small City with a combination fire department, there are not nationally recommended response times. Therefore, the policy issue for the City Council in a fire services discussion is what level of outcome for different types of emergencies is desirable and cost-effective for the Department's size? Once outcomes are known, then the response system can be designed with staffing and station locations to accomplish the desired mission. These issues will be addressed later in this study.

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 Cover process, time studies determine how many personnel are required over what timeframe 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.

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 Department response. Fireground operations fall in one of two strategies – **offensive or defensive.**

A fire service philosophical approaches to these strategies are:

- 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 adjoining 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, regardless of career or volunteer. 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. The amount of staffing needed can be derived from the desired outcome and risk class. If the City 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 serious fire in the District requires *a significant volunteer response and/or 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 attack line fire, and no rescue* needed fire. A serious fire in a two-story residential building or a one-story commercial or multi-story building would require at a minimum, an additional 2-3 Engines, 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 a minimum of 10 firefighters plus the chief for accountability and control.

The Dixon Fire Department has sufficient on-duty staffing of 5-6 career firefighters to meet the OSHA minimum standard for firefighter safety in a building fire. Unless there is a significant response of either or both volunteer and off-duty paid personnel, the necessary, simultaneous building fire operations cannot be performed, which increase the possibility of fire growing to larger proportions thus requiring outside assistance. During the time it takes for mutual aid to arrive, there is an increased chance for injury to Dixon fire personnel as they try to do too much, with too few firefighters. There were approximately 19 structure fires in 2005, typical of this situation.

Staffing in the Dixon Fire Department

Below is the typical unit and staffing assignment on emergences in the Department currently:

6 Suppression Personnel (5 minimum) + 1 Command Chief (Chief from home outside business hours):

1 Engine - 1 Captain, 1 Engineer, 1 Firefighter and/or 1 Firefighter/paramedic

1 Engine - 1 Engineer, 1 Firefighter/paramedic

Volunteer and off-duty firefighters are utilized to raise staffing at an emergency to the necessary minimums, if possible.

When volunteer firefighters are available for shift coverage, they are scheduled to provide a 3rd and 4th firefighter on the engine. Additional personnel can be dispatched from home to come to

the station and from the station bring any necessary equipment and themselves to the scene of the emergency; but less than 1-3 respond during the Monday thru Friday workweek. This means a serious fire requires mutual aid from Vacaville and UC Davis.

Volunteer History and Modern Issues

All fire departments utilizing volunteers are under great pressure today to maintain an adequate roster. The reasons for this are not unique to Dixon, and are placing pressure on small city volunteer systems across the state and nation:

- Economic pressures result in more two-income families and less time to volunteer.
- In a commuter economy, more jobs are clustered in metropolitan and dense suburban areas. Cities like Dixon increasingly have residents that work elsewhere.
- Due to the growth in society of complex systems and technology, the fire service was given more missions, like emergency medical services, hazardous materials and specialty rescue. This dramatically increased the legally mandated training hours for volunteers, causing many to drop out as the time commitments became unbearable.
- Early in this decade, due to rising firefighter injuries and deaths, especially in the volunteer ranks, more safety regulations and training minimums were placed on all firefighters.
- January 2004 California Volunteer Firefighters –

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

This change, coupled with a society of increasingly two-wage earner families, means that volunteer firefighter programs dry up, given the increased time spent to train and the fact that many volunteers drive to jobs outside their communities. This is a significant time commitment for "true" volunteers that are serving for love of community and to give something back. In addition, most employers 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 that 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 a shift stipend or for an hourly wage, without benefits. These personnel are used successfully to increase daily station staffing and instead of being called even "reserve" firefighters, they are more typically called "paid-call" 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.

Generally, the threshold for a volunteer department providing initial emergency response is up to 500-800 calls per year with a service population of 10,000 or less. The Dixon Fire Department exceeded these criteria in the early 1980s, but was unable to provide a level of dependable staffing until the 1990s. The Department's career staff started with a Fire Chief in 1976. Not until 1996 was the first career firefighter staffing added 24/7/365. This was the beginning of the transition from an all-volunteer department to a combination department (part career, part volunteer). As the calls for service have continued to increase, the City responded by adding more career firefighters on a 24/7/365 basis to reach the current amount of 6-firefighters per day that was reached in February 2006. In the past decades, the volunteers were utilized maybe four times a week; currently they can be called upwards of five times a day. The Department reports that consistently no more than an average of three volunteer firefighters respond to any structure fire regardless of the day of the week or the time of day.

Of the current 22 volunteers, 3 live and work in town, 7 live in town and work outside town, and 12 live and work outside of town. There is no way, given this out-of-town measure, that the Department can depend on a significant volunteer response during the workweek. Even if all three "local" volunteers did respond and three of the off-duty career personnel respond to a call back request, those six only double the daily career staffing to 12, which is still an inadequate response force to a serious building fire that would then require mutual aid.

The current volunteer engine operator staffing trained to operate Department fire apparatus is currently at an all-time low of one volunteer. Four more have attended classes (another serious time commitment) but have not completed the check-off process as of December 2006. Thus, the Department has a hard time obtaining apparatus drivers, even if many of the volunteers respond.

Volunteers have to serve a minimum of 16 hours per month in the station to enhance duty crew staffing. Even if the Department had a full volunteer roster of 35 and *all* of them gave the required 16 hours per month, this only averages to 19 hours per day of one additional person on duty. Sometimes, there can be 2 or 3 volunteers simultaneously meeting their time commitment, which further lowers the volunteer availability on other days. Therefore, the volunteer program **at best** can only provide one more firefighter three-fourths of each day. While this may help, it is not enough in and of itself to solve the Department's staffing needs.

The leadership in the Department understood these changes and adapted as the volunteers roster waned. They have tried (with varying success) different volunteer recruitment strategies. While these have helped, they also have limitations. The Department competes for a small number of personnel in a limited commute area.

Citygate recommends the Department try a paid-call firefighter program. In these programs, for volunteer training, recruitment and retention, one to two assigned firefighters per day could be scheduled 24/7/356 from the volunteer system. These personnel would be, at a minimum, a Volunteer Fire Academy Graduate and EMT. They should be compensated for their time, even as they gain résumé experience. Given that these typically younger firefighters that are working towards a full-time firefighter career also need to work another job, Citygate recommends the

Department pay well above the local "market rate" for service industry jobs and, in fact, consider these part-time, un-benefited employees, and pay them an hourly rate competitive with a service industry job like Starbucks. For example, with a wage of $7/hour for 17 hours of awake time, and 7 hours of sleep time, with some of the sleep hours interrupted by incidents and that time also paid at $7/hour, a "blended" 24-hour cost of $5.76 per hour can be used. Thus, one 24/7/365 "Reserve" firefighter position would cost $138.24 per 24-hour shift or $50,461 annually for 365 days of coverage.

To avoid paid-call firefighters turning into full-time employees without benefits and representation, the hours per year, per person should be limited. While there are IRS issues, Union negotiations, California wage and hour regulations and state pension system rules to comply with, all of which set caps on part-time staffing, these paid-call programs can still be cost-effective and beneficial. It has to also be acknowledged that these part-time staffing models usually are transitional until the Department can provide additional full-time career personnel.

Regulatory Changes in Career Fire Service Staffing

1) 1999 OSHA Staffing Policies –
   Federal OSHA applies tank and underground confined space safety regulations to America's firefighters. Requires in IDLH atmospheres teams of two inside and two outside in constant communication and with the outside pair equipped and ready to rescue the inside pair. IDLH means "Immediately Dangerous to Life and Health," which for the fire service is interior building fire attack 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.

2) May 2001 National Staffing Guidelines –
   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, or the total effective response force (first alarm assignment) shall arrive within eight minutes travel time, 90 percent of the time. NFPA #1720 for Volunteer departments requires no time minimum, but calls for assembling a "safe, effective force" before beginning fire attack.

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. Save for one statutory change to Labor Code Section 98.7, all of AB 1127's changes 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 "sea change" in personal and agency liability means that not just any firefighter can, or should be, an Incident Commander on serious, 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).

Staffing Discussion

If the City or District provides fire services at all, it must be done with the safety of the public and firefighter in mind. Additionally, the Chief Officers as scene incident commanders must be well trained, competent, and are liable for mistakes that violate the law. An under-staffed, under-led token force will only not be able to stop a fire, it opens the City and District up for real liability should the Department fail.

As for using volunteers, that system is under severe pressure and is failing across the western states, especially during the 40-hour workweek. Two-income families have less free time. 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 just 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 are that 15 or so firefighters, including an incident commander are needed at serious 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.

The following table illustrates how the needed tasks are typically carried out by four engine/truck companies in a full career suburban department with staffing of three firefighters per unit:

Moderate Risk Structure Fire

First-Due Engine Company

1. Stretch a 200 foot 1-3/4 inch pre-connect to the point of access for the residence.
2. Operate the pump to supply water and hook-up a four-inch hydrant supply line.
3. Assume command of initial operations.

Second-Due Engine Company

1. If necessary, lay in a hydrant supply line to the first company.
2. Stretch a second 200-foot pre-connect for exposures or safety-line function.
3. Fill out initial rescue team (IRIT), so interior attack can start.

Truck Company

1. Conduct primary search.
2. Secure utilities.
3. Using tools and methods provide vertical or positive pressure ventilation.

Third-Due Engine Company

1. Staff functions not already underway and/or provide a full RIT crew.

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 the 911 call being received. 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
1st Engine/ Medic on scene (hydrant)			6:09
Report on Conditions	:15	:15	6:24
Hydrant Line laid by 1st in Engine	:46	:46	6:55
2nd Engine/BC 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
BC Assumes Command	2:07	1:00	8:16
Pre-connected hose line to door (charged)	3:27	3:27	9:36
RIC established and Accountability at CMD 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
3rd Engine on scene - assigned RIC support			12:08

Structure Fire Incident Tasks	Task Time	Time Since Arrival	Time From 911 Call
1st ladder to roof	6:17	1:50	12:16
3rd 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
Total Personnel Needed:	**15**		

The time to complete the above tasks with even six firefighters on-scene will be so much longer, that the fire will *substantially* destroy the dwelling. With only 6 responders initially from Dixon and maybe some volunteers from home by about minute 12-15, the fire will destroy the dwelling if the first 3 firefighters are forced to conduct a rescue, delaying firefighting. Limited staffing can only do one thing safely at a time, and rescue comes first, followed by limiting the fire spread to adjoining buildings first if they are immediately threatened, followed by firefighting in the involved building.

Dixon Staffing Finding

Based on its small size, newer buildings, risk control measures such as fire sprinklers, and the City's fiscal capacity, Dixon probably does not need (given its current General Plan and County growth policies), nor will ever be large enough for a fire department that can deliver 15 career firefighters in 10 minutes or less from the time the 911 call is received. What the Department 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 serious upon detection, in older un-sprinklered buildings, will grow beyond the limited staffing in the Dixon region.

What a small department cannot do is to control a fire that is serious at the time it is discovered, handle multiple medical patients on one emergency, perform challenging technical rescues, or handle more than two calls for service at once. A small city, 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 six-person duty crew does not make a fully capable fire department.

Thus, the Department needs to always 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, the two crews

can handle a simple emergency, or keep the public from further injury while mutual aid or the volunteers can respond.

STATION CONFIGURATIONS

The Department is served today by one fire station in the northern City area. The Department and City have discussed adding a second station in the southwest area of the City to better serve the City and southern District areas. As part of this fire services study, it is appropriate to understand what the proposed site does and does not cover, and IF there are any coverage gaps, what, if anything, to do about them at the build-out of the City. 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 career staffed engine should have a first-due unit response goal of 7 minutes, 90 percent of the time from the time of 911 call receipt. When a minute is added for dispatcher reflex time and 2 minutes for crew turnout time (where the NFPA only recommends 1 minute), then the maps effectively show the area covered within 7 minutes for the first-due engine that the Department provides today.

Please refer to Volume 2 of this report for the Map Atlas.

Map #1 – Station Location

This is a reference map for the others. It shows the City limits and the Fire District boundary, with existing streets.

Map #2 – Coverage Areas for Staffed Stations

This map view displays the 1.5-mile first-due unit coverage, as well as the 2.5-mile, second-due unit coverage from the staffed station. The main Dixon Fire Station (81) has effective primary coverage shown in green, for much of central-northern Dixon. This station can respond with a second-due unit or a ladder truck that covers 100 percent of the City in 2.5 miles. This station is well located, except to provide primary coverage to the emerging southwest residential areas.

Not shown in this map are the mutual aid stations from Vacaville or UC Davis, as they are too far away to be of primary use within 10-12 minutes of receiving the 911 call.

Map #3 – Coverage Areas for Proposed Dixon Station

In this map view, the proposed West Side District station is activated and the resultant combined 1.5 mile and 2.5 mile coverage areas is displayed. The addition of the southwest station in the City greatly expands the 1.5 mile primary coverage in the southwest City and a little into the southern unincorporated areas. The 2.5-mile coverage area is also significantly expanded into the southwestern District areas.

The proposed site provides good overlap into Station 81's area, should that station be on a call. Typically, Citygate would advise against placing a station against a jurisdiction limit, as then it only serves a 180-degree response area instead of a more desirable 360 degrees. However, in this case, the City is still growing with in-fill development, and this site also better serves the western and southern District areas.

Map #4 – Combined Two Station Coverage Areas

This map combines the first-due and second-due coverage from both stations. All but the northeast area of the City is covered by an effective first-due unit and there is expanded 2.5 mile or 10-minute coverage out into the Fire District. Thus, the proposed placement of the second station is excellent, and it also provides redundant coverage, being west of the train tracks when a train is traversing the City.

Map #4a – Combined Two Station Coverage Areas – Regional Perspective

Displayed here is the same two-station coverage model as Map #4, but scaled out to display that even with two stations, Dixon is a considerable distance from the nearest partner's mutual aid fire stations.

Map #5 – Locations of All Incidents Over Three Years for the Dixon Fire Protection District

Plotted on this exhibit are the calls for service locations for all incidents for the Department for 2005. It is apparent that most of the calls are within the Dixon city limits and some are clustered in District Area 10, known as the Allendale area. This clustering of call locations is normal as this report stated previously: people drive calls for service, not isolated ranch buildings or agriculture lands.

Map #6 – Insurance Service Office Evaluated Building Locations

The Insurance Service Office (ISO) sends personnel into the field to conduct risk assessments on specific buildings for the insurance underwriters. These buildings are typically larger and present more fire risks to the community. Located on this map are the buildings that have been deemed significant enough to warrant field grading in the Dixon area. Given the size of Dixon commercial properties, there are not very many ISO-inspected properties, and only one building has a fire flow calculation in excess of 3,000 gallons per minute. There are, of course, many more un-sprinklered commercial, industrial and school buildings in the City. The significance of this data for this study is that there are a small number of buildings whose maximum fire risk calculates to a sustained fire flow of over 1,000 gallons per minute. Given the number of firefighters needed to deliver a fire flow of even 1,000 gallons per minute, there is insufficient

career staffing on duty in the City area to deliver the required fire flow, should one of these buildings become well involved in fire.

Additionally, the historic downtown buildings are of older "non-fire stopped" framing construction and most all lack fire sprinklers. These buildings represent a high challenge to the Fire Department. During remodels, it would be very advantageous to require installation of fire sprinklers.

Fire Deployment Map Findings

Citygate finds that the City cannot be effectively served from only one fire station, nor can the entire Dixon Fire District. The proposed second station site significantly improves:

- Southwest Side response times
- Multiple Unit coverage to the entire City
- Location on the major street network for the best possible access
- Primary access to the south and west District areas.

The Department and the surrounding rural area in the District will never develop into a densely populated area and will remain mostly residential building types. As such, given the current planning approvals, it will not be cost effective for the Dixon area to have three fire stations. The only issue to trigger a 3rd or even a 4th fire station would be intense development out at the northeast corner of the City, or somewhere unforeseen in the District with the resultant public tax capacity to fund the cost of expansion provided by an added rural station. Where there is development:

Northeast City general development would have to create more intense risk than residential, requiring a short response distance and/or for some reason become a significant call for service generator. As Map #2 displays, Station 81's 2.5-mile or 10-minute (from time of call) coverage area barely reaches the Pedrick Road interchange. Any development in this area should be required by the City to be fully fire sprinklered. There would have to be intense call for service activity and tax base revenue in this area to justify a third Dixon Fire Station. If light development occurs, this area will have to accept that they will not have suburban levels of response effort, but rather longer response times.

Southwest City general development will soon start with residential subdivision approvals and park sites. There are longer response times to this area presently, and as the population grows, so will the calls for service.

Southeast general development has already begun with construction of a residential subdivision, drainage pond site and a new High School. This area will experience longer response times until a new southwest fire station is constructed and staffed along with the proposed Parkway over crossing.

The Allendale area is very difficult to serve from any fire service provider, and there is no short-term solution that is a win/win. The rural Vacaville District stations are not career staffed to provide timely 24/7 coverage. A prior Citygate study recommended that the City of Vacaville re-locate Station 73 to the east and consider adding another station in far northeast Vacaville as development occurs. Neither of these moves significantly improves coverage to Allendale so that a contract for service makes sense. Worse, is the fiscal impact of Allendale changing fire

service agencies. The developed property density in Allendale is such that if it were detached to the rural Vacaville District, or under contract to the City of Vacaville, the revenue loss to the Dixon District would be significant and materially damage its ability to pay for much of any rural fire protection to the remaining district. Regardless of what happens with the Fire District, the City will still wind up responding to mutual aid requests in the unincorporated area, so the position that makes the most sense is to maintain the current relationship that garners some revenue to the City for that service.

EQUIPMENT CONFIGURATIONS AND ISO GRADING ISSUES

After a review of staffing and station location issues, the next most important capital asset the City has is its fire equipment. There are many different types in the fire service today: 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 has to have, and the primary asset the Insurance Service Office requires.

Currently, the Department has one year 2000 Engine (Pumper) that can pump up to 1,500 gallons per minute (GPM) and one 1995 Engine that can pump up to 1,500 GPM. There is also a 1983 reserve engine. The Department operates a year 2002 Aerial Ladder truck and has a reserve 1990 small ladder/pumper. Additionally, the District has purchased two water tenders for fires in rural areas without hydrants. The City also operates a rescue vehicle, pickup truck and command/staff units.

The Insurance Service Office Grading for the City of Dixon was Class 5 in their last review of the Department on a scale of 1 to 10, with Class 10 being no fire protection, and Class 1 being the best metropolitan department. In the non-hydrant rural District areas, the Department was rated Class 5, 8 or 9 based on fire hydrants or not, distance from a fire station and the response quantity of the volunteers. 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 City of Dixon was, and is, a modest fire department with a good City water 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 and water main system can supply this flow. Given the Department's low career and volunteer staffing, the Class 5 Grade was assigned.

As Map #6 displayed, there are 10 buildings that have a calculated, worst case fire flow of more than 750 gallons per minute (gpm), and 3 of these buildings have a fire flow of more than 2,000 gpm, with the highest flow building rated at 4,500 gpm. These buildings present a significant fire problem due to their size, type of construction and occupancy use. Many of these represent the significant jobs and tax base properties to the City and Fire District. The expectation of the insurance industry is that a fire deployment system would be able to handle at least small fires in these buildings. However, with only six firefighters on duty in the City, the Department cannot deliver even a 1,000 gpm fire flow without waiting for volunteers and mutual aid. By the time more personnel arrive, any one of these buildings could need a 2,000+ gpm fire flow, which will outstrip the volunteer response and/or mutual aid response.

An emerging issue for the Department is to replace, in a timely manner, its fire apparatus. National recommendations are that a fire pumper serve 15 years front line service and 5 or so

years in reserve, depending on condition. The reserve engine is now 23 years old and the next oldest pumper is 11 years. In the next couple of years, the oldest unit should be placed into reserve and the current reserve pumper replaced.

However, the Department has a replacement plan expectation that the engines will last 25 years and 100,000 miles. This fiscal year, the Fire Chief and Finance Director are discussing a replacement plan that would be ten years frontline and ten years reserve life cycle. The City needs to formally adopt this change. Citygate finds the current 25-year policy to be on the long side. The City and District do have a fleet replacement program where each year funds are set aside for eventual apparatus replacement using the accrued cash. Replacements to date have been purchased using City and District one-time funds that may or may not be there in the future. Citygate recommends the Department redo its replacement program to provide for a life cycle consistent with today's needs and national recommendations that call for 15-years front line service and 5-10 years reserve service in lighter mileage, suburban settings.

The on-going challenge for the City and District will be to maintain the ISO Class 5 grading in areas where fire hydrants exist, which will keep fire insurance premiums at a modest level for the City and District's size, even at build-out. The ISO re-evaluates communities every 10 years or so, sooner if they feel there has been a marked change in community risk as identified above in the number of buildings now present with a significant fire flow risk.

As for aerial ladders, Dixon is in good shape for a small department. The basic ISO requirement is to have a ladder truck when there is more than five, three-story or greater buildings in a protected area. Additionally ladder trucks should be spaced apart to cover all such buildings within 2.5 miles or less driving distance. In Dixon, the 2.5 mile spacing from the main fire station will never be a problem as the response distance maps in this report showed, and the Department operates a front line aerial ladder and a small ladder/pumper reserve ladder.

One problem for maintaining or even lowering the City ISO Classification is the low career staffing and the almost non-existent volunteer response during the workweek. While the pumpers can pump a large sustained flow, there are not enough firefighters to handle hose lines to deliver it. 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. The volunteer response can replace (not supplement) the need for career staffing.

Another factor that can affect the ISO Grading is the maintenance of fire hydrants. Due to low staffing and calls for service increasing, the six on-duty firefighters cannot keep up a reasonable maintenance schedule. However, this is an easy to solve problem if the water utilities will use their personnel on a full- or part-time basis to do this work. It will cost less per hour, it does not tie up the City's only fire crews, and the cost of maintenance can legally be placed into the water rate schedule as they file for rate changes with the Public Utilities Commission or their elected directors. What the fire department does do, and should continue to do, is to conduct acceptance testing of newly added hydrants to the system to be sure they are fully operational.

Dixon Fire Department Equipment and ISO Findings

Citygate finds the Department is currently properly and appropriately equipped for small building fires. The Department needs to continue its focus on increasing the volunteer staffing and improving the replacement schedule and funding of replacement apparatus.

REGIONAL EMS ISSUES

A repeating issue for the 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 not really any 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 underinsured 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.

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.

Currently, the Department delivers both basic life support at the EMT level of training and paramedic care from the fire engine staffing. The EMTs are also certified and use automatic external defibrillators (AEDs) and tracheal intubation for airway management. However, the public perception continues that almost every firefighter is a paramedic anyway.

So, in addition to its firefighters at the EMT level and paramedic level, the Department receives paramedic level ambulance services from Medic Ambulance as part of a countywide public-private partnership.

Dixon EMS System Findings

The current level of Firefighter-EMT or Paramedic and private ambulance paramedic care is well designed and appropriate to risks in the community. Citygate does not find the current ambulance structure in need of immediate attention. Where does this leave Dixon if Medic Ambulance ever ceases to provide ambulance operations? **The County EMS Agency would assume control of the ambulance service and would operate it or find another provider.** Any smaller private ambulance company today operates in a very tight, fragile set of circumstances, all of which have to balance. Any one issue could break this balance and put the company 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 Solano County EMS Agency, which under the provisions of state law, regulates ambulance operations in franchise zones. If Medic Ambulance or an approved successor failed to continue, then the County would have to get another operator in, at least temporarily. If the reason for Medic's failure was lack of revenue, then the County would be forced to consider a subsidy to continue operations. Currently, there are too many unknowns to take planning this issue any further.

Why not a fire department paramedic ambulance? First, the cost per hour 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 was an essential part of daily fire staffing, every time they transported a patient to a distant hospital, the Department's staffing would be reduced. Given these issues and that fact that the County's operator can maintain an ambulance in the Dixon area, Citygate does not see a need for the Department to add an ambulance; nor can the City do this unilaterally, under current state law, as the County is charged with the selection of ambulance providers.

REGIONAL COMPARABLE INFORMATION

An appropriate question for the City and District leaders to ask is how does our current fire deployment and future fire staffing plan compare to similar communities? Are we in the "ballpark," very low or very high? If Dixon is out to one extreme, why; and is there a Dixon-region specific reason why?

Regional comparisons to Dixon's fire services are difficult given all the variables involved and Dixon's geographic isolation. Many small fire departments in California are either single or multi-area fire Districts with their own independent tax rate. Many are larger than Dixon in size or population. Citygate prepared a table of comparable information that is attached as Appendix 1. We selected communities both smaller and larger than Dixon. Any such survey compilation in fire services is very difficult given the varying types of fire services, local control decisions, local revenue capacity, local fire risk and the presence or absence of mutual aid.

First, by any measure, from communities slightly smaller to larger than the Department, it is apparent that the Department has a survey average number of firefighters on duty for its middle size population and call volume. Some departments in this survey, such as Suisun City with only two firefighters on duty per day and even Millbrae with 6 firefighters per day, are covered by close-in, multiple units under automatic or mutual aid, which lowers their on-duty dependence. As identified elsewhere in this report, Dixon is more isolated, and the mutual aid units cannot cover the entire City in a reasonable response time, so mutual aid does not provide enough firefighters to bring the City firefighting force up to a reasonable size for serious emergencies.

The number of stations per community is not a good indicator, since a community may or may not be very compact. Even given this fact, all the communities (except Suisun City and Windsor) with a population above 20,000 have a least two staffed fire stations, compared to the one in Dixon.

Calls for Service are a more predicative indicator of community risk and expected outcomes. Population will drive calls for service, and multiple calls will occur during the hours of the day when human activity is at its peak. In this survey, communities with a similar call for service load of about 1,900 per year have 7 or 8 career firefighters per day compared to Dixon's six. Many of these communities also have more close-by mutual aid support than does the Dixon region. For example, all the communities in San Mateo County belong to a regional dispatch system where, under automatic aid, every serious fire gets 15+ firefighters on 3 engines, 1 truck and 1 Battalion Chief. All the San Mateo communities are very tightly compacted together, which makes their partnered response very effective. Again, due to Dixon's geographic isolation, it does not have this kind of support. Comparing all the elements in the survey means that Dixon is similarly staffed to other departments its size, and all departments this size do not

typically have the fiscal resources to provide more firefighters per day. Many of the comparable communities already have a second station, and Dixon is beginning to plan for its second station.

DIXON FIRE DEPARTMENT REVIEW – NON DEPLOYMENT FUNCTIONS

The Department is a well-run, smooth functioning fire department. Since Dixon is a small but growing community with no immediately adjacent fire departments, it developed a "stand-alone" capability. The Department has a robust internal culture characterized by a sense of values and principles best described as traditional. They are:

- A strong work ethic; they frequently work well after five in the afternoon to get projects completed.
- Commitment to the community they serve; they participate in Toys for Tots, the annual community food drive and numerous other community activities.
- A sense of independence; the employee chose not to affiliate their bargaining unit with the International Association of Firefighters.
- An appreciation of their roots; most members came from the Department volunteer ranks.
- Identification with the chief; universally they praised Fire Chief Ric Dorris for what he has accomplished with them.

This does not mean there are not issues to improve upon; however, the community can take pride in and feel confident about its fire department.

Citygate evaluated all aspects of the Department during "listening sessions" with citizens, employees and volunteers, as well as a thorough fire department review. A number of main themes emerged, some of which deserve particular consideration and others only require the regular attention they currently receive.

Operations Systems

The operations system covers a multitude of activities. For the purposes of this plan, Citygate interviewed staff, inspected the apparatus, equipment and facilities, examined some documents and conducted "listening sessions" with career and volunteer firefighters. Citygate 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, and appraised the training program and volunteer fire programs. All of these are important components of a fire department operation and critical to ensuring that needed resources can respond quickly and effectively.

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?

Findings:

- Daily logs follow the Firehouse Software (see Management Information System) format and are accessible by the chief officers.
- The shift captain completes the drill rosters that list the topic, instructor and attendees of the daily drills.
- The engineers inventory the apparatus daily and certify the presence of the listed equipment.
- Paramedics safeguard the medicines and controlled substances they use by conducting a weekly inventory. This procedure complies with the Solano County ALS requirements. Paramedics discard expired drugs following these procedures as well.

Commendations:

- The daily report system provides adequate, available and timely reports for management for an organization of this size.

Recommendations:

- When the Department adds a second station, the Department should review the current daily report system to see if it will still be effective with a more decentralized organization.

Apparatus and Equipment Readiness

Issue:

- The fire service generally groups fire apparatus into two categories: Engine companies primary functions are to pump and deliver water and perform basic firefighting functions including search and rescue. Truck company's primary functions are forcible entry, ventilation, search and rescue, aerial operations for water delivery and rescue, utility control, illumination, overhaul and salvage work. Other types of apparatus include water tenders whose main function is to carry large quantities of water, squads or rescue companies, which carry a variety of rescue and emergency medical equipment, and other auxiliary apparatus.
- To be effective, the apparatus must be of proper design, well equipped with the proper hose, appliances, tools, ladders and paraphernalia necessary to do the complex work of firefighting, rescue, emergency medical and public service type assignments.
- There should also be a system of testing, maintenance and repair, which ensures a high state of readiness of apparatus, and critical equipment.
- Does the Department have the proper apparatus and equipment in a first-class state of readiness?

Findings:

- Examination of the apparatus and equipment showed that members made appropriate maintenance and inventory checks at the prescribed intervals.
- Spot checks of inventories showed that everything was in its proper place.
- The engineers inspect the apparatus daily. They report repairs by exception.
- Members test hose, ladders and breathing equipment in accordance with best practices. Members test all annually; breathing equipment receives third party testing every two years.
- Visual inspection of the apparatus and equipment, including the undercarriage, showed a high degree of neatness, cleanliness and good care.
- There is a regular maintenance preventative program for the apparatus under the direction of one of the shift captains, Greg Lewis. With input from all the members, he schedules the annual preventative maintenance and steam cleaning programs.
- Fire engineers do minor repairs. Outside vendors complete all oil changes and major repairs to apparatus.

Commendations:

- Apparatus and equipment are of the appropriate type and design, of good quality, well maintained and in a high state of readiness.

Recommendations:

- While the apparatus is in good repair, maintenance will become problematic for older apparatus due to high mileage and parts availability. Dixon should adhere to the national standard of engine (pumper) replacement at fifteen years followed by five to ten years reserve status due to mileage concerns alone. In addition, safety features (for example, electronic engine management and anti-skid brake control) are under constant development, are important to firefighter and citizen safety and should be added to the fleet sooner than every 25 years.

Dispatching

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 Department within sixty seconds, ninety percent of the time?

Findings:

- A "police-fire" dispatch center, operated from the Solano County Sheriff's Office (SCSO), uses a Vision Computer Aided Dispatch System." The SCSO is a primary

Public Safety Answering Point (PSAP). The Dixon Police Department also uses this dispatch center. There are six PSAPs in the County not interlinked for different dispatch computers.

- Dixon and Rio Vista are the only cities to use the SCSO dispatch.
- Dispatchers provide responding units with a map page and cross streets. The Department tests apparatus operators for area familiarity.
- When an incident starts to stress the system, a chief officer from one of the uninvolved Solano County fire departments reports to the dispatch center and assists with the appropriate deployment (move-up and cover) of uncommitted resources.
- Dispatch time records were not available to determine whether the dispatch center met the best practice criteria.

Commendations:

- The County fire service cooperates effectively by providing a chief officer to assist with deployment of resources during a drawdown situation.

Recommendations:

- The dispatch center should provide dispatch time records to the fire departments that contract for services. Without these records there is no way to determine if the service is even functional, let alone timely. In addition, a standard clock time needs to be used so that Department time records correspond with dispatch center time records.
- The County fire chiefs are studying a fire-service dispatch center. The level of fire service activity in the County, while not a province of this study, is likely high enough that the countywide fire service could afford and should consider a joint-powers fire dispatch center. This would allow the use of a dispatch computer system that is fire service friendly and ensure supervision that was fire service oriented**.**
- The Department should consider taking the lead to include Yolo County, as that might be an even more cost effective approach for the City. For example, due to telephone company fee policies, it would be far less expensive to electronically use a leased line to tie the Dixon police dispatch system to the Yolo County system, rather than Solano. In order for firefighters to receive hard copy dispatch information from Solano, it is necessary to use a leased line from the Dixon Police Departments CLETS computer link with Solano. Because of the phone grid created by the long distance system, direct contact with Solano must be accomplished using an expensive "T1" line for data transfer.

Standard Response Plan

A standard response plan pre-designates the numbers and types of units that will respond to a particular type of call. This ensures that sufficient numbers of personnel, pumping capacity and tools and equipment are at scene in a timely manner to be effective. Often this number exceeds the need, but it ensures that sufficient resources to do the various tasks at an incident arrive at the incident most of the time.

Issue:

- Does the Department have a standard plan in order to ensure the prompt arrival of appropriate resources to the scene of the emergency?

Findings:

- The Dixon Fire Chief is the current mutual aid coordinator for the County mutual aid system.
- Along with the rest of Solano County, the Department participates in a standard response plan that provides the appropriate mix of resources, including engine companies, truck companies, squads, bush engines, water tenders, chief officers and specialized units for the different types of typical emergencies.
- The Solano County standard response plan goes to a depth of eight alarms, each alarm being roughly a replication of the previous alarm. Depending on the needs expressed by the incident commander to the dispatch center, the dispatcher transmits the appropriate number of alarms and the units respond. The Solano County Sheriff's Office dispatches this system as the operational area. The Dixon Fire Chief is the Coordinator.
- The response in the City is different than in the District:

Alarm	City response	District response
EMS	Paramedic engine and ambulance	Paramedic engine and ambulance
Vehicle collision	2 engines	1 engine
Structure fire	2 engines initially, ladder, water tender, squad with volunteer and career callback	

Commendations:

- The Department has exhausted all possible approaches to increasing the effectiveness of first alarm response to fires and other emergencies through the application of automatic and mutual aid processes. Due to Dixon's geographical location, it is simply too far from either Vacaville or Davis for their response units to be an effective part of the first alarm to deliver fifteen people arriving within the first ten minutes of receipt of the call for service.

Recommendations:

- None.

Mutual Aid/Automatic Aid

Since only the very largest cities have sufficient resources to handle almost every call, fire departments developed mutual aid systems to assist each other when their needs exceeded the capabilities. Departments build their mutual aid agreements upon the concept of reciprocity, "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 signatories to 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 jurisdictions own resources.

Issue:

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

Findings:

- The Department participates in automatic aid agreements with Yolo County (Davis, U.C. Davis, West Sacramento, Woodland) up to two engines from each department staggered by alarm and with the City of Vacaville (1 engine). Both agreements include move up and cover.
- Mutual aid is all through the State of California Master Mutual Aid Agreement administered by the Governor's Office of Emergency Services.

Commendations:

- All agreements are current and effective. The Department routinely uses the automatic aid agreement to provide first-due coverage in those areas where other agencies resources are closer, to fill out alarm assignments, and to provide special call resources such breathing air support.

Recommendations:

- None.

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?

Findings:

- Most of the fire protection agencies in the surrounding area, Solano and Yolo Counties, utilize 800 MHz UHF band for radio communications.
- Department radios are on the 154 MHz VHF band. There are problems with reception northeast of the fire station. The Department had to direct the antenna toward the southwest to prevent interference with Rocklin Fire Department on the same frequency as the Department.
- There is an 800 MHz mobile radio on one engine. Both Davis and West Sacramento fire departments are supposed to have VHF radio packs so they can communicate with Department units.

- Both reception in some areas and interoperability are problems that plague radio communications.
- The City should consider not continuing in the radio business on its VHF frequencies, but instead investigate co-buying into a regional 700 or 800 MHz frequency system that can be cost shared and possibly grant funded.

Commendations:

- None.

Recommendations:

- Since the Department is the "odd man out" in the County's fire service radio configuration, it needs to explore some means of improving interoperability. As the Department expands to meet the needs of a growing population, it should consider having a technical study commissioned to determine the best path from a technical perspective. This study should also consider the financial and operational impacts of any change. Additionally, time is of the essence as the FCC is mandating changes to the public safety radio frequencies nationwide and all California counties are in the planning phase for this change.

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.

Issue:

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

Findings:

- The Department has floor plans of all the commercial and industrial facilities. These floor plans lack the detail needed for effective command of incidents and for pre-fire training purposes.
- The Department has adopted a simple drawing program to begin a process to update these plans; no completion time has been set.

Commendations:

- None.

Recommendations:

- The Department should adopt one of the standard pre-incident planning programs available. Since the Department already uses Firehouse Software, that would seem to be the logical choice.

- Firehouse Software Mobile Preplans is optimized to display or audibly read the information needed from occupancy records while en route to scene, with large, easy to press buttons and flexible display options to adapt the program to a mobile PC. This system displays all or selected information from:
    - Occupancy contacts
    - Building information
    - Required fire flow
    - Safety information and alerts
    - Chemicals, hazardous materials, and other onsite materials
    - Associated hydrants
    - Storage tanks.

EMS Response

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

Issue:

- Does the Department provide adequate emergency medical services?

Findings:

- According to the NFPA (Providing Emergency Medical Services by Community Size (percent), 1998-2000), only twenty-seven percent of the communities the size of Dixon provide Advanced Life Support (ALS) or paramedic service.
- Countywide, in Solano County, all the cities except Vacaville and Suisun City participate in a program where a private ambulance service responds within seven minutes. The Department provides the ALS for the intervening time.
- The Department staffs two engines on a daily basis. They staff each one with a paramedic when possible. Medical emergencies within the City will get the paramedic engine and an ambulance response, in the District the response is one paramedic engine and an ambulance.
- The ALS field report interfaces with the Toomay Software that the County Emergency Medical Council decreed for all emergency medical providers to use. It does not easily interface with the Firehouse Software. Paramedics are testing a Logitech pen system that may provide the solution. So far, it is 85 percent accurate.

Commendations:

- For the size of the City, the Department provides a commendable level of emergency medical service.

Recommendations:

- Continue pressuring the Emergency Medical Council on the report interface issue. Making out two reports simply because the systems do not talk to each other is a waste of valuable time.

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 many smaller 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?

Findings:

- The Department notifies water purveyors by FAX when and where they will be testing hydrants. There are two water purveyors in the City.
- Firefighters collect the data on the hydrants on a field form and then enter the data into the Firehouse Software.
- If a hydrant requires maintenance, the Department notifies the purveyor by radio if it is a major or immediate need, by phone if it is minor. There is a paper trail follow-up system.
- The Department inspects and does routine maintenance on all hydrants annually.

Commendations:

- The Department hydrant maintenance system follows best practices.

Recommendations:

- As calls for service increase along with training-mandated hours and fire prevention programs, there is not enough time in the year for adequate hydrant maintenance. It would be more cost effective for one full- or part-time employee to conduct inspection and/or service, as compared to the hourly cost of a 3-firefighter engine crew. This water system maintenance cost can be placed into the water rate structure for cost recovery.

Training

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 and do not occur very often, for which there is no decision time. Training in the fire service has two parts: (1) vocational training, which teaches the skill sets necessary to do the "hands-on" type work that firefighters do; and (2) education, which teaches the knowledge necessary to do the "mental" work that firefighters do.

Issue:

- Is there an effective training program in the Department?

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

Findings:

- The training program is a model program that uses a combination of incentives and requirements to maintain a well-trained and drilled workforce.
- Instructors enter the class topics into the drill roster. Firefighters sign the document to attest their attendance. The receptionist/secretary enters the data into the Firehouse Software, and they retain the forms forever.

Commendations:

- Through input from the captains, the Department training officer develops an annual drill schedule that the Department publishes quarterly through the "Firehouse Management Information System."
- The Department copies all training certificates received by employees, and retains one copy and sends one copy to Human Resources to retain in the employee's file.
- Firefighters attain State Board of Fire Services certification through an incentive program. For example, firefighters receive an incentive payment of one percent of salary for each certification course they pass with a grade of "C" or better up to five percent. Upon achieving certification, firefighters receive an additional two percent incentive; they keep this forever. There is a three-year maintenance clause, after which the firefighter starts losing one percent per year. The Department policy requires certification for promotion. Upon promotion, the five percent disappears and the door opens to obtain certification for the next level.
- All career members have California Incident Command System task books for Strike Team Leader or below. Ninety (90) percent of the firefighters and engineers have certification for Firefighter Type 2 and 1. A training specialist signs off the Task Books and employees receive the cards after completion of the peer review process.

Recommendations:

- With the exception of two captains and one assistant chief, all members of each rank are certified. The Department should focus on those who still need certification especially since they are in leadership positions.
- The Department should retain a copy of the Task Book signature page in Department training files and members' personnel files upon task book completion.

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 standards 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 NFIRS compliant?

Findings:

- The Department uses Firehouse Software version for report writing. The Department transmits this data to the state on a quarterly basis and annually the Department receives an output. Each member has limited rights to enter data. They use a field fire report that interfaces with the Firehouse Software form.

Commendations:

- The use of Firehouse Software for the fire report system is a good choice, as it feeds not only into the NFIRS system seamlessly it also provides the same information to managers as part of the Management Information System.

Recommendations:

- None.

Volunteer Firefighter Program

In suburban combination departments such as the Department, volunteers or reserve firefighters' role 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 two engines staffed with a total of six firefighters and a chief officer responds in a command vehicle, the volunteers should make up the remaining required 7-14 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 Dixon, rely more heavily on career staffed fire companies. As this transition occurred, many volunteers became career firefighters for the City, some disillusioned volunteers left the Department, some left due to work and family commitment pressures, and some remained in a greatly diminished volunteer role.

Issue:

- Do a sufficient number of volunteer firefighters respond to a structure fire to make up the required supplemental personnel?
- What is the proper role of the volunteer fire component of the Department?

Findings:

- Anecdotal evidence indicates that on the average, three volunteer firefighters report to structure fires. This means that the staffing at structure fires is nine members plus a chief officer. Contrasted against a best practice recommendation of fourteen firefighters plus a chief officer for the average single-family dwelling fire, it is testimony to the training, aggressiveness of firefighters, fire prevention and socio-economic luck that the fire loss in Dixon is so low. (It should be pointed out that while the cities of Davis and Vacaville both have automatic aid agreements with Dixon, their travel times are outside the times

required for effective first alarm response and they each bring only another 3 firefighters, still short of the recommended fifteen total).

- The Department divides the volunteers into three groups; each group is assigned to one of the shift captains. There is no requirement that the volunteers do their required duty times with their assigned shift.
- Most volunteers are unable to leave their employment to respond to fires and other emergencies.
- The current volunteer roster lists 22 active volunteers, with 14 more in the intake and training process for availability in mid-2006.
- 15 of the current career members of the Department are former volunteer members.
- The volunteer firefighters receive an annual reimbursement for the number of responses, drills and participation they attend, this ranges from 1-2,000 dollars.
- The volunteer firefighters are required to participate at the station for sixteen hours per month, in four-hour increments. They can accomplish this by spending two nights, working two full days, or four mornings, or afternoons, or various combinations thereof.
- The training required of volunteers for each level, firefighter, driver/operator or officer (there is currently is one lieutenant) is equal to that required of career members. The volunteers appear to support this requirement.
- There is a concern about the quality of the "new" volunteers expressed by both volunteers and career firefighters.
- There is a perception of a serious disconnect between the volunteer force and the career force and chief officers. The result is that the volunteers do not feel that they are part of the same "team." The Department often underutilizes volunteer firefighters with qualifications as officers, apparatus operators, paramedics and other specialties.

Commendations:

- The Department has made a strong effort to maintain both the quality and quantity of volunteers for the community through a number of initiatives including an aggressive recruitment program, hosting training at the Department headquarters and providing top quality training to the volunteer firefighters.

Recommendations:

- Develop a multifaceted approach to the issue of the volunteer force. Start with a cross-sectional group of volunteers, listen to their needs and develop a vision for the volunteer firefighters that they can support. While many of the members of the Department came from volunteer ranks before becoming career firefighters, it does not take long before they sever that connection.
- Develop a volunteer organization parallel to the career organization with the same requirements for training and certification. Utilize the volunteer officer cadre to administer the volunteer program, do some of the training, and supervise volunteer firefighters at incidents under the direction of the incident commander or subordinate command levels in the Incident Command System.

- With the advent of additional captain positions, assign the volunteer program to one captain for administration and as the volunteers' direct access to the management of the Department. This would provide someone to follow up on their needs.
- In addition to the annual stipend received for participation, institute a system of non-monetary rewards for both career and volunteers based on length of service, safety record, community involvement, special projects and heroism.
- Develop standard plans for the deployment of four or five person staffing, when volunteers are on the engines, so that they have an expectation of their responsibilities on the fireground. This will make them more effective.
- Consider converting the volunteer fire force to a reserve or paid-call firefighter system. In a typical configuration reserve firefighters work one 24-hour shift per week, and work under the direction of the Reserve Coordinator and the on duty Captain. They staff a specific piece of apparatus, such as the second engine and assist the full-time personnel at emergencies. Other duties include: cleaning and maintaining the station and equipment, participating in training drills, working alongside full-time personnel with fire inspections, helping with fire education and station tours, assisting with cooking duties, and any special project or studies they wish to accomplish during down-time. Reserve Firefighters are paid a stipend or hourly wage per shift.

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.

Fire Code Enforcement

The Department, organizationally, divides the code enforcement into two arenas. Fire prevention code enforcement, which is one of the tasks of the Fire Marshal, and City code enforcement, which is the sole task of the Department code enforcement officer. This discussion focuses first on the other code enforcement area, fire code enforcement.

Issue:

- The Uniform Fire Code requires that the Department complete inspections of various occupancies on a regular basis according to the type of occupancy.
- Does the current system of fire prevention inspections meet the requirements of the code?

Findings:

- Engine companies do regular inspections of occupancy types A, B, F, M, S, and R. The inspection list is in the Firehouse Journal part of the Management Information System and hard copy. They track all inspections using the Firehouse Software. The companies are free to choose which inspections they do during the quarter. They are supposed to complete all assigned inspections during the quarter. If they do not complete them, they get one additional month for follow-up. Firefighters do their part willingly. There is an inspection list for the entire City.

- The Fire Marshal performs all other inspections, including R changes, E inspections, follow-ups and all construction and fire-protection system inspections. There is an eighty-dollar fee for follow-up inspections.
- The Fire Marshal performs all required plans checks.
- Inspections are done up to three times: one initial inspection and up to two follow-ups. If unable to complete or make contact, the companies refer them to the Fire Marshal. The Firehouse Software does not alert the Fire Marshal to the need for his intervention. The City Attorney assists with inspection enforcement.
- There is a fee schedule for fire prevention inspections as part of the fire code amendments.
- Members get quarterly training on inspections as part of their scheduled drills.
- The entire fire prevention operation, including coordination with the building and planning departments, depends on <u>one</u> person, the Fire Marshal/Assistant Chief. While very well thought of and technically competent, he is spread too thin just in prevention, not including his incident command responsibilities. Both the City Building Official and Planning Directors pointed out this is a fragile system without a back-up for long-term illness or injury leave. There is an emerging program to cross-train some firefighters in handling less technical inspections when the Fire Marshal is away, but this is not a complete solution.

2005 Fire Prevention Workload Statistics:

SUBJECT	NUMBER	HOURS SPENT
Consultation meetings – all topics	25	21
➢ Other (city/county, planning commission, etc)	90	165
Plan reviews		
➢ Fire alarm	16	16
➢ Building	152	160
➢ Fire Protection (sprinkler, hood, fire pump, etc)	77	113
➢ Other (parcels, occupancy, permit, Hazards, civils, etc)	98	110
Building inspections		
➢ Construction	30	32
➢ Fire alarm	9	9
➢ Fire protection	133	154
➢ General	4	4
➢ Other	12	12
Fire investigations		
➢ Origin/cause, interviewing, etc.	9	12
Training		24 hours

TOTAL HOURS		832
Engine Company Inspections (addresses)		327
(completed)		317
total including re-inspections		352

Commendations:

- The use of engine companies to do prevention inspections accomplishes two things: it spreads the inspection workload and reduces the need for more staff in the prevention bureau; and it allows the companies to gain familiarity with the occupancies.

Recommendations:

- Increase the staffing of the bureau by one inspector to spread workload and to provide redundancy to the Fire Marshal position. Make the receptionist/secretary full-time. Investigate if the inspector position could be contracted out to a private inspection/plan checking firm. A three-person fire prevention bureau should be cross-trained for fire prevention code enforcement, plan checking and City code enforcement.
- Increase the use of outside plan check consultants to free up Fire Marshal time for incident commander duties, to provide redundancy and to allow for fast track development should one occur.

City Code Enforcement

As mentioned above, the City of Dixon has a number of municipal codes to keep neighborhoods clean and protect property values. The City also participates in the countywide abandoned vehicle programs. The Department administers this program.

Issue:

- Is the program effective?
- Does it belong as a Department program?

Findings:

- The code enforcement officer works as part of the Fire Prevention Bureau. The connection between the two is very loose. This deprives the code enforcement officer of supervision and results in inefficient use of staff.
- The code enforcement program seems to be successful despite some coordination issues with the Fire leadership and City Hall departments. The code enforcement officer self-reported compliance on the second notice at over 90 percent and overall compliance at almost 100 percent.
- As opposed to most other functions in the fire department that are usually the result of a call for positive help, code enforcement can be confrontational with the offending citizen(s). The code enforcement officer's safety is occasionally threatened and compromised. There is no routine means of tracking her location or for her to quickly request police assistance.
- Most of what the code enforcement officer does (abandoned vehicles might be an exception) assists the Department (it is an old truism that good housekeeping and fire prevention go hand in hand).
- The code enforcement officer has no space to make confidential phone calls to violators.

Commendations:

- Despite an organizational disconnect, the code enforcement officer provides a valuable service to the Department and the City of Dixon.

Recommendations:

- Both the City code enforcement and fire prevention programs suffer when staff takes vacations. By training the code enforcement officer in fire prevention functions and vice versa, they can cover for each other during vacation periods. While this may not result in full-service in either program, cross-training will provide professional answers to citizens, contractors and business people.
- The Fire Prevention Bureau is already at maximum production. There is a need for additional staff; it is a logical first step to make the Code Enforcement and Fire Prevention connection tighter, and as the bureau adds staff, ensure that cross-training occurs for all so that programs prosper even if someone takes a vacation or leaves.
- Review the configuration of the Department office complex to allow for some soundproofing of the Code Enforcement Officer's cubicle. As the Bureau staff increases, the need for confidential space will increase as well.
- Citywide, there is a need for code enforcement coordination and hand-off when the Department coordinator is unable to take the issue to final resolution. While there has been informal talk among the departments to improve the process flow for code enforcement, there have not been systemic improvements.
- There does not seem to be a clear set of priorities for what the code enforcement position works with. It would be best for City management staff and the Council to discuss and adopt priorities for this position.
- In lieu of the code enforcement position staying in the Department, investigate what other cities do and see if there is a better fit for Dixon. Many cities place the function in Community Development to additionally handle zoning complaints. Other cities place a police officer into the position – on a "civilian" rotation to Community Development – to not only handle a broad range of code issues, but to bring to the table a police officer's conflict resolution and communication skills. This method of staffing also improves coordination with Community Oriented Policing.

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 Department and providing information about fire prevention?

Findings:

- The County's fire departments are just getting started in the public information arena on a formal basis.

- The Fire Chief is the chief spokesperson for the Department; duty chiefs handle public information at fires and other incidents.
- The Fire Marshal has taken some public information training.

Commendations:

- None.

Recommendations:

- The Department needs to find a way(s) to communicate with the communities about its services, programs and self-preparedness topics

Public Education

On the level of human behavior, including the basic ignorance that often causes unwanted fires, there is a need for more public education. Now that the fire service is in a lead role in the emergency medical arena, the role of public education has expanded to a much broader area of accident prevention. Simultaneously, the 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?

Findings:

- The Department uses as many opportunities as possible to educate the public on fire prevention activities, including such things as extinguisher training, senior fairs, battery replacements for smoke detectors, "Every 15 Minutes" for high school students, a quarterly newspaper insert with safety tips, messages on the City website, station tours and car-seat inspections.
- The Department uses fire prevention week and month as an opportunity to educate the public. They also do education programs for daycare and first and second grades. The Department participates in National Night Out.
- The Department does presentations on request (disaster preparedness is currently drawing considerable of interest).

Commendations:

- Given the size of the staff and the competing agendas for time, the Department provides a comprehensive public education program covering both fire and accident prevention.

Recommendations:

- If the staff for the prevention bureau increases, consider two additional education initiatives: (1) a school program, with teachers' packets, focused on the primary grades; and (2) a school program similar to "FirePALS" (Fire Public And Life Safety) program

focused on the fourth through sixth grades. Both these initiatives will require additional staff in the bureau.

Arson Investigation

Issue:

- Does fire investigation assist with developing an effective hazard and risk prevention program?

Findings:

- Four members and the fire marshal have investigation training. The investigations lead to prevention and/or to further criminal investigation.
- The Department is part of the Solano-Napa Fire Investigation Unit and the Sacramento Sierra Arson Investigation Unit (AIU) (the Fire Marshal is the Solano County representative on the AIU.) The Department also has access to the Alcohol Tobacco and Firearms (ATF) arson investigation experts.

Commendations:

- The Department maintains an adequate arson investigation capability.

Recommendations:

- None.

Management Systems

In contrast to the Operations and Fire Prevention components, the Management Systems have an internal focus. Their function is to support the Operations and Fire Prevention programs that touch the public.

Management Information System

Fire departments maintain a management information system to support the management of the organization by providing the leadership with data and information that indicates the effectiveness of the organization to meet its program goals. The fire service is a lot like baseball with its reliance on statistical information. The fire service counts success in minutes and seconds. Frequencies of responses, inspections, drills and training sessions all measure the capability of a fire department. Effective Management Information Systems are essential components of the management of a fire department.

Issue:

- Is there a Management Information System that follows best practices for the fire service?

Findings:

- The Department maintains a policy and procedures handbook that is available to all members. They are currently updating the handbook. Each month the Department leadership reviews one of the policies and brings it into current practice.

- The Department follows the City's Internet policy.
- The Department uses Affiliated Computer Services, Inc. Firehouse Software for 95 percent of their management information system needs.
- Firehouse Software covers operations, prevention, financial, personnel and apparatus reporting systems. Employees have rights to the reports and records they need for their assignments.
- Each year or two the Department adds another module; they only need to add two to the system. This year they are adding an accounts receivable module.
- While Firehouse Software is easily customizable, there is no interface between this software and the reports required by the Solano County Emergency Medical Service Authority.
- The City Finance Department Accounting software is not transparent.
- Other Management Information Systems include:
    - A monthly budget report from the City Finance Department, which includes the budgeted amount by category and the amount and percent expended
    - Construction permits that require a wet signature that causes the contractor to talk to the Department
    - No permit/inspection tracking system from the Building Department tied electronically to fire prevention
    - Monthly the Human Resources Department forwards that month's required employee evaluation reports and a monthly education incentive report
    - Semi-annually the Human Resources Department forwards a Department of Motor Vehicles Employer Pull Notice Program report
    - From City Payroll the Department receives a bi-weekly report of vacation balances and sick leave usage.
- The Solano County Sheriff's Office Dispatch Center faxes dispatch times to the Department for fire report purposes. The computer aided dispatch system (CAD) used by the dispatch center has no capability of listing prior responses to the same address (frequent flyers), special information such as Knox boxes, criminal history at the address and other useful information.
- The Department uses the email system for the remainder of the management reports. The Department imposes no restrictions on its use for career employees and its use is still under control. Volunteers have no access.

Commendations:

- The choice of Firehouse Software for the Management Information System was a good one. It complies with the National Fire Incident Reporting System (NFIRS 5.0) requirements.
- The Department is as close to a paperless environment as possible.

Recommendations:

- The Fire Chief, through the County Chief's Association, should continue efforts to make the EMSA reporting simpler. Under testing is the electronic pencil, which will reduce the amount of data entry, if it works in the field environment. However, there will still be double entry as the EMSA report is inconsistent with the Firehouse Software. Some type of electronic transfer of data between the systems is preferable to the current method. The Department should explore the possibility of contracting with a software developer who can develop the software that will allow the systems to "talk" to each other.
- The Department and the Finance Department need to collaborate on a method that will allow the Department to obtain the detail of data that it needs to effectively manage its funds.
- When the Sheriff's Office dispatch center upgrades or changes its CAD system, the Department should work with the CAD development process to ensure that the CAD reports are seamless and readable by the Firehouse Software. They should also work to obtain the enhancements necessary for firefighter safety and response that is more efficient.

Risk Management

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 also has chapters on fire apparatus, tools and equipment, protective clothing, and equipment, emergency scene operations, facility safety, medical requirements for firefighters, as member assistance program and critical incident stress management.

California Occupational Health and Safety Administration (OSHA) also impose many fire service and local government safety requirements. A quality risk management program is an investment in the members of the Department and demonstrates to them that the community cares that go home healthy at the end of their shifts and keeps the City and Department compliant with the law.

Issue:

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

Findings:

- The Department's risk management system is significantly inadequate. The City's Injury and Illness Prevention Program (IIPP) does not follow best practices. The Human Resources Department did not initially view the IIPP proposed by the Department as adoptable. Among the missing elements of the current program 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. Human Resource performs a new employee orientation; however, the focus of the training is general and not specific to the illnesses and injuries of the Department.

- The Department maintains Material Safety Data Sheets (MSDS) and the firefighters know how to access them.
- National Fire Protect Association Standard 1500, Standard on Fire Department Occupational Safety and Health Program is absent from the Department.
- There is no Department safety and health council.
- There are no "tailgate safety sessions" and no safety topics in the training schedule. Drill and training lesson plans have safety issue components.
- There is a physical fitness program.
- There is an accident report process in place.

Commendations:

- The Department's physical fitness program is excellent. All firefighters take the same physical fitness test they took at time of hire. If they pass the test, they receive a $150 per-month incentive. The firefighters maintain their fitness on their own time. The station is equipped with a full workout room.
- The accident and injury report system is consistent with best practices. Assistant Chief Frank Drayton is the Safety Officer. He trains supervisors on properly completing the required accident report forms.

Recommendations:

- The Department should adopt a comprehensive risk management plan. The risk management plan should consider all fire department policies and procedures, and it should identify and actively manage the goals and objectives that mitigate risks associated with the operations of the Department. National Fire Protection Association Standard 1500, Standard on Fire Department Occupational Safety and Health Program, 2002 Edition, provides an excellent starting point for such a plan. The Department should adopt NFPA 1500 as a supporting document to their safety and health program.
- The Department should establish a Safety and Health Committee. A Safety and Health Committee is advisory to the Fire Chief, usually composed of a cross section of members of the Department and meets at least every six months. The purpose of this committee shall be to conduct research, develop recommendations, and study and review matters pertaining to occupational safety and health within the Department.
- Cal OSHA consultative assistance is available for an on-site visit. All services provided by Cal/OSHA Consultation Services are provided free of charge to California employers. There is no penalty if the consultative service uncovers a violation. By pointing out the obvious Cal-OSHA safety violations, the Department can prevent injuries and save the City the cost of hefty fines. They also provide telephone support, publications and educational outreach.

- The Human Resources Department and the Department need to place as a top priority the development implementation of a consensus IIPP that the Department can maintain and that meets state requirements. After review, the Human Resources Department and the Department, after modification, may wish to adopt the best practices Safety and Health program that they currently have in "draft" form.
- A risk management program that focuses training on the "high risk, low frequency, no decision time" evolutions will make tailgate safety sessions and drills more effective by preventing the worst types of injuries and accidents. Using standard risk management techniques, the Safety and Health Committee could generate the list of these activities. With this in hand, they could then recommend adoption of the best practices procedures and guidelines by the Department. This would then form the basis for safety training.

Finance

While there is a City Finance Department that is responsible for most finance and budget issues, some parts of the system reside in the Department. These parts include: departmental budget preparation, routine purchasing and departmental capital outlay.

Issue:

- Is there an effective system of financial management that permits the Department to meet its goals, objectives and expected outcomes?
- Does the system safeguard public funds to prevent misuse?

Findings:

- The Management Information System provides up-to-date printouts of the budget on a monthly basis.
- Members use the purchasing system to make appropriate purchases as necessary. They can make purchases up to five hundred dollars with permission of the captain. They retrieve a purchase order from the file, make the purchase and return the completed purchase to the office manager. Various members have purchasing responsibilities for different aspects of the Department and they know what their budget for the year is. Before purchasing documents go to City Finance, the Chief approves and signs for the purchases.
- Budget preparation starts in February. Subordinates with purchasing responsibilities prepare and justify their budget recommendations. The chief's assistant (office manager) edits the budget and flags anomalies. The chief approves the budget.
- The Capital Improvement Program (CIP) has a five-year projection, updated annually. The chief develops the Department's CIP inputs.
- There has been no recent audit of the Volunteer Fire Association fund. Originally established to provide retirement funds for volunteers, the Volunteer Association Fund is now primarily a trust account. Until two years ago, there was an annual appeal letter.

Commendations:

- The monthly budget printouts from the City Finance Department provide adequate information for management purposes.

- The purchasing system works effectively and efficiently. There are sufficient safeguards in place to prevent fraud.

Recommendations:

- While the Volunteer Association Fund is not a City-administered fund, all fund raising is under the goodwill name of the Department; it should be determined if they are public funds raised for a public purpose. If so, the Department should have an outside audit of the funds.

Personnel

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

Issue:

- Is there a disciplinary process in place that starts at the company officer (captain) level?
- Is overtime managed effectively to reduce its impact on the budget as much as possible?
- Does the fire Department maintain personnel and members medical files at the Human Resources Department?

Findings:

- Human Resources sends employee evaluations to the Department monthly on the employee's anniversary date. They also forward the Education Incentive report.
- The Payroll Department sends a report of vacation balance and sick leave to the Department on a bi-weekly basis.
- The Operations Assistant Chief fills all the planned overtime assignments. Unplanned overtime is on a call back basis from a rotating list rank for rank. If no one in the rank is available, then hire a qualified member from the next rank down.
- Human Resources Department keeps all personnel records, except notes for employee evaluations.
- The disciplinary process adheres to the following general steps:
    - On first time in most cases, the captain will investigate and have a verbal discussion with the employee. He will note that discussion and file the note in the employee's HR folder.
    - If there is a repeat, the captain will have the employee sign a statement referring to the discussion and will pass on the discussion to the duty chief or operations chief at the earliest opportunity.
    - If the matter is particularly egregious or repeats a third time, the matter goes to the operations chief. The operations chief holds the Skelly hearing as well as is the hearing officer for the disciplinary. (There is not a third party Skelly officer).
    - Appeals of discipline then go to HR and the City Manager.

Commendations:

- It appears that the Department handles personnel issues in accordance with best practices.

Recommendations:

- None.

Facility Maintenance

The Department has a model headquarters fire station. With proper maintenance, it should last the City a long time.

Issue:

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

Findings:

- Cursory inspection of the facilities by the consultant on numerous occasions found them to be clean and well maintained, including the buildings and grounds.
- Members follow a routine maintenance procedure on a daily basis. Members do major repairs, including minor repainting and other similar projects, and Public Works maintains the heating/cooling systems.

Commendations:

- The members are acutely proud of the well-designed fire station and take good care of it.

Recommendations:

- None.

DIXON FIRE PROTECTION DISTRICT FINANCIAL STANDING

For many years, Dixon Fire Protection District has contracted with the City of Dixon for fire department services. This has been a mutually beneficial relationship as it was in the early years. Neither agency could afford fire services by themselves and both are isolated from nearby mutual aid. Thus, both agencies have grown up interdependent. This relationship will be challenged by the growth in the City and the I-80 corridor. City residents may question why they need to "share" fire units with the District as the call for service demand grows within the City. Newer District residents in large size parcel estate home areas may wonder why they do not have suburban levels of fire station coverage, as after all, they see "Dixon Fire Department" on the apparatus when they do call.

For Fiscal 05/06 the District Budget is:

REVENUES	
Property Taxes	397,214
Interest	3,000
Total Estimated Revenues	**400,214**
EXPENDITURES	
Operations and Maintenance	
Contract Service-City of Dixon (90% less $5,000 for engine, 3 of 3)	352,493
Tax Administration Fee-Solano Co.	4,358
Manual Refunds & Cancellations-Solano Co.	1,201
Audit	2,100
Legal Service-Solano Co.	1,000
Insurance	2,000
Meetings and Seminars	750
Dues and Subscriptions	200
Office Supplies	500
Map Revisions & Updates	2,000
District Website - Setup & Maintenance	500
Consultant Services Agreement - Strategic Plan	14,000
Capital Improvements	0
Total Operations and Maintenance Costs	**381,102**
Net to Reserves *(70% Equipment Replacement/30% General Reserves)*	19,112
CAPITAL IMPROVEMENTS	
Total Capital Improvement Costs	**0**
RESERVES	
Estimated Available Reserves	
General	144,306
Equipment Replacement	214,326
Total Estimated Reserves (June 30,2005)	**358,632**

The contract between the City and District calls for the District to pay 90 percent of its property tax revenue for fire protection to the City. If the actual property tax revenue is higher than estimated, 90 percent of that increase is also automatically paid to the City. Given a modest rate of new construction in the District, its property tax revenues are growing slowly at a rate of 5-10 percent per year, which means that the payments available to the City are growing at a rate somewhat faster than inflation. The District's property tax rate under the Proposition 13 and AB-8 limits is for Fiscal Year 05-06 is .00097793512.

The addition to reserves accumulated by the District each year are set aside for equipment replacement, which is the District's obligation under the contract with the City, and for unanticipated expenditures in some of the line item budget categories listed above in the FY 2005-06 District Budget.

The District has several challenges to raising more revenue to significantly increase service levels or to afford fire protection on its own. There are only 3,486 parcels in the District and the vast majority of these are permanently in agriculture usage or open space. Thus, even if the District were able to obtain voter or property owner approval of a special parcel tax or a benefit assessment, the relatively few number of residential parcels would likely pay the vast majority of the new tax or assessment. If such an assessment could somehow double the revenue, the new total amount still could not pay for even a 2-firefighter per day minimum staffing in a new District area station.

An additional problem to sell a revenue increase is the fact that the highest concentration of homes is in the Allendale area, which is the farthest from the City's fire stations. While a staffing increase in the City stations helps to provide more firefighters for serious emergencies or to cover when there are multiple calls for service, it is unlikely the more remote residents would perceive any benefit from approving a significant fire benefit assessment when they still would not receive a closer neighborhood fire station.

Given the above fact pattern, Citygate does not see a short-term solution any different from continuing the existing revenue and contract for service relationship. While the City could stop primary coverage to the District, it is unlikely, even with a revenue increase and the current negative pressures on volunteer firefighters, that the District could field a fire department on its own. If the District operated a token force, under mutual aid agreements, the City would still end up sending a unit to a District for free on a significant number of the District emergencies calls for service.

Presently, the City is not incurring higher staffing costs to serve the District, since the staffing level that the City now has is necessary to serve the City. Furthermore, the District is responsible for purchasing and replacing two fire apparatus – the water tenders. Thus, the City incurs relatively little added expense to provide service to a District that, for the foreseeable future, will experience very little population and building growth. The annual property tax revenue payments from the District to the City as a result of the fire service contract, then, constitute net revenue that would otherwise be lost to the City without the City experiencing a proportionate decrease in it expenses. The current relationship of the City offsetting some of its costs through the fire service contract is a better fiscal alternative than receiving no cost offset.

Over the long-term, Citygate can see the District leadership looking at its projected growth at "build out" and determining the size of a revenue measure that would offset more of the costs to provide fire services. Nevertheless, District residents more than 10 minutes driving time from

the City-based stations would still not see more than a rural level of fire and emergency medical service.

FINDINGS AND RECOMMENDED FIRE SERVICES PLAN

ADMINISTRATION

Citygate does not find the Department is top heavy at all with managers or support personnel. Rather, it is too lean, with little depth. The incident commander function falls to 3 people, the Fire Chief and the two Assistant Chiefs 24/7/365. This means they have to respond from home for all serious calls, and it means one must be in the Department at all times.

Administratively, there is no real back-up to the Fire Chief and the Administration Manager. Should either one have a problem that removes them for a long period of time, or there is an unexpected need to quickly replace them, it will really hurt Department operations. Even with a planned retirement, it will be difficult to replace the Fire Chief with someone so committed, and who has the district administrative skills as well as the willingness to respond from home whenever necessary.

In the fire prevention and code enforcement fields, the Department depends on the one Assistant Chief and, to a very limited degree, the on-duty Fire Captain. This is an inadequate staffing level for the fire prevention needs of a service area of 17,000 plus residents. When emergencies take the Assistant Chief's time, there is no one available for fire prevention inspections, plan checks or public education.

Citygate recommends the Department plan to hire a fire prevention inspector who has the technical training and experience to conduct technical fire code plan reviews and inspections. This person will be the primary daily contact for the planning, building and development teams. Ideally, this person also will have the background and personality to additionally lead the public education functions.

Hiring a fire inspector will also free up a little of the Assistant Chief's time to provide training and oversight to one of the three duty platoons. Additionally, any available time could go to developing an understanding of the District's management and fiscal operation as backup should something happen to the Fire Chief.

Another headquarters function that the three chief officers just do not have quality time for is that of updating the Department and City Disaster Plan and training key City leaders on it. Dixon is a small city, and in a major disaster will have to lean on the County and larger cities. However, Dixon still needs to maintain and train on its disaster plan, particularly since it is isolated from neighboring communities.

This is the type of function that is very easy and cost-effective for a small agency to contract out, as it does not even take a year round half-time position to fulfill. Citygate recommends the City hire a disaster planning consultant and trainer who is already familiar with the northern Bay area disaster methods to tune up and maintain the City plan and conduct appropriate training.

As an option, funding permitting, the City could add a 3rd duty Chief position. This would provide more depth to the Incident Command function and increase training and supervision coordination of the three station platoons. This position could also manage Disaster Preparedness. There are just too many programs for the present three chiefs to manage effectively.

If any more positions are added to headquarters, the second part-time office support position (clerical) in fire prevention should be increased to full-time. Funds permitting, this would be a very good move now, since fire prevention is increasingly busy, and if the part-time employee is off and the Fire Marshal or Code Enforcement Technician are out in the field, there is no office-based fire prevention just to receive calls and schedule inspections. Additionally, if the Administrative Manager is on vacation or sick leave and the part-time position is off, then there is really no public support at headquarters.

EQUIPMENT

The Department currently has an adequate fleet of fire apparatus.

Emergency Medical Services

The existing Medic Ambulance Company service is meeting the area's modest call volume ambulance needs. The Department should continue to operate fire unit based paramedics and be part of the County regional EMS system.

Dixon Fire District

The District and City have an intertwined and lengthy relationship. Both need the other and the District does not really have any fiscal or operating options other than a contract for service with Dixon. The District cannot and will never be able to afford its own fire department, given the current pressures on an all-volunteer force. Even if the District could raise a tax levy to field one 2-person fire crew per day, the District still would need City of Dixon crews to assist in even a modest sized emergency situation.

If the District operated just one fire station, the center of the District and thus the best location for that station, would be in or very near the City of Dixon.

The City should continue to accept an unequal relationship with the District. The City is receiving almost all of the District revenues. If those revenues stopped, the City, at its current economic size, would have trouble paying for its six firefighters per day. If the District operated independently, the City would still be compelled to send at least one unit out to the District under mutual aid. Thus, if the best location for a District station is in the City, and the City would help the District anyway under mutual aid, the City is financially well served to receive what District revenue it can and accept the fact that very occasionally (due to low call volumes) the City will have units out in the District.

Given its sheer size, being at the east edge of the County and having another volunteer District on its western border, the District does not have a better contract for service option than Dixon. The City of Dixon's units can cover most of the District better than a Vacaville unit can. It would not be in the City of Vacaville's best interests to commit its units to District problems, given the modest number of units and much higher call for service volumes in Vacaville.

Thus, the current residents of the Allendale area of the District are in a response situation that cannot be fixed in the short-term. If they annex to the Vacaville Fire District, LAFCO will likely reject the boundary change, as it would fiscally ruin the District. If Allendale could attach to the Vacaville Fire District, that district's staffs with all volunteers, and while one of its fire stations is closer to Allendale than Dixon City, it is likely that most of the time, the Dixon career staffed

unit would reach Allendale first. A southwest station in Dixon will slightly improve response times to Allendale and western District areas.

The only long-term alternative fire service arrangement Citygate can see for the rural fire districts would be to combine and spread out the cost of overhead command positions and a few career line personnel across the greatest number of parcels. To provide taxation equity, a "super" district would be well served to set up tax zones based on zoning, population densities so that those areas with more homes would pay more than an open space agricultural areas would. Nevertheless, none of the rural areas will ever have or be able to afford suburban levels of fire and EMS protection, and the District would not likely see an improved level of service under a "super" District arrangement as compared to its current contract level of service.

Given that the District area will never be large enough, in terms of tax revenue, to support suburban levels of career fire services, it is important that the District hold to its strict automatic fire sprinkler ordinance as well as it's other Fire Codes amendments in order to keep fires small until the arrival of a lightly staffed response from the City-based stations.

SIGNIFICANT RECOMMENDATIONS IN PRIORITY ORDER:

Management Team and Headquarters Functions Recommendations

1. The Department needs to work closely with the Human Resources Director and the HR staff, to jointly develop a risk management plan. This plan should meet the best practices for fire departments as outlined in National Fire Protection Association Standard (NFPA) 1500 Standard on Fire Department Occupational Safety and Health Program, 2002 Edition and the requirements of the California Occupational Health and Safety Administration (Cal- OSHA). The Department lacks this very important component of their program and it is made doubly important by the fact that the Department routinely handles structure fires with slightly over half the recommended staffing levels.
2. The Department volunteer firefighter program suffers from problems that are similar in other similar jurisdictions, namely a sense of disconnect from the career staff, falling membership and misgivings on both the part of the career as well as the volunteer firefighters. 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 reserve firefighter program, and develop a new model for the Department.
3. The fire prevention program, while meeting all best practice parameters, is operating at about the maximum level it can with the current staff. Merging the Code Enforcement more closely into the Fire Marshal's arena through cross-training, hiring another inspector and upgrading the ¾-time receptionist to full-time to assist with paperwork would dramatically increase effectiveness. An option would be to move code enforcement to another City department.
4. As the Department expands to two stations, it should give strong consideration to adding a third chief officer below the fire chief. This model would utilize one Assistant Chief for Operations, one for Prevention, and one for Training/Administration.
5. The employees in the Department form a small, close society, with few newcomers from outside the volunteer ranks. There is a little diversity, but not enough yet to be reflective

of the community at large. The Department would be well served to add diversity and human relations training to its bi-annual training schedule, especially as recent state law changes have mandated harassment training every two years for public employers.

6. Another factor that can affect the Department's ISO Grading is the maintenance of fire hydrants. Due to low staffing and calls for service increasing, the six on-duty firefighters cannot keep up a reasonable maintenance schedule. However, this is an easy to solve problem if the water utilities will use their personnel on a full- or part-time basis to do this work. It will cost less per hour, it does not tie up the City's only fire crews, and the cost of maintenance can legally be placed into the water rate schedule.
7. Since the Department is the "odd man out" in the County's fire service radio configuration, still operating on VHF lower band frequencies, it needs to explore some means of improving interoperability. As the Department expands to meet the needs of a growing population, it should consider having a technical study commissioned to determine the best path from a technical perspective. This study, which the department has now started, should also consider the financial and operational impacts of any change.
8. The Department should adopt one of the standard pre-incident planning programs available. Since the Department already uses Firehouse Software, that would seem to be the logical choice.
9. Continue pressuring the County Emergency Medical Office on the patient care report interface issue. Making out two reports simply because the systems do not talk to each other is a waste of valuable time.

FIRE DEPLOYMENT

Staffing

As this study has identified and measured, the Department is staffed with enough career firefighters to address small fires and 1-2 patient EMS incidents. The current staffing is in line with other agencies its size, as all suffer from lack of funding to provide a full level of suburban fire suppression. The volunteer program is alive and undergoing additional replacement hiring. However, given the living and job locations of the available volunteers, this program cannot any longer supplement the career staffing during the Monday thru Friday workweek when most of the volunteers are away.

The addition in early 2006 of a 6th career firefighter/paramedic per day, enabling two three-person crews in the Department, was an excellent move. At least the Department can now field two companies that individually can handle a paramedic call in the City or District, a small rescue or small fire. Together, the two crews provide an incipient or small fire force. What a single 3-person crew cannot do alone is begin interior fire attack until the arrival of the second engine, mutual aid, or volunteers.

At the current size, risk and call for service volume of the Department, Citygate recommends that:

1. *As soon as possible, the Department should construct a Reserve, or Paid Call Firefighter (PCF) program. These personnel will be scheduled as the 4th crew member on each engine*

24/7/365, funding and quantity allowing. If funding does not permit 24/7/365 staffing, then the priority should be to staff the 4th position per crew during the 40-hour workweek when volunteer callback is at its lowest.

This is an increase of two (2) PCF part-time firefighters per day that would increase daily staffing from the present 6 up to 8 career and PCF fire fighters. This would provide the ability for **each** engine to meet the OSHA requirements when immediate entry to serious building fires is needed and to begin fire control while volunteers and mutual aid units arrive. Four career personnel could safely and effectively deploy an aerial ladder for above grade rescue. Eight personnel deployed on two units, supported by volunteer and volunteer firefighters, could handle two small emergencies at once, or one modest emergency.

2. *At build-out of the City, the Department should operate 3 engines per day, staffed with 3-firefighter career crews each. This would deliver an initial response force of nine (9) firefighters and one Chief Officer. The third crew could staff the ladder truck, rescue and/or water tender. Depending on funding and market availability, one or more of the units could be staffed with a PCF position bringing that unit to a 4-person crew.*

At build-out this staffing program of three, 3-4 person crews could deliver upwards of 12 firefighters within 10 minutes of the receipt of the 911 call and deliver adequate fire attack on small fires and be able to slow the progress of larger fires pending the arrival of mutual aid or the volunteers. In this model, any crew of four could initiate interior fire attack if the other crew(s) were committed on a prior call. If all the crews could respond, then a force of 9-12 firefighters could hold the fire, while the closest mutual aid unit responds with 3 more firefighters bringing the total on-scene to 12-15. Volunteers outside of the 40-hour workweek would bring the total force up to 15 or more on serious fires. This response, while not ideal in that all 12-15 firefighters would not respond by minute ten or so, would still be able to hold a fire in check, especially in sprinklered buildings. A response force of 15 (12 Dixon + 3 mutual aid) would be a very credible effort and consistent with any suburban area adjoining a metro area.

3. *Citygate recommends the Department strengthen the use of paid-call firefighters*.

These personnel do not need to live in the area, and need career experience while attending fire science community college classes and applying for full career positions. To recruit qualified personnel, the District should pay well above the "market rate" and, in fact, consider these as part-time, un-benefited employees. They should be paid an hourly rate competitive with a service industry job like Starbucks. For example, with a wage of $7/hour for 17 hours of awake time, and 7 hours of sleep time, with some of the sleep hours interrupted by incidents and that "interrupted sleep" time also paid at $7/hr, a "blended" 24-hour cost of approximately $5.76 per hour can be used. Thus, one 24/7/365 "Reserve" firefighter position would cost $138.24 per 24-hour shift or $50,458 annually. To avoid paid-call firefighters turning into full-time employees without benefits and representation, the hours per year and years in the program should be limited.

It will be a continuing challenge to recruit, train and retain volunteer firefighters. The Department, given its size and modest call volumes, needs to realize that to recruit and retain volunteers, its needs to be a "premier" combination agency. What volunteers want is training, résumé experience, and to be used. To this end, whatever the Department can do to support a first class volunteer training program and part-time use of the volunteers will draw more people to the program.

Stations

The current Department headquarters station is well located and sized. It will serve the needs of the District and City through at least build-out of the City General Plan. As this report identified, there is not adequate response time coverage in the southwestern portion of the City.

The District would also benefit from a southwest side station located in the City itself, where the majority of the calls for service are. Citygate finds the proposed 2nd station site is an excellent response time location, given the west side street network.

Given that the District benefits from the second station, and the District has growing Fiscal Reserves in excess of that needed for apparatus replacement, there is adequate rationale for the District contributing what it can towards the construction of the second station.

Since, in the United States, there are not minimum response requirements on local government fire services, the Commission on Fire Accreditation has developed a matrix of issues to guide the discussion of when to add fire stations. Research in this area has noted that most communities do not add fire stations until there is a compelling combination of factors that make it effective to do so. These factors as expressed in the table are distance, response time, call for service quantity and types of buildings at risk for fire:

CHOICES	DISTANCE	RESPONSE TIME	PERCENT OF CALLS	BLDG INVENTORY
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 City	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 minutes	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

Source: *CREATING AND EVALUATING STANDARDS OF RESPONSE COVERAGE FOR FIRE DEPARTMENTS©*, 4th Edition, Commission on Fire Accreditation International, Inc.

This matrix can be used by the City to evaluate when to add new 24/7/365 fire stations. No single factor can and should drive an additional crew for an underserved area. It takes 2-4 of the above factors to be unmet before it is cost-effective to add another crew. For example, having a long travel time to a very low density developed area, generating a call for service per week, is not the same as having thousands of people, generating one or more calls per day, with a fire station too far away, combined with the problem that the nearest station is busy backing up another station's dropped workload.

Citygate does not see a need for a 3rd or 4th station to serve the District and City, at the City's build-out population, unless significant development or annexations occur in the northeast planning area. The District will always be too large to serve effectively from two central stations in the Dixon population center, but given the low quantity of improved property that can carry a reasonable tax levy, there will not be enough revenue for stations spread out in the District area.