City of Gilroy, CA

Master Plan of Fire Services

Final Report

August 2000
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EXECUTIVE SUMMARY AND ACTION PLAN

This report presents the results of Citygate Associates’ efforts in developing a Master Plan in conjunction with the City of Gilroy’s Fire Service 20-Year Master Plan Task Force. The City of Gilroy has a past record of using Task Forces and Committees to increase participation in the City’s decision-making processes. The Gilroy Fire Services Master Planning Task Force was appointed in 1999 to continue the tradition of collecting both public and private input into the planning process. These individuals are identified in the acknowledgement section of this document.

A. GILROY FIRE SERVICES MASTER PLAN TASK FORCE

This review was conducted during a series of meetings with the Task Force between October 1999 and July 2000. This Executive Summary describes the overall approach, goals and objectives, and the scope of the study. It concludes with a summary of policy directions aimed at achieving the goals of the study.

The Task Force adopted a mission statement for the development of this report. The proposed mission statement was reviewed and amended as necessary. The mission statement reads as follows:

“The mission of the City of Gilroy’s Fire and Emergency Services Master Planning Task Force is to provide a source of input and expertise to the development of the 20-year Master Plan document for review by stakeholders and policy makers.”

The objectives of the Task Force in this planning process were to: 1) review the basic organizational and performance requirements of the Gilroy Fire Department; 2) identify general goals and objectives for the Master Planning Process; and 3) collect input on fire service policy and programming projections for the next 20 years. These objectives were met through the various Task Force meetings.

B. GOAL OF STUDY

The goal of this study was for Citygate to provide the City with the information needed to best manage resources in the next 20-year planning period. Planning conducted now will increase the City’s ability to maintain or increase levels of service, achieve cost savings, and decrease duplication of effort. In order to achieve project goals, Citygate developed a methodology that would result in findings and recommendations aimed at allocating fire resources in the future. The study included a review of the following key factors:

- The City’s population and development growth trends and patterns;
- The Fire Department’s operational policies and practices;
- Basic fire protection practices and principles; and
- Overall City policy direction as it relates to fire services.
This planning activity included two distinct ways of collecting information. The first was the creation and utilization of the Task Force appointed by the City. This was done to accomplish a high degree of involvement in the community and to assure review of the complex concepts that are part of contemporary fire protection. The second phase consisted of one-on-one interviews with individuals in the community and those in positions of authority in other areas of the City and County to assure an accurate assessment of the whole system.

The discussions with the Task Force and the concluding findings of this project have been set into the overall cities strategic framework. This is so that the City of Gilroy can maximize the utilization of its finite resources to provide a fire service that is responsive, effective and efficient, and will provide timely and appropriate services to the citizens of Gilroy.

C. ORGANIZATION OF THIS REPORT

The Master Plan is organized in four sections. These are as follows:

- **Section I: Overview of the City**
- **Section II: Overview of the Fire Department**
- **Section III: Program and Practices**
- **Section IV: Policy Direction**

The report also contains several appendices that provide information that is relevant and supportive of the process, but is more technical in nature. The sections of the report are described below.

**Section I: Overview of the City**

Section I of this report provides an overview of the City of Gilroy. This section includes the City’s growth patterns over the last 20 years, as well as a description of the projected growth of the City based upon the 2000 Draft General Plan. This section describes a city that has grown slowly, but steadily over the years.

The City that was once centered around an older downtown business district is now growing from that center. There is a general distribution of business and industry that are neither highly technical in building or occupational nature, nor particularly hazardous. Currently, there is a large amount of undeveloped land that is anticipated to be a part of the growth pattern of the City. It is likely this area will be made part of the city within the 20 year planning period.

The City is shaped somewhat like a distorted triangle with a north-to-south axis defined by the 101 freeway (the longest dimension) and an east-to-west axis defined by the City’s own boundaries. The older downtown is located in the geographic center of the City. To the south and the east, the majority of the property is zoned for industrial use. There is a segment of the northeast also zoned for industrial use. Commercial and general services are around the City center. Residential development is to the west, with segments to the northwest and southwest. There is an urban-wildland interface in the western quadrant of the City commonly known as Eagle Ridge, Country Club Estates, and The Forest.
The statistical portion in Section I display a portrait of a City that will not likely change in any significant way over the next 20 years. The population is anticipated to increase, but the corporate boundaries are not expected to change significantly, even considering the contemplated annexations. As a result, the City will become denser from the influx of population. This results in a growth pattern that can best be described as “infill” rather than expansion. There could be an exception to this though because the City’s General Plan is currently being updated and has yet to be adopted. If the assumptions made within this plan are linked to projections that change, then the specific factors being evaluated may have to be recalculated. Changes in risk inventory or city boundaries may result in a need to make changes to the assessments done during this planning period.

Section II: Overview of the Gilroy Fire Department

In Section II, Overview of the Fire Department, we depict the Gilroy Fire Department as an “all-hazards” or “all-risk oriented fire protection agency that currently delivers fire prevention, fire education, fire suppression, and basic emergency medical services.

The City of Gilroy has an Insurance Services Office (ISO) Class of 4 and the Fire Department has an overall Class of 6. The City is currently scheduled by the ISO for a visit sometime within the next 24 months. Some of the issues identified in this Master Plan could have an impact upon that grading. The reason is that the ISO only conducts gradings for cities in this population range once every 15 years. If the grading were conducted within the next 24 months, this would conceivably be the only opportunity for the City to gain credit for any improvements. However, an ISO of 4 is not a bad rating. For the majority of homeowners and those in industrial and commercial occupancies that are sprinklered, moving to a higher ranking will have little effect on their insurance rates. Conversely, older, un-sprinklered risks would benefit from a grading improvement.

The Department operates two fire stations with a total staff of 21 fire suppression personnel, 3 chief officers, 2.5 civilian personnel and 12 paid-call firefighters. The fulltime complement is staffed to the table of organization. The number of paid-call firefighters is not up to authorized levels. The current cost of fire protection is $67 per capita and has a level of effort of .61 firefighters per one thousand in population. According to the California Fire Census (1994), the average for a city of this population class is about $90 per capita. The International City/County Management Association finds the average staffing at the national level to be 1.0 firefighters per thousand. Within California the level is estimated to be .92 per thousand population. The Department currently responds to 2,218 emergencies per year, with emergency medical aid calls making up the majority of calls for service. The Department’s growth in calls for service from 1985 to 1999 has tripled.

Goals have been established to manage the Department and in many cases the goals are utilized as a performance standard. The most important of these is the response time performance goal. This goal is for the Fire Department to arrive at the scene of 95% of the calls for service within 5 minutes of the time of dispatch. The Task Force spent considerable time in analyzing and evaluating this definition of response time (see Section II, Fire Department Overview). Section II provides a comprehensive description of the concepts used in defining response times, as well as an overview of critical task analysis and a review of fire station locations.
The City conducted a staffing review in 1993, and this document was reviewed again in this process. Fire station locations were evaluated at three different levels. They were the baseline of what Gilroy provides now, but did not include automatic aid. The second level was what is being provided now, including automatic aid. The third level was a combination of scenarios that could develop as the City grows and as the Department evolves over time.

The findings of Section II are as follows (refers to Section II maps):

1. Currently, the two Gilroy fire stations, by themselves, provide a response to the concentrated values (i.e. downtown district, commercial occupancies) in the City that is within the stated goal.

2. Currently, the two Gilroy fire stations, by themselves, have “response zones” that cannot be served within the stated goal.

3. The deployment patterns using the automatic aid companies are an effective way to reach some of the zones, but not all of them.

4. The current deployment pattern, utilizing the automatic aid companies, is subject to future changes that are not under the control of the City.

5. Additional fire stations will be required to provide response time coverage to areas that will be developed under the General Plan.

The Task Force reviewed these findings and developed a set of criteria that was incorporated into this document. The criteria for future fire station locations should be as follows:

- To provide service to areas that cannot be reached with existing stations.
- To reach areas that have a measurable quantity of property or life at risk.
- To reach areas where there is a workload that becomes statistically significant.
- To improve stations’ cost-effectiveness.
- To improve the overall concentration of resources.

Section III: Program and Practices

Section III of this report looks at the actual program activity and preparation elements of the Department. This section of the report looks at everything from overall administration to specific activities like fire prevention, training and public education. There are three distinct elements in this section that should be noted.

The first is that the Department has modified the traditional method of organizing fire prevention by placing the Fire Prevention Bureau within the Building, Life and Environmental Safety Division of the Community Development Department. The positioning of the Bureau in this manner is designed to provide better coordination of plan checking and code enforcement. A review of the documentation and effectiveness of this program indicates that the City has done
an excellent job of incorporating modern fire prevention techniques into the construction and development process.

The second observation is that Emergency Medical Services (EMS) are becoming a significant part of the Department’s program activity, which has an impact upon workload, training, professional development and customer expectations. Moreover, the fact that Gilroy is the only city in Santa Clara County that does not provide First Response Paramedic service creates a service equity issue.

The third is that the Department’s ability to train and maintain fire-fighting skills is impacted by the lack of adequate training facilities. This is especially true since Gilroy is an environment where actual fires are decreasing, but where the potential for fires remain and where older structures possess high potential for a major fire event. The Fire Department must address skill degradation with the lack of “practice” fires. Gilroy needs to evaluate how it can achieve a minimal training capability within the context of existing or future fire station locations.

Section IV: Policy Direction

Section IV of this report is the aggregation of the findings from all three previous sections. These findings are incorporated into recommendation statements. These recommendations are summarized below.

D. OVERVIEW OF KEY FINDINGS AND RECOMMENDATIONS

After collecting information on the current and anticipated needs of the Fire Department, the findings were placed into the framework of issue statements. The Department has clearly done an excellent job of providing services to the community. There is high public support for the Department and customer satisfaction is very high.

Risk Assessment Inventory

Finding #1
The Department does not have a system for quantifying risk, hazard, or values for planning purposes. The Fire Department has a pre-fire planning program. The current program is essentially a “diagramming program” for target hazards, but it does not result in information that can be quantified and aggregated to display the City’s risk management profile.

While the Fire Department has fire prevention records and a pre-fire planning program, neither system quantifies the actual risks in the community. There are existing systems that can be utilized to measure, inventory, and display the community’s risk assessment in graphic ways. As the City grows into its projected population and occupancy make-up, a more adequate method of mapping and analyzing values at risk would help in maintaining the appropriate mitigation and response policies for the City.
Mapping Environment

Finding #2
The City of Gilroy has already adopted a mapping environment and is utilizing it. The Department, however, is not utilizing the mapping environment for analyzing or displaying the fire problem for analytical purposes.

Fire Station Analysis: Distribution and Concentration

Finding #3
Using the FLAME Model, Citygate has identified deficiencies in current station coverage and determined that projected growth will cause the problem to grow more severe. FLAME scenarios indicate the following: to achieve the response time goal of reaching 95% of the calls for service within five minutes, two additional stations will be required over the life of this plan. Fire station location studies based upon projected growth and anticipated road network, project a minimum of four fire stations in the planning period.

NOTE: The Gilroy Fire Department has developed the ability to make FLAME studies of the road network as it is developed in the future. The criterion for these studies is found on Page II-36 of this study.

The Gilroy Fire Department currently has two fire stations and is in an automatic aid agreement with the South Santa Clara County Fire District. This provides the first alarm assignment response for the current service demand area. There are currently gaps in the system that are reflected on the response maps, primarily in the northwest and southwest quadrants of the City. There is at least one decision in the future that could impact upon this current arrangement. This would be the re-location of the SSCCFD fire station in the Hecker Pass area. If that were to occur, it would increase SSCCFD’s response times and reduce their assistance in responding to the west side of the City and possibly even further. To preserve the Department’s ability to meet current response time goals, planning and funding for additional fire station construction will be needed immediately. Additional fire stations will be needed over the term of this plan.

The process used to evaluate fire station locations is called FLAME. This stands for Fire Station Location and Mapping Environment. It is a computer software program produced by Bode Research Group. The Fire Department has its own copy of FLAME. During this process, City staff was conferred with regarding the road network, but was not used to run any of the base scenarios used in the text of this report. As the group progressed with the project a subcommittee of the Task Force began to develop the City's ability to use FLAME to develop potential fire station location scenarios. These will be available as a supporting document to this report.

Current fire station locations meet the response time goal for the majority of the current City. As one would expect, as growth continues, the stations will become less and less effective in that performance area. The City upon adoption of two alternative strategies could modify this number. The first is the enter into an enhanced agreement with the South Santa Clara County Fire District for the construction and use of a combined fire station. The second is to consider a
relocation of Fire Station Number 2 and an enhanced automatic aid agreement. Lastly, additional stations may be required to meet the response time goals.

The Gilroy Fire Department has a fire experience level that results in a very low per capita fire loss figure. Over the next 20 years, the open space will be converted to developments that will likely increase the service demand level. Further, the areas that are in the elevated portions of the town will likely continue to evolve as sites for future urban-wildland fire scenarios. The Department needs to develop a system that documents, displays and utilizes these growth patterns into a systematic risk inventory that can be used in future decision making processes.

**Staffing**

The issue of staffing is one of the most difficult areas of managing fire departments. Because the service is being provided on a 24 hour a day basis, every new position that is created creates a need for multiple persons to fulfill that job. Furthermore, the staffing levels in fire agencies are impacted by at least two different federal laws that impose constraints on how staffing is to be treated. The first is the Fair Labor Standards Act (FLSA). The second is the Federal Occupational Safety and Health Administration (OSHA).

**Finding #4**

The current staffing level is three persons per company with seven persons assigned to each shift. This provides a level of effort of 6 persons on duty for each shift. The initial attack force must be reinforced by automatic aid companies to fulfill the staffing needs for an initial attack force for interior fire-fighting. The Gilroy current staffing level, absent the automatic aid companies, cannot handle more than a simple room and content fire.

The current staffing level is three people per company. This plan assumes the continuation of that staffing pattern for existing and future fire companies. However, this plan does advocate a periodic assessment of staffing levels as part of a cycle of performance review. Therefore, during the 20 year planning period staffing levels may vary. Over the time period of this plan, staffing increases should be contemplated based upon two incremental decisions. The building of additional fire stations and the loss of automatic aid coverage or the increased demand for additional levels of service adopted to meet specific needs. Further, the requirements to comply with interpretations associated with the OSHA "Two-in/Two-out" may impact staffing levels.

**Finding #5**

The span of control in the Department at this time is appropriate.

This does not mean that it will stay that way. Span of control has to do with the relationship between supervisor and supervised personnel. As the department adds additional stations, and workload increases changes may be needed to add Shift supervision (i.e. Battalion Chiefs).

**Level of Service**

The current level of service being provided by the Gilroy Fire Department is slightly lower than the state and national benchmarks for a Fire Department. The current “on-duty” strength of the
Gilroy Fire Department is 6 personnel. This provides the ability (along with automatic aid) to deliver an initial attack force equal to about 500 to 1,000 gpm by handline application for essentially defensive operations only. This is the same service level the Department has utilized for some period of time. However, these factors should not be considered a criticism. The Department has both a very good fire record and a high level of customer satisfaction.

Finding #6:
The current staffing level of 3 persons per company and two engine companies, provides a level of service limited to initial attack for a fire scenario of less than 500 GPM (single family dwelling) and a single patient emergency medical aid call.

The current level of service is to provide initial attack fire for the routine or typical fire problem in the community and provide Basic Life Support, with enhanced EMT skills, in the field of emergency medical services. The community has fire risks that are in excess of this capacity, but they are not clearly identified, as noted in the risk assessment issue statement.

Finding #7
The current level of service provided by the Fire Department is Basic Life Support, with enhanced EMT skills. Gilroy has considered the implementation of paramedic services. However, the ballot initiative to provide this service did not pass. Gilroy is the only agency that has not entered the paramedic program in the Santa Clara County. This creates a lower level of service in the City of Gilroy. Gilroy is still operating under County Health Standards at the BLS level.

The surrounding communities and the county area have already enhanced the service level of emergency medical services. Service demand in fires is fairly static, but calls for EMS are on the increase. It is anticipated that over the time frame of this plan, fires will continue to remain contained as a result of both effective code enforcement and improved built-in fire protection devices. As Gilroy's population increases and changes in demographics, EMS is likely to become a higher priority.

The potential for improvement of services seems to be more that of type of services, rather than the amount of services. For example, the City of Gilroy has a goal of providing services that are consistent with the county (regional) plans in the Emergency Medical Services area. Currently, the automatic aid companies responding into the City are paramedic units. The standard of care in the county seems to be moving towards Advanced Life Support as a basic service of fire agencies. The decision to expand or respond to this service level enhancement seems to be an issue that should be reviewed at least annually.

Finding #8
The current inventory of the physical assets of the department and a review of neighboring fire agencies indicate that there are no adequate local training facilities available to the Department.
A small training facility is provided at headquarters, but it is not adequate to meet the needs of the current department, much less the department of 20 years from now.

Finding #9
The Master Plan Task Force recognized that the total response time of the Department is impacted by the alarm processing time in dispatch and the time element involved for the dispatcher to process a call is part of the overall system. The Department does not currently have any data available to determine a benchmark for performance.

Finding #10
The fire prevention activity of the Department is comprehensive and effective in obtaining code compliance. The workload of the relevant division is impacted by growth rates and by maintenance of effort after occupancy is granted. The Department is utilizing fire operations personnel to assist in maintenance of fire and life safety conditions successfully.

Finding #11
The Fire Department already has an active and effective public education program. It is staffed by a part time position.

Finding #12
The Department will experience an exodus of knowledge and experience over the next 10 years that will require replacement of individuals and reinforcement through training to maintain skill levels in the Department.

Finding #13
The Fire Department grading is due to for re-evaluation by the Insurance Service Office. The City is currently a Class 4. The Department is a Class 6. There are limited benefits from seeking a higher rating however there are some negative impacts if the City receives a lower rating. Improvements in staffing and record keeping will result in the most cost effective reduction in the departments scoring.

The department has participated in recent training events with the ISO to be better prepared to respond to this visitation. Further, completion of some of the recommendations contained in this report will be of assistance in meeting these needs.

Finding #14:
The Department’s current fire apparatus & equipment maintenance and replacement schedule is a well-managed system.

Management Information Systems

Finding #15
The Fire Department does not have a comprehensive management information system that can be utilized to perform analysis of Fire Department activities in a timely fashion.

The Fire Department maintains a records management system that is partially manual and partially automated. Efforts have already been expended to reduce the amount of manual record keeping. However, the current system is not comprehensive, nor is it integrated, i.e. the systems don’t support each other and are not used in the decision making process. The Department needs a comprehensive management information system that reduces the time it takes to perform analysis on the data.

In the future, the Department will have an increasing need to have information to analyze the services and activities of the Department. While fire agencies are very good at collecting records and reports, they often do not make the transition to analyzing the data. The Gilroy Fire Department has a comprehensive records and reports system that is almost totally manual and has limited ability to provide answers to inquiries. For example, the current system cannot plot the response locations in any mapping environment without it being done manually. The processes and methodology of adding software and hardware to any organization structure is complex. What is important is that the Department needs to invest in equipment and programs that will allow it to analyze, not just collect data.

**Periodic Assessment of Performance**

Public safety is generally one of the largest users of the General Fund. Therefore, periodic assessment of the use of funds to support public safety programs should be a top priority of policy makers. The facts identified in the assessment of this Department demonstrate that the Department has a track record of fiscal management that is both prudent and within benchmark parameters for agencies in the population range of Gilroy.

**Finding #16**

The Gilroy Fire Department has provided evidence of both setting goals and evaluating their completion. The current processes clearly produce goals and objectives that can be evaluated.

Periodic assessment of the Department’s goals and objectives, in relation to its cost and productivity, are very important to the future decisions that will be needed to keep this Department both efficient and effective. Periodic assessment is not just an evaluation of the budget. This issue entails a regular scrutiny of outcomes from the Department’s activity. The mechanism for periodic review is at two levels: the monthly and annual reports of the Department. Performance measures have been suggested in the document that should be considered when setting up the output reports from the Department.

Considering that all fire agencies face periodic anomalies such as large loss fires as a result of unusual conditions, fire loss by itself is not a good indicator of Fire Department performance. The Department needs to develop a self-assessing mechanism that provides for short-term operational changes and long-term policy changes. The Department has a record of conducting
periodic reviews and the current budget process offers opportunities to advocate longer-term changes.

**Policy Direction**

Section IV, Policy Direction, provides an overview of the rationale for the recommendations being forwarded and suggests a cycle of periodic assessment review of the Department’s performance.

**E. Action Plan**

The Action Plan is the section of the document designed to identify decision points that need to be acted upon. It sets some targets and criteria that need to be pursued if the Department’s capacity to perform is to be fulfilled by the end of this planning period. The Action Plan is designed to implement change and to keep the growth of the Department parallel to growth in the community. It is recognized that not every recommendation will be achieved. And, because of that, every desired outcome may not occur. What is important about these recommendations is that they be considered. Section IV, Policy and Programs, suggests that an annual review be conducted of this plan to determine if any of the triggering mechanisms occur. The plan also recommends that a review of the document be conducted every five years to determine if there are changes in the City that demands a new direction.

This section of the plan provides a road map as to HOW changes should be developed and implemented. It does not suggest that there are any specific dates WHEN these changes should be made, except by the definition of the triggering criteria.

The plan contains:

1) A Recommendation Number.
2) A Priority number
3) The Suggested Course of Action.
4) The Projected Time Frame.
5) The responsible party for implementation.
<table>
<thead>
<tr>
<th>Finding Number</th>
<th>Priority</th>
<th>Recommendation</th>
<th>Time Frame</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>Continue development of plan of operation to maintain role of Gilroy Fire Department in the countywide emergency medical service plan. This is to assure that the citizens of Gilroy are assured a comparable level of service within the context of the Santa Clara County Emergency Medical System (EMS). Prepare to expand staff input through Medical Director.</td>
<td>Ongoing</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Develop a more comprehensive risk inventory information system. This is an expansion of the pre-fire emergency planning system and is based upon the occupancy records for the community</td>
<td>Within 2 years</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>3</td>
<td>3a</td>
<td>Acquire Site Locations for future fire stations based upon the criteria of response time thresholds and service demand increase. This is to provide for construction and deployment of stations to minimize areas with minimum service.</td>
<td>Start Immediately Complete within 2 years</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>3</td>
<td>3b</td>
<td>F. D. staff should run FLAME analysis whenever any major change in traffic pattern or land development occur.</td>
<td>As required</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>3</td>
<td>3c</td>
<td>Evaluate option for establishing a joint fire station with South Santa Clara County Fire Department.</td>
<td>Discretionary</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>15</td>
<td>4</td>
<td>Develop a comprehensive management information system to produce more comprehensive performance data. This is to assure accuracy in developing management information for incremental decisions over the time frame of the plan. This would include, but not be limited to software that provides aggregate analysis of response records. Included in this area would be expanded use of GIS to analyze display data.</td>
<td>Start Immediately, finish within 5 years</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>Finding Number</td>
<td>Priority</td>
<td>Recommendation</td>
<td>Time Frame</td>
<td>Responsible Party</td>
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</tr>
<tr>
<td>12</td>
<td>5</td>
<td>Develop a career development guide that provides entry-level personnel with general direction for acquisition of knowledge, experience, skill and abilities to assure preparation for higher levels of responsibility.</td>
<td>Next 24 months</td>
<td>Departmental Training Officer</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>Review entry-level requirements of knowledge, skills and abilities needed for personnel entering EMS field.</td>
<td>Next 24 months</td>
<td>Human Resources</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>Develop plans and specifications for a local fire training facility. This is in order to develop and maintain fire fighting, rescue, EMS and other skills over the time frame of the Master Plan.</td>
<td>Within 4 years</td>
<td>Training Officer</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>Incorporate fire services performance criteria into future developments of the City’s Computer Assisted Dispatch in order to capture better performance data, on response time and workload activity. This is to assure accuracy in evaluating performance measures.</td>
<td>Immediately</td>
<td>Police Chief</td>
</tr>
<tr>
<td>10</td>
<td>9a</td>
<td>Maintain and enhance program activity in code enforcement and plan checking to sustain the role of pro-active fire protection systems on the community fire problem. Set a performance criterion that results in future development not exceeding 3500 GPM fireflow requirement.</td>
<td>Ongoing</td>
<td>Fire Marshal</td>
</tr>
<tr>
<td>10</td>
<td>9b</td>
<td>Increase Fire Department participation in planning process for traffic circulation.</td>
<td>Ongoing</td>
<td>Fire Marshal</td>
</tr>
<tr>
<td>Finding Number</td>
<td>Priority</td>
<td>Recommendation</td>
<td>Time Frame</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
<td>----------------</td>
<td>--------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>10</td>
<td>Maintain and expand the role of public education by integrating emergency medical information into the deliverables. Also, conduct a baseline community awareness survey once every four years to determine depth of public awareness on pertinent issues in order to target activities and programs more accurately.</td>
<td>Next 12 months</td>
<td>Fire Chief &amp; Public Education Specialist</td>
</tr>
<tr>
<td>16</td>
<td>11</td>
<td>Conduct an annual review of all program goals, and specific goals and objectives for each program element. This review should include a review of the city baseline and benchmark performance measures for fire protection services. This is to make an assessment of the changes the department experiences over time.</td>
<td>Annually</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>13</td>
<td>12</td>
<td>Institute internal team to prepare for next visit of the Insurance Services Office grading team to obtain maximum benefit from actions taken by the Department since the last grading. Develop plan of communication and interface with ISO to assure maximum credit for action taken by department since last grading.</td>
<td>Next 12 months</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>Develop enhanced utilization of City’s Geographic Information System (GIS) through use of fire related programs such as Fire View, Consequences Assessment Tools System (CATS) and other software applications to improve planning efforts. This directive should also include expanded use of Flame in incident analysis and response time studies.</td>
<td>Next 24 months</td>
<td>Mapping Coordinator</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Maintain and review the Apparatus Replacement Schedule every budget cycle to prevent apparatus replacement cycles from unnecessarily overlapping. Evaluate cost benefits of converting one engine to a “quint” to obtain ladder services credit.</td>
<td>Every budget cycle</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>Finding Number</td>
<td>Priority</td>
<td>Recommendation</td>
<td>Time Frame</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>----------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Incorporate performance measures from appendix to add to monthly reporting data elements. Emphasis should be on establishing outcome measures.</td>
<td>Within 6 months</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>Conduct review of City’s demographic and physical changes, reviewing Fire Department programs and resources every 5 years to monitor progress of Master Plan.</td>
<td>5, 10, 15 year cycles</td>
<td>Fire Chief</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
<td>Review workload, sphere of control and command issues as fire stations increase over time. Re-evaluate role of chief officers in areas of accountability and responsiveness.</td>
<td>As Required</td>
<td>Human Resources</td>
</tr>
</tbody>
</table>
INTRODUCTION

A. OBJECTIVES OF THE STUDY

Citygate was retained by the City of Gilroy to develop a Master Plan for fire and emergency services. The goal of the study was to provide an objective and systematic examination of the Department’s policies, practices, and activities in the context of the City’s current population and jurisdictional area. Moreover, the intent of this process was to provide information by an independent source for the development of policy direction for the Department’s growth and response to the need for service levels in the future.

The Fire Services Master Planning is part of a series of department plans that are consistent with the City’s General Plan. The City has completed a Parks and Recreation Master Plan and a Police Facility Master Plan.

This report has been designed to provide the necessary information for development of policy guidelines. It is intended for use by management to adopt, support, evaluate, and/or modify actions needed to assure that the Gilroy Fire Department service is adequate to meet the needs of the community through the tenure of the plan.

B. SCOPE OF THE STUDY

The process of defining the project’s specific scope and objectives consisted of an initial meeting with the City’s Project Team. A dialogue between Citygate and the City’s Project Team resulted in a calendar of events and criteria for development of the Task Force meetings.

The scope of this Master Planning study was to address questions related to the mission, goals and objectives, community risks, demand for service, organization and staffing, deployment and concentration of resources, levels of service, and standards for response coverage for the next 20 years.

This project differs from a management audit. It focuses on future performance rather than current conditions. Citygate, in conducting the engagement, attempted to determine if the Fire Department is being managed and operated to maximize its performance. Also, Citygate evaluated the Department’s future potential for efficient, effective, responsive, and timely service. The emphasis was on developing a framework for decision making that will occur in the future.

C. STUDY METHODOLOGY

The Citygate Consulting teams includes the following personnel: David DeRoos, Project Director and President of Citygate Associates, Ron Coleman, Project Manager/Facilitator and Senior Consultant for Fire Services, Larry Greene, Consultant for Emergency Medical Services, Stefanie Y. Clifton, Staff Consultant. The group initiated the study on September 27th, 1999.
Master Planning in General

Master Planning consists of the following steps:
- Reviewing existing conditions;
- Formulating and developing options and alternatives to control or contain the community’s risk; and
- Formulating and implementing decisions about the community’s future condition.

The purpose of a Master Plan is to serve as a single source of results from a variety of planning and administrative processes. The basic elements of a Master Plan include the following:
1) A description of the general direction of the Department, as reflected in the Mission Statement;
2) A description of current and projected risks and hazards in the community;
3) A series of “blueprints” for action that may be part of the budgetary process; and
4) A description of how the City should be monitoring progress to assure that the system is achieving both efficiency and effectiveness in its assignment.

The Master Plan will serve the governing body with an analysis of current conditions, but will focus on a longer planning period consistent with the community’s needs. This plan will address at least three increments: current conditions, 5-10 year forecasts, and a 20-year projection.

Studying a fire department requires assessing the many facets of activities and the impacts on the community. Among the difficulties that are often experienced in evaluating a fire department is its technical nature and its vocabulary. Therefore, the consulting team has established and utilized a simple framework for this plan that is described below. We have also developed a glossary of terms in the Appendix D. Readers of the plan are encouraged to review the glossary whenever a word, phrase, or concept is unfamiliar.

The Model that Citygate utilized for the development of this plan has the following elements:

1) The Existing Gilroy Fire Department.
2) Risk Assessment.
3) Goal Identification.
4) Response Capability.
5) Response Reliability.
6) Historical Performance.
7) Program Activity.
8) Needed Changes.
9) Evaluation.
10) Performance Standards.
11) Policy Choices.
12) Budget Formulation and Adoption.

This model is illustrated on the following chart.
The manner in which this model works is fairly simple and is listed below in the following series:

- The process consists of looking at where the Department is today and identifying what is at risk. This information is used to develop goals to protect what is at risk.
- The goals above are used to analyze whether the Department is deployed correctly and can assemble resources quickly to handle emergencies.
- Programs are then reviewed to determine if the types of services being provided are appropriate and consistent with the City’s needs.
- Then, the Department’s historical performance is reviewed to determine the level of activity. These items often suggest changes within the Fire Chief’s delegated authority and do not require Council action. If the Chief makes changes, they can be adopted without seeking additional approvals. However, the box on the model labeled “Evaluation” is for longer range planning purposes. The evaluation process is based upon comparing the Department’s overall capability to regional and statewide baselines for operations. During this evaluation process the Department should first look at its own performance standards to evaluate the consequences of its level of activity. Examples of performance standards include response time or level of inspection activity. If the second assessment requires funding or requires more definite policy choices the Department must obtain authority or
resources. These policy options often require budgetary consideration. These processes then define policy directions that must be evaluated over time to achieve a targeted modification in the Department. The process is iterative in that these changes result in a “new” Department that continues the process ad infinitum.

The period that this Master Plan is in effect is from 1999 to the year 2020. Emphasis in this Master Plan is placed on review of baseline information and on practical benchmarks for levels of service that are in line with the risk that the City of Gilroy is willing to accept (as expressed through its elected City officials). The Master Plan is based upon the assumption that all staffing and resource decisions in the future will be made incrementally, but that the capacity of the Department will be directed towards an overall condition of balancing risks with resources.

The policy recommendations are based upon the contingency that resources will be made available during budget cycles that will occur over the same time period. The process of planning for such an extended period of time (20 years) places emphasis on each year’s budget process. Measurable performance objectives should be established for each goal statement in the Master Plan to provide for the actions needed to make this document a viable part of the planning process.

It is important to note that while building service levels around the Fire Department’s mission statement is appropriate, this process also includes coordination with the City’s overall mission statement and other department mission statements. This explains why there are frequent references in this study linking findings back to the City’s General Plan. Also, because of the Department’s relationship with the Community Development Department and the Police Department, some of the Department’s success or failure in providing its level of service is based upon the actions of others. Other department efforts need to be closely coordinated and evaluated.

**Gilroy Fire Services Master Plan Process**

In accordance with the project schedule, a meeting was conducted with the members of the Task Force that had been appointed to discuss the mission and activities of the Task Force as related to this project. A list of these members is provided in the Acknowledgements of this report. An overview of the master planning process was given to the Task Force by Citygate staff to provide a framework for discussion. A review of the mission statement provided by City staff was offered for review. The project schedule and the project’s work plan were also reviewed, as well as a task list and task force guideline. A telephone and e-mail contact list was created to aid in communications.

The Task Force adopted a mission statement for the Task Force in the development of this report. The proposed mission statement was reviewed and amendments were made. The mission statement was revised to read:

“The mission of the City of Gilroy’s Fire and Emergency Services Master Planning Task Force is to provide a source of input and expertise to the development of the 20-year Master Plan document for review by stakeholders and policy makers.”
The Task Force was given information from the U.S. Fire Administration’s manual on Master Planning. Citygate provided additional reading materials for the Task Force and City Project Team for support of these concepts over the entire series of meetings. The group reviewed a six step process and discussed necessary revisions to the work schedule. Another work session was held in the City Council chambers to allow for other parties to review the projected plan of operation. In total, there was a series of meetings to involve the Task Force in the process and to assist them in their understanding of fire service related concepts and principles.

In conducting our analysis to address the study objectives described in the scope stated above, Citygate Associates developed an approach that would facilitate the effective gathering of the necessary information in the most expeditious manner possible. We examined the manner and method of achieving the project’s overall scope and objectives by using the following methods:

• Meeting, interviewing and working interactively with the City’s Project Team, the City’s Master Planning Task Force, the Fire Department, and those other entities and key officials who possessed information relative to the process.

• Reviewing all key documentation generated by both the City and the Fire Department that relates to fire service operations. This included reviewing previously adopted Master Plans of law enforcement, parks and recreation, and the City in general (General Plan).

• Conducting a series of meetings with members of the Task Force to test some basic assumptions and the accuracy of gathered information. This meeting process also served to validate some of the more important goals and objectives to be included in the report.

Citygate recognizes that each and every fire agency has to determine its policies and procedures based upon local conditions. However, Citygate also recognizes the requirement that fire agencies are mandated to adhere to specific federal and state regulations. Furthermore, Citygate recognizes that the fire profession is one that has adopted a wide variety of technical standards and recognized professional standards that are consistent from one agency to another. For example, a community has to address the Cal-OSHA requirements for compliance with protective clothing and fire attack practices. However, the manner in which the agency complies varies from community to community. In another instance, all cities must enforce the provisions of local and state fire codes. The manner in which they conduct that enforcement varies according to a wide variety of variables.

Citygate has relied upon a wide variety of information sources to prepare this plan. These sources include:

• The Fire Department’s adopted policies, practices and techniques.
• County and State legislative and regulatory provisions that impact operations.
• The International City/County Management Associations (ICMA) Performance Consortium publications as they relate to performance measures.
• Gilroy’s Insurance Services Office report.
• The ICMA publication Managing Fire Services
• The Commission on Fire Accreditation, International (CFAI).
II. OVERVIEW OF THE FIRE DEPARTMENT

A. DESCRIPTION OF THE GILROY FIRE DEPARTMENT

The Gilroy Fire Department is an “all-risk” agency that responds to fires, emergency medical aids, and other related emergencies such as public assists, water removal, and hazardous conditions. In terms of population, the City was ranked 180th out of the 400 municipalities in the state by the State Department of Finance on January 1, 1998. The City’s current population of 39,070 places the City within the population category between 24,999 to 50,000 in the California Fire Census. There are approximately 65 cities, out of the 960 departments in the state, that fall into this population category.

Departmental Mission

The goals, objectives and activities of any fire department are linked directly to the mission that has been assigned to the agency. The fundamental purpose behind having a mission statement is to provide a definition of the core competencies that an organization brings to protect the residents of a community.

The City of Gilroy’s Fire Department has a current mission statement of:

“The Gilroy Fire Department is dedicated to providing professional services for the citizens of Gilroy.

We are committed to protecting life and the preservation of property through fire prevention and emergency response. We will meet the changing needs of the community through education, innovation and technology.”

Furthermore, all City of Gilroy’s employees have adopted a Mission Statement that reinforces the spirit and intent of the City organization as a whole. This statement serves as additional support for the actions and behaviors of the personnel within the Gilroy Fire Department. It reads as follows:

“We are committed to providing highly effective public services in a professional, cooperative and adaptable manner. We will be proactive, informative and responsive government through communications and actions that welcome participation from all segments of our community. We are committed to excellence through respectful, responsive and responsible customer service. We will carry out our responsibilities in a manner that enhances the quality of life in Gilroy.”
B. OVERARCHING PROJECT GOALS

The Fire Protection Master Plan Committee met and discussed the need for a set of overarching goals to provide direction for the Master Planning process. The goal statements below were adopted by this group.

To provide a quality fire protection system for the City of Gilroy that:

Effectively utilizes resources to maintain a safe environment to protect life and property based upon contemporary standards;

Provides the community with an array of services that educates citizens and businesses on preventative measures, code enforcement, and personal and environmental safety in a community oriented partnership;

Subscribes to the principles of engineering, education, enforcement and extinguishment to mitigate against existing and emerging fire problems;

Develops and maintain a medical response consistent with the City’s regional plan for Emergency Medical Services; and

Meet the needs of the changing population, demographics, and economics through a periodic assessment of the Fire Department.

In order to develop a rationale or prescription for fire protection that achieves the goals of the Fire Department, there should be an acceptance that there are two fundamental premises in fire protection. Fires should be prevented when possible and controlled when they occur. This statement refers to two separate activities.

Prevention activity is cost effective because it helps to prevent significant fires, but is not capable of guaranteeing that a fire will not occur. “Users” of fire departments’ emergency services are usually interested in effectiveness -- did the fire department respond in a timely manner and in the appropriate configuration to deal with my emergency? While fire prevention policy will be addressed in this section, the proper placement and staffing of fire stations is a more fundamental consideration. The following is an explanation of why fire stations are placed in certain locations to deal with the element of time during an event.

C. ORGANIZATION OF THE DEPARTMENT

Fire Stations

The Department consists of two fire stations. One station, headquarters, is located at 7070 Chestnut Street. This station was built in 1972 and has been remodeled to accommodate gender considerations and to provide improved staff facilities. The Las Animas Station is located at 8383 Wren Avenue. This station was built in 1977 and for the most part has not been modified.
**Department Divisions**

The Department is broken down into three divisional areas:
- Administration;
- Training and Education; and
- Fire Operations.

The City has adopted an innovative organizational structure with respect to its Fire Prevention Bureau. The Bureau is situated in the Division of Building, Life, and Environmental Safety in the Community Development Department at City Hall. While this structure is non-traditional, it has the appropriate link back to the Fire Chief for use of both mandatory and discretionary code enforcement authorities.

An Organization Chart can be found on the next page as **Figure II-1**.

**Staffing Configuration**

The Department currently has 24 uniformed personnel, 2.5 civilian personnel, and 12 authorized paid-call (reserve) firefighters.

Administration consists of a Fire Chief, an Assistant Chief, and a Secretary. The Training and Education Division is staffed by a Division Chief and a Public Education Specialist. The Fire Operations Division has 21 firefighters that work a three platoon, 56 hour shift schedule.

**Chestnut Fire Station**

The Chestnut Fire Station is staffed on a 24-hour daily basis by a company that consists of 1 Fire Captain, 1 Engineer and 1 Firefighter. One company staffs the station every day. The primary apparatus for response from this station is a 1999 High-Tech engine. It is a 1500 gpm, Type I engine company. This station also houses various reserve apparatus including a 1982 Van Pelt Quint with a 55 foot aerial ladder and a 1985 West Mark 4-Wheel Drive Type IV vehicle (due to be retired in near future).

**Las Animas Fire Station**

The Las Animas Fire Station is staffed similarly to the Chestnut Station with one company of three personnel in a similar configuration. The primary apparatus from this station is a 1987 Pierce, 1500 gpm Type I, engine company. Also housed at this station is a 1999 4-Wheel Drive Type III Westmark and a 1982 Pierce, 1500 gpm Type I, engine company, for use as a reserve company.

With Gilroy’s two stations, there are two engine companies scheduled on duty each day. This places six persons on duty at all times throughout each day. Gilroy has assigned seven personnel on each shift. According to Department policy, six persons must be always on duty. This is called constant staffing. When a person is absent for any reason, the position is first filled by a seventh person on an assigned shift. When any other positions are required to be filled, another
FIGURE II-1

ORGANIZATION CHART

Fire Chief

Assistant Fire Chief

Operations
- 6 Captains
- 6 Fire Engineers
- 9 Firefighters
- 12 Paid Call Firefighters

Training/Support Services
- 1 Division Chief
- .75 Fire Education Specialist

Fire Prevention
- 1 Deputy Fire Marshall

Fire Marshal

Secretary

Chemical Control Division
- 3 Chemical Control Specialists
employee is “recalled” and placed on overtime. Reasons for absenteeism include leave times for sickness, vacation, and training. The Department’s overtime budget reflects the use of both mandatory and discretionary overtime.

**Paid-call (Reserve) Firefighters**

The paid-call firefighters are only utilized when needed or in fire terms “recalled.” A paid-call firefighter by definition is a part time person that receives training in basic fire fighting skills to fill in for the fulltime force when they are completely engaged or need extra support. A paid-call firefighter can be used to staff reserve apparatus such as engines, wildland trucks or other equipment. The current paid-call system has been in place for some time. Recent review by the Department was conducted to evaluate the future use of the staffing strategy. The Department is authorized 12 positions, yet fewer than 12 are officially appointed. This review evaluated recruiting, training and recall protocols; however, the findings of this review are not available because the Department does not have records that could answer two crucial questions: 1) How often was reserves and/or fulltime personnel recalled?; and 2) When a recall occurred, how many personnel responded? Both of these questions should be addressed within the management information system.

**Management Staff**

The Fire Chief has the responsibility to manage the resources that are used to protect the community. However, since fires and other emergencies strike 24 hours a day, 365 days a year, this cannot be done in normal business hours. Therefore, other management personnel are also assigned responsibility to manage day-to-day activities. Some of these personnel are required to be available Monday through Friday. These positions are usually called “Staff” because they are assigned to assist the Fire Chief in staffing out specific day-to-day activities such as fire prevention and training. The larger fire agencies often have many staff positions. Smaller agencies such as Gilroy usually only have a few.

Since there are no chief officers on shift duty in the Gilroy Fire Department, the chief officers rotate the responsibilities of the duty chief. The result is that the chief officers must remain in communication with the communications center through phones, pagers and radios so that they can respond when a structural fire or other serious incident occurs. When a person is performing as duty chief, he or she cannot travel out a long distance from the City. He or she must be able to respond and perform as the incident commander in a timely fashion.

**Line Personnel**

The Personnel who are assigned to cover the 24-hour time frames are called “Line” personnel. They staff the various types of equipment that are used to respond to emergencies. These personnel work a 24-hour shift on a rotational cycle called a 56-hour workweek. Line personnel are grouped in various “platoons” - each station 24-hour shift is staffed with the same personnel. A shift firefighter is assigned to a station for approximately 121 shifts per year. They do not work all of these shifts however due to vacations, sick leave, job injury or training. The result of the shifts described above, is that for every person that is on duty each day there has to be two others ready to fulfill those “post” positions. This is simply a mathematical calculation. If you have a position that must be covered 24 hours a day, 365 days a year and you have a 56-hour
workweek, one would conclude that multiple people are required to achieve the City’s staffing level. The three platoon system of the fire service usually results in about 3.1 persons hired to sustain a post position.

**Gilroy Emergency Response**

As stated earlier, when the two staffs of the two Gilroy stations are combined, there are 6 firefighters on duty for each 24-hour period. Staff personnel, such as chief officers, are not replaced by another individual when they are absent for any reason. However, staff personnel are considered to be part of the overall response to certain types of emergencies. Chief officers are periodically assigned to be available for duty after the normal 8-hour workday is finished. This person is then called the “duty chief.” This will be reviewed in Section IV, under title of “Effective Response Force.”

**Automatic Aid Agreements**

The Fire Department has automatic aid agreements that provide additional resources during an emergency event. The Department’s agreement is with the South Santa Clara County Fire District (SSCCFD). The SSCCFD provides staffing and engines when they are available. These companies come from two different fire stations, SSCCFD Station #2 and #3, depending upon the location of the emergency within Gilroy. Station #2 is a two person company that is paramedic staffed (according to the SSCCFD, it is sometimes three-person staffed). The station is located on Masten to the north of the Gilroy. Station #3 is a “Schedule A,” contract station, that has a two person engine company. Station #3 is scheduled to become a paramedic station in February 2000. It is located on the property owned by the Bonfante Theme Park.

The Department is also operating under provisions of the Santa Clara County Mutual Aid System, which is part of the State Mutual Aid System. This system is the mechanism for deploying resources when large-scale emergencies occur. It is NOT the same as automatic aid. Mutual Aid must be requested by the community in need only after all resources have been exhausted. In the State Mutual Aid system, Gilroy can call for any number of resources and the Gilroy Fire Department (as well as other cities’ departments) can be called upon to respond to other community’s requests for service. The Department has also signed a “Mutual Threat Zone” agreement with the California Department of Forestry and Fire Protection. This agreement provides resources for those areas in the western portion of the City that are designated as urban-wildland interface zones.

**Funding**

The budgeted expenditures of the Gilroy Fire Department are reflected in the Budgeted Expenditure Growth Chart (1993 to Current), that is displayed below as Chart II-1.
Level of Effort

The Gilroy Fire Department currently provides its level of service for fire protection and life safety at a per capita cost of $67.00. If the current level of effort parallels the population trend line, the total Fire Department budget in 2020 would be approximately $4,120,500. The current FY 99/00 budget is $3,050,203.

The City of Gilroy’s current level of effort provides .61 “firefighters per one thousand population.” According to the International City/County Managers Association (ICMA) Performance Consortium, the national average is 1.0 firefighters per one thousand in population.

If Gilroy’s current staffing level (.61) were extrapolated to estimated 2020 population of 61,500, total staffing would be about 37 uniformed firefighters in twenty years. This would be about 35 percent more staff effort. It should be noted that the Department’s 12 paid-call firefighters mentioned earlier are not part of the calculation since these individuals are recalled only when needed. They are however credited as a part of overall staffing in the Insurance Service Office’s evaluation. Adequate records are required to obtain that credit. The ISO does not consider a paid-call firefighter to be a one-for-one replacement. The ratio is usually more like four paid-call firefighters to one paid position.
D. **FIRE PROTECTION AND THE CITY OF GILROY**

**Development Activity**

The City of Gilroy, like other cities throughout the nation, has generally grown from its center core outwards. In the last ten years, the growth rate has varied in the context of the national and state economic trends. Citygate looked for changes in the basic makeup of the fire problem for the last ten years.

**Chart II-2** is a reflection of the City’s building permit activity. This chart illustrates a continuing trend for increased activity.

![Chart II-2: Yearly Permit Valuation](chart.png)

The City’s fire problem was characterized in a 1993 Station Location Study by VSP Associates as consisting of three types of problems:

- residential
- commercial/industrial
- urban-wildland interface

This same study, assessing the Gilroy fire problem in 1993, stated that calls for emergency medical aid would continue to increase and would emerge as a key response element. The report also indicated that the residential fire problem seemed slightly higher than average, but did not support the contention.

There are some similarities to Gilroy’s fire problem today and the observations made in 1993. For example, calls for medical aid have increased and make-up the majority of total fire department calls. However, there was no data to support that Gilroy’s fire problem is higher than average.
The Department’s fire records indicate that fire property losses in the community are within average ranges for cities with similar physical and demographic size.

Later in this section there is a description of the Fire Prevention Bureau’s activity, providing a more specific description of the City’s current mix of occupancies, building type, and land uses. In sum, Gilroy is essentially a residential community that is mixed with a variety of commercial and business enterprises. This mix of occupancies generates the need for both prevention and suppression fire department services. In addition, there is significant risk with the railroad that intersects the City and the highway (Highway 101) that has limited access. The risk profile, composed of the various occupancies, demographics, infrastructure, and building types of the City of Gilroy dictates fire department service demands and outcomes.

**Growth Patterns**

The City of Gilroy is separated into east and west divisions by Highway 101. The east side of the freeway is the smaller side where the majority of the business and commercial development has occurred. The west side of the highway is predominantly residential. What commercial development does exist on the west side is predominantly for neighborhood services. The growth that is occurring to the north and to the west is primarily residential. The growth that is occurring to the south and to the east is commercial and industrial.

While these patterns of growth are not unusual, they do impact the configuration and response of the Gilroy Fire Department. Currently, the two Gilroy fire stations and the current “automatic aid agreement” stations are providing a service level that generally meets the response time criteria for a majority of the City. The Department’s response time goal is five minutes or less 95% of the time and records demonstrate that the Department was meeting the goal about 91% of the time at the end of the third quarter of 1999. This is based upon the City of Gilroy’s Quarterly Reports.

However, there are sections of the City that cannot be reached within the response time goal. In the Department’s third quarter report to the City it was noted that there were 42 responses in excess of five minutes. The breakdown of these 42 calls indicates that 27 were for EMS calls, 2 were for structural fires, 9 were other fire types, and 4 were false alarms. As growth continues to increase in the patterns described above and in-line with the General Plan, the ability of the Department to achieve this current service level will be more of a challenge and a target for continuous evaluation. This finding will be revisited later in this section under heading “Fire Station Location.”

**Community Fire Experience**

As described in the City Overview, Section 1, the City population has grown at a rate of about 2.5 percent per year over the last twenty years to the current population of 39,070. Since population correlates to call volume, we see that calls or demands for service have also increased. Chart II-3 displays what the growth in calls for service has been over the last five years.
If this trend line is extended back over the last 20 years, the trend line for increased calls for service is even clearer. Emergency Medical Aids, when compared to all other causes are on the increase. In the last fifteen years, calls for emergency medical aid have doubled. See Chart II-4 above. Based upon the information in Section I, City Overview, it is anticipated that this trend line will continue.

Currently the service demand level is 2,218 (1999) calls per year for a population base of 39,070. This is on average about 6.0 calls per day (3.0 per station per day). This generates 55.8 calls per thousand population per year. Extrapolated to the 2020 estimated population, we would expect the call for service to increase to 3,167 per year. This is about 8.6 calls per day or about 30 percent more than its current daily call volume. As emergency events do not occur on a regular schedule, there will ultimately be days of higher activity and days of lesser activity. There was not sufficient data to determine if there are any statistical peaks created by time of day, day of week or month of year. Also, there are other demographic and weather factors that have an effect on calls for service.

As Chart II-4 indicates, increases in service demand are most related to emergency medical aid calls than any other type of call. This should not be considered as unusual. Statewide, the fire service has been experiencing a similar trend and pattern. The number of calls for fire do not seem to increase with population, but calls for emergency medical aid do seem to increase with population. Fires and other types of emergencies have not increased in direct proportion with population increases could be attributed to a number of variables. Fire prevention and education activities over the last two decades, for example, have had significant positive impact on the frequency and even the average severity of fires. Improvements in fire codes, improved public education, and personal concerns over protecting ones own property may have contributed to the containment of this growth. Medical emergencies are less susceptible to the prevention and mitigation strategies used on fires.

The Department’s experience in distribution and concentration of call workload could not be provided with the Department’s existing management information system and therefore a map that captures the number and location of incidents over a period of time could not be developed. The Department, in the past, has produced “pin” maps manually, which are considerably labor intensive.

**Planning Assumptions**

In order to evaluate a community’s fire defenses, there are three important assumptions to take into account.

1) The Fire Department needs legal authority to operate.
2) The Fire Department needs to establish what currently needs protection in the community or what is currently at risk.
3) The Fire Department needs to develop programs to counteract the risk defined in Number 2 above in an appropriate and efficient fashion.

The City of Gilroy has tasked the Gilroy Fire Department with responsibility for fires, emergency medical services, various rescue functions, and a role in disaster mitigation. The
governance of this Department authorizes a wide variety of programs and activities. Direction is provided to the Department in the mission statement provided earlier in this section and through various goals and objectives. The next portion of this plan identifies the general goals and direction of the Gilroy Fire Department.

**Pre-Fire Planning**

The Gilroy Fire Department has an active and comprehensive pre-fire planning program that is based on looking at risk from an operational point of view. Documents were reviewed that encompassed over 100 occupancies. These occupancies were selected because they represent “target” hazards or occupancies that have a high concentration of occupants or property values. According to the Building, Life, and Environmental Safety Division, the City has over 600 occupancies that have been issued permits or have hazardous materials on premises.

The current pre-fire planning program is well developed, but does not form the basis for any analysis of the concentration or distribution of the risks within the community. In terms of the definitions of probability and consequences discussed previously, the pre-fire planning program may not have resulted in specific plans being drawn up for some of the more subtle fire problems with high consequences.

**Fire Flow**

Fire flow must also be addressed when considering risk factors because it represents the specific resistance to control of an individual structure. Fire Flow is an assessment of water supply needed once a structure has become fully involved. This assessment is based on defining the problem that will occur if the structure is totally involved, thereby creating the maximum demand upon fire suppression services.

The Insurance Services Office (ISO) has provided Citygate with a document called the Fire Flow Batch Report that indicates that the City has a wide range of fire flows being evaluated by the insurance industry. These fire flows are not plotted on any map or overlay to display the relationship between fire flows and engine company distribution and concentration. Because of the size of the City, this factor may or may not be of great importance. However, as the City becomes denser and call demand increases, high fire flow occupancies may not receive the initial attack complement as quickly as in the past. It is prudent that the Department have a sense of where these high fire flow occupancies exist.

The Building, Life, and Environmental Safety Division currently requires fire flow calculations with all plan review documents. Additionally, every new commercial and industrial building is required to perform fire flow capabilities of the City water supply and include results with the building’s construction documents. Additionally, the City’s Water Department maintains the water supply system and periodically performs fire flows on its hydrants.
Classification of Occupancies and Construction Types

The total numbers of occupancies that generate calls for service have been broken down into three general categories in the past. These were stated earlier as residential, business and industrial. There are more definite ways of assessing these occupancies. The Building Department classifies occupancies according to a table that is much more representative of the variety of risks being protected. A table of these classifications is provided in Appendix B.

Citygate’s evaluation of these occupancies in the Gilroy Fire Department was at two levels. The first was to review the records in the Fire Prevention Bureau. The second was to review the records in the files of the fire companies conducting routine inspections. The Fire Prevention Bureau has records on 280 occupancies that require permits under the Uniform Fire Code (UFC). They also have 90 occupancies that are classified as state-licensed care facilities. Considering a factor of business start-up and shutdown, the total number of technical inspections is probably around 400. The remainder of the Fire Prevention Bureaus workload is distributed among business license inspection and plan check activity.

What was determined was that the files for both business and industry exist, but there is not a system for aggregating or analyzing them from a perspective of consequence or probability. Moreover, the Department does not have systems in existence to evaluate at single family dwelling units. This should not be considered a criticism of the current practices. Very few agencies have information on dwellings since it is not practical to try to keep them up to date. The statewide fire experience points to the fact that multi-family housing stock is where large losses of life and property have been on the increase over the last few decades.

What is important to recognize is that risks in the community are distributed throughout the City, yet at the same time, there are concentrations of values that occur. Based upon an overall review of the city’s zoning maps, the pre-fire planning map, and a mixture of other data sources, the fire problem in the City of Gilroy can best be described as:

1) the downtown business district;
2) industrial park development;
3) detached malls;
4) multi-family housing;
5) a wide range of sizes and concentration of values in single family homes; and
6) a transportation corridor and an urban-wildland interface.

These risk categories are arrayed in the community in accordance with past and current land use policies.

Developmental Trends

The City’s growth has been systematic and incremental in the last 20 years. Chart II-3 earlier in this section illustrates the pattern of development over the last few years. The General Plan and the Section I, City Overview, presented the projection that further growth and enhancement of
the Fire Department will be needed. The trend line for the issuance of building permits is not necessarily congruent with increases in fire service demand since other factors besides population can cause increases in development activity. Changes in population type impacts fire service demand. For example populations that become older or younger cause a change in the demands for EMS service.

Nonetheless, the fire problem, and therefore the fire risks of the future, will emerge from these growth trends. If one assumes that very little re-development will occur in the next 20 years, the fire risk inventory will include a variety of problems. It will include everything from the earliest construction and occupancy characteristics from the historical downtown area to the most highly protected occupancies using both automatic detection and fire sprinkler systems to lower the risk. This means that larger, better-protected structures may give the impression of creating a larger fire problem, but that smaller older structures may be more of a risk.

For purposes of Master Planning, the following assumptions should be considered:

- The community will have a wide range of structural and occupancy conditions.
- In-fill growth will generally be of a lower risk category than the existing structures. This is a result of the now wider use of automatic fire sprinklers.
- Individual projects may result in fire flows, or risk categorization higher than adjacent projects. This is a result of larger buildings in industrial and commercial developments.
- Redevelopment or tenant improvements in specific projects can change the nature and classification of a risk in existing buildings.

E. BASELINES FOR RESPONSE POLICY

The primary reason for a fire company’s existence is to arrive at the scene of a fire before the fire grows to a level that destroys life and property. The primary mechanism for delivering that service is the individual fire company housed in a fire station. Moreover, a secondary reason for a fire company’s existence is to arrive at the scene of an emergency to provide life support services in an emergency medical aid situation.

One of the most basic questions that has to be addressed in providing that service is how quickly service must be delivered to significantly improve a negative situation. This is one of the most common questions raised in discussing fire protection. In order to understand the rational for setting response times, reference must be made to the two models that have been developed. These models compare the onset and escalation of an incident and the arrival of an intervention force. These two models are called “Standard Time - Temperature Curve” and the “Utstein Criteria” and are explained below.

Standard Time-Temperature Curve

The standard method of assessing the need for dealing with fire growth is based upon a figure that is called the “Standard Time - Temperature Curve.” This figure, found on the following
page as **Figure II-2**, answer the question: “Where do the time elements come from in setting response times?”

This “Standard Time-Temperature” chart displays a sequence of time that starts when a fire breaks into open flame and terminates when the fire destroys the occupancy or origin when there is no intervention by a fire protection action.

This chart also displays the various elements of time that come into existence as a fire grows in size and complexity. Reading the chart from left to right you can see that for every moment the fire is allowed to increase, it generates more and more of a threat to the occupants. This does not mean that every fire goes to these extremes. What this does mean is that every fire that has reached an open flame production has the possibility of going to that stage, provided it is unchallenged.

The chart also illustrates that there are points in this curve in which other interventions can occur. The chart reflects the activation of smoke detection and sprinkler head devices which, if they are in position and properly maintained, will result in either notification or an actual intervention on the fire. Fire station response is based upon the probability that most fire scenarios are created where there are few interventions. Based upon someone being aware that a fire exists, the fire department must be notified and then respond in a timely fashion to avoid the fires destruction of life or property.

**Figure II-2** below illustrates the planning notion that a five-minute response time is appropriate to achieve the operational objective of keeping the fire within a room of origin. The standard fire service performance objective for this target is 90 percent of the time.
Utstein Criteria

There is a corollary time sequence that has been developed to set standards for emergency medical responses. This is called the Utstein Criteria. See Figure II-3 below. The criteria is based on a study that was conducted to determine how long a person could survive if they were deprived of either oxygen or blood circulation. The Utstein study demonstrated that a person that has lost circulation or breathing ability has a very low percentage of survivability after a period of 5 minutes. When the time exceeds 8 minutes for live-saving intervention, the survival rate decreases to practically zero.

Both of these time-response models have been utilized by fire protection agencies to set response time criteria. The Gilroy Fire Department has been utilizing these models prior to the development of this Master Plan.
F. EXISTING STANDARDS OF RESPONSE COVERAGE STATEMENTS

The Gilroy Fire Department has adopted a response time standard that has been reflected in their statistical reports for many years. This time standard is as follows: The Department will “respond to 95 percent of the calls for service within 5 minutes.” This is based upon Policy 18.01 in the Gilroy General Plan which states that the Department’s “current levels of service should be maintained or improved as the City continues to grow, with an average response time for fire services of less than 5.0 minutes.”

This is not the appropriate way to describe response time as a benchmark for evaluation. The statement does not indicate when the five minutes begins, nor does it take into consideration that an average number could imply that at least 50 percent of the calls exceed 5 minutes. Appendix A of this report displays a time sequence chart that is derived from the Fire and Emergency Services Accreditation Handbook. It is called the “Cascade of Events.” This chart demonstrates that there are many elements that make up the concept of response time. Some of these time elements are under the control of the Fire Department and some are not. For example, the time to discover a fire and to report it to the authorities is something that varies a great deal.

Response time is usually measured from when the “call for help” is received to the time the first unit reports that they are at the scene. It is measured in minutes and seconds. The previously
referenced models project that a response time in excess of five minutes provides a fire with ample opportunity to reach “flashover” before intervention. Medical studies have linked survivability in cardiac arrest to having CPR administered within four to six minutes. Brain cells begin to die if oxygenation is interrupted longer than four to six minutes. Response times of four minutes for first response (fire department response) and eight minutes for second response (paramedics) have become an international standard for urban EMS systems.

**Measuring Response Time Performance**

There are two ways to measure response time performance:

1. **Average Performance Measurement** – All response times are added together and averaged. If the average is the number of minutes or less than the performance goal, it is considered satisfactory. Using this method, up to half the total number of responses could take longer than 5 minutes and can create a credibility gap for the fire service.

2. **Percentile Performance Measurement** – Using this method, the response times are stacked in ascending length. Then the total number of calls generating a response within 8 minutes is calculated as a percentage of the total number of calls. When using this method, only 10 percent of the total number of calls should take longer than the number minutes stated in the performance goal. According to American Ambulance Association, a 90th percentile or 90 percent standard is most commonly used in the EMS industry. The Commission on Fire Accreditation conducted a study in the early 1990’s and determined that an 80 to 90 percentile was the common practice for fire response.

The City of Gilroy Fire Department currently measures response time from when the station is notified to the arrival of the fire unit on scene. This response time measures travel time and turnout time. It does not take into account the time it takes the police dispatcher to process the call or the “alarm processing time.” Therefore, the Department is not currently evaluating “alarm processing time” on a routine basis.

The Department should only calculate response time on the basis of “Code Three” or emergency responses since there are certain alarms that do not demand a quick response, such as public assists.

In 1993, a “Station and Staffing Study” by VSP Associates was performed for the City of Gilroy Fire Department. In this document, the Department was informed that a typical performance goal for most fire fighting agencies is the measurement of the “total” response time that takes into account “alarm processing time.” This report further stated that for the City to retain “maximum credit” (for ISO Grading purposes), all protected properties had to be located within 1.5 miles of a fire station. Distance is not a good measurement of response time due to other factors such as traffic patterns and road calming devices. Response time data in this 1993 report indicates that the average response time from 1989 to 1992 was 3.43 minutes. There is no indication in this report however of how this data was collected. Nor did it identify the range of response times. If the
data depicted a true “average,” one would expect some response times to be lower, but others higher. The report also did not include a review of the alarm processing times by the communications center.

The Fire Master Plan Task Force looked into the activities and capacity of the Gilroy Fire Department regarding the issue of response times. The Task Force reviewed the current response times and found them to be consistent with the statements in the 1993 Station Location Study with one exception. The Task Force concluded that the Department’s current response time of five minutes is an appropriate time interval, but recognized that the definition was not entirely accurate. The Department is actually measuring response times as a percentile of the whole.

The Master Plan Task Force reviewed the components of “total” response time, commonly called the “cascade of events” as shown above. They found that the time that is currently being measured and reported by the Fire Department is only the time between when the fire station has been alerted and arrived on the scene. This time frame has two components -- turnout from the station and travel time to the scene. It was determined that the best description of current practices would be to add the words “from time of dispatch” to the Department’s response time definition. This would provide a measurable sequence of events that does not change the performance requirement, but does clarify what the Department is expected to achieve. Moreover, the public tends to measure the time of a response from the time that they make the call for service. The cascade of events labels these factors as alarm receipt and processing time. What the above implies is a need for the City of Gilroy to begin measuring the time it takes to receive and process the alarm before it is transmitted to the Fire Department. Alarm processing times are currently unavailable.

The Task Force adopted the following definition for measuring the response time performance of the Department.

**Goal:** The Gilroy Fire Department will respond to 95 percent of the calls for service in 5 minutes or less from time of notification to arrival on scene.

This definition does not include alarm-processing time. This redefinition does not change the method of measuring response times. It does place priority upon setting a baseline for the time it takes to conduct the processing of the alarm. The contemporary standard for alarm processing time is 50 seconds.

**G. RISK ASSESSMENT CONCEPTS**

The City of Gilroy’s General Plan already recognizes the concept of “Acceptable Risk.” A definition for acceptable risk in the context of fire protection is contained in the glossary of that document. Fire protection risk assessment consists of evaluating the following six key elements in order to define what is an acceptable risk in a fire problem (See Appendix H):

**Fire Flow** — The amount of water required to control the emergency based on contents and combustible materials. There are three types of fire flow figures that can be calculated. They are:
  1. **Required fire flow**, which is derived from a buildings size, construction type, and
contents;

2. **Available fire flow**, which is determined by the amount of water in the water mains in the vicinity of a specific building; and

3. **Delivered fire flow**, which is the amount of water that a fire response force can apply during fire fighting operations. The obvious goal of controlling all risks is to attempt to make all three of these numbers be relatively close together.

**Probability** — The likelihood that a particular event will occur within a given period of time. An event that occurs daily is highly probable. An event that occurs only once in a century is very unlikely. Probability then, is an estimate of how often an event will occur.

**Consequence** — The impact from life threatening situations including both fire and EMS, and economic impact, representing the severity of the losses of life, property, income or irreplaceable assets from a specific situation.

**Occupancy risk** — An assessment of the relative risk to life and property resulting from a fire inherent in a specific occupancy or in a generic occupancy class.

**Demand zones** — The map area used to define or limit the management of a risk situation. Currently the closest things to demand zones in Gilroy are the response map districts.

**Community profile** — The overall profile of the community based on the unique mixture of demographics, socioeconomic factors, occupancy risk, demand zones, and the level of services currently provided.

By determining what is at risk in the community, the risk assessment makes it possible to develop resource deployment strategies. The goal is to determine the probability of an event occurring and the consequence of that event.

In its risk assessment, the probabilities and consequences of an event usually consists of identifying risk factors and creating risk categories. Then each demand zone should be evaluated for its risk factors and placed into a risk category.

The probability of occurrence and the consequence of occurrence for each event included in a risk assessment is different for different types of fire problems. The following are four possible relationships between structures or conditions and the distribution and concentration of fire stations represented by the factors.
FIGURE II-4 above conveys that there is a range of probabilities of events occurring. And, there is a range of consequences from those events if they occur. It is possible to review the various structural conditions in a community and place various occupancies into the four boxes. This is accomplished with a formula that looks at such things as construction type, occupancy factors, life safety, and values at risk. After completing an inventory of a community the various buildings or risks can be placed into a box, summarized and then analyzed. This results in four different combinations of consequence and probability as follows:

a) Low probability, Low consequence  
b) Low probability, High consequence  
c) High probability, Low consequence  
d) High probability, High consequence

For example, the risk assessment of a community may include defining the differences between a single family dwelling, a multiple family dwelling, an industrial building, and a six story hotel, and then placing each in a separate category on Figure II-4.

Fire stations and apparatus may have to be distributed equally when considering risk factors. Fire Flow is an assessment of water supply needed once a structure has become fully involved. This assessment is based on defining the problem that will occur if the structure is totally involved, thereby creating the maximum demand upon fire suppression service.

On the model (Figure II-4) there are two bars, one that is vertical and is labeled “Concentration”; and one that is horizontal and is labeled “Distribution.” Fire stations need to be “distributed” in a community to provide the same response to all entities or to levels of risk. And, fire stations
must also be able to come together to deal with high probability or high consequence events. This is called concentration.

**Risk Factors**

In order to categorize risk within the City of Gilroy, the risk factors present within the Department’s jurisdictional area need be identified. Generally, the fire service defines a risk factor as any factor that:

a) Increases the need for the Fire Department to arrive quickly;
b) Increases the number of firefighters needed to control the situation;
c) Negatively impacts the financial well being of the community; or
d) Negatively impacts the historic properties of the community.

The specific factors identified include the following:

a) life loss potential;
b) the ability of occupants to take self-preserving actions;
c) nature of the occupancy and its contents;
d) construction features;
e) fire loss potential;
f) built in fire protection;
g) historical value;
h) fire flow; and
i) economic impact to the community.

While all risk factors have some common elements, the rationale behind placing an occupancy within any risk assessment category is to assume the worst.

Currently the Department does not have a risk inventory system. There are records of occupancies and there is a pre-fire planning system. But neither of these processes analyze or rank the relative comparisons of risks, hazards or values in comparison to fire station location, or the critical tasks that might be required to deal with them.

**Response Force**

The Fire Department is required to prepare a response to all risk categories in the community. What the records indicate is that there are occupancies, due to size, base fire flow, complexity and configuration that exceed the ability of the on-duty fire force to handle if the fire gets to the flashover stage prior to their arrival.

Essentially, the Gilroy Fire Department responds to four major categories of emergencies. They are:

- Structural fires;
- Grass and vegetation fires;
- Emergency medical responses and vehicle rescue; and
• Other. (Other includes different types of events that occur infrequently, but are not statistically significant.)

When a structural fire occurs, the Gilroy Fire Department responds with its two engine companies or a total of six personnel. Also responding is one duty chief and a South Santa Clara County Fire District engine. If the response involves SSCCFD Station #3, the staffing increases by two. If the response involves SSCCFD #2, the staffing increases by two or three depending on the day. Total staffing on the fireground therefore is between 9 to 10 persons. The Department responds a similar force to handle vegetation fires.

If the incident involves a medical response, the standard is to deploy one engine company and an AMR ambulance. This places five personnel on the scene. If the medical response is associated with a vehicle rescue, the duty chief responds, increasing the number by one.

Scene commanders have the option to call for additional assistance, which can come from automatic aid or mutual aid when needed.

On-scene Operations – Critical Task Analysis

The variables of fire growth dynamics and property and life risk combine to determine the fireground tasks that must be accomplished to mitigate loss. These activities are called “Critical Tasks.” In evaluating a fire defense system, an analysis of these tasks helps define what is a protected risk, what is an acceptable risk, and what is an unprotected risk. These tasks are interrelated but can be separated into two basic types, fire flow and life safety. Fire flow tasks are those related to getting water on the fire. Life safety tasks are those related to finding trapped victims and removing them from the building.

The term “initial attack” refers to the activities taken by the first unit(s) assigned to respond to an emergency. For example, if only one engine is sent to a vehicle fire the initial attack force is represented by the persons in that company. If several companies are sent to a fire, such as a structure, initial attack is the combination of what that number of personnel can accomplish.

Because this element is very operationally oriented it is often difficult to understand. The materials in this section are derived from the Commission on Fire Accreditation International. Appendix G has supplemental information to allow interested parties to review how these concepts are more thoroughly developed.

Fire flow application can be accomplished with hand held hoses or master streams (i.e., nozzles usually attached to the engine or ladder). Each 1-1/2 or 1-3/4 inch hose requires a minimum of two firefighters to make an attack. These size hoses can flow 150 gallons per minute (gpm) and when these lines are used, the fire flow is about 75 gpm per firefighter. A 2-1/2 or 3 inch hose can flow 250 gpm and requires a minimum of two or three firefighters to operate. For this larger hose, the fire flow is 75 to 125 gpm per firefighter. Master streams can flow from 500 to 1000 gpm each. They take relatively fewer firefighters to operate -- they are fixed to the apparatus.

The decision to use hand lines or master streams depends upon the stage of the fire and the threat...
to life safety. Fire attack operations can be described as offensive or defensive. They can also be characterized as being on the interior or the exterior. If the fire is in a pre-flashover stage, firefighters can make an offensive fire attack into the building by using hand lines to attack the fire and shield trapped victims until they can be removed from the building. If the fire is in its post-flashover stage and has extended beyond the capacity or mobility of hand held hoses, or if structural damage is a threat to the fire-fighters life safety, the structure is declared lost and master streams are employed to keep the fire from advancing to surrounding exposures. This is called “exposure protection.” It is an exterior operation.

The purpose of initial attack is to be able to control a fire before it reaches the flashover stage and to remove occupants before they suffer damage from heat, flame or smoke. Life safety tasks are commonly called “rescue” and are based upon the number of occupants, their location, their status (e.g., awake versus sleeping), and their ability to take self-preserving actions.

H. Grading by the Insurance Industry

The Insurance Services Office (ISO) is an organization that prepares reports on local fire defenses. The insurance industry evaluates a community’s risks. Once ISO has completed their assessment and accompanied report, they sell the information to insurance underwriters for use in rate setting. The system they use has ten different public fire protection classifications, which define the various levels of public fire protection. Property insurance premiums are sometimes based on the insurance classification rate and the type of occupancy asking for the insurance. Notably, life safety issues are not considered in this evaluation system, and the fire department section of the evaluation does not include a review of public education activities or fire prevention.

The ISO report rates a city by ten class categorizations. A Class One rating is considered to be the best rating. The ISO publishes a document titled “Fire Protection Rating Schedule” that provides a list of those features that have a significant influence on minimizing damage once a fire has started. One element that is evaluated includes the handling of fire alarm communications. Another element is a fire department's portion of water supply that is set aside for fire fighting purposes (a city can be penalized by "divergent points"). This occurs if the fire and water supply sections are separated by a large number of points.

Commonly, a city will have a different grading than the fire department because the overall score is only determined after evaluating the city’s water system. The public fire protection class given to the city is based on the percentage of credits that the city earns in the evaluation process as follows:
<table>
<thead>
<tr>
<th>Class</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90% or more</td>
</tr>
<tr>
<td>2</td>
<td>80% to 89.99%</td>
</tr>
<tr>
<td>3</td>
<td>70% to 79.99%</td>
</tr>
<tr>
<td>4</td>
<td>60% to 69.99%</td>
</tr>
<tr>
<td>5</td>
<td>50% to 59.99</td>
</tr>
<tr>
<td>6</td>
<td>40.0% to 49.99%</td>
</tr>
<tr>
<td>7</td>
<td>30% to 39.99%</td>
</tr>
<tr>
<td>8</td>
<td>20% to 29.99%</td>
</tr>
<tr>
<td>9</td>
<td>10% to 19.99%</td>
</tr>
<tr>
<td>10</td>
<td>0% to 9.99%</td>
</tr>
</tbody>
</table>

The Gilroy Fire Department received its last insurance evaluation in September of 1983. At that time, the City's population was recorded at 22,948. The “Receiving and Handling of Alarms” criteria received 5.69 points out of 10, rating the fire alarm as a Class 5. The “Water System” criteria received 37.21 points out of a possible 40 for a Class 1 rating. The Fire Department received 28.52 points out of 50 for a Class 6 rating. The City was assessed a total of 7.20 points for this divergence. The total points assessed against the City were 64.22. The City was given an overall Class 4 rating.

The ISO report does not provide a list of detailed recommendations with specific actions that would improve the grading. However, a brief review of the points that were assessed seems to indicate that the needed improvements that would result in a change of classification are primarily in the Fire Department. There is little room for improvement in the City’s water systems that would be cost beneficial. In the Fire Department, the two areas that stand out were ladder truck service and credit or company personnel. There also appears to be an opportunity to reduce significant deficiency points in the area of training.

Citygate is not in a position of anticipating the next ISO interpretation. It is likely that the City will be graded again in the very near future. In view of the City's growth, and the actions needed to be taken by this Department to respond to this growth, it is likely that the next ISO's grading will focus attention upon the same factors addressed above. In the event that staffing, training and other factors have not kept pace, the City could drop another insurance class.

It needs to be noted that to there is very little incentive to improve beyond a Class 4 city with respect to homeowners insurance. Industry practices result in very little differences in the rates of homeowners in cities that have a lower classification. The area that this could provide the most significant impact is in large unsprinklered businesses or industries. The group of occupancies that would benefit the most from an improved ISO grading is the older buildings, especially unsprinklered ones. Notably the ISO Classification Details Report indicates that the city classification system only applies to properties with a fire flow of less than 3500 gpm. According to the current listing of Fire Flow's provided by ISO there are many structures that have a fire flow over 3500 gpm.
I. EMS Activity

Emergency medical services have been in evolution in Gilroy as well as statewide in California for the past twenty years. The Fire Department and the Emergency Medical Service share traditions steeped in the military. The Fire Department is paramilitary in its organizational design while EMS has its origin on the battlefield. Many of the conceptual aspects of emergency medical treatment, such as prompt field evaluation and treatment delivered by para-medical personnel, were developed by the military in the Korean and Vietnam wars. When the need for a comprehensive system for the delivery of EMS was recognized, the Fire Department was the obvious choice. Fire stations were already strategically located throughout communities and had emergency communication equipment and personnel trained to function during times of crises. During this evolution, the citizens of Gilroy have pre-hospital emergency care provided by a public/private partnership with the Gilroy Fire Department and private ambulance services.

Paramedic level of care was started in 1980, provided by The Ambulance Company, and continues to today. The Fire Department’s EMS role in 1980 as first responders included trained personnel in cardiopulmonary resuscitation (CPR) and first aid. In 1987, training was brought to all fire personnel to the Emergency Medical Technician (EMT) Level. EMT Defibrillation Training was completed in 1990. In 1997, Gilroy Fire Department participated in a pilot program sponsored by Santa Clara Emergency Medical Services Agency (EMSA) with a grant from California EMSA to train fire personnel with EMT enhanced training, adding nine skills which included airway management and drug administration. There is no guarantee that this program will continue due to factors beyond the control of the Fire Department.

In the City of Gilroy, the current system design for pre-hospital care delivery provides initial assessment and patient treatment by firefighters trained at the EMT-enhanced skill level. Advanced Cardiac Life Support (ACLS) and Advanced Life Support (ALS) are currently provided by the ambulance company, American Medical Response (AMR). The response time criteria for AMR is ten minutes or less, ninety percent of the time.

Today, the Fire Department is called on to a variety of occurrences ranging from hazardous materials incidents, to vehicular accidents with extrication of the trapped passengers, and to building collapses. All of these scenarios may involve the use of EMS.

In addition, the “chain of survival” described by The American Heart Association dictates the chances of survival are improved when the following sequence of events occur rapidly: early access to pre-hospital care system (911), early CPR (bystanders or first responders), and early Advanced Cardiac Life Support (ACLS) provided by paramedics. If any link in this chain is weak or missing, the chance of survival is diminished and the EMS system will have poor performance results. Recent studies now suggest that ACLS should be provided within 4 to 6 minutes. This has led many fire agencies to place firefighter/paramedics on first responder units. In the City of Gilroy, EMS calls constitute the largest component of total Fire Department calls.

Critical Tasks for EMS Response

When a fire station responds to a medical aid call, the critical tasks that must be performed
change. The level of training that the responding company possesses and the level of authority they have been granted determines what they can do. What needs to be done is a function of the nature of the illness or injury being treated. In general, those firefighters that are Emergency Medical Technicians can perform basic life-saving skills but are not allowed to conduct procedures that require invasive techniques or the use of drugs. The term “paramedic” has been applied to many individuals involved in helping a victim, but is appropriately reserved for those that have met stringent training and education requirements and have been recognized by the state to perform specific tasks.

Once on the scene of a medical aid, the three top priorities are to stop bleeding, restore breathing, and maintain circulation. This requires that staffing be adequate to perform these tasks almost simultaneously. Santa Clara County policy requires that at least one per company member must be trained to perform as an Advanced Life Support (ALS) medic.

Effective Response Force

The Master Plan Task Force conducted a review of the current staffing and deployment of the Gilroy Fire Department. The Task Force also reviewed a Critical Task Analysis chart that represented the Gilroy Fire Department’s current capabilities. The current response places about nine or ten personnel on the scene of a full first alarm assignment. This includes both Gilroy fire stations, a duty chief officer, and the automatic aid companies from the South Santa Clara County Fire District. Based upon the provisions of OSHA regulation on “2 in and 2 out,” and the methods used by the Department to utilize water supply and initial attack equipment, the Department provides a level of service that can deliver about 250 to 500 gpm in the first 8 to ten minutes of fire attack. This correlates with about a single family dwelling or small commercial or industrial occupancy.

Fires and other emergencies that exceed this fire flow demand will require additional resources. Additions of staffing enhancements, engine or truck companies to the departments deployment capability will have an effect of raising this attack capacity in increments, depending upon the capacity of the resource to supplement the attack.

One of the most heavily debated issues in the fire service is the question of what each incremental improvement will do to improve a department’s capacity to perform. Studies have been conducted to determine the difference in fire spread based upon staffing levels and response times. There are no simple answers to the question of when to add resources. There are, however, criteria that can be evaluated locally to determine when any policy should be reviewed. These link back to two concepts mentioned earlier in the document. They are goals and objectives and level of acceptable risk.

What these two concepts establish is a set of performance measures that can be used as thresholds for evaluation. Establishing a response time goal is an obvious criterion. What is not so obvious is that that response time needs to be evaluated against two other elements. They are how often did the company achieve the goal and what were the outcomes of getting there on time? Another way of looking at this is to state that if the company exceeds that response time more than the stated performance goal there is a delay in alarm. Secondly, if the fire is not
contained at the area or in the room of origin a very high percentage of the time, the department is not being effective.

Generally, fire agencies enhance their level of services by doing two things. They either add staff to a company to allow it to perform more tasks in the first few minutes of deployment or they add stations to decrease response times to areas beyond the performance goal. Neither of these can be arbitrarily advocated. They each require a cost and benefit analysis.

**Response Reliability and Call Queuing**

Another factor that must be considered in “response” is the factor of multiple calls for service simultaneously. While the fire records from Gilroy do not indicate that this is a problem, it could emerge as the response workload increases. This can occur in many different configurations. For purposes of this planning document, there are two that should be noted. The first is when a fire occurs at the same time that a medical emergency occurs. In this scenario, the current two engine response is in total commitment for initial attack. If the fire comes in first, there is nothing left to respond to the medical aid, except for automatic aid. If the medical aid comes in first, the initial attack response is reduced.

The management information system does not provide for automated analysis of this type of conflict. Departmental staff conducted a manual review of the CAD records and determined that this type of call conflict occurs about 15 times per month. Based upon this estimate, the current companies have the potential for about 175 to 180 times per year where one or both companies are unavailable for a call for service. Based upon the current workload of 2,218 calls for service per year, the concurrent calls for service occur in approximately one call out of every twelve calls. This is about 8 percent of the Department’s total calls for service.

This is only an estimate. The benchmark that was used to make the estimate was based on call times that were within 30 minutes of each other. There was not a way of determining if there were calls for service that resulted in delays of alarm because the first in unit could not clear a call and respond. This is due to the lack of ability to evaluate the types of incidents involved, the time on-scene, and/or the availability to clear a call and respond to additional calls for service. The one conclusion that could be extracted from the raw data is that concurrent medical aids are more likely than any other type of call for service. The number is based upon a comparison of call times when one company is already committed and another call has been recorded before the first unit is declared available from the scene. This factor, according to current workload levels, has the possibility of becoming a problem and should be evaluated constantly as the workload increases. The Department should also consider tracking this one data element, especially if they get into the ALS program. On scene times will likely increase, thereby increasing the potential for call conflicts.

Another consequence of increased workload is called “Out of District” response. This occurs when individual engines are out of their normal first-in district for purposes of training or other administrative activities. When an alarm comes in they are then responding from a location other than their normal station. This can result in a longer response time.
J. Fire Station Locations

There are two questions that must be addressed in a fire defense plan. Are the stations adequately distributed in the community to achieve the response time goals? Are the total amounts of resources available able to be drawn together in a timely fashion so they can concentrate their ability to control a severe emergency?

Theoretically, fire stations should be distributed so that they protect an equal share of area, population and workload. However, that seldom occurs. Generally fire stations are placed in locations that provide them with a percentage of the coverage that is linked more to the road network. It is the balancing out of response time and risks that makes locating fire stations sometimes problematic.

Once again, this concept is very technical in some respects. The Task Force was given information from the Commission on Fire Accreditation International that provides the methodology of this concept. A summary of the concepts is included in the Bibliography.

The Gilroy Fire Department has access to a computer program that is used by many fire departments to conduct an analysis of distribution and analysis. The program is called FLAME. This is an acronym that stands for Fire Station Location and Mapping Environment. Citygate utilizes this same methodology. In cooperation with the Gilroy Fire Department staff, a review of the road network was evaluated to verify road speeds and road network changes. Citygate ran a series of fire station scenarios for the existing two stations and the automatic aid resources as part of the evaluation process. Citygate also ran several scenarios regarding future fire station locations. Full size color maps are provided as Appendix F.

The basic finding of these studies is as follows:

- The two Gilroy fire stations currently provide a response to the concentrated values in the City that are within the stated response time goal.
- The two Gilroy fire stations currently have response zones that cannot be served within the same response time goal.
- The current deployment pattern utilizing the automatic aid companies is an effective way to reach some, but not all of the areas of minimum coverage.
- The current deployment pattern, utilizing the automatic aid companies, is subject to future changes that are not under the control of the City.
- Additional fire stations will be required to provide response time coverage to the areas that will be developed under the General Plan.

The 1993 Station Location Study made the following findings:
“Over the next 10 years, neither the projected increase in call volume nor the expected geographic distribution of call load would require the relocation of existing stations or addition of a new station or addition of new companies.”

Later in that report, the statement is made that:

“As development proceeds towards the 20 year build-out, maintaining response time statistics at or above the current level would require additional stations.”

This is the most important decision point in the Master Planning process. The basic questions have to be answered is when and where new stations should be constructed. Citygate agrees with the findings of the previous consultant that the City should explore the potential for mitigating costs by means of closer cooperation with the South Santa Clara County Fire District. The 1993 Study, in its findings declares that the decision to build, relocate or jointly share in the creation of new facilities is a political decision based upon what is determined to be an acceptable level of service.

For purpose of this Master Plan, Citygate recommends that this decision not be a political one, but rather a conscious one. A decision that includes the setting performance requirements for the Fire Department, evaluating them periodically to see when they are exceeded, and then making a determination that funds are available to provide for service enhancements when the Department is unable to meet its own targeted goals.

**Potential Fire Station Locations**

The Fire Chief was originally requested to provide Citygate with a listing of potential fire station location sites for review by the Task Force. These locations were discussed at a Task Force meeting. Then they were evaluated as possible alternatives to address response time performance in the Gilroy Fire Department. A subcommittee of the Task Force was created to use the cities own FLAME program to evaluate potential areas for future stations. This is consistent with the need of the department to continue conducting studies as part of an annual evaluation process. Therefore, FLAME program was used to prepare a set of response maps that reflected both existing and potential locations. They are described as follows:

**Traffic Circulation**

One of the elements that effect response patterns is the traffic circulation pattern. Examples are one way streets, cul-de-sacs, speed limits, traffic calming devices, turning radiuses and other physical limitations of the road bed. With over six thousand acres to be developed within the City, there will be many decisions made that will increase or decrease fire station access. The Fire Department should be an active participant in the planning process for future traffic circulation. This will be reflected again in the recommendation section.
*Baseline Map*

These two maps display the City’s two fire stations: Chestnut and Las Animas. These maps show that there are several areas of response deficiency. It also provides an indication of the need for additional considerations to protect these areas. The Department has already taken action to mitigate the conditions such as automatic aid.
Automatic Aid Maps

The next two maps display the two existing Gilroy fire stations and the area of coverage of the two automatic aid companies. They are located at Bonfonte Gardens (Station #3) and Masten and Highway 101 (Station #2). These maps display the fact that the areas of response deficiency are reduced, but not eliminated by the use of the automatic aid companies.
The Response Coverage map illustrates the level of coverage of all 4 companies in the current deployment plan. The station numbers on the map denote locations 5, 6, 7, and 8 and are only displayed to place them in context of potential locations. These were not used to calculate first-in response times.

Prescriptive Maps
Several maps were prepared by the subcommittee to look at possible combinations that would be in response to future growth and would reduce the deficiencies that exist today. There were several scenarios that were evaluated. These include keeping the current station locations and adding stations. In addition, consideration was given to the relocation of stations to determine if that action would eliminate the need for another station. The Gilroy Fire Department has developed the ability to run FLAME maps. All future fire station locations should be based on an analysis of conditions that exist.

Summary of Response Coverage

Overall, these maps indicate that the current Chestnut station provides a very high coverage percentage and that Las Animas cannot reach the deficient area in the northwest quadrant. As the City grows to the south and west, the response deficiency starts to have a negative impact.
As the City grows to the north and west, there is a deficiency that cannot be resolved by South Santa Clara County Fire District Engine #2. If the City is looked at as a polygon, the center point of the geographical area is to the west of the freeway. Considering that this City is in a seismically active area it would be very desirable to have fire-fighting resources located on either side of the freeway. This is in consideration of possible downed freeway access points. From a practical perspective, this would result in an engine located on the east side having a restricted response zone, unless it was incorporated in automatic aid going out of the City.

Scenario Mapping

There were thirteen scenario maps developed by the subcommittee are for planning purposes. They leave existing stations in place and evaluate adding stations at the northern and southern quadrants. While these maps suggest improvements in coverage and concentration, they cannot be adequately evaluated until specific sites are chosen. Another consideration in this mapping exercise is to leave the county automatic aid engines in place. This may result in a high concentration, but is still a configuration that does not provide total coverage using city resources. The SSCCFD has indicated that it is considering a relocation of Tree Haven Station #3. This raises another question posed in the 1993 Study and that is the possibility of a co-located station.

There is sufficient statewide experience to indicate this type of co-location is a possibility. There are examples of this concept in place in Tracy, California, Ventura County, and Riverside City and County. This finding may affect the viability of this decision and the need for the SSCCFD to move further to the north and west. This would be desirable.

Future Fire Station Locations will be required to provide an adequate level of response that is equitable for all parts of the community. The two questions that will need to be answered are when and where. The question of when a station is needed is based upon the principles already described in this report. However, these principles need to be implemented within the context of a budget and are subject to conditions that may change in the future.

At one of the earlier Task Force meetings, the question of setting criterion for this type of decision was raised. The Task Force concurred that a fire station location should be based upon the following criterion:

- To reach areas that are beyond the response goal boundary.
- To reach areas with population and property at risk.
- To reach areas where there is a workload (call volume) that becomes statistically significant.
- The station should provide the most cost-effective distribution.
- The station should contribute to the overall concentration of resources.
- Readily assessable to traffic pattern and circulation elements.
SUMMARY

The Gilroy Fire department has applied itself diligently to developing its capacity to respond to the community fire problem. Its current level of service is challenged to keep pace with community growth and individual expectations. In Section IV, Policy Direction, recommendations are made that are based upon the criteria and thresholds from this chapter.
III. PROGRAM AND PRACTICES

This section reviews the services, activities and responses provided by the Fire Department to the City of Gilroy. These are the specific activities designed, organized and operated in compliance with the Department’s mission, goals and objectives. This section does not resemble a management audit. Specific areas for improvement are not discussed in this chapter. The findings however were used to develop recommendations for future consideration. The intent of this section is to identify the various types of services and activities that are currently being provided by the Department and that may require modification as the City grows and evolves.

We evaluate organized services to determine the various levels of adequacy, deficiency, and effectiveness. Methods and specific results of programs are not discussed in this document. Technical terms are defined in the included glossary.

A. GOAL STATEMENT

General Plan\(^1\) Policy 18 states the following goal statement:

“Public health and safety through (1) the provision of high quality police, fire and emergency-response services that respond to community needs and issues; (2) education programs that raise community awareness about public safety issues; and (3) preventative programs that involve residents in deterring crime, reducing fire hazards and addressing other threats to public health and safety.”

The applicability of all the Fire Department’s listed programs is discussed in the context of the goal statement above, which is reinforced through the Gilroy Fire Department’s program activity that has been approved in the budget. This was further clarified by reviewing the Department’s mission, goals, and objectives (see Section II). The Gilroy Fire Department has already committed to these goals in the implementation of programs, activities and discretionary tasks being performed.

This raises two questions in the process of Master Planning:

1.) Should these activities and programs be continued at the existing level? or

2.) Should they be enhanced where appropriate to deal with future demands upon the Department?

We evaluate these questions through the use of the Fire and Emergency Services Self Assessment criteria. The results of this review are below. Please note that statements in italics are “standard” statements used in fire service reviews.

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\(^1\) General Plan, Section Page 7-13
B. ASSESSMENT CRITERIA AND DEPARTMENT RESULTS

General Administration and Management

“The administrative support service component of the organization should be adequate, effective, and efficient to provide the organization with all appropriate support functions such as research, planning, purchasing, coordination, control, and feedback.”

Currently the Department has four persons available to provide for administrative activities. The current workload of these positions is reflected in the types of reports generated by the Department such as the status of its compliance with City policies and procedures and its participation in citywide administrative processes.

There are no indications of a backlog in this area, but there are indications that continued growth in program activity would result in increased workload. Examples of this would include: 1) expanded record keeping; 2) additional compliance with state mandated activities and quality assurance activities within EMS program; and 3) further use of technology, especially in the area of management information systems (needed to keep pace with both an increased workload and documentation to support program activity).

The Department should anticipate that the amount of effort devoted to administrative duties will increase every budget cycle. This is due in part to the demands placed on local government by state and federal mandates. Examples of this in the past include mandates from FLSA and OSHA involving mandatory training and fire prevention requirements.

If these trend lines continue, we would anticipate that an additional Administrative Officer will be required within the next twenty years. If the quality assurance and documentation increases as much as it has over the last ten years, a fulltime EMS Coordinator is likely to be required within the next five years. This is discussed later in the report, but it is included here because EMS Coordinators often are multi-tasked, also performing administrative duties.

Fire Prevention

“An adequate, effective and efficient program should be directed toward fire prevention, life safety, and risk reduction of hazards. Enforcement of contemporary fire and building codes is one of the most cost-effective ways of controlling a fire problem. This area involves installation of equipment for the detection, reporting, and containment and control of fires and other emergencies. The provision of occupant safety, through features such as, exiting and the provisions for first aid fire fighting equipment are all contained in fire and building codes. This process also involves conducting plan checks and inspections to assure compliance with codes, regulations, and ordinances.”
The Gilroy Fire Prevention Bureau consists of five personnel. These include a manager, a clerical staff member, a fire inspector, and three chemical control personnel. The Bureau has established goals and objectives that are consistent with the Department's mission statement and overall goals. They currently are:

- Building Life Environmental Safety Division (BLES)/Fire Prevention Section and Engine Company personnel shall inspect all businesses at least bi-annually unless otherwise required by law.

- BLES Division/Fire Prevention Section will maintain an effective weed abatement program that routinely notifies property owners each year of their responsibility to abate their weeds, enforces compliance, and responds in a timely manner when complaints are received.

- BLES Division/Fire Prevention Section will continue to maintain an effective program of insuring Fire Department access during emergencies to locked facilities utilizing the "Knox Box" key entry system.

- BLES Division/Fire Prevention Section will respond to customer requests within 24 hours or less.

- BLES Division/Fire Prevention Section will maintain its current standard of initial plan-check turnaround time of ten days or less, 95% of the time.

- BLES Division/Fire Prevention Section will, in coordination with the Fire Department’s Training Division, implement an on-going training program in support of the Engine Company Inspection Program.

- BLES Division/Fire Prevention Section will coordinate a public education/outreach program with the Fire Department Public Education Unit. The program will target the business community and emphasize a fire safe business environment predicated on state and local code requirements.

The Fire Prevention Bureau is also responsible for the implementation of the Hazardous Materials/Chemical Control program. They have established goals and objectives that are aligned with the City and Fire Department's mission. They are:

- BLES Division/Chemical Control Section shall inspect all applicable businesses at least bi-annually unless otherwise required by law.

- BLES Division/Chemical Control Section will respond to customer requests within 24 hours or less.

- BLES Division/Chemical Control Section will maintain its current standard of initial plan-check turnaround time of ten days or less, 95% of the time.
BLES Division/Chemical Control Section will develop procedures for providing the Operations Division with Hazardous Materials Business Plan information.

BLES Division/Chemical Control Section will, in coordination with the Fire Department’s Training Division, develop an ongoing training program focused on identifying hazardous materials related compliance issues.

BLES Division/Chemical Control Section will coordinate a public education/outreach program with the Fire Department Public Education Unit. The program will target the business community and emphasize the minimization, use, handling, storage and disposal of hazardous materials.

The workload of the BLES Division is driven entirely by the number of occupancies that require inspection and the amount of workload created by new construction. The current staffing levels are capable of keeping up with the current pace, but would be considered marginal if the number of occupancies increase. One program element that helps to keep the fire prevention workload under control is the active inspection program implemented by the Fire Department’s companies. While the pattern of growth in the City will increase the total number of occupancies, decisions can be made to balance out the distribution of inspections. What will continue to be a pressure on fire prevention is new construction and tenant improvements.

Based upon current and anticipated growth in fire prevention responsibility, it can be expected that over the next twenty-year planning period, additional fire prevention personnel will be required. The criterion for that decision will be the numbers of required inspections and the amount of personnel hours available to achieve them.

Fire Investigation

“There should be an adequate, effective, and efficient program directed toward identification of the causes and origins of fires, explosions, and other emergency situations that endanger life or property.”

The City of Gilroy has a fire investigation ability at two levels. Fire officers or fire companies are given responsibility to perform “cause and origin” investigation to determine if the event was a result of a deliberate act, or a function of an otherwise accidental ignition. If it has been determined that arson or other form of criminal act has occurred, provisions are made to bring in more technical expertise. Law enforcement personnel are available to assist.

It was not possible to determine from the records review whether there is any significant workload associated with this activity.
Fire Suppression

“There should be a fire suppression program, designed to control and/or extinguish fires for the purpose of protecting people from injury, death or property loss. The overview of the Department’s suppression functional areas was provided in Section II of this document. Fire suppression is one of the most visible services provided by a Fire Department, but is not the program that takes up most of the productivity time. In fact, if a department is experiencing a high rate of fires, high fire loss and severe losses of life and property, the overall system is not functioning correctly. Fire Suppression is a service that is provided to react when everything else has failed to prevent the event from occurring.”

General Plan Policy 18.01 states a “Standard of Service” goal as follows:

“Continue to provide and maintain police and fire services that are adequate in manpower, equipment, and resources to respond to localized emergencies and calls for service within the City. The Department’s current levels of service should be maintained or improved as the City continues to grow, with average emergency response times for police services of approximately 4.5 minutes and an average emergency response time for fire services of less than 5.0 minutes.”

The Operations Division of the Fire Department has established goals and objectives consistent with the General Plan and the Department’s mission. These goals and objectives consist of the following statements:

- Insure that there is an adequate, effective and efficient fire suppression response force designed to control and/or extinguish fires for the purpose of protecting people from injury, death and/or property loss.
- Arrive on scene in five minutes or less 95% of the time.
- Confine fires to the building of origin 90% of the time.
- Confine fires to the area of involvement upon arrival 95% of the time.
- Maintain current pre-fire plans for designated target hazards.

The decision to add additional staff and stations to a fire department is both a technical and a pragmatic question. The need must be clearly established and the finances must be available. Section II of this document stated that there are hazards, risks and values that are clearly present in the City of Gilroy, but they are not documented or categorized.

There is evidence of areas within the existing city that cannot be reached within the stated goals. The maps displayed in Section II demonstrate that additional fire stations will be required to provide adequate coverage as the City moves towards its build-out period.
Based on population, area and traffic circulation, and construction development, it is projected from data in this Master Plan that a minimum of four fire stations will be required by the year 2020. Based upon the majority of the calls for service being medical aids, the staffing configuration would be more cost effective if the personnel were also EMS qualified. This will be further elaborated on in the next element below.

**Emergency Medical Services**

“EMS has become a major element of many fire service agencies over the last 20 years. Throughout the state, fire companies are commonly tasked to be the first responders to medical emergencies. The primary reason for this is the placement of fire companies through their locations and staffing configuration. EMS, in order to be delivered promptly, has become an integrated activity of fire company activity. Care however should be exercised so as not to create a priority or resource allocation conflict between the two program activities.”

The purpose of the EMS portion of the Master Plan document is to define the delivery of pre-hospital medical care service for the City of Gilroy Fire Department and other provider agencies vested with responsibility and authority to deliver such services to the citizens of Gilroy.

Citygate’s assessment of the Gilroy Fire Department’s EMS services is based upon information gathered from multi-dimensional sources. A comprehensive analysis of an EMS system requires much more than simply quantifiable measures. Historical perspectives and qualitative influences can significantly influence the performance of an EMS System.

**Mission Statement Alignment**

The purpose of the Emergency Medical Services component of the Department is the provision of efficient and timely pre-hospital care of the sick and injured. Medical oversights of quality of care issues and collaborative system design are essential for clinical excellence in pre-hospital care. The Department has established goals and objectives for this program. They are as follows:

- Provide pre-hospital care at a level consistent with the Regional EMS plan.
- Maintain EMT and EMT-D certification for 100% of the fire suppression personnel.
- Continue to provide an enhanced level of EMT skills, consistent with State EMS regulations and requirements.
- Develop a Quality Assurance Program that will track patient treatment and patient outcome.
• Develop a continuous quality improvement plan.

Existing EMS Practices in the City of Gilroy

The Fire Department EMS program is not a separate division within the Fire Department. The Fire Department’s Training Officer, who concurrently is responsible for numerous other fire training and safety mandates, manages EMS services. It is operated as a concurrent function of existing staff. Records and reports kept on this activity illustrates the following:

1. The Department is able to provide for basic life support within 5 minutes 95% of the time.

2. The Department is not able to provide for Advanced Life Support within 8 minutes 90% of the time.

Role and Authority

The Gilroy Fire Department is licensed by the state EMSA and certified by the County of Santa Clara EMSA to provide a combination of first responder Basic Life Support and enhanced EMT, EMT-D skills. A private ambulance provider, not the Gilroy Fire Department, provides emergency ambulance transportation and is regulated by the Santa Clara EMSA. On line medical control is the responsibility of the Duty Chief. The enhanced EMT currently uses standing medical orders that are authorized by both the state and the Santa Clara EMSA. A policy and procedures manual located at each fire station contains EMS protocols. The review and revision of this manual is the responsibility of the Santa Clara EMSA Agency.

There is not an identified EMS planning and research function in place in the Gilroy Fire Department. At present, there is not a medical director involved in the planning process or evaluation activities as it relates to Gilroy Fire Department EMS.

Management

Gilroy Fire Department’s management practices encourage discretionary decision-making. There are liaisons within the Department and with other Departments through citywide meetings. Although agendas are prepared and distributed, no formal notes are available after each staff meeting to indicate the level of attention to EMS details. Specific staff meetings are not conducted within the EMS Division.

Legal Services

The City Attorney is the Fire Department’s legal officer. Release of patient information or medical history requires a subpoena. The City Attorney is present when EMS personnel are required to submit depositions and is available to defend employees in job-
related civil cases. The City currently does not provide malpractice insurance for personnel associated with the delivery of EMS. There is not a routine review of EMS policy by the legal officer and he/she does not attend Fire Department meetings. There is no regular tracking or translating of legislation and court decisions specific to Department employees for EMS policy development and for making decisions. The legal officer regularly reviews contractual agreements between EMS and other public or private entities.

Fiscal Management

The City of Gilroy does not charge for Emergency Medical Services. The Fire Department does though have an inventory of property, equipment and supplies and the ambulance company, by contract with the County, replaces Fire Department expendable EMS items (i.e. drugs) on a one-to-one basis.

Operations

EMT personnel are not solely dedicated to EMS. They function in dual roles of fire prevention and suppression. EMS is provided 24 hrs/day, 7 days a week. The current shift schedule is 24 hours. A recall mechanism is in place. All company officers in the Gilroy Fire Department are trained at the enhanced EMT level and also respond to each EMS call.

Safety and Health

Gilroy Fire has written and well-established procedures concerning the availability and use of EMS safety equipment. Established procedures exist for dealing with violent and potentially dangerous situations to which EMTs are summoned. Procedures have been written and established for disposal of potentially infectious waste materials and for involvement in hazardous material incidents. Policies and procedures are in place regarding infection control and potential exposure to a communicable disease.

An emergency operation plan is in place concerning planning for disasters and civil disturbances; however, EMS involvement in heavy search and rescue incidents is not addressed. EMT involvement in crime scenes is covered by EMT guidelines in early training.

A Critical Incident Stress Debriefing (CISD) program exists to incorporate the availability of employee assistance programs and a crisis intervention team. All personnel are offered Hepatitis-B Vaccinations. TB Testing is initially done. No annual follow-up tests are given.

Command Operations

EMS is an integral part of Gilroy’s Incident Command/management System (ICS). There are specific job assignments included in the ICS. The Gilroy Fire Department has
both a multi-casualty and a mass casualty plan. There is a designated EMS command officer for these emergencies, and the EMS component of ICS includes cross communication with other agencies.

Training

The Department Training Officer is responsible for the Fire Department’s EMS training under the guidance of the Santa Clara EMSA. Annual EMS training is mandated. EMS training is regulated by California and certified by Santa Clara County. EMS Training Specialists are associated with the Mission Community College. All Gilroy Fire Department personnel, regardless of rank, are required to have EMT certification. Medical training is not provided for civilian employees. The Gilroy Fire Department currently has no firefighter paramedics.

EMS Quality Assurance

Gilroy does not have a Quality Assurance (QA) program in place regarding Fire Department EMS. This is because it is not required at Gilroy’s current service level.

Medical Control

The Medical Director of the Santa Clara County EMSA maintains medical control of the Gilroy Fire Department EMS. The Gilroy Fire Department does not have a physician review board that addresses specific medical concerns. The county medical advisor maintains specific requirements under state or local guidelines and oversees compliance with specific EMS policies and procedures.

Support Services

The Gilroy Police Department dispatches all Fire Department calls. Ambulance dispatching is done centrally by the Santa Clara County Communications Center. No prioritization is given for a basic or advanced life support calls. Dispatchers are responsible for other functions as well. Currently, dispatchers are not trained in CPR or Emergency Medical dispatch. The City does not employ medical advice services, or pre-arrival restrictions to 9-1-1 callers.

Fire Department EMTs provide enhanced-level of care until the arrival of the ambulance with paramedic-level personnel, telemetry and communication capabilities with a centrally located Base Station Hospital (BSH). The Gilroy Police Department uses a Computer Assisted Dispatch System (CAD) which does not allow for the inclusion of EMS data. The inability to access a CAD/MIS (management information system) for EMS data hampers the Fire Department’s ability to identify and address quantitative data regarding many areas such as:

1. Non-transported patients.
2. Complications of procedures (i.e. Medication errors).
3. Delays and/or success of procedures.
4. Policy compliance issues.
5. Field treatments/death.
6. Success rates with procedures.
7. Scene Calculation and Response Efficiency (SCARE) or the length of time that medics are on-scene.

Cost Recovery for EMS

At present, the Gilroy Fire Department operates solely by a tax supported general fund system. No revenue is collected to offset costs by another source i.e.: Medical or Medicare, private insurance, fees for service, or subscription program.

Gilroy EMS in the New Millennium

According to Section I of this report, housing figures published by the Gilroy Community Development Department, estimate Gilroy’s population to be 39,070 as of January 1, 1999. Projected growth estimates a 2020 population of between 60,500 and 62,500 residents.

Two distinct entities that stand out within this population growth are persons over 90 and number of households of lower income status. Over the next 20 years, Gilroy’s population over 60 years of age is expected to increase significantly, representing 16 percent of the City’s residents. These older households generally have fewer resources to spend on services. Secondly, Gilroy also has a high incidence of people below poverty level, representing 12.7% of the City’s population. Historically, these families are without medical insurance or money for health care and tend to rely on EMS to provide medical assistance and/or intervention.

The projected residential construction in the southwest and northwest regions of Gilroy will have a direct impact on EMS response times to these areas. The existing fire stations will encounter longer response times. Also with the potential relocation of the SSCCFD Hecker Pass Station, auto-aid response times will increase. Shifting population demographics will affect EMS demands proportionally. EMS experience in Gilroy indicates call rates could increase conservatively by as much as 50 percent over a 20-year period.

Alternative EMS profiles for the City of Gilroy

Fire departments throughout California have identified and developed many diverse approaches to the delivery of EMS. Following are three program operational profiles including the existing delivery system in use in Gilroy.*

1. Placement of paramedics on engine companies. Transportation of patients provided by private ambulance.
2. Utilization of a dedicated unit composed of firefighter-paramedics. This would be a Fire Station-based squad or ambulance located centrally in Gilroy and would respond to both EMS and fire calls.

* First response by Engine Companies with EMT-enhanced skilled personnel followed by paramedic intervention provided by private ambulance.

The Fire Department’s role in EMS will require attention to the following factors:

A. Medical Accountability

Medical accountability is set at the State and Federal Levels by legislation, regulations, and treatment protocols that provide medical control.

In pre-hospital care, there is a distinct difference between medical control and operational control. Medical control is the responsibility of the Medical Director of Santa Clara County and should be absolute with regard to clinical issues such as treatment protocols and quality monitoring or patient care. Operational control is the responsibility of the Fire Department. Examples of operational control involve staffing, scheduling, vehicles, equipment dispatching, and quality monitoring of operational issues. The Fire Department has the most financial responsibility and legal liability and must work collaboratively with the medical community on system design and quality of care issues.

Inherent with these responsibilities is a liaison between the Gilroy Fire Department and the medical community to conduct patient care quality assurance studies which evaluate the effectiveness of policies, medical treatments and paramedic performance. The Gilroy Fire Department must demonstrate medical accountability to the systems standards. This is done by performance evaluation of providers, provision of quality continuing education programs, monitoring of protocol compliance, and input from patients.

B. Continuity of Care

Continuity of care for purposes of this document is defined as the transition of care from pre-hospital BLS to the ALS team and finally to the hospital medical staff. This continuity of care must exist regardless of what system is chosen and its goal must be quality patient care.

C. Teamwork

The patient care team must work in harmony to provide a well-coordinated approach toward quality medical care. Good communications are imperative and can have dire results when not achieved. Continuous training focuses on well-organized team performance. This is enhanced by a stable and experienced work force.
D. Coordination

EMS involves a diverse set of individuals, agencies, organizations, and institutions. There is no single organizational umbrella that employs and directs every person who must serve the immediate needs of an emergency patient throughout the sequence of emergency care and transportation.

Cooperation in EMS is fragile and requires constant attention. When it is a planned endeavor and pursued on a regular basis, coordination can become a method of controlling events rather than being controlled by them.

E. Program Evaluation

Evaluation means the examination of a specific function to determine whether that function is producing the desired results. Desired results, or goals, will have been stated in the initial stages of the paramedic planning process. Data will be necessary to measure performance. When the data (in the form of system outcomes) are measured against the goals, an opportunity occurs to evaluate the program and its performance. Patient outcomes are the measurement of performance against the goal of reducing unnecessary death and disability through improved emergency care and transportation.

Public Education and EMS

The Gilroy Fire Department must assume a proactive role in providing community education outreach programs. Programs such as First Aid, Blood Pressure Screening, CPR, and School Safety programs can all contribute to the success of an EMS program. For example, early CPR (by bystanders) is an important link in the “chain of survival.” Without this intervention, chance of survival is diminished and the EMS system will have poor performance results.

Essential elements in this outreach program must include teaching the difference between a non-emergent situations and a “911”-level event. Census data shows that many of the City’s residents are of Hispanic decent. Therefore, education programs should be delivered in a bilingual format to increase participation.

Recognition must be given to the fact that the Emergency Medical Services System is a rapidly changing system. The combination of state and federal legislation, coupled with local needs, requires that any plan be monitored and updated frequently.

Training & Education

“Training and Education” is defined as the specific programs, resources, and capabilities of the personnel within a fire service agency which exist to support the operational programs defined by its own policies.
“Training and Education” resource programs express the philosophy of the organization they serve and are central to its mission. Learning resources should include the following:

1) a library and other collections of materials that support teaching and learning;
2) instructional methodologies and technologies;
3) support services;
4) distribution and maintenance systems for equipment and materials; and
5) instructional information systems, such as computers and software, telecommunications, other audiovisual media and the facilities to utilize such equipment and services.

Central to success of the training and educational process is a learning resources organizational structure and a technically proficient support staff. The training staff should provide services that encourage and stimulate competency, innovation, and increased effectiveness. The agency or system should provide those learning resources necessary to support quality training. The adequacy of a system’s successes should be judged in terms of its goals, objectives, and programs supporting the organization in achieving its mission. The system should also include the following elements:

- Comply with all Federal, State, and Local mandated training requirements.
- Include training sessions specific to new apparatus and equipment.
- Implement a record keeping system that identifies individual participation and compliance with mandated training requirements.
- Develop Standard Operating Procedures specific to Gilroy Fire Department capabilities.
- Ensure operational readiness through quarterly performance reviews.

The Gilroy Fire Department has a Training Officer that prepares a Master Calendar of Training and assures that records are maintained. The Department does not have an adequate training facility to accomplish basic fireground operational procedures. One of the consequences associated with low outbreaks of fire in a community is the loss of practice and likewise the ability to fight them when they do occur. This is not because firefighters do not have the training. It is because of a phenomena called “skills degradation.” This is a reduction in the ability to perform skills that are not frequently practiced. Without an adequate reinforcement of periodic drills of basic skills, especially in the area of interior attack, skills often deteriorate over time.

Fire departments therefore need training facilities to maintain their skills. Currently there are no formal training facilities within the immediate vicinity. The closest training tower...
is in San Jose. There are no plans for neighboring communities to develop facilities that could be shared. Therefore, the Department, in considering a new station, should evaluate how to incorporate moderate, not elaborate, training facilities into the plan. Based on all of the information to date, the Department is unlikely to have either the space or financial resources to build a complete training facility. Nonetheless, there are less expensive modular designs for fire training facilities that could provide a low rise, smoke, and even a heat producing training facility that could be incorporated into a future fire station site.

Public Education, Awareness and Outreach

The Department has a part-time Public Education Specialist. The position has been funded for some time, but has had some recent changes in staff. There have been goals established for the program, with an emphasis on fire and life safety.

Hazardous Materials

“*There should be a hazardous materials response program designed to protect the community from the hazards associated with fires and uncontrolled releases of hazardous and toxic materials.*”

Hazardous material emergencies, spills, releases, or accidents have become a major function of fire service agency activity. Hazardous materials response is a complex undertaking, and considerable knowledge and resources are required to cope with these types of emergencies. Such incidents may require the integration or coordination of several agencies. The local fire agency has generally become the lead agency during the “unstabilized” emergency portion of such an incident.

Gilroy has two different levels of dealing with hazardous materials. The first has been identified in the BLES section. This section deals with hazardous materials response only.

The Fire Department has trained all fire suppression personnel to meet the state mandated level of “awareness.” The standard operating procedures utilize the BLES, Chemical Central personnel, when appropriate to guide watch commanders on small events.

If the event escalates to a level that requires a hazmat specialist or a technician’s expertise, Gilroy utilizes the Mutual Aid system. There is no person within the Gilroy organization certified to use encapsulated suits or to function at the level of a hazmat team member. The current resources available come from the City of San Jose and Santa Clara County Fire within a 45 to 60 minute timeframe.

Heavy or Specialized Rescue

“*There should be an adequate, effective and efficient program established to rescue trapped or endangered persons from any specific cause that exists in the Gilroy Fire Department’s area of responsibility. A specialized rescue could include a structural*
collapse, vehicle accidents, fast water or dive rescue, cave-in, trench rescue, or hazardous material plumes.”

The Department currently trains and staffs a rescue team designed to respond to rapid water situations. The Department in response to a specific incident in the past voluntarily adopted this. The city does have periodic flooding that can result in risks to life, but the number of incidents is low. There are some resources budgeted for this program, but it is limited.

Current discussion is under way regarding the impact of new qualifications and certifications that are required if the unit is to become recognized and conform to “typing” in the mutual aid system. Typing is a term that is applied to all resources that are placed in the mutual aid system. All resources that are identified as meeting minimum requirements are given a number or letter that tells all other users what its capabilities are. The best example of this is the typing of engine companies. A Type I pumper is considerably different than a Type IV pumper.

In the field of rapid water rescue the process of creating types is under the jurisdiction of the State Office of Emergency Services. Gilroy’s existing team may or may not meet the new criterion. The cost impact of this is unknown at this time. When it has been established it will contain both physical assets and personnel costs.

Disaster Management

“There should be a disaster management program designed to protect the community from both man made and natural catastrophes.”

The State of California, under the provisions of the Emergency Services Act, places specific obligations upon a city to prepare for disasters. The City of Gilroy has an adopted Disaster Plan and supporting documentation for its effective implementation. The City and the Fire Department are in compliance with the provisions of Standardized Emergency Management System (SEMS) legislation.

Physical Resources

“Physical Resources” are defined as the fire stations, training facilities, fire apparatus and other capital expenditures and outlays that make up the property assets of an agency. Special attention is required to obtain and maintain appropriate physical resources. Apparatus resources should be designed and purchased to meet the Gilroy Fire Department’s goals and objectives. The inspection, testing, preventative maintenance, replacement schedule, and emergency repair of all apparatus should be well established and meet the needs for service and reliability of emergency apparatus.”
Fire Stations

The two stations that Gilroy has in service today are well-maintained and very “serviceable.” The average length of service for a fire station is about 50 years. Both stations are well into the middle of that cycle. The Department has a funding mechanism for capital improvement projects in place. Current costs of building a fire station range from 1.2 to 1.8 million dollars, depending upon design specification.

In Section II, Fire Department Overview, the “Standards of Response Coverage” concept was discussed. In the 1993 Station Location Study, it was indicated that additional stations might be required. The FLAME maps produced in this Master Plan indicate that in order to provide service equity, achieve the response time goal for all portions of the City, options need to be exercised during the 20-year time frame.

What is missing from many statements about future fire station locations is a criterion for when the station is REQUIRED. The decision to construct a station is a financial one that requires several years of planning. For purpose of this Master plan, the following two goals are proposed as part of setting that criterion.

- The Fire Department will, if fiscally capable, construct and staff fire stations when time and distance studies reveal a significant deficiency in achieving the Department response goal.
- All permanent fire stations will be of sufficient size and flexibility to meet current and anticipated operational needs for the life span of this plan.

Fleet Maintenance and Replacement

The Gilroy Fire Department vehicle fleet is maintained by the City’s Maintenance Department. There is a comprehensive maintenance program in place that has adequate documentation and record keeping. The City provides specific training and certification of the mechanics assigned to work on Fire Department vehicles. There is a vehicle replacement cycle in place that has resulted in a rotation of fleet vehicles. The engines are given annual pump tests.

The Fire Department will, if fiscally capable, maintain a vehicle replacement cycle approved by the City through the budget process.

<table>
<thead>
<tr>
<th>Fleet Categories</th>
<th>Replacement Criteria</th>
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<tbody>
<tr>
<td>Fire Suppression</td>
<td>Years of Service</td>
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<tr>
<td>Command Vehicles</td>
<td>Years of Service &amp; Mileage</td>
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<tr>
<td>Staff and Support</td>
<td>Mileage</td>
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<tr>
<td>Utility</td>
<td>Physical Condition</td>
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Personnel and Staffing Issues

“The category of human resources is defined as all aspects of personnel administration except those regarding training and competency. The heart of any organization is in its people and this category is designed to appraise the importance and results of the human resources program. It is recognized that the completion of this human resources section may involve members from other governing entities or other elements of the community.”

Section II defined the Department’s existing staff resources. The City’s Personnel Department is responsible for development of human resource policies and procedures and the Fire Department is tasked to follow through to assure compliance and consistency. The current staffing level of the Department is set by public policy and is reflected in the budget.

Current staffing levels are capable of providing initial attack for a fire of less than 500 gpm and are capable of handling basic EMS calls. This Master Plan projects that additional personnel will be added with the addition of each new station, but further anticipates that staffing and distribution between line and staff will increase over the period of the next 20 years to respond to growth issues.

The most important considerations for future staffing enhancements are the cost and benefit of each improvement.

The Fire Department should, if fiscally capable, maintain and staff fire stations that are located to comply with the adopted Standards of Response Coverage and:

The Fire Department should, if fiscally capable, maintain adequate staff personnel to assure quality control over program activity and workload management.

Internal Support

These are the activities relating to internal support including communications and dispatch services.

“The public and the Department should have an adequate, effective and efficient emergency communications system. The system is reliable and is able to meet the demands of major operations, including command and control within fire/rescue services during emergency operations and including the meeting of the needs of other public safety agencies having the need for distribution of information.”

The Gilroy Police Department provides the Gilroy Fire Department’s communications and dispatch services. Earlier in this report it was indicated that this service is an element in the determination of response time in that it controls the time it takes to process an alarm. Alarm time is not currently being evaluated or measured. The Police Department’s analyst provided Citygate with an inventory of incidents, but was unable to
provide any further analysis, such as breakdown of types of incidents by location in the City.

There are indications that the Police Department is currently out to bid for a new CAD system, but specifications were not provided to Citygate for evaluation. Based on the assumption that the City of Gilroy intends to continue with its current methods of communications and dispatch the Police Department should be tasked with providing some form of documentation for alarm processing time for use in evaluating the Department’s performance in overall response time.

Furthermore, the change in the CAD system’s hardware and software should involve the Fire Department so that it can communicate its design needs regarding the system’s inputs and outputs.

Management Information Systems

The Department’s records and reporting system is comprehensive and provides a wide variety of documentation. The system is partially automated, but the majority of the system is manual. The Department is keeping the appropriate records to respond to questions relative to fire prevention, training, maintenance and emergency operations. The reports that are aggregated on a regular basis, i.e. monthly or annually, are labor intensive to a minor degree. The reports that are developed periodically, i.e. specific studies, are labor intensive to a large degree. In the process of conducting this review, several key issues could not be addressed due to lack of an automated system that would allow the rapid collection or compilation of data.

External Relationships

“A fire service agency should have well-developed and functioning external agency agreements. The system is synergistic and is taking advantage of all operational and cost effective benefits that may be derived from external agency agreements.”

The Gilroy Fire Department has involved itself with both automatic aid and mutual aid.

Mutual Aid

In the State of California every fire department is a participant in the California’s Master Mutual Aid Plan. This plan is structured through regional and local area coordinators who operate the system on a day-to-day basis. There are no areas of consideration in this document relative to this plan. However, it should be recognized that this plan is based upon the commitment that when a city is requested to respond this has financial considerations (i.e. overtime). The experience of the last ten years has been that mutual aid is a very valuable asset to every community and that active participation in major events is becoming a more frequent experience.
Currently Gilroy has sufficient reserve apparatus to allow it to respond to reasonable mutual aid requests. When this occurs, a recall of off-duty personnel is required to maintain standards of response coverage in the community.

Automatic Aid

Automatic Aid is a very large part of the Gilroy Fire Department’s overall response strategy at this time. Agreements have been signed that provide for response into areas that are beyond the response time goal of existing stations. These agreements are both effective and efficient ways of providing coverage. The one disadvantage is that they are dependent upon external decision making processes. The predominate factor that could change the existing relationship is the possible need by the South Santa Clara County Fire District to relocate the Tree Haven Fire Station. This station was once outside of corporate boundaries and was on land that was very inexpensive. Today, it is located out of position for its primary area of jurisdiction and is experiencing increased costs of operation.

The history of excellent relationships between these two agencies should provide a solid foundation to consider other options and alternatives. As referred to in Section II, there may be need for the City and County to discuss a jointly operated station.

Evaluation and Performance Measurement

“For purposes of organizing and managing a Fire Department, goals and objectives that can be measured should always be established. Performance measurement is best described as a systematic attempt to quantify and compare a Department’s activities. The purpose of the analysis is to determine if the activity is effective (doing what it is supposed to do) or efficient (doing the job as inexpensively as possible).”

There are three ways of measuring service levels:

1. Comparisons between communities.
2. Setting a specified service level that can be measured over time.
3. Setting a standard against which performance is measured.

Each technique has its limitations. Inter-community comparisons requires that all factors for comparison remain the same and setting specific service levels without considering growth factors may be misleading. Measurements against standards are only useful if the standard is realistic. One of the tools to set standards is to have a set of goals and objectives.

The Gilroy Fire Department has utilized the goals and objective process extensively. Not only have they been established, they are utilized at different levels in the organization to drive decision making processes. However, while goals and objectives are incorporated into various functional areas, they must be evaluated and measured on a periodic basis if they are to contribute to efficiency and effectiveness.
Since goals and objectives are key areas for the Fire Department, we anticipated finding performance measures related to each of these areas. During the Task Force's deliberations, a review was conducted of several different levels of goal setting. These included goals for the master planning process and program goals.

Fire Department performance indicators are usually grouped into three types -- inputs, outputs, or efficiency indicators.

Input indication refers to the level of effort applied to a service unit. In this report we have calculated expenditures per capita, staffing per 1,000 population, and others. Inputs however, do not constitute performance information since they do not provide any information regarding what was achieved as a result of the input. Example: The speedometer tells you how fast you're going, but does not give you indication of your direction. Input measures also do not inform you about how efficient your operations are or the quality of service provided.

An intermediate indicator also does not lead to an end by itself. Achieving the goal of arriving at a scene of a fire within a specified time frame does not necessarily mean there will not be loss or injury. Intermediate indicators, for instance, could include the numbers of dollars lost or the average property loss for all structural fires. These would indicate the level of expected damage from an average fire call.

An efficiency indicator measures outcomes. An example of this would be keeping records on the percentage of fires that are confined to the room of origin after arrival of the fire company to the scene. Efficiency indicators compare inputs versus outcomes. These are very difficult to develop for fire service scenarios, but they form the basis of a cost versus benefit analysis.

Generally the management of a Fire Department is better represented by the use of intermediate and output performance indicators, rather than input or efficiency indicators. When performance indicators are used in areas of community risk reduction, training and education, fire prevention, fire suppression, hazardous materials and emergency services, they began to represent a community’s quality of life.

Performance measures only become meaningful when they are kept over a period of years. This allows the development of trends and patterns that reflect the Department’s influence over the community's fire problem.

Examples of various output performance measures might be:
  - Number of single-family dwelling fires per 1000 single-family dwellings.
  - Number of commercial fires per 1000 commercial occupancies.
  - Number of industrial fires per 1000 industrial occupancies.
  - Number of arson fires per 1000 population.
  - Number of EMS calls for 1000 population.
  - Percent of fire calls where fire is confined to area of origin.
  - Number of occupancies inspected every month.
The monthly and annual reports of the Gilroy Fire Department are very comprehensive in nature. They provide an overview of the program activity that is easily understood and evaluated. The data elements could be enhanced by the addition of performance measures that are more closely linked to the decision-making processes for the future.

Anticipated Performance Measures

The League of California Cities, City Managers Department, has produced a publication entitled “A How to Guide for Assessing Effective Service Levels In California Cities.” This document suggests that once goals and objectives are created, it is critical for an agency to identify units of measurement. The League document proposes that units of measurement should meet the following criteria.

- Relevancy.
- Easy to report and monitor.
- Capable of being reported accurately.
- The unit should not be subject to increased productivity at expense of quality.

Appendix C of this publication cites 12 performance measurements that should be utilized by users of this concept. For purposes of brevity the entire context will not be repeated, but the chart has been reproduced in the Appendix.

It is important to note that there are several performance measures not identified that should be noted. Among these are data elements on the level and quality of training given to operational staff. With the large number of state and federal mandatory training requirements, the Department should be tracking the records of both the individual and Departments compliance.

Moreover, the Department’s reporting system should analyze the reasons that response time exceeds the five-minute goal. These reasons may be critical to the identification of meeting threshold criterion for future station and staffing considerations.
C. MEANS OF EVALUATION OF THE MASTER PLAN

A Master Plan is a document that requires periodic review to determine when to implement various components identified in the future forecast of the Department. The review cycle has two elements: 1) the annual budget cycle; and 2) a 5-year update. All financial considerations contained within the budget are subject to the proposed adoption process utilized to develop the budget cycle. When multiple-year budgeting is utilized, the same consideration is given.

The 5-year update review cycle is for a different purpose. It is an internal review aimed at evaluating the validity of planning assumptions and accuracy of trends and patterns. The five-year review process should focus upon population and area projections, as well as workload increases and the ability to meet adopted performance standards.

This report, once adopted, should be reviewed in 2005, 2010, 2015 and 2020, unless superseded by another document with a similar charge. The responsibility for conducting such a review should be tasked to the Chief Fire Official. A written report should be required that provides amendments to planning details and updates and replaces or eliminates policy for the Department.
IV. POLICY DIRECTION

A. TRENDS AND PATTERNS

Trends and patterns in all areas of governmental services are subject to wide changes in direction. For example, economic factors can cause funding of service to become very difficult. A breakthrough in technology can cause significant changes in work practices. New tools and techniques can change efficiency and effectiveness of both individuals and groups. Therefore, making predictions from trends is at best inaccurate over time. The "farther out" a projection, the lower its accuracy. Nonetheless, the best way to assure a future outcome is to plan for its eventual implementation. This requires establishing some form of vision of the future and therefore this Master Plan has a 20-year timeframe.

Moreover, the speed of technological change is creating some difficulty in the decision-making processes of organization. In a recent article the Sacramento Bee identified the fact that with growth comes consequences. This article noted that California’s ten largest areas are struggling with how to make growth compatible with quality of life. Fire protection is a quality of life issue. Communities with high fire loss and extremely high response needs are often the ones that have not invested in a total systems approach to fire protection. They may have lacked mitigation through prevention, staffing to control incipient fire, or training for both the fire force and the community.

It is also appropriate to note that fire protection is in competition with other infrastructure issues in the community. Schools, highways, water systems, garbage disposal and law enforcement are generally in a similar mode of growth at the same time. Balancing out risk with resources requires constant assessment of the policy direction of the Fire Department.

Trends and patterns can be used to define a direction and to some degree a sense of incremental change that can be projected short term. In the context of this document, the trends and patterns have also been evaluated against the performance and professional standards used currently by the Fire Department. Section II and Section III provide detailed information relating to these activities. The information in these sections present basic findings used to form the foundation of recommendations in this section.

General Issues

After a review of the City, the Department, and the programs and contemporary standards in place that guide the delivery of fire protection services, Citygate proposed to the Task Force that there are six main issues to be addressed by this organization over the next 20 years. They are:

1) Risk Assessment Inventory
2) Fire Station Distribution and Concentration
3) Staffing
4) Level of Service

5) Management information systems

6) Periodic Assessment of Performance

As noted in Section II, the current level of effort for providing fire protection is about $67.00 per person. The Department has an additional fund that collects contributions to a capital outlay fund from development processes, but the annual contributions are usually modest. If this trend is continued, the implementation of these items will be based upon available funds and will take most of the 20-year planning period to see total fruition. Any incremental improvement in the level of effort would enhance the ability to see closure on specific decisions.

B. THE CITY OF GILROY 20 YEARS FROM NOW

If a person drove down the streets of Gilroy in 1980 and had a perfect memory of what they saw, then came back in the year 2000, they would have two different impressions. The first is that some things didn’t change. The second would be that there have been some very important changes that have made the City a different place. If one projected those same phenomena from the current year 2000 to the year 2020 a person would most probably have a similar experience.

The similarities are important, but not nearly as important as the differences. From a fire protection planning perspective, the fire problem in a community is a fairly slowly changing phenomenon. The General Plan will determine a great deal with respect to what is allowed to be built within the City. And, the increased population will bring with it increased service demands on the Fire Department. These were projected in Section III.

The most important thing to consider in this planning process is not that things may change, but rather that they will change one day at a time. Often problems are created before anyone recognizes them as problems. Based upon some of the existing changes going on in the community, we can anticipate that there will be a continuation of increased traffic on streets and the construction of a wide range of buildings for a wide variety of occupancies. There will be an anticipated change in type and distribution of housing stock, with some considerations given to increasing both the purchase-ability and the availability for local work forces. There is likely going to be a change in the make-up of the age distribution in the community.

It is unlikely that there will be major shifts in the types and sizes of business and industry currently in the City. New processes will be created and new products stored in old occupancies. It is likely that the number of occupancies that will require fire inspections and pre-fire planning will increase. New neighborhoods will become older neighborhoods.

All of these things may happen, but when they do, they will not happen at the same time. The Fire Department must monitor and respond to these changes in the community or there will be service level deficiencies.
The fire service of the future is not easy to predict. If one looks at the fire service of 1980 and compares it to the fire service of 2000, he or she would find that the fire profession has changed very little. There are still traditional fire stations and the basic firefighting and staffing configurations. Slight improvements would include the means of fire extinguishment from automatic fire sprinklers and the number and type of built-in fire protection devices.

What has changed the most is that fire departments have become “all-risk” agencies – given more and more multi-tasked assignments. This has been basically for emergency medical services and hazardous materials. Also, the majority of the fire service has a strong disaster management focus. Another change has been an increasing demand upon firefighters to meet training and education standards since there has been more regulation of the types of training and education required and a general increase in accountability and productivity of fire agencies.

Therefore, if these trends continue, the public will have a much higher level of expectation of the Gilroy Fire Department. With the increased emphasis upon emergency medical services, hazardous materials, and even environmental issues, the fire service of the future may have need to re-evaluate hiring practices to emphasize different skills and abilities. Fire agencies will also likely be impacted by legislative and regulatory changes in the field of health care. Moreover, fire equipment may evolve into different configurations to take into consideration both higher road activity and the need to meet a different mission assignment.

C. Specific Policy Considerations

Background and support documentation for these considerations are contained in the previous three Sections. This Section identifies specific needs in these major areas that need to be considered in determining ultimate outcomes. These issues are not listed in order of priority in this section. Priorities have to be developed into formal action plans as the implementation of specific items reach maturation. Funding, time frames, strategies and decisions will vary according to facts that come into existence over the time frame of the Plan. In the Executive Summary, these recommendations are listed in a framework that identifies who is responsible, and approximately when they should become a priority. The Fire Chief and appropriate city officials should consider and adopt actions to deal with the following decisions:

Risk Assessment

Finding #1: The Department does not have a system for quantifying risk, hazard or values for planning purposes. The Fire Department does have a pre-fire planning program. The current program is essentially a “diagramming program” for target hazards, but it does not result in information that can be quantified and aggregated to display the City’s risk management profile.

The Department should develop a more comprehensive risk inventory information system. This would be an expansion of the pre-fire emergency planning system and would be based upon the community’s occupancy records. This system could be used to measure performance of the Fire Department in controlling risk. Software called RHAVE (Risk, Hazard and Value Evaluation) is
available to fire departments at no cost; it can be used to quantify the range of risks in the community.

**Improve Mapping Environment**

**Finding #2:** The City of Gilroy has already adopted a mapping environment and is utilizing it. The Department however is not utilizing the mapping environment for analyzing the fire problem.

As communities become more complex, they have turned to electronic mapping systems to keep track of information. The Fire Department should develop enhanced utilization of the City’s Geographic Information System (GIS) through the use of fire related programs such as Fire View, Consequences Assessment Tools System (CATS), and other software applications to improve planning efforts.

**Fire Station Distribution and Concentration**

Given the need for fire stations to be distributed equitably for initial attack purposes, yet still concentrated on high risks throughout the community, the City of Gilroy should be prepared to develop a minimum of two more locations for future fire stations.

**Finding #3:** The FLAME Model has identified that current station coverage has deficiencies and that projected growth will cause the problem to grow more severe. FLAME scenarios indicate that to achieve the response time goal of reaching 95% of the calls for service within five minutes, additional fire stations will be required over the life of this plan.

Citygate projects the need for a total of four fire stations in the City of Gilroy by the year 2020. This does take into consideration the existence of the current automatic aid companies. With regard to specific apparatus and staffing, the Department may evolve into a different mix of types and sizes of apparatus than it has presently. Flexibility will be required in making those operational decisions, as the delivery of services becomes more diverse. As stated in the paragraphs on risk assessment, more consideration should be given to providing a system that quantifies the fire problem to a much greater degree. Use of technology to aid firefighters in the performance of high-risk job tasks should be part of the scenario, but are virtually impossible to predict.

The process used in this report to evaluate future fire station locations was primarily based on response time standards and not on risk assessment. This is not to say that general risk categories were not observed in this study. Referring to the general principles of fire protection planning, there are risk factors that were identified (see **Section II**) and reviewed; however, they could not be quantified. Furthermore, there are concepts of risk categorization that are used in the “Accreditation Process” that can be applied in general terms. These are referenced in **Appendix I** of this report. Based upon a review of the these background principles, proposed land use, and existing distribution and concentration of occupancies, it was determined that existing fire
stations will not serve the needs of this community based upon the growth assumptions and projections in Section I of this report.

The decision to build fire stations should be based upon criteria of response time thresholds and service demand increases. In order for a policy making body to make a valid decision regarding such a major capital outlay project, each fire station location or relocation should be accompanied by a specific analysis of its contribution to the City’s overall fire defenses. The criteria for the need for a new fire station are defined in the “Standards of Response Coverage Element” in Section III. The goal of this evaluation is to provide for construction and deployment of stations to minimize areas with minimum service.

Several alternatives are provided for in Section III for consideration in responding to future fire station needs. The current costs of construction for a new fire station vary from 1.2 to 1.8 million dollars. The cost of new fire apparatus is now averaging $350,000. This is a long-term capital outlay commitment.

**Staffing**

The issue of staffing levels is among the most controversial of factors within fire agency planning efforts. The “critical task analysis,” prepared by the consultants and reviewed by the Task Force, indicates that the following staffing level is provided by the City to respond to all fire risks in the community.

**Finding #4:** The current staffing level is three persons per company with seven persons assigned to each shift. This provides a level of effort of 6 persons on duty for each shift. The initial attack force must be reinforced by automatic aid companies to fulfill the staffing needs for an initial attack force for interior firefighting. The Gilroy current staffing level, absent the automatic aid companies, cannot handle more than a simple room and content fire.

If a third and fourth engine company were to be provided by Gilroy to the Department’s staffing profile, the initial attack capability does not change; however, it reduces reliance on automatic aid companies and the Department’s concentration capability improves. This is because a department usually only sends two engine companies, a truck company (if available), and a chief officer for a first alarm assignment.

In this Master Plan, it is anticipated that the Department’s “staffing configuration” will remain the same over the period of this plan. The current “staffing configuration” is three persons per company. The net result of this policy direction would be that four engine companies would result in an on-duty force of 12 personnel. In keeping with existing practices of maintaining personnel on shifts to cover for constant staffing, the table of organization would need to increase to 45 (15 personnel per shift.)
Spans of Control

The implication of the anticipated growth process is that span of control over program activity may be affected on a daily basis.

Finding #5: The span of control in the Department at this time is appropriate.

The three chief officers have command and control over the daily activities of the Department at this time. There are no chief officers assigned to work on the three platoons. With four fire stations in service, the Department may have a need for more management positions for improved command and control. It needs to be stated that the concept of on-duty chief officers (i.e. Battalion Chiefs (BC)) has undergone a considerable amount of scrutiny in the last decade. Many communities have converted their on-duty chief officers to alternative work schedules that provide the City with more time devoted to administrative and project management tasks. The issue of span of control rests on whether or not there is adequate supervision of programs and activities. At some time in the 20 year planning cycle, the Department may have need for additional staff resources to manage the Department.

Levels of Service

The following paragraphs define the level of service performance for each of the programs currently delivered by the Gilroy Fire Department.

Fire Suppression Operations

Given the existing staffing configuration, the Gilroy Fire Department should be prepared to expand the organization to a minimum of 45 shift personnel during the 20-year time frame. This assumes two factors.

The first is that there are no further modifications to the Fair Labor Standards Act (FLSA) to lower the number of hours in a workweek for firefighters to receive overtime pay. The current hour workweek for Gilroy firefighters is a 56.0 hour cycle. This is incorporated in the memorandum of agreement with the City. FLSA requires that overtime be paid beyond 53.0 hours.

The second is that other operational decisions do not require additional staffing. The Critical task analysis conducted in Section III indicates that this Department is currently capable of interior initial attack operations that do not exceed 350 gpm. In the case of defensive fires or an exterior attack, the limitations of existing staffing are 500 to 1000 gpm. That latter figure incorporates the use of master stream or large diameter nozzles. Given that automatic aid remains in place, and that the projected four fire stations are ultimately developed, this would increase the initial attack capability to about 2500 gpm. Under the section on fire prevention and code enforcement, the recommendation has been made to assure that future developments do not generate fire flow of over 3500.

The ISO evaluation will likely consider the lack of ladder company service as it did last time. The City has three options for consideration of this factor:
1) Do nothing
2) Consider modifying the Department’s apparatus configuration by making one engine company a “quint” – This would result in some credit.
3) Add an unstaffed fifth company to the response configuration – this could be cross staffed or made available for use by reserve firefighters (if the program remains viable).

Finding #6: The current staffing level of 3 persons per company and two engine companies, provides a level of service limited to initial attack for a fire scenario of less than 500 GPM (single family dwelling) and a single patient emergency medical aid call.

Emergency Medical Service

After reviewing in-depth the City of Gilroy's present systems for the delivery of Emergency Medical Services, Citygate has formulated the following recommendations:

- The City of Gilroy’s Master Plan Task Force agreed that the Department should establish emergency medical service goals and objectives. These have been integrated into the desired results, system outcomes, and system performance measures of the Department. As noted in several sections of the report, emergency medical aids are the predominant source of additional response workload. In addition, the Section on the City Overview demonstrates that the population/demographic changes are most likely going to increase the need for EMS in the 20-year timeframe.
- Continue development of plans of operation to maintain the role of the Gilroy Fire Department in the countywide emergency medical service plan. This is to assure that citizens of Gilroy are assured a comparable level of service within the context of the Santa Clara County Emergency Medical System (EMS). If that decision is made, the Gilroy Fire Department should be prepared to enhance their First Responder Capability to firefighter/paramedic.

Regardless of whether or not the enhancement occurs, the Department should be prepared to create a quality assurance (QA) process. The QA process should be in place whether or not other changes occur in Emergency Medical Service Delivery in order to do a better job of evaluating performance and reducing liability to the City.

Numerous studies, starting with the Seattle CPR study in the 1980’s, have indicated that survivability of cardiac arrest patients is not always determined by the speed with which ALS personnel arrive on the scene. While the treatment and procedures of ALS companies is vital, another vital link is the intervention by witnesses to cardiac arrests. The speed in which first aid, CPR, and other actions are taken, is a determining factor of overall outcomes. The Gilroy Fire Department should recommend to the Gilroy Police Department that a program of instruction in Cardio Pulmonary Resuscitation (CPR) and pre-arrival instruction First Aid be developed for all police dispatchers. As the Department expands its role, it should develop a more visible, proactive outreach program geared towards educating the public about Emergency Medical...
Services. This should also be a bilingual program due to the presence of language differences in the community.

Exploration of Emergency Medical Services cost recovery measures may not be a current priority for the Department. However, the entire field of EMS provision is still in a state of change. The budget should reflect and the Department should track costs associated with the EMS program and be prepared to undertake cost recovery measures when appropriate.

Documentation of training and performance is very important in the EMS field. The Department needs a performance tracking system for EMT-enhanced and EMT-D Level Skills. The development of competency-based curriculum testing for all EMS personnel, on an annual basis, should be a Fire Department standard. This should be in place as quickly as possible. This requires additional resources.

Another factor to be considered is a requirement of the Santa Clara EMSA is that a Medical Director be in place when paramedic level EMTs are added to the Fire Department EMS. During the interview process we were unable to determine if this has been planned or not.

Finding #7: The current level of service provided by the Fire Department is Basic Life Support with enhanced EMT skills. Gilroy is currently considering the implementation of paramedic services. Gilroy is the last fire agency to enter the paramedic program in the area.

The goal statement for this program is to provide a level of service consistent with the countywide plan. The Department must continue its development of plans to maintain the Gilroy Fire Department’s role in the Countywide Emergency Medical Service Plan. Since Gilroy is among the last to develop this capability, there is likely to be an inequity with neighboring communities. As noted earlier SSCCFD has already gone to this service level.

Fire Training Facilities

Finding #8: The current inventory of assets in the community and a review of neighboring fire agencies indicate that there are no local training facilities available.

This plan proposes the development of plans and specifications for a local fire training facility scaled to the City’s needs. This might include, but is not limited to, a modular type training building such as that offered by Wesco or Werner-Herbison-Padgett (WHP). A training facility would aid in the development and maintenance of fire fighting rescue and other skills over the time frame of the Master Plan.

Communications and Dispatch

If response time criteria take into account the interval of time from when the call is received at the public safety answering point (PSAP) until it is sent to the Fire Department, it should be measured and evaluated on a periodic basis. This is to assure accuracy in evaluating performance measures.
Finding #9: The Master Plan Task Force recognized that the total response time of the Department is impacted by the alarm processing time in dispatch and that the time element involved for the dispatcher to process a call is part of the overall system. Currently, there is not data available to determine a benchmark for alarm processing performance.

During the time this study was conducted, Citygate was advised that the Police Department is considering a change of its CAD hardware. It is very important that the Fire Department’s needs be factored into the design specifications of this project.

Fire Code Enforcement

One of the most effective means of controlling the growth of the community fire problem is the Fire Prevention Bureau. By incorporating fire services performance criterion into future developments of the City, the fire problem can be mitigated to the same level that the staffing and distribution levels of the Department can cope with. Emphasis should be given to limiting fire areas to 3500 gpm or lower. The Fire Department should be an active participant in the planning processes, such as traffic circulation.

Finding #10: The fire prevention activity of this Department is comprehensive and effective in obtaining code compliance. The workload of the Bureau is impacted by growth rates and by maintenance of effort after occupancy is granted. The Department is utilizing fire operations personnel to assist in maintenance of fire and life safety conditions.

By maintaining and enhancing program activity in code enforcement and plan checking, the City will sustain the role of proactive fire protection systems on the community fire problem. The workload of the code enforcement activities will increase with growth. The Fire Department has the option of continuing with its practices of dividing the workload between prevention and suppression forces and should continue doing so. However, the increase in numbers will likely result in a need to add technical staff to the Bureau at some point. The workload trigger for this should be based on the number of occupancies that require technical inspections divided by the number of staff hours available to do the task.

Public Education

Finding #11: The Fire Department already has an active and effective public education program. It is a part-time position.

In the next 20 years however the Department’s public education program should be expanded. The role of public education is changing from a “fire only” basis to more “all-risk” as departments change. With the Department integrating emergency medical information into its publications and audio-visual presentations, its public education program can contribute greatly to the survivability of potential users of the EMS program.
The public education program can be used more effectively if it focuses upon targeted audiences. The Department should also conduct a baseline community awareness survey once every four years to determine the depth of public awareness on pertinent issues in order to target activities and programs more accurately.

**Goals, Objectives and Performance Review**

Accountability and responsibility are increasingly part of the assessment of services in government.

**Finding #12: The Gilroy Fire Department has provided evidence of both setting goals and evaluating their completion. Current processes clearly produce goals and objectives that can be evaluated.**

This recommendation is to raise the visibility of the process by recommending an annual review of all program and specific goals and objectives for each program element, as it relates to the elements of the Master Plan. The Fire Department should consider a one or two day retreat with the staff and officers to facilitate the exchange of information between programs. This review should include a review of the City’s baseline and benchmark performance measures for fire protection services. The goal of this recommendation is to make an assessment of the changes the Department experiences over time.

**Career Development process**

The City is not the only thing growing older. The Department is also aging. A brief review of the tenure of Department personnel indicates that over the time period of this plan there will be many retirements.

**Finding #13: The Department will experience an exodus of knowledge and experience over the next 10 years. This will require the replacement of individuals and the reinforcement of others through training to maintain skill levels.**

Succession planning for this transition is a worthwhile consideration. As individuals retire, the City loses experience. As new personnel are added, the City gains new knowledge, skills and abilities. The Fire Department, in cooperation with City human resources personnel, should be developing an assessment of the types of candidates the Department will need in the future. The Department should also develop a Career Development Guide that provides entry-level personnel with general direction for acquisition of knowledge, experience, skill and abilities, to assure preparation for higher levels of responsibility.

**ISO Grading**

The ISO only grades cities in this population range about every 15 years. The next grading may be the only time in the 20-year cycle of this plan that there is a chance to impact the “class” of the City.
Finding #14: The Fire Department is due for a re-evaluation by the Insurance Service Office. The City is currently a Class 4. There are limited benefits from seeking a higher rating. However, there are some negative impacts if the grading goes to a lower rating.

The Department should institute an internal team to prepare for the next visit of the Insurance Services Office to assure it gets maximum benefit from its policies, practices and resources used for fire protection. This will help the Department obtain the maximum benefit from actions taken by the Department since the last grading.

Apparatus Replacement and Specification

While the vast majority of each year’s budget goes to personnel costs, the purchase price of a fire vehicle often creates “sticker shock” to the agency making the acquisition. As the City develops the replacement cycle of fire apparatus, it will become more of a planning issue than it is now.

Finding #15: Citygate’s review of the current apparatus maintenance and replacement schedule indicates a well managed system.

As the fleet increases in size, a conscious effort needs to be made to maintain and review the Apparatus Replacement Schedule every budget cycle. This is to prevent apparatus replacement cycles from overlapping unnecessarily.

Since the Department has already been heavily involved in responding to medical aids, changing the service level should not negatively impact the replacement cycle. What may have an impact is the workload, depending upon the total number of companies in the inventory and the total calls for service. The deterioration of apparatus may vary from station to station.

Management Information Systems

The contemporary thinking on governmental services is that performance measurement needs to increase. Publications provided by the ICMA and League of California Cities both advocate that fire agencies do a better job of providing outcome measures. As stated in Section II, the Fire Department Overview, the current MIS is essentially a manual system.

Finding #16: The Fire Department does not have a comprehensive management information system that can be utilized to perform analysis of Fire Department activities in a timely fashion.

The Department does collect a lot of information that could be useful if it were capable of being aggregated and analyzed. The Department in the future should develop a comprehensive automated management information system to produce more comprehensive performance data. This is to assure accuracy in developing management information for incremental decisions over the time frame of the plan.
SUMMARY

Citygate believes that the Gilroy Fire Department is a well-structured and very focused fire service agency. It displays a great deal of professionalism in its activities and performance. The Department should be commended for its track record of achievement and commitment. The interview process revealed that Department members are knowledgeable and motivated.

This report has offered a number of recommendations that, if adopted, will assist the Department in being prepared to keep pace with the changes in service demand and community expectation over time. These adjustments cannot be dealt with all at once, but incremental adjustment over time can accumulate to significant improvements in the Department's ability to provide quality services to its citizens.
APPENDIX A

CASCADE OF EVENTS ASSOCIATED WITH EMERGENCY OPERATIONS
Cascade of Events Associated with Emergency Operations

State of Normalcy
- Event Initiation - Soft Data
- Emergency Event - Soft Data
- Alarm - Soft Data
  - Notification - Hard Data
    - Alarm is reported - Emergency in Progress
      - Alarm Processing - Hard Data
        - Unit is notified
      - Base Line = 50 seconds
      - Turnout Time - Hard Data
        - Unit has left station
    - Base Line = 50 seconds
      - Travel Time - Hard Data
      - On-Scene Time - Hard Data
        - Unit Arrives at Scene
      - Initiation of Action - Soft Data
        - Unit begins operations
    - Base Line = 50 seconds
  - Termination of Incident - Hard Data
    - State of Normalcy

Appendix A
APPENDIX B

TABLE BUILDING CODE:
OCCUPANCY DESCRIPTIONS
# BUILDING CODE: OCCUPANCY DESCRIPTIONS

<table>
<thead>
<tr>
<th>Group &amp; Division</th>
<th>Description of Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A-1</strong></td>
<td>A building or portion of a building having an assembly room with an occupant load of 1,000 or more and a legitimate stage.</td>
</tr>
<tr>
<td><strong>A-2</strong></td>
<td>A building or portion of a building having an assembly room with an occupant load of less than 1,000 and a legitimate stage.</td>
</tr>
<tr>
<td><strong>A2.1</strong></td>
<td>A building or portion of a building having an assembly room with an occupant load of 300 or more without a legitimate stage, including such buildings used for educational purposes and not classed as a Group E or Group B Occupancy.</td>
</tr>
<tr>
<td><strong>A-3</strong></td>
<td>Any building or portion of a building having an assembly room with an occupant load of less than 300 without a legitimate stage, including such buildings used for educational purposes and not classed as a Group E or Group B Occupancy.</td>
</tr>
<tr>
<td><strong>A-4</strong></td>
<td>Stadiums, reviewing stand and amusement park structures not included within other Group A Occupancies.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>A building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts; eating and drinking establishments with an occupant load of less than 50.</td>
</tr>
<tr>
<td><strong>E-1</strong></td>
<td>Any building used for educational purposes through the 12th grade by 50 persons for more than 12 hours per week or four hours in any one day.</td>
</tr>
<tr>
<td><strong>E-2</strong></td>
<td>Any building used for educational purposes through the 12th grade by less than 50 persons for more than 12 hours per week or four hours in any one day.</td>
</tr>
<tr>
<td><strong>E-3</strong></td>
<td>Any building or portion thereof used for day-care purposes for more than six persons.</td>
</tr>
<tr>
<td><strong>F-1</strong></td>
<td>Moderate-hazard factory and industrial occupancies include factory and industrial uses not classified as Group F, Division 2 Occupancies.</td>
</tr>
<tr>
<td><strong>F-2</strong></td>
<td>Low-hazard factory and industrial occupancies include facilities producing noncombustible or nonexplosive materials that during finishing, packing or processing do not involve a significant fire hazard.</td>
</tr>
<tr>
<td><strong>H-1</strong></td>
<td>Occupancies with a quantity of material in the building in excess of those listed in Table 3-D that present an explosion hazard as listed in Section 307.1.1.</td>
</tr>
<tr>
<td><strong>H-2</strong></td>
<td>Occupancies with a quantity of material in the building in excess of those listed in Table 3-D that present a moderate explosion hazard or a hazard from accelerated burning as listed in Section 307.1.1.</td>
</tr>
<tr>
<td><strong>H-3</strong></td>
<td>Occupancies with a quantity of material in the building in excess of those listed in Table 3-D that present a high fire or physical hazard as listed in Section 307.1.1.</td>
</tr>
<tr>
<td><strong>H-4</strong></td>
<td>Repair garages not classified as Group S, Division 3 Occupancies.</td>
</tr>
<tr>
<td><strong>H-5</strong></td>
<td>Aircraft repair hangers not classified as Group S, Division 5 Occupancies and heliports.</td>
</tr>
<tr>
<td><strong>H-6</strong></td>
<td>Semiconductor fabrication facilities and comparable research and development areas when the facilities in which hazardous production materials are used, and the aggregate quantity of material is in excess of those listed in Table 3-D or 3-E.</td>
</tr>
<tr>
<td><strong>H-7</strong></td>
<td>Occupancies having quantities of material in excess of those listed in Table 3-E that are health hazards as listed in Section 307.1.1.</td>
</tr>
<tr>
<td><strong>I-1.1</strong></td>
<td>Nurseries for the full-time care of children under the age of six (each accommodating more than five children), hospitals, sanitariums, nursing homes with nonambulatory patients and similar buildings.</td>
</tr>
<tr>
<td>Group &amp; Division</td>
<td>Description of Occupancy</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>I-1.2</td>
<td>Health-care centers for ambulatory patients receiving outpatient medical care which may render the patient incapable of unassisted self-preservation (each tenant space accommodating more than five such patients).</td>
</tr>
<tr>
<td>I-2</td>
<td>Nursing homes for ambulatory patients, homes for children six years of age or over (each accommodating more than five persons).</td>
</tr>
<tr>
<td>I-3</td>
<td>Mental hospitals, mental sanitariums, jails, prisons, reformatories and buildings where personal liberties of inmates are similarly restrained.</td>
</tr>
<tr>
<td>M</td>
<td>A building or structure, or a portion thereof, for the display and sale of merchandise, and involving stocks of goods, wares or merchandise, incidental to such purposes and accessible to the public.</td>
</tr>
<tr>
<td>R-1</td>
<td>Hotels and apartment houses, congregate residences (each accommodating more than 10 persons).</td>
</tr>
<tr>
<td>R-3</td>
<td>Dwellings, lodging houses, congregate residences (each accommodating 10 or fewer persons).</td>
</tr>
<tr>
<td>S-1</td>
<td>Moderate hazard storage occupancies including buildings or portions of buildings used for storage of combustible materials not classified as Group S, Division 2 or Group H occupancies.</td>
</tr>
<tr>
<td>S-2</td>
<td>Low-hazard storage occupancies including buildings or portions of buildings used for storage of noncombustible materials.</td>
</tr>
<tr>
<td>S-3</td>
<td>Repair garages where work is limited to exchange of parts and maintenance not requiring open flame or welding, and parking garages not classified as Group S, Division 4 Occupancies.</td>
</tr>
<tr>
<td>S-4</td>
<td>Open parking garages.</td>
</tr>
<tr>
<td>S-5</td>
<td>Aircraft hangars and helistops.</td>
</tr>
<tr>
<td>U-1</td>
<td>Private garages, carports, sheds and agricultural buildings.</td>
</tr>
<tr>
<td>U-2</td>
<td>Fences over 6 feet (1829 mm) high, tanks and towers.</td>
</tr>
</tbody>
</table>

Appendix B-2
APPENDIX C

EFFECTIVENESS MEASURES FOR FIRE PROTECTION SERVICES
# EFFECTIVENESS MEASURES FOR FIRE PROTECTION SERVICE

**GOAL:** To minimize losses to persons and property by helping to prevent fires from occurring and suppress losses from fires that occur.

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>QUALITY CHARACTERISTICS</th>
<th>PERFORMANCE MEASURE</th>
<th>SERVICE LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>To minimize fire losses</td>
<td>Firefighter Casualties</td>
<td>Number of firefighter injuries &amp; deaths per 100 employees</td>
<td>High: 0 deaths, 0 injuries. Medium: 1-3 injuries. Low: 1 or more deaths, 3 or injuries</td>
</tr>
<tr>
<td>Property Loss</td>
<td></td>
<td>Direct dollar loss from fires per $1,000 property served</td>
<td>High: .0- Medium: .33 - .64 Low: Greater than .64</td>
</tr>
<tr>
<td>To effectively suppress actual fires</td>
<td>Firefighting effectiveness &amp; spread</td>
<td>Percentage of fires (not out on arrival of first fire unit) in which spread after arrival is limited to 60 sq. ft.</td>
<td>High: 100% Medium: More than 50% Low: Less than 50%</td>
</tr>
<tr>
<td>Firefighting effectiveness time</td>
<td></td>
<td>Time to control or confirm spread has stopped; by size on arrival</td>
<td>High: 0-1 minute Medium: 5-10 minutes Low: 10 or more minutes</td>
</tr>
<tr>
<td>Speed of providing service</td>
<td></td>
<td>Percentage of response times that are less than 5 minutes</td>
<td>High: 100% Medium: 95% Low: 50%</td>
</tr>
<tr>
<td>Detection systems (alarms, sprinklers) response effectiveness</td>
<td></td>
<td>Percentage of extension from point of origin</td>
<td>High: 0% Medium: 10-25% Low: Over 25%</td>
</tr>
</tbody>
</table>

Appendix C-1
## EFFECTIVENESS MEASURES FOR FIRE PROTECTION SERVICE

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>QUALITY CHARACTERISTICS</th>
<th>PERFORMANCE MEASURE</th>
<th>SERVICE LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>To provide effective advanced life support services</td>
<td>Rescue effectiveness</td>
<td>Number of &quot;saves&quot; versus number of casualties</td>
<td>High: 100% Medium: 75% Low: 50%</td>
</tr>
<tr>
<td>To prevent fires</td>
<td>Reported building fire incident rate</td>
<td>Number of building fires per 1,000 occupancy by selected type</td>
<td>High: 0- Medium: 2-9 Low: 10 or greater</td>
</tr>
<tr>
<td></td>
<td>Pre-fire inspection effectiveness</td>
<td>Ratio of fires in inspected versus un inspected</td>
<td>High: 0:0 Medium: 1:4 Low: 1:5 or greater</td>
</tr>
<tr>
<td></td>
<td>Early warning fire devices</td>
<td>Percentage of residences/businesses equipped with smoke/fire detection system</td>
<td>High: 100% Medium: 90%-100% Low: 89% or less</td>
</tr>
<tr>
<td></td>
<td>Reported fire incident rate</td>
<td>Number of reported fires per 1,000 population</td>
<td>High: 8-9.7 Medium: 9.8-11.20 Low: Greater than 11.80</td>
</tr>
<tr>
<td></td>
<td>Building inspections</td>
<td>Minimum inspection frequency for 95% of commercial occupancies</td>
<td>High: Once per year Medium: Every 18 mo Low: 1 or greater</td>
</tr>
<tr>
<td></td>
<td>Citizen satisfaction</td>
<td>% of population satisfied with fire services</td>
<td>High: 90% Medium Low: Less than 80%</td>
</tr>
</tbody>
</table>
APPENDIX D

GLOSSARY OF TECHNICAL TERMS
GLOSSARY OF TECHNICAL TERMS

This glossary defines terms used in Master Planning which may be unfamiliar to the reader, and/or which have special meaning within the context of fire protection master planning.

ABILITY TEST: A test of maximum performance designed to reveal the level of the organization or individuals ability to carry out specific tasks or activities.

ACCEPTED RISK: The amount or level of risk that is allowed by policy. The question of whether a risk is acceptable must be gauged against a benchmark or standard that has been deemed adequate by a particular Authority Having Jurisdiction (see definition below under AHJ), at a specific point in time. The unprotected portion of what there is to burn, defined by the policies, and accepted by the community through approval of the objectives. Examples would vary according to the level of government involved, i.e. city, fire district, county, region through law, regulation or level of service.

ADEQUACY: The quality or state of being adequate; sufficient for a purpose; equal to; proportionate to; or fully sufficient for a specified or implied requirement.

ADVANCED LIFE SUPPORT (ALS): Special Services designed to provide definitive pre-hospital emergency medical care such as cardiopulmonary resuscitation, cardiac monitoring, cardiac defibrillation, advanced airway management, intravenous therapy, administration of specified drugs, and other specified techniques or procedures administrated by authorized personnel under the direct supervision of a base hospital or utilizing approved standing orders.

ADVANCED LIFE SUPPORT UNIT (ALS Unit): Emergency vehicles, such as vans, engine companies, truck companies, squad companies, helicopters, and other emergency vehicles that are especially equipped and staffed by certified emergency medical technicians – paramedics to provide Advanced Life Support to the sick and injured at a medical emergency.

ADVISORY COMMITTEE: A body of community representatives that reviews and guides the work of the Planning Team. See also TASK FORCE.

AHJ: Acronym for Authority Having Jurisdiction.

ALARM PROCESSING TIME: The elapsed time from the receipt of an alarm by the dispatch center and the notification of specific fire companies that are to respond.

ALTERNATIVE: (n) One of two or more things, courses, or propositions to be chosen. (adj) Offering or expressing a choice.
ALTERNATIVE SYSTEM CONCEPT: One of two or more ideas for a fire protection system.

ANALYSIS: Examination of a complex, its elements, and their relations.

APPARATUS: Fire suppression equipment such as engine companies, aerial trucks, crash fire rescue, and command officer vehicles.

ARSON: The willful or malicious burning of property with criminal or fraudulent intent.

ASSUMPTION: A situation or condition which must be considered as existing if the organization is forced to operate in a specific manner and over which the organization does not exercise any control.

AUTOMATIC AID: A contact between two or more agencies agreeing to an exchange of emergency response units, such as Fire apparatus, paramedic units, etc., to a predetermined geographical area, regardless of political boundaries to deal with day to day emergencies.

AUTHORITY: The State of California’s Emergency Medical Service Authority as defined in the State Health and Safety Code Section 1797.100.

BASE HOSPITAL (BH): A hospital which, upon designation by the Santa Clara Emergency Medical Services Agency with a written contractual agreement, is responsible for medical direction of the advanced life support system.

BASIC LIFE SUPPORT (BLS): Minimum acceptable level of pre-hospital care; emergency Fire Aid and cardiopulmonary resuscitation (and may include EMT-D) procedures to include recognition of respiratory and cardiac arrest and starting the proper application of cardiopulmonary resuscitation to maintain life support without invasive techniques until the victim receives advanced life support services in the field, or until the patient is transported to a medical facility.

BASELINE SYSTEM: The current system with modifications to the resource levels necessary to meet the organizations situation and objectives.

BENCHMARK: A benchmark is defined as a standard from which something can be judged. Searching for a “best practice” to use as a benchmark helps define superior performance of a product, or services; includes both public and private organizations, apparatus, equipment, fixed and mobile, facilities, methods, human resources and policies by the authority having jurisdiction.

BLES: Building Life & Environment Safety. A Division of the Community Development Department.

BUDGET: A plan for the coordination of resources and expenditures.
CHARACTERISTIC: An attribute or feature.

CERTIFICATE: A special document issued to an individual by a recognized medical authority denoting competence in a named area of pre-hospital care. See Health and Safety Code Section 1797.62.

CERTIFIED: Having in one’s procession a currently valid certificate or card issued by a recognized medical authority denoting personal competence in a named area of pre-hospital care.

CERTIFICATION: Certification is a process whereby an individual is tested and evaluated in order to determine their mastery of a specific body of Adequacy - The quality or state of being adequate; sufficient for a purpose; equal to; proportionate to; or fully sufficient for a specified or implied requirement.

CERTIFIED TRAINING: Training that is sponsored or recognized by an organization that is capable of issuing certification to a person completing that training that meets the minimum specifications.

CHARACTERISTIC: An attribute or a feature of something.

CHIEF EXECUTIVE OFFICER: The person in the community who is charged with carrying out the policy established by the community governing body; for example, the city manager.

COMMISSION: The California State Emergency Medical Services Commission created by Senate Bill 125 (Garamendi) and coded in the Health and Safety Code, Section 1799.

COMMUNITY: A population area wherein there is a clear responsibility, and statutory basis, for fire protection.

COMMUNITY RISK ASSESSMENT: The evaluation of fire and other risks taking into account all pertinent facts that increase or decrease hazard in order to define standards of coverage (See OCCUPANY RISK ASSESSMENT).

COMPETENCY-BASED CURRICULUM: A curriculum in which the specific objectives are defined for each of the separate skills taught in training and education programs with integrated didactic and practical instruction and upon which the successful completion of an examination demonstrates mastery of each skill tested.

COMPLEX: Something made up of or involving an often intricate combination of elements.

CONCEPT: Something conceived in the mind; an abstract or generic idea generalized from particular instances.
COST-BENEFIT: A term used to express the value of a benefit-producing system. Can be expressed as a ratio of cost (negative value) to benefit both in equivalent terms such as dollars, person-hours, etc.

CPR: Cardio Pulmonary Resuscitation.

CRITERION: A measure on which a judgment or decision may be based. Plural are CRITERIA.

CURRENT: Occurring in or belonging to the present time.

CURRENT SYSTEM: The fire protection system in place at present.

DEPLOYMENT: The strategic assignment and placement of fire agency resources such as fire companies, fire stations and specific staffing levels for those companies.

DOCUMENT: (v) Write, record. (n) Book, paper.

EDUCATION: a term often used as a synonym for training. In the context of this review it is used to describe training that has been given in a formal fashion and is acquired through or in cooperation with degree granting institutions.

EFFECTIVENESS: Marked by a quality of being influential or exerting positive influence; exerting authority over outcomes producing positive results.

EFFICIENCY: Capacity to produce desired results with a minimum expenditure of time, energy, money or materials. Marked by quality, characteristics or facility to serve the performance of a task in the best possible manner. The ratio of “effective” is based upon useful output in relation to the total output of the system.

EMERGENCY: A condition of situation in which an individual perceives a need for immediate medical attention or where the potential for such a need is perceived by emergency medical personnel or a public safety agency.

EMERGENCY MEDICAL SERVICES (EMSA): Those services, resources and methodologies utilized in responding to medical emergencies.

EMERGENCY RESPONSE: Response to the scene of an incident that threatens lives or property that requires the use of emergency warning devices in accordance with California Vehicle Code Section 21806.

EMERGENCY MEDICAL SERVICE: Medical service required for the immediate diagnosis and treatment of medical conditions, which if not immediately diagnosed and treated, could lead to serious physical or mental disability or death.
EMERGENCY MEDICAL SERVICES SYSTEM (EMSS): A specially organized arrangement which provides for the personnel, facilities and equipment for the effective and coordinated delivery of services in an EMS area of medical care services under emergency conditions.

EMERGENCY MEDICAL TECHNICIAN – A: An individual trained in Basic Life Support according to the standards prescribed by the Health and Safety Code and who has a current and valid certificate in the State of California issued pursuant to the Health and Safety Code.

EMERGENCY MEDICAL TECHNICIAN – D: An individual trained in Basic Life Support and who has received additional training to perform the Advanced Life Support procedure of cardiac defibrillation.

EMERGENCY MEDICAL TECHNICIAN – PARAMEDIC (EMT-P): An individual EMT-I or EMT-II who has received additional training in Advanced Cardiac Life Support according to the standards prescribed by the Health and Safety Code and who has a current and valid certificate pursuant to the Health and Safety Code.

EMERGENCY RESPONSE TRAVEL TIMES - See SERVICE LEVEL OBJECTIVES.

EMERGENCY OPERATIONS CENTER: A central location where those in authority congregate to allow for exchange of information and conduct face to face coordination in the making of decisions. The center, often referred to as the Dispatch, provides for centralized emergency management in major disasters.

EMPIRICAL: Originating in or based on observation or experience.

ENGINE COMPANY: Fire apparatus that is equipped with fire hose, a water tank, and a pump. This is the basic equipment used for initial attack on fires.

EVALUATION: Analysis and comparison of actual performance versus prior plan and stated goals and objectives.

EXPLORATORY METHODS: A set of methods which is used to explore what is possible given present capabilities.

FEES FOR SERVICE: Funds paid directly to the provider by the patient for charges. These funds are derived from patient’s income and other personal assets.

FIRE MANAGEMENT AREA (FMA): The elemental building block upon which planning is based. An area in which it is desired to define and manage the fire situation.

FIRE PRE-PLAN: A document or other information source developed by a fire agency to identify hazardous situations, building information, owner information, and a variety of other data.
FIRE PREVENTION: That part of fire protection activities exercised in advance of the outbreak of fire to prevent such outbreaks and to minimize loss when fire does occur.

FIRE PROTECTION: The act of shielding from loss or injury due to fire.

FIRE PROTECTION ENVIRONMENT: The conditions, circumstances, and influences, under which the fire protection system must operate. Includes population, land use, physical, structural and non-structural, financial and water supply environments.

FIRE PROTECTION SYSTEM: A regularly acting or interdependent group of items employed in fire protection. Includes public and private agencies, apparatus, equipment, facilities, procedures, and people.

FIRE SCENARIO: A tabulation of fire incident, loss, and casualty data. This tabulation method, developed by the NFPCA, consolidates data collected under the NFIRS into a useful format for analysis. Further information may be obtained from the NFPCA.

FIRE SITUATION: The state or condition of the community with regard to fire protection. Includes fire related (what there is to burn) and fire system management situations.

FIRE SUPPRESSION: The total work of extinguishing a fire beginning with its discovery.

FIRST RESPONDERS: Personnel who have responsibility to initially respond to emergencies such as firefighters, police officer, California Highway Patrol officers, Life guards, forestry personnel, ambulance attendants, and other public safety personnel. California Law requires such person to have completed a First Aid course and to be trained in Cardiopulmonary resuscitation, and an EMTA Certification is desired.

FLASHOVER: Thermal radiation feedback from the ceiling and upper walls, which have been heated by the fire. This radiation feedback gradually heats the contents of the fire area. When all the combustibles in the space have become heated to their ignition temperature, simultaneous ignition occurs (NFPA Handbook, Fourteenth Edition).

FUNCTION: One of a group of related actions contributing to a larger action.

GENERAL OPERATING GUIDELINES: Written guidelines that suggest courses of action, usually provided in a manual format. Acronym for this term is GOG; Often considered being comparable with Standard Operating Procedures.

GIS: Acronym for Geographic Information System.
GOAL ACHIEVEMENT: The means of verifying through indicators, either quantitative or qualitative that the end result being desired is being accomplished. Goal measurement does not imply that the goal is totally resolved.

GOALS: The general end toward which effort is directed. In the context of fire protection, master planning goals are fundamental, inclusive, nonspecific, qualitative, future-oriented, time independent.

IMPLEMENTATION PHASE: The period in which the Master Plan is carried out, updated, and modified.

INCIDENT COMMAND SYSTEM (ICS): A management system that is based on the F.I.R.E.S.C.O.P.E. System of controlling resources at the scene of an emergency. The ICS defines roles, relationships and functions of the different individuals responding to an emergency situation.

JURISDICTION: A population area wherein there is clearly defined responsibility, based on statutory authority, to provide fire and/or emergency medical services. Also called authority having jurisdiction or AHJ.

IAFC: Acronym for the International Association of Fire Chiefs.

IAFF: Acronym for the International Association of Fire Fighters.

IFSTA: Acronym for the International Fire Service Training Association.

ISFSI: Acronym for the International Society of Fire Service Instructors.

ISO: Insurance Services Office. An insurance grading organization, which establishes community rankings, based on the capability of the fire organization.

ITERATIVE PLANNING PROCESS: A method of cycling back through earlier steps in the process to refine the results.

LEVEL OF SERVICE: The magnitude of the supply for a public demand. In terms of fire protection 'the magnitude may be expressed in many ways, such as percent of people protected, percent of buildings protected, area protected, monetary value of property protected, etc.

MASTER PLAN: A documented program of action, which defines and controls subordinate activities by virtue of vested authority.

MASTER PLAN WORKING GROUP: A group of community representatives, led by a professional, which performs the pre-planning effort.

MAXIMUM: The greatest quantity or value attainable or attained.

Appendix D-7
MEASURABLE TERMS: A word or expression that has a precise meaning and that may be measured.

MEDICAL CONTROL: The medical direction and management of an emergency medical services system as set forth in the Health and Safety Code, Section 17987 et al.

MEDICAL DIRECTOR: The physician appointed to provide medical control and to assure medical accountability in accordance with Section 1787.202 of the Health and Safety Code.

MEDICAL OR MEDICARE: A reimbursement from the State or Federal government for eligible services charged to a covered patient.

MEASUREMENT: A quantity or quantitative expression indicating acceptability.

MINIMUM: The least quantity assignable, admissible, or possible.

MUTUAL AID: The Santa Clara County Mutual Aid Plan; a written contract between all agencies in Santa Clara County wherein they agree to assist each other when an emergency occurs that exceeds the capabilities of any one agency. The Mutual Aid Plan is a County-wide plan that can result in any one agency receiving assistance from any or all of the other agencies in the County. Mutual Aid extends to the Regional Area and to a statewide plan. Also see AUTOMATIC AID.

M.V.I.: Abbreviation for Multiple Victim Incident. A multiple Victim Incident has more patients involved in the incident than a normal First Medical Aid Response can handle. It will usually involve the use of multiple first provider units, AIS units, and ambulances. An example would be a large traffic accident or hazardous material exposure to several people. An MVI is larger than the normal day-to-day incident, but smaller than a disaster.

NBS: National Bureau of Standards.

NFIRS: National Fire Incident Reporting System.


NFPA Standards: Publications adopted by the NFPA through the consensus process setting a level of standard for fire service related dimensions or equipment specification.

NOAA: National Oceanographic and Atmospheric Administration.

NSF: National Science Foundation.

Appendix D-8
NORMATIVE METHODS: A set of methods, based on goal setting, which are used to determine what capability is needed to achieve some stated objective.

OBJECTIVES: The specific end toward which effort is directed. In the context of fire protection, master planning objectives are independent of the means by which they may be reached, attainable within the planning period, quantitative. Objectives must be achievable within a certain planning period and be able to be measured in some quantifiable way.

OCCUPANCY CATEGORY: The classifications of occupancies used in the building codes. The structural occupancy categories used in this Planning Guide are from the Uniform Building Code, and the non-structural occupancy categories are form the NFPA 901 Code. These categories are used as examples only—you should use the building code categories in your community.

OCCUPANCY RISK ASSESSMENT: An assessment of the potential severity of a specific structure in relation to the fire agency's ability to handle the type and severity of emergencies within that structure. Occupancy risk assessment often includes classifying these risks into categories. See RISK CATEGORIES.

OPERATIONAL CONTROL: A day to day supervision of personnel who are assigned different tasks and responsibility in a provider agency. Operational control includes but is not limited to, the areas of scheduling, workload allocations, risk distribution, disciplining, and the setting of priorities for personnel that are hired and work for the provider agencies.

OPTIMAL: Most desirable or satisfactory.

OPTIMUM: Greatest degree attained under implied or specified conditions.

OSHA 29 CFR 1910.120 (q) (3): The citation for the Federal Occupational Safety and Health Administration program.

OUTPUTS: The specifically intended types of results that can be expected from the activities and inputs that are placed into service. An example of outputs might be comparing the number of fire inspections to the number of staffing hours used to complete them.

PLANNING RISK: That risk, within an FMA, which is selected as the risk, which drives the fire protection planning for that FMA. The planning risk is selected from the major, key, and typical risks, using the historical, and statistical risks within the FMA.

PLANNING PHASE: The period in which the community is identified and the fire situation defined; the goals, objectives, selection characteristics and measurements defined; alternative systems defined and analyzed; a preferred system selected; and a Master Plan prepared to acquire and maintain the system.
PLANNING PROPOSAL: A document produced during the Pre-planning Phase, which sets forth the need, outlines the approach, and presents a budget for doing fire protection master planning.

PLANNING TEAM: A group of community representatives, led by a professional, which performs the planning effort.

PRE-PLANNING PHASE: The period in which the need for a Plan is identified, commitment to planning is made, and the planning effort is organized.

PRIMARY FUNCTION LEVEL: The first level of a function tree; a major system function (such as suppression, prevention, etc.).

PRIVATE SECTOR: That portion of a community that is not in the public sector; Generally used as a synonym for citizens groups and private industry.

PRIVATE INSURANCE: A reimbursement from a private medical insurance company for eligible services charged to a covered patient.

PROVIDER AGENCIES: Local governmental entities and agencies that elect to provide a complete pre-hospital care system.

PROTECTIVE CLOTHING: Personal items of clothing and equipment issued to individual firefighters for protection against heat, flame, abrasion, puncture or other traumatic injury during combat operations. Includes, but is not limited to, coats, trousers, boots, gloves, helmets, personal alarm devices, fire shelters, and any other special equipment issued for evaluating exposure such as dosimeters, communicable disease shields, etc. Sometimes referred to by the acronym PPE.

PROJECTED: Extended into the future; forecasted based on present trends.

PUBLIC SECTOR: That which belongs to the public at large; generally used as a synonym for governmental agencies.

PUBLIC SAFETY ANSWERING POINT (PSAP): A single telephone answering point within a given geographical area. A term associated with the countywide 911 system.

PURPOSE: That which is expected to be achieved if the organization is successful in completing their mission. It can be expressed in either qualitative or quantitative terms, within the parameters to be able to objectively verify them. Those, which we hope to create, accomplish, or change with view towards influencing the solution to a problem.

QUALITY ASSURANCE: A process through which a desired level of care is defined, monitored, achieved and maintained by detecting and correcting factors which present the achievement of the established desired quality.
QUALITATIVE: Having to do with the basic nature or kind of a characteristic; such as capital cost, fire loss, etc.

QUANTITATIVE: Having to do with the property by which a characteristic can be measured; such as capital cost not to exceed ten million dollars reduction in fire loss, etc.

QUINT: This is a type of apparatus that combines the functions of an engine company and truck company. It usually carries less hose and less water than an engine. It usually has less ladder reach and amount of ladders than a truck company. The term QUINT is short for quintuplet. This is because the apparatus can do five jobs.

RANKING: The ordering of quantitative scores or qualitative ratings from the highest to the lowest.

RECEIVING HOSPITAL-PARAMEDIC: A hospital contracted with and certified by the Emergency Medical Services Agency that provides an agreed upon level of care to all patients served by EMT-paramedics and transported under medical care.

RELIABILITY: The degree to which a test or other examination is free from chance errors of measurement. The extent to which scores are stable, dependable, and similar upon repeated measurements, consistent scores in successive ratings even with different raters.

RESOURCE FACTOR: An attribute of a function. Specifically as used in master planning, the level in a function tree at which the functions may be described in terms of quantities (such as fire flow, person-hours, etc.).

RISK: Possibility of loss, as in fire risk.

RISK: Exposure to a hazard based on the probability of an outcome when combined with a given situation with a specific vulnerability. The level of risk can be described as the probability of a specified loss over a given period of time. All structures, for example, are subject to destruction by fire; however, individual structures vary considerably as to the possibility of loss as a result of their construction, contents and built in protection.

SAFETY EQUIPMENT: Tools and equipment used by individual firefighters to perform firefighting, hazardous entry or rescue work upon which the individual must rely on for personal safety. This equipment is normally not assigned to the individual, but rather carried on the apparatus. Includes, but is not limited to, respiratory equipment, hazardous materials entry suits, carabiners, lifelines, etc. Does not include nozzles, hoses, ladders, etc.

SELECTION CHARACTERISTICS: Qualitative features used to compare and select systems. Examples are cost, benefits, legislative, political, etc.
SELECTION MEASUREMENTS: Quantitative selection characteristics.

SENSITIVITY: In system analysis, the degree to which a quantity is sensitive to change in its component parts. For example, the sensitivity of total cost to change in estimated.

SERVICE LEVEL OBJECTIVES: Service level objectives are statements of performance unique to a given jurisdiction. These statements should be developed by the agency based upon several factors: nationally recognized standards and practices for fire and ancillary services. The service level objectives should be written based upon a community’s specific profile that includes both existing and future risk levels. The community risk profile should examine the makeup of occupancies; types of uses, what the probability/consequences are of anticipated incidents and the historical response trends and patterns.

STAFFING: The level of personnel assigned to perform the anticipated emergency tasks of a specific fire company for the risk identified in a given district or community; The number of personnel required to perform multiple emergency operations functions such as fire suppression versus EMS or hazardous materials operations.

STANDARDS OF RESPONSE COVERAGE: A written statement that combines service level objectives with staffing levels to define how and when fire agencies resources will respond to call for service.

STANDARD OPERATING PROCEDURES: A term used to describe written direction provided to personnel in a manual format. Similar to the General Operating Guideline, but may be more specific requiring specific actions.

STANDARDIZATION: A process by which a product or service is assessed against some fixed standard or performance or quality.

SUBSCRIPTION PROGRAM: A program that allows citizens of a community to pre-pay for services. It is usually a modest annual fee that will prevent the subscriber’s household from having to pay any further fees if they use the service.

SURROGATE: Substitute.

SYSTEM: A regularly interacting or interdependent group of items forming a unified whole; as a group of devices or artificial objects or an organization forming a network especially for distributing something or serving a common purpose.

SYSTEM CONCEPT: An idea for a fire protection system.

UNCERTAINTY: Lack of sureness; a lack of definite knowledge about an outcome or result.
TASK FORCE: A body of community representatives which reviews and guides the work of the Planning Team. See also ADVISORY COMMITTEE.

TOTAL RESPONSE TIME: It is the total elapsed time from the point of notification to a responding fire company and the arrival of that unit at the scene. Total Response Time equals notification, plus Alarm Processing/Dispatch time plus Turnout Time plus Travel Time.

TRUCK COMPANY: This is apparatus designed to carry ground ladders and aerial apparatus (ladder, snorkel, or boom) and equipment to assist in ventilation and salvage operations.

TURNOUT TIME: The time it takes a fire company to discontinue routine operations and begin to respond.

TURNOUT CLOTHING: A synonym for protective clothing, also called “bunker gear”; acronym PPE is used in many codes and standards. Stands for Personal Protective Equipment.

UNCERTAINTY ANALYSIS: As used herein, an analysis aimed toward gaining more knowledge about the utility and acceptance of a fire protection system in the community.


VULNERABILITY: A measure of adverse consequence that might occur to a structure as a result of exposure to an uncontrolled fire. It is usually expressed as an indication of the difference between a level of risk and a level of service. For example, if a building has a calculated fire flow of 5000 gam and the level of service can only deliver 3,000 gam; the structure is vulnerable to total loss unless the fire is controlled at the compartment level. Vulnerability is increased as the size and complexity of a risk exceeds the resources available to contain a fire to a limited level.
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U.S. Census Bureau Website.

Interview Sources:

Gilroy Fire Department:

Fire Chief Arthur L. Gillespie
Assistant Fire Chief Rod L. Pavao
Fire Division Chief/Training Officer Kenneth Heredia
Fire Captain Moe McHenry
Fire Captain Clay Bentson
Fire Engineer Colette Harmon
Fire Fighter Roy Shackel

City of Gilroy:

City Administrator Jay Baksa
Police Department (Certified Crime Analyst) Phyllis Ward
Building, Life and Environmental Safety Division Manager Robert R. Ledesma
Deputy Fire Marshal Roger Maggio
Clerk-typist, BLES Division, Kathy McHenry
Fleet and Facilities Manager, Dennis White
Santa Clara County EMSA:
Jim McPherson

South Santa Clara County Fire District
Chief Steve Woodill
Captain Ken Randall

American Medical Response Ambulance:
Director of Operations Santa Clara County, Paul Wayne Davis

Palo Alto Fire Department:
Operations Chief Nick Marinaro - Operations Chief responsible for feasibility of the rural/metro private integrated ambulance transportation system model.
APPENDIX F

FIRE MAPS
Response Coverage Citywide
Appendix F-5
Potential Station Location

Appendix F-6
Potential Relocation
Appendix F-7
Potential Location South City
Appendix F-8
Potential Location North City

Appendix F-9
APPENDIX G

CRITICAL TASKING
CRITICAL TASKING

Critical tasks are tasks that must be conducted in a timely manner by firefighters at structure fires in order to control the fire prior to flashover. In creating standards of response coverage, the capability of arriving companies and individual firefighters to achieve these tasks must be assessed.

Furthermore, there may be need for critical tasks to be developed for each risk category, if there is a higher level of expectation due to size or complexity of the risk. Firefighter safety must be emphasized when identifying critical tasks. Whenever interior fire operations require the use of at least a 1 3/4-inch hose and protective clothing including turnout gear and self contained breathing apparatus (SCBA), additional personnel must be staged to perform rescue functions for interior firefighters. In this situation, a command structure must also be in place.

Critical tasks are described below. These descriptions are supplemented by a table that outlines the tasks that must be accomplished by the initial response force if a department is to control a fire in a typical fire risk if a fire is in progress upon their arrival.

**Attack Line** - a 1 3/4 inch hose that produces 125-150 GPM and is usually handled by a minimum of two firefighters, or a 2-1/2-inch hose that produces 250 GPM handled by two or three firefighters. Generally each engine company carries a set of attack lines pre-connected to the pump, one folded on the hosebed, and a special pack designed to be carried into high-rise buildings.

The selection of attack line for a given situation depends on the type of structure, the distance to the seat of the fire, and the stage of the fire. The pre-connected lines are the fastest to use but are limited to fires within 200 feet of the pumper. When attack lines are needed beyond this limit, the hosebed or high-rise lines are used. 2-1/2-inch attack line will be used when the fire has passed the flashover stage and threatens exposed unburned portions of the structure.

**Search and Rescue** - a minimum of two firefighters assigned to search for and remove living victims while the attack crew moves between the victims and the fire to stop it from advancing to them. A two-person crew is normally sufficient for most moderate risk structures, but additional crews are required in multistory buildings or structures with people who are not capable of self-preservation.

**Ventilation Crew** - a minimum of two firefighters to open horizontal or vertical ventilation channels when the attack crew is ready to enter the building. Vertical ventilation or ventilation of a multi-story building can require more than two firefighters. Ventilation removes superheated gases and obscuring smoke, thereby preventing flashover and allowing attack crews to see and work closer to the seat of the fire. Ventilation also gives the fire an exit route so the attack crew can "push" the fire out the opening they choose and keep it away from endangered people or unburned property.
Ventilation must be closely timed with the fire attack. If it is performed too soon, the fire will receive additional oxygen and grow. If performed too late, the attack crew cannot push the fire in the desired direction. Instead, the gases and smoke will be forced back toward the firefighters and their entry point, endangering them as well as any victims and unburned property they are protecting.

**Back-up Line** - a 1 ¾ inch or 2 ½ inch line that is taken in behind the attack crew to provide cover in case the fire overpowers them or a problem develops with the attack line. Back-up lines require a minimum of two firefighters per 1 3/4-inch line. A 2-1/2-inch line is used for back up when the fire is one that could grow rapidly if not stopped by the 1 ¾-inch attack line.

**Rapid Intervention Crew** - a minimum of two firefighters equipped with SCBA and available near the entry point to go into the structure, performs search and rescue, or serves as the back up crew if something goes wrong. OSHA as of October 1998 required this critical task.

**Exposure Line** - a 1 ¾-inch attack line staffed by two firefighters and taken above the fire in multi-story buildings to prevent fire expansion. This line is also used externally to protect nearby structures from igniting due to radiant heat. In situations where the heat release is great or structures are built close together, a 2-1/2-inch line or deluge gun is used. The use of 2 1/2-inch lines doubles the staffing requirement.

**Pump Operator** - one firefighter assigned to deliver water under the correct pressure to the attack, back up, and exposure lines, monitor the pressure changes caused by changing flows on each line, and ensure that water hammer does not endanger any of the hose line crews. This firefighter also completes the hose hookups to the correct discharges and the water supply hook up to the intake. The pump operator can sometimes make the hydrant hookup alone if the pumper is near a hydrant, but the hydrant spacing for moderate risk fires normally precludes this.

**Water Supply** - a crew of one or two firefighters who must pull the large diameter hose between the pumper and the nearest hydrants, hookup at the hydrant, and deliver a water supply to the pumper before its water tank runs dry. A pumper has about four minutes of water if one 1 ¾-inch line is flowing. Once a hydrant line is in placed, this person can often be given additional assignments.

**Incident Command** - an officer assigned to remain outside of the structure to coordinate the attack, evaluate results, redirect the attack, arrange for more resources, and monitor conditions that might jeopardize crew safety.

**Utilities** - at least one firefighter to secure natural gas, electrical supply, and water to the affected structures. Utilities must be secured before interior firefighters can open a concealed space such as an attic.
**Ladder operations** - at least one and preferably two firefighters to set up the aerial ladder and a ground ladder to provide access to the roof of the structure when vertical ventilation is performed.

**EMS/Rehabilitation** - at least one firefighter to establish a treatment and rehabilitation sector in preparation for any victims found and any firefighters who are injured or physically drained. This latter event is a common occurrence during periods where there are high temperatures.

**Safety Officer** - one firefighter dedicated to the exterior of the structure with the sole responsibility of firefighter and scene safety. The majority of structure fires occur in moderate/typical risk occupancies. The table below shows the standards of cover required for the initial response force to accomplish the critical tasks necessary to mitigate a moderate/typical risk occupancy fire usually relies on the incident commander to perform this function.

<table>
<thead>
<tr>
<th>Task</th>
<th>Number of Firefighters</th>
<th>Company Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Attack Line</td>
<td>2-3</td>
<td>1st Engine</td>
</tr>
<tr>
<td>Water Supply</td>
<td>1</td>
<td>1st Engine</td>
</tr>
<tr>
<td>Pump Operator</td>
<td>1</td>
<td>1st Engine</td>
</tr>
<tr>
<td>RIC Crew</td>
<td>2</td>
<td>2nd Engine</td>
</tr>
<tr>
<td>Ventilation Crew</td>
<td>2</td>
<td>2nd Engine</td>
</tr>
<tr>
<td>Utilities Support</td>
<td>1</td>
<td>1st Truck</td>
</tr>
<tr>
<td>Ladder Operations</td>
<td>1</td>
<td>1st Truck</td>
</tr>
<tr>
<td>Incident Command</td>
<td>1</td>
<td>1st Chief</td>
</tr>
<tr>
<td>EMS/Rehabilitation</td>
<td>1</td>
<td>3rd Engine</td>
</tr>
<tr>
<td>Exposure Line</td>
<td>2</td>
<td>3rd Engine</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14-15 personnel</strong></td>
<td></td>
</tr>
</tbody>
</table>

As shown above, 14-15 firefighters are needed to accomplish the critical tasks necessary to control a moderate risk fire in an efficient and effective manner. It should be noted that the table assumes the availability of three engine companies, one truck company, and a chief officer.
**RISK CATEGORIES**

Once risk factors have been identified by a fire agency, then risk categories should be developed. The fire service acknowledges the possibility that hundreds of different types of risk categories could exist within any individual community. Nevertheless, for a risk assessment to be effective, it must be manageable. Every occupancy should be placed into one of the following five risk categories.

**Maximum Risk**

An area or building to be classified as maximum risk should be of substantial size and contain properties presenting a high risk of life loss, loss of economic value to the community, or large loss in damage to the property in the event of a fire. Such areas would ordinarily be the highest fire flow areas. The structures within them may lack built in fire protection features and may contain occupants not capable of self-preservation. Examples of maximum risk areas include the following:

- a) main shopping and business centers, large department stores, shopping malls, multi-story hotels, and office properties;
- b) concentrations of high risk industrial and commercial properties including hazardous materials facilities;
- c) concentrations of theaters, cinemas, clubs, dance halls, bars and other areas with potential for large life loss;
- d) buildings over two stories high with or without built in fire protection;
- e) occupancies with occupants that may require assistance such as nonambulatory or restrained persons (i.e., nursing homes and hospitals);
- f) built up of residential properties adjacent to maximum and high risk areas;
- g) any occupancy over 10,000 square feet without built in fire protection.

Maximum risks frequently impact a fire agency's needs for multiple alarm capability and an adequate assessment of its ability to concentrate resources. Failure to identify these risks often results in the inability to control loss when a fire of this category of risk occurs. Proper risk identification of maximum risks is also fundamental to the assessment of need for an individual agency's mutual and automatic aid resources.

**High Risk**

A high risk area or building is defined as one that contains properties presenting a substantial risk of life loss, a severe financial impact on the community, or unusual
potential damage to property if there is a fire. Examples of such areas include the following:

a) strip shopping centers and business centers not exceeding two stories;

b) concentrated areas of revenue generating properties or high job loss to the community if business is lost;

c) infrastructure facilities such as city, state, and federal facilities;

d) large residential buildings exceeding 5000 square feet (mansions);

e) properties deemed to be of historical value to the community; and

f) any building with life safety and fire load beyond the reach of preconnected hose lines (200 feet).

**Moderate/Typical Risk**

An area or building is classified as a moderate risk when it contains built up areas of average size, and the risk of life loss or damage to property if there is a fire in a single occupancy is usually limited to the occupants. In certain areas such as small apartment complexes, the risk of death or injury may be relatively high. Concentrations of property may vary, but generally will be of limited extent. Examples of moderate risk areas include the following:

a) developments of generally detached single family housing;
b) apartments with pre-connected hose line access (200 feet);
c) industrial or commercial buildings under 10,000 square feet with built in fire protection not classified as maximum or high hazards.

These risks are often the greatest factor in the distribution of fire stations to ensure fair and equitable access to initial attack capability.

**Remote/Isolated/Rural Risks**

Areas or buildings may be classified as remote or rural risks if they are isolated from any centers of population and contain few buildings. Examples include the following:

a) rural land with minimal occupied structures; and

b) recreational areas.
Special Risks

Certain small areas, whether comprised of single buildings or complexes, require a first due response beyond that which is appropriate to the predominant risk of the surrounding area. These premises or small areas should be treated as special risks and given an appropriate predetermined response. Examples of such areas include the following:

a) isolated maximum or high risk structures when they are in other risk areas;
b) railroad lines and interstates; and

c) elementary, junior high, and high schools with or without built in fire protection.