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EXECUTIVE SUMMARY

Purpose of the Report

This report details the study of fire protection services in Key Largo, Florida. The report provides a thorough and detailed evaluation of the agency, its management, assets, operations, and its service delivery. The report provides observations and findings, as well as strategies and recommendations for changes or improvements in the overall operation of the fire department.

Emergency Services Consulting inc. (ESCi) wishes to thank the staff and elected officials of the Key Largo Fire Rescue & EMS District (District) and the Key Largo Volunteer Fire and Rescue Department, Inc. (KLVFRD) for the excellent cooperation we received. All involved were candid in their comments and provided a large amount of information and data in a short amount of time.

Methodology

The approach used by ESCi in performing the evaluation included utilization and analysis of statistics, review of documents, interviews with key staff and various agency representatives, and direct observation of facilities and apparatus. Information was collected on a variety of topics of importance on providing quality fire and emergency services.

This information was used to develop specific recommendations for the District and its department. The recommendations represent opportunities to improve the quality of service provided to the community.

Contrary to popular belief, these types of evaluations are not normally conducted on organizations that are suffering serious problems. Instead, evaluations of this type are primarily directed at organizations that may be experiencing growing pains or are looking for creative and innovative ways to handle the challenges of the future. Such is the case for the Key Largo Volunteer Fire and Rescue Department, Inc.

Background Information

This report includes a detailed review of fire department and its various programs. The agency evaluation is arranged by the seven survey objectives shown below:

- Community Baseline and Organizational Overview
- Management Components
- Personnel Management
- Staffing
- Capital Assets: facilities, apparatus, and equipment
- Service Delivery and Performance
- Training Program

The criteria used to evaluate the department have been developed over many years. These criteria include relevant National Fire Protection Association standards, national accreditation criteria, health and safety requirements, federal and state mandates relative to fire protection, fire protection standards of the property insurance industry, and generally accepted practices within the fire and emergency services.

Each survey objective provides the reader with general information about that element, as well as specific observations and analysis of any significant issues or conditions that are pertinent. Observations are supported by data collected as part of the survey and interview process.

Finally, specific recommendations are included to resolve identified issues and concerns or to take advantage of opportunities that may exist.

Summary of Significant Recommendations

This study resulted in sixty-nine specific recommendations for improvement. The most significant recommendations developed as a result of this study include the following. A list of all recommendations can be found in the back of this report.

- The District should clarify its authority and role in setting the vision, determining the objectives for levels of service, and providing overall goals for the manner in which fire services are to be provided.
- The KLVFRD has only two corporate officers, the President and the Chief. The concentration of power and authority to conduct the business activities of the organization are focused on its two officer positions. The KLVFRD should revisit its corporation roles, distribution of authority, and executive or administrative oversight. At a minimum, the return to the use of a Treasurer and Vice President may be advisable.
- Adopt the proposed, conceptual organizational chart/structure provided in this report. This would include the recommendation to appoint a full-time District Public Safety Director/Fire Chief and supporting Administrative Assistant.
- Hire full-time driver/operator/EMT firefighters, employed by the District, to provide for one career firefighter on duty at each station on a 24 hour, seven day per week basis to supplement the volunteer response staff.
- Design and implement a volunteer personnel duty staff scheduling program for both stations.
- Adopt complete, accurate, and legal policies and procedures including by-laws, standard operating guidelines, general orders, personnel regulations, or their appropriate combination, based on firm, enabling documents.
- The District Commission should establish performance objectives for such basic deliverables as firefighter turnout time, overall emergency response time, incident staffing in relation to incident risk, and other critical components of emergency response outcome.
- Record-keeping related to incident records, training, maintenance, and other department activities must be improved dramatically. Initiation of the new records management software package should include adequate training and improved accountability, along with firm policies regarding its use.
- Confirm whether or not "Service Providers" have forfeited their volunteer status and tort liability protection under Florida State Law by signing the "Agreement of Understanding between the Individual Volunteer Firefighter and the Fire Department" document.
- Confirm whether the $8,700–$12,000 in annual, individual volunteer reimbursement compensation triggers other employment, Internal Revenue, and/or Department of Labor requirements.
- Promulgate a clearly identifiable, formal, progressive disciplinary process with an appropriate appeal procedure.
- Discontinue the practice of having the membership vote to accept or reject new members. The selections should be made based on merit and qualification.
- Conduct a job analysis of the Station Manager and Logistics Officer positions to confirm the incumbents are working within their job descriptions and expectations. Confirm the Logistics Officer's employment status is in compliance with Department of Labor

regulations.
- Appoint a department training officer and training committee.

A complete listing of all recommendations is found in Appendix 1 at the back of this report. Page numbers provide quick reference to the originating section of the study.

KEY LARGO FIRE SERVICES EVALUATION

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Objective One – Community Baseline and Organizational Overview

The Key Largo Fire Rescue and Emergency Medical Services District is an independent special fire control district. The Key Largo Volunteer Fire and Rescue Department, Inc. is a private not-for-profit corporation with which the District has currently elected to contract for the provision of fire protection services to the District. As a result of this contract, the department's jurisdiction encompasses the entire limits of the District. The response area includes all of Cross Key and that part of Key Largo from South Bay Harbor Drive and Lobster Lane to the southern boundary of the right-of-way for County Roads 905 and 905a. The contractual agreement expires on April 30th, 2007, but may be continued on a month-to-month basis until renegotiated.

The department began providing fire protection services in 1954, when the Tavernier Fire Department donated an older fire truck to the community. The formal organization occurred in 1955 and the corporation was chartered by the State of Florida on December 7th. The initial station was built in the Sunset Cove subdivision.

KLVFRD provides emergency services to a population of 11,886[1]. These services are provided from two facilities located within the jurisdiction. The department maintains a fleet of vehicles including two fire engines, one aerial truck, one water tender, one heavy rescue truck, and two specialty/utility vehicles. The department also operates two rescue boats.

There are 64 individuals[2] involved in delivering these services to the jurisdiction. The department has a Fire Chief, Assistant Chief, Corporation President and Board, and two Captains. Additional support is provided by a Station Manager and Logistics Officer. Primary staffing coverage for emergency response is primarily through the use of on-duty volunteer firefighters or on-call personnel responding from home and work. The department does not currently maintain collective bargaining agreements (CBA) with any classification of employees within the organization.

The following figure provides an overview of the Key Largo Volunteer Fire Department's fire suppression resources and compares these with the average rate of resource allocation in other

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[1] U.S. Census Bureau, 2000 census data.
[2] Current number at time of field research.

communities of similar size within the same region of the United States[3].

Figure 1: Resource Allocation Comparison
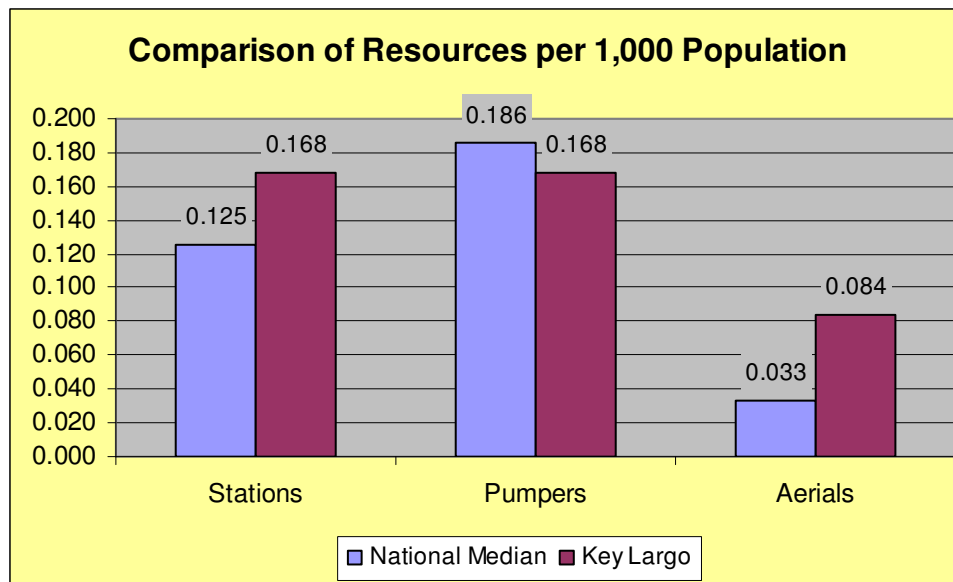
The chart demonstrates that KLVFRD has a slightly higher than average allocation of stations, but relatively similar to the typical deployment for communities of its population and geographic spread. The department has a relatively average number of pumpers, and a higher than average ratio of aerial devices (though only one aerial unit is in operation). It should be noted that many communities of this population size in the benchmark data do not operate any aerial device at all. The operation of an aerial unit in a community of this size is more often related to the type of property risks, as is the case in Key Largo, rather than population size.

The department provides a variety of services including fire suppression, victim rescue, operations-level hazmat response, and public fire safety education. A Hazardous Materials Response Team within the region provides technician-level hazardous materials emergency response service.

The Monroe County Sheriff's Officer provides emergency call receipt and dispatch service. Enhanced-911 telephone service, computer-aided dispatch, and a multi-channel radio system are in place.

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[3] Comparison data from the National Fire Protection Association *Fire Department Profiles 2003*.

Responsibilities and Lines of Authority

The Key Largo Fire Rescue and Emergency Medical Services District is an independent special fire control district established by House Bill 1291 of the Florida Legislature in 2005 Special Session. Now codified in Chapter 2005-329 of the Laws of Florida, the District is a public corporation having the powers, duties, obligations, and immunities provided to all such special districts.

Prior to the formation of the special fire service district, the responsibility for fire protection was in the hands of Monroe County (County) for all unincorporated areas of the County. This included what is now the Key Largo Fire Rescue and Emergency Medical Services District. The County, through contract, provided the KLVFRD with funding, equipment, training, administrative oversight, and was in the process of building a new facility at the time the District was approved by the state. As a result of negotiations with Monroe County, ownership of most County assets used in fire protection for the area was transferred to the newly-formed District.

Under its enabling legislation, the District is organized and exists for purposes including "providing firefighting services, rescue services, and emergency medical services." The document goes on to describe District powers, including the authority to:
- contract with qualified service providers
- purchase necessary real and personal property
- purchase and carry standard insurance policies on all such equipment
- employ such personnel as may be necessary to carry out the purpose of the District
- provide adequate insurance for said employees
- provide insurance for the protection of all firefighters and personnel and for all equipment and personal property on loan to the District
- sell surplus real and personal property

In addition, there is specific language ensuring that the District can cooperate with state of other local governments to render service to adjacent communities as well.

The District is governed by a five-member elected Board of Commissioners (Commission). The Commissioners have the authority and responsibility for ad valorem taxation, bond issuance, budget preparation and approval, liens, contractual agreements, and the adoption of ordinances

or resolutions necessary to conduct District business, so long as they do not conflict with those of a general-purpose government within whose jurisdiction the District is located. Also worth noting is that the enabling legislation specifically provides for the authority to impose impact fees on new construction or development, but only to the extent the new construction requires new facilities.

The role and authority of the Board of Commissioners is further clarified within state statutes and written policy documents describing their function and tasks. The contract between the District and the Key Largo Volunteer Fire and Rescue Department, Inc., is intended to provide additional clarification of the roles of each entity. However, the understanding of these roles continues to be blurry. Interviews with members of both the District and the KLVFRD reveal conflicting opinions regarding the role of the District Commissioners.

During interviews, it was repeatedly stated by various members of both the Commission and Fire Department Board that the intention during formation of the District was that its Commissioners would act basically in a role of budgetary promulgation. In other words, they would meet primarily for the purpose of providing only a cursory review of the budgets submitted by the fire and rescue agencies, then pass the budgets into ordinance and set the tax rate accordingly. This is certainly not in keeping with either the enabling legislation that created the District, nor the common practice found in other similar special districts around the state.

This misunderstanding needs to be clarified. The Commission is clearly the authority having jurisdiction, and is ultimately responsible for the proper provision of fire and rescue services. It has the authority to provide those services either directly, or by contract with the current service providers or others of its choosing. Therefore, it is mandatory that it maintain controlling authority in all matters. While ESCi is not advocating that the District or its Commissioners involve themselves in day to day operational direction, we are encouraging the District to clarify its role in setting the vision, determining the objectives for levels of service, and providing overall goals for the manner in which services are to be provided. In addition, its financial oversight of the operational agencies is critical.

Additional concerns arise when reading, in detail, the contract between the District and KLVFRD. Section 7 of the contract requires the department to provide its services "as provided

for in the Monroe County Master Public Fire Defense Plan" or any other similar planning documents adopted by Monroe County. During interviews with the fire department, however, ESCi observed attitudes of near-contempt for the County that appears to have a long history. There was no indication of an effort to work within any County Fire Defense Plan, but rather a significant independence on the part of the department. This paragraph should be revisited and, if it is the intention of the District Commission, the KLVFRD should be directed to improve its cooperation and relationship with the County, its officials, and its fire department members.

Paragraph 10 of the contract directs the KLVFRD to submit its proposed budget "in a format specified by the District". However, there was no indication that any specific format had been officially designated by the Commissioners. This should be clarified prior to the next budget. The budget process, in general, should be in writing and clearly understood by both parties.

Paragraph 11.3 indicates that travel expenses must be submitted in accordance with the "District's adopted Travel Authorization and Expense Policy." No one was able to provide this policy for review. The clause in the contract or the described policy should be clarified and distributed.

Paragraph 15 of the contract provides a requirement that all members of the department provide a policy of liability insurance on his/her private vehicle as required by Florida law and to provide "proof of insurance in a form acceptable to the District." This is an unusual requirement to be found in a service contract such as this, and ESCi encourages a review by legal counsel to ensure that the District is not inadvertently establishing a relationship between itself and the individual member's personal vehicles that could have unintended consequences. If, in fact, the department does not have direct control over the use of the personal vehicles of its members, this paragraph may be unnecessary. Other state laws governing personal vehicles being used by volunteer firefighters should be reviewed to determine whether they provide sufficient protections.

Paragraph 16 of the contract requires that KLVFRD provide a Length of Service Awards Program for the purpose or enhancing recruitment and retention of volunteer/paid on call (POC) personnel. No such program has been established. The paragraph should be enforced, eliminated, or revised.

The By-Laws of the KLVFRD will be discussed in greater depth in other sections of this report. However, as it relates to responsibilities and lines of authority, the document presents a few concerns that will be discussed here.

According to the latest iteration of the document,[4] the KLVFRD has only two corporate officers. These are the President and the Chief. The positions of Treasurer and Vice President have been eliminated. In general, this is an unusual concentration of power and authority in a volunteer fire department organization. Though there are additional directors on the department's board, the concentration of power and authority to conduct the business activities of the organization are focused on its two officer positions. The arrangement also dilutes any intended check and balance between executive/administrative oversight and operational functions.

The KLVFRD should revisit its corporation roles, distribution of authority, and executive or administrative oversight. The return to the use of a Treasurer and Vice President may be advisable.

Foundational Policy

Organizations that operate efficiently are typically governed by clear policies that lay the foundation for effective organizational culture. These policies set the boundaries for both expected and acceptable behavior, while not discouraging creativity and self-motivation.

A comprehensive set of departmental operating rules and guidelines should contain at least two primary sections. The following format is suggested.

1. Administrative Rules – This section would contain all of the rules that personnel in the organization are required to comply with at all times. Administrative Rules, by definition, **require** certain actions or behaviors in all situations. The Department Board should adopt or approve the Administrative Rules with a review by the District Commission since the Fire Chief is also subject to them. However, the Board should delegate

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[4] It is unclear which of several versions of the By-Laws that were produced during our field visit is in force. This is discussed elsewhere in the report.

authority to the Chief for their enforcement on department personnel. The Administrative Rules should govern **all** members of the department: paid, volunteer and civilian. Where rules and policies, by their nature, require different application or provisions for different classifications of members, these differences should be clearly indicated and explained in writing. Specifically, the Administrative Rules should contain sections which address:

- Public records access and retention
- Contracting and purchasing authority
- Safety and loss prevention
- Respiratory protection program
- Hazard communication program

- Harassment and discrimination
- Personnel appointment and promotion
- Disciplinary and grievance procedures
- Uniforms and personal appearance
- Other personnel management issues

2. Standard Operating Guidelines (SOGs) – This section should contain *street-level* operational standards of practice for personnel of the department. SOGs are different from Administrative Rules in that variances are allowed in unique or unusual circumstances where strict application of the SOG would be less effective. The document should provide for a program of regular, systematic updating to assure it remains current, practical, and relevant. SOGs should be developed, approved, and enforced under the direction of the Fire Chief.

KLVFRD maintains two primary policy manuals: The By-Laws of the KLVFRD and the Standard Operating Guidelines.

As explained by a number of members of the KLVFRD board of directors and confirmed by an analysis of documents provided, the KLVFRD corporate By-laws are in disarray. The department is unable to provide a formal copy of the By-laws currently in affect. A *draft* copy is on file with handwritten notes, multi-colored, word processing formatted changes, and no indication of which version is legally in place. This document provides the basis of all corporate personnel management provisions, and must be brought to an accurate, correct, legal standing. KLVFRD's legal corporate standing with the State of Florida should be confirmed.

Policies and procedures, standard operating guidelines, general orders, or their appropriate combination, based on firm, enabling documents, are keys to efficient and effective personnel

management of a fire department. Several sets of documents were presented as the policies, procedures, and/or standing orders for the KLVFRD. At this writing, it is unclear which documents are in effect. Two sets of documents were promulgated in the early 1990s. A more contemporary *set* was presented as the extensive, and admirable, work of the Monroe County Fire Chief's Association. From the personnel management perspective, not to mention all other administrative and operational aspects of the fire department, members and employees of the KLVFRD must understand what documents and/or requirements are in place.

Organizational Structure

A well-designed organizational structure should reflect the efficient assignment of responsibility and authority, allowing the organization to accomplish effectiveness by maximizing distribution of workload. The lines on an organizational chart simply clarify accountability, coordination, and supervision. Thorough job descriptions should provide the details of each position, and ensure that each individual's specific role is clear and centered on the overall mission of the organization.

The current organizational structure is not provided with clear, designated operating divisions that provide for efficient division of workload. Instead, supervisors and staff tend to *float* from function to function, dealing primarily with the immediate issues at hand. Functional divisions would permit the core functions of the organization to be the primary focus of specific supervisors and assigned members. While some task-level activities may carry over from division to division, the primary focus of leadership, management, and budgeting within a division are clarified by the division's key function within the mission statement. Those individuals supervising or operating within a specific division are positively clear as to the role of the division and its goals and objectives.

Thus far, during the interview and fact-gathering portion of this study, three KLVFRD organizational charts have been presented. The following chart identifies the current organizational structure of the department. This arrangement was implemented during the week of the first on-site visit.

Figure 2: KLVFRD Current Organization Chart
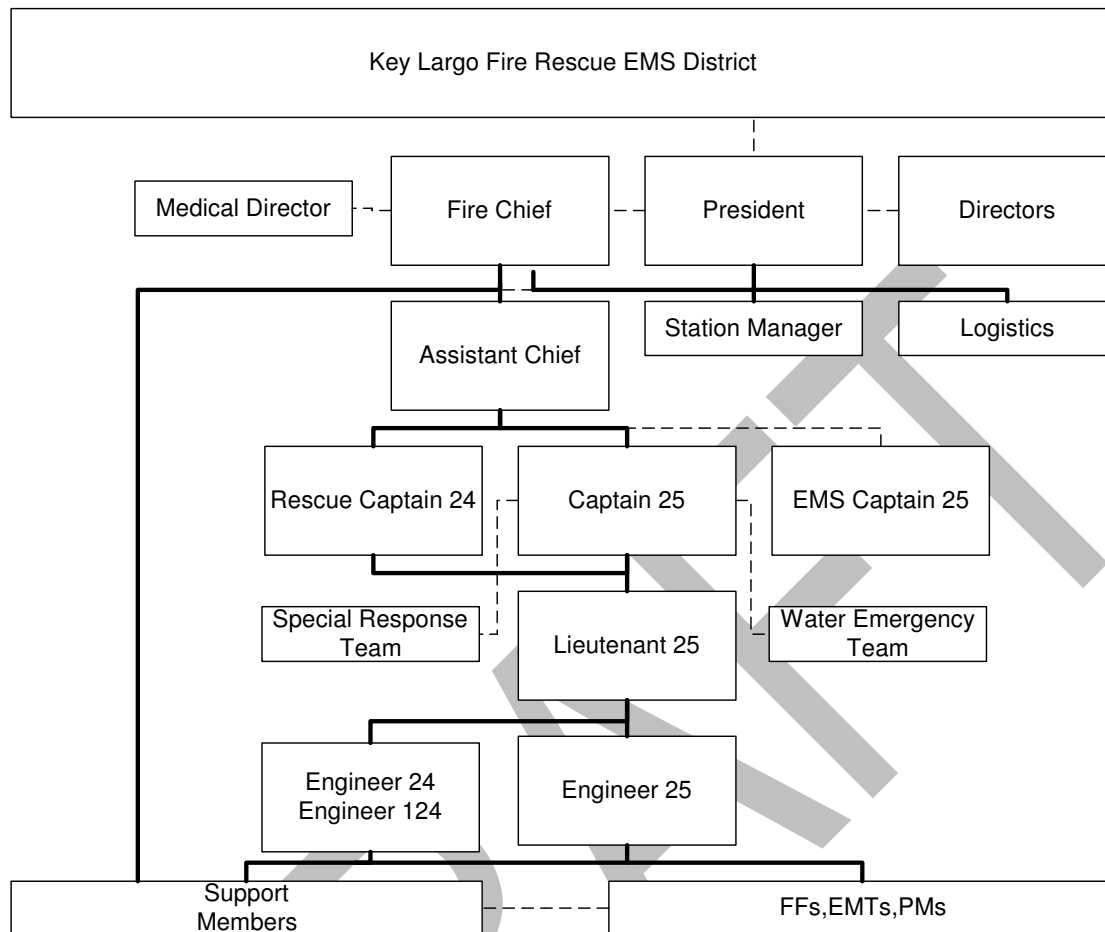
Source: Fire Chief

The initial organizational structure chart provided upon arrival to the first on-site visit depicted a vacant assistant chief position responsible for fire prevention; a vacant assistant chief position responsible for operations; two battalion chief positions; two vacant lieutenant positions at Station 24; a vacant lieutenant position at Station 25, and a vacant engineer position at Station 25. Functional assignments of operations, EMS, training, fire prevention, and safety were identified. However, the identified incumbent was not aware he was the training officer, and the fire prevention position was vacant. Implementation of the current organizational structure chart (above) reflects the removal of the incumbent safety officer from the initial chart.

The current organizational chart above reflects a very flat organizational structure. It is only by the generosity of the fire chief's employer, and the understanding of his family, that allows his availability to provide daily supervision at the station level as supplemented by the other

operational officers. This supervision time demand continues to increase with the recruitment of new members and the transition to the *in-station* response model. This phenomenon, coupled with the opening of the new station, will quite likely exceed the day-to-day in-station supervision capability required of the current organizational structure; it is currently marginal at best. With the current organizational structure, the Fire Chief must assume most of the functional roles of the department by default.

The District, in cooperation with the fire department board, should develop a process to reorganize the operational structure of the department as soon as practical. One approach could be the establishment of eligibility lists for required positions based on merit, experience, and qualification to facilitate the appointment of needed officers from these lists. This would emphasize service delivery and efficient, safe operations over political allegiances, personality, and subjectivity. The eligibility list could also serve to identify *acting* officers or supervisors, affording opportunities to gain experience, enhance morale, and promote positive competition.

The organizational structure chart proposed by the Fire Chief in January 2007, includes two battalion chiefs reporting to the existing Assistant Chief with a captain, three lieutenants, and three engineers at each of the two stations. A support captain would oversee EMS, and the District would continue to contract fire code administration and enforcement.

The following proposed organization chart reflects a recommended conceptual approach to a viable organizational structure for the current duties, responsibilities, and cultural status of KLVFRD and the District.

Figure 3: Proposed Conceptual Organization Chart
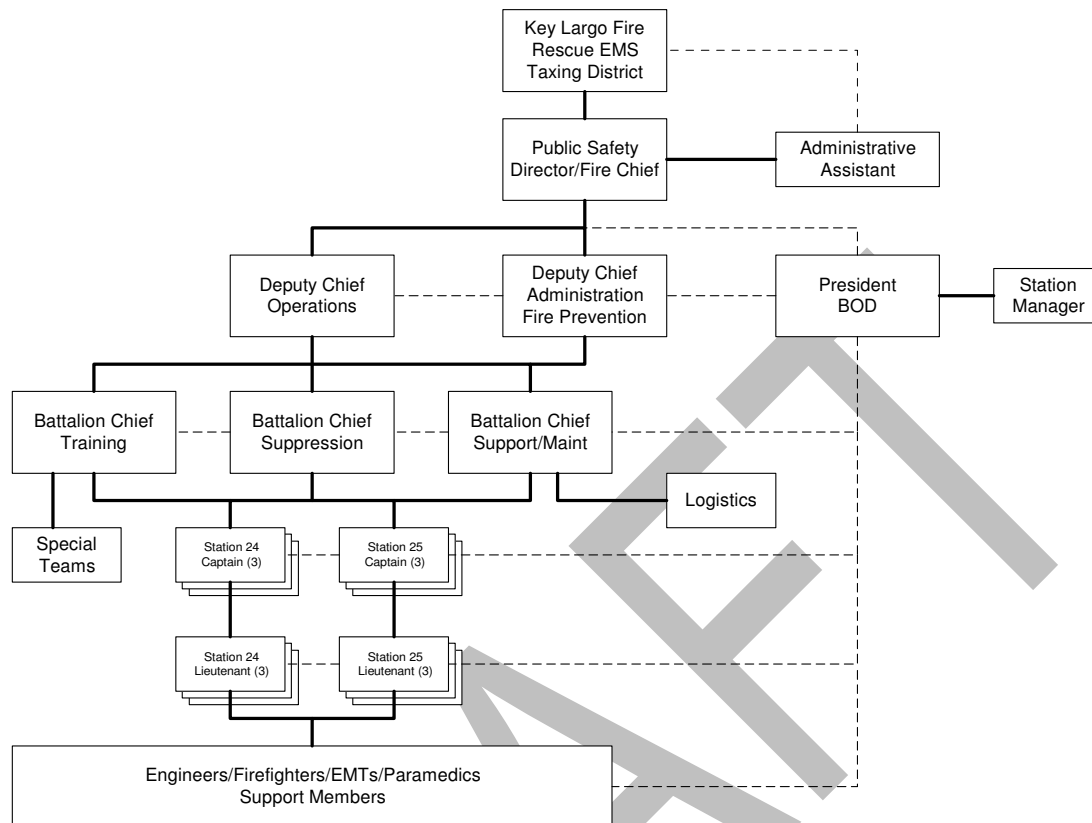
The organization chart above delineates a proposed conceptual organizational structure for the KLVFRD. This proposed structure would facilitate the administrative and operational challenges currently facing the KLVFRD (see Staffing and Personnel Management recommendations).

Adopting this conceptual organizational structure proposal requires consideration of the following.

Appointment of a District Public Safety Director/Fire Chief. This full-time position would report to the District chairman and facilitate the contract between the District and the service providers (fire and EMS). Establishment of this position would require the appropriate corporate, operational, and contractual modifications to facilitate utilizing the KLVFRD as the service provider for the District (see Assignment of Responsibilities section of the Staffing chapter). The Fire Chief position could be amended to Deputy Chief of Operations. Operational officer appointments would require approval of the District commissioners.

Appointment of a District Administrative Assistant. This full-time assistant would support the District chairman and the Public Safety Director/Fire Chief. The day-to-day supervision of the administrative assistant would by provided by the Public Safety Director/Fire Chief.

The KLVFRD corporate structure would be maintained with a direct contractual relationship between the Public Safety Director/Fire Chief and the corporate President. The solid lines on the proposed conceptual organization chart delineate the operational/administrative relationship between the Public Safety Director/Fire Chief and District employees/corporate members. The dash lines on the chart delineate the corporate relationship to these individuals. The Station Manager could be retained to provide administrative and clerical support to the corporation, if necessary.

Appointment of a Deputy Chief of Operations and a Deputy Chief of Administration/Fire Prevention (Fire Marshal). The volunteer or part-time deputy chiefs would report to the District's Public Safety Director/Fire Chief.

Appointment of a Battalion Chief of Suppression, a Battalion Chief of Training, and a Battalion Chief of Support/Maintenance. The battalion chief positions would be volunteer or part-time appointments. Special teams would be responsible to the Battalion Chief of Training. The Logistics Officer would report to the Battalion Chief of Support/Maintenance.

Appointment of three Captains at Station 24 and three Captains at Station 25. The captains would facilitate a station commander/supervision role, and serve as a command officer in the absence of a chief officer.

Appointment of three Lieutenants at Station 24 and three Lieutenants at Station 25. The lieutenants would facilitate station supervision and serve as unit (engine/ladder, etc) officers.

The department has not sufficiently analyzed its mission and functions, and has not established a set of specific agency programs. Organized, structured programs permit better assignment of resources, division of workload, development of future planning, and analysis of service delivery. Those departments that have clarified their programs with titles, assigned leadership, resources, budget appropriations, performance objectives, and accountability are among the

most successful. This department tends to operate on the basis of day-to-day tasks and issues. Organized structure and planning, down to the program level, should be improved.

The Fire Chief currently appears to directly supervise 20-30 other individuals, including the Logistics Officer, captains, Station Manager, and firefighters. The Chief's span of control exceeds the range typically considered normal and acceptable. Many times chief officers accept, or encourage, a span of control that greatly exceeds their ability to maintain good communication and leadership, often with good intentions, but just as often to the detriment of the department. An excessive span of control is not necessarily a good reflection of efficiency or even ability and should be corrected.

The Fire Chief has been provided with the authority to suspend members from operational response and can recommend expulsion.

The department maintains job classifications and descriptions that are intended to accurately reflect the typical responsibilities and activities of all positions within the agency. However, there was no clear indication that the documents had actually been approved by the KLVFRD Board or were actually in force. Several members indicated having no knowledge of the position descriptions. These documents should be properly promulgated by the Board of Directors to ensure they adequately describe the primary functions and activities, critical tasks, levels of supervision, and accountability, as well as reasonable qualifications of each class or position within the organization and are enforceable.

Maintenance of History

The KLVFRD has faltering levels of history retention programs in place. Appropriate records of all corporate or municipal meetings are maintained in accordance with the laws of the state governing various types of public meetings and decisions involving public funds.

The department does not formally maintain a scrapbook or file containing items of historical significance, including pictures, newspaper articles, etc. This is a missed opportunity; as such items are helpful when updating a historical perspective of the organization and the major events in its development. Previously, Former Chief David Gow had assembled an admirable collection of such information, but the department has failed to maintain or assign responsibility

for this function.

A regularly maintained historical record serves as a valuable tool for planning and decision-making. It allows quick recollection of how the department has adapted to changes in the community. It provides valuable historical data to agencies, such as the Insurance Services Office, for evaluation purposes. It also allows for permanent memory of the people who have contributed to the success of the department in its service to the community.

A well-produced annual report can serve to satisfy this need. In addition, an annual report is a wonderful communications tool to share the efforts and activities of the department with the public. The department does not publish or distribute an annual report of activities and accomplishments, failing to provide any specific historical record or measurement of its performance.

At a minimum an annual report should include:

- Brief history of the department
- Summary of events and activities during the report year
- Description of major incidents handled by the department
- Descriptions of new or improved services and programs
- List of people who served with the department during the year
- Awards received by the department or individuals
- Financial summary including revenues and expenditures, grants, etc.
- Statistical analysis, with trends, of key community service level indicators

The annual report should be printed and distributed to the community and made available at such places as the local chamber of commerce and library.

Finance

The taxable value of the District is $3,435,224,278 with a total current fiscal year tax millage rate for operations of .75 mills. The total revenue of the District is $2,820,799. The District's total operating budget is $1,800,695, with another $790,000 designated to its Vehicle and Equipment Replacement Fund.

The following figures provide an overview of the current fiscal year budget for the department.

Figure 4: Budget by Category

2006-2007 Key Largo Fire & Rescue Budget	
Contractual Services	$ 629,041
Travel	$ 29,500
Phones	$ 15,205
Utilities	$ 20,050
Rent & Leases	$ 4,214
Insurance	$ 26,017
Repair and Maintenance	$ 44,600
Printing	$ 1,100
Office Expenses	$ 7,300
Training	$ 26,945
Advertising	$ 1,000
Postage	$ 500
Office Supplies	$ 2,500
Operating Supplies	$ 45,500
Fuel	$ 15,000
Dues and Subscriptions	$ 4,600
Capital Outlay	$ 312,600
TOTAL BUDGET	**$ 1,185,672**

Given the population receiving direct services from the Key Largo Volunteer Fire and Rescue Department, Inc., the following chart demonstrates service costs per person and contrasts this with other communities, both larger and smaller.

Emergency Services Consulting inc.

Figure 5: Fire Service Cost per Person
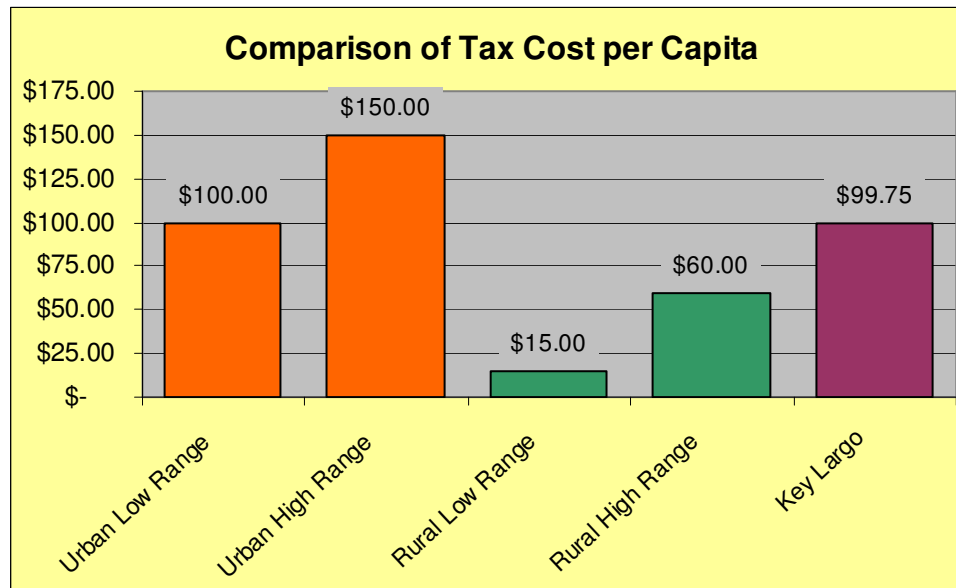
The comparison figures that are provided have been developed by ESCi and, as such, represent the company's collective experience with fire service tax costs as observed during work in agency evaluations, growth management plans, staffing studies, station location studies, merger and consolidation studies, and strategic planning in fire department agencies. As used in this chart, urban refers to those communities utilizing primarily career or combination staffing systems serving populations in excess of 20,000 persons or with average population densities of greater than 3,000 persons per square mile. Rural refers to those communities utilizing primarily volunteer staffing systems serving populations less than 20,000 or with average population densities of less than 3,000 per square mile.

Population

The Key Largo Volunteer Fire Department provides primary fire protection and first responder emergency medical services to Key Largo, Florida, an unincorporated area of Monroe County. The population of Key Largo was 11,886 according to the 2000 U.S. Census. Key Largo is categorized as a census-designated place (CDP). As such, the Census Bureau does not estimate any increase in population figures since the 2000 Census; however population growth in the previous decade had been stagnant. For the key, the population has grown a mere one-half percent annually since the 1990 Census, when the population of Key Largo was 11,386. Similarly, an equally slow growth rate has occurred through additional housing development;

only six percent of Key Largo's total housing has been built since 1990.[5]

The Census CDP includes figures that are outside of the fire district. The fire district, however, covers the bulk of the residential population on the key, and the census data is representative of fire district demographics. Nonetheless, a more exact population figure for the fire district, as measured by census block group points on geographic information systems (GIS), reveals a population of 10,984 in 2000. The following figures provide demographic information on population and housing for Key Largo.[6] As one of the factors that influences emergency service demand, population composition with regards to age and socioeconomic characteristics will need to be examined. The following chart examines the population segmented by age groups.

Figure 6: Key Largo Population by Age
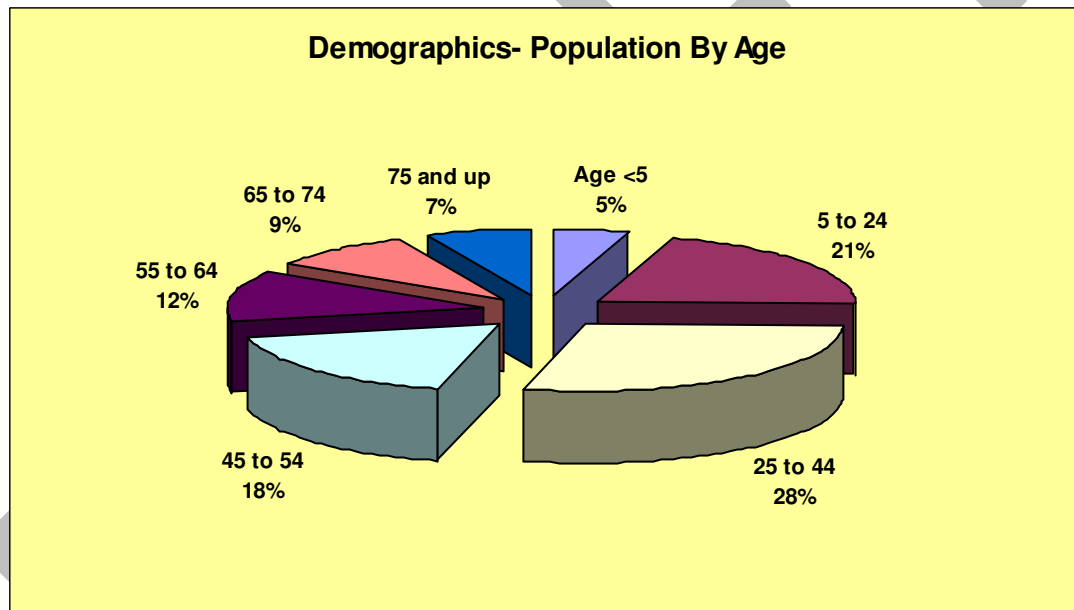
Selected Demographic Information- 1990 to 2000							
	Total Pop	Age <5	5 to 24	25 to 44	45 to 54	55 to 64	65 to 74	75 and up
2000	11,886	554	2443	3415	2127	1472	1071	804
1990	11,336	582	2046	3536	1486	1605	1471	610
change	5%	-5%	19%	-3%	43%	-8%	-27%	32%

As seen above, 16 percent of the population is 65 years of age or older, and five percent of the

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[5] Data from the 2000 U.S. Census Bureau Table SF-3.
[6] Data from the 2000 U.S. Census Bureau Table SF-1.

population is under five years of age, placing a total of 21 percent of the area's population within the significant target age groups that pose the highest risk in residential fire incidents. Although the bulk of the population is aged 25 to 44 years, the decline in the rate of growth over the decade in the 55 to 75 age group present unique challenges to the fire service. Although there was an increase in the age group of persons over the age of 75 in the last decade, this subsequent decline in population of younger age groups is forecasting a stabilization of emergency medical call requests for the next several decades.

Census figures report only Key Largo residents. However, this area is popular for vacationers and part-time residents from other parts of the country and abroad. There is seasonal increase in population due to the numerous hotels, vacation condominiums, and attractions such as beaches, wetlands, coral reef diving, and sport fishing. The population of Key Largo has been estimated to nearly double during the height of the tourist seasonal beginning in October and extending until April.

Figure 7: Key Largo Housing by Occupancy
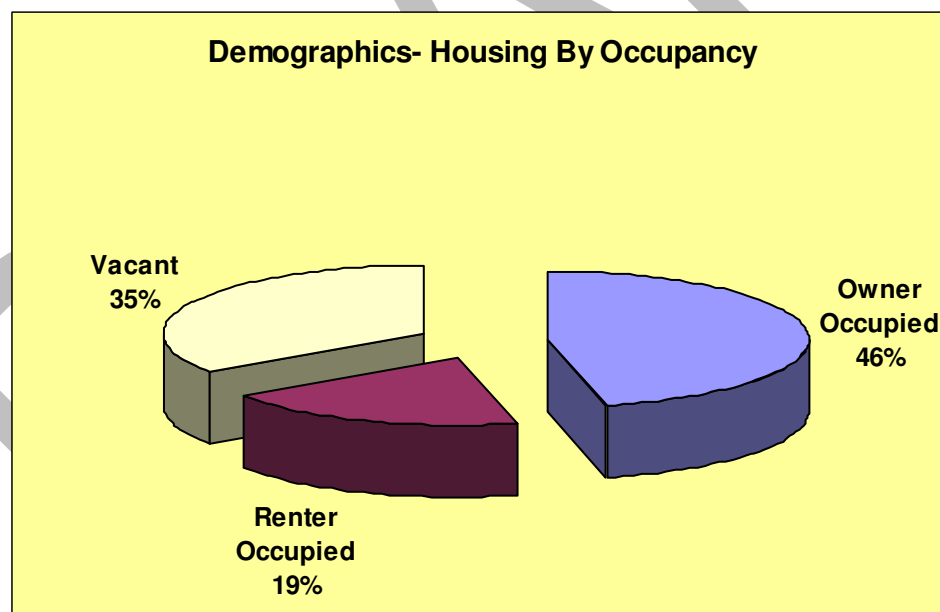
Selected Housing Information- 1990 to 2000				
	Housing Units	Owner Occupied	Renter Occupied	Vacant
2000	8043	3723	1522	2798
1990	7594	3641	1304	2649
change	6%	2%	17%	6%

Total housing figures have remained as stable as the residential population; however the increase in conversion of housing units into tourist rental properties has affected the rental figures. In addition, new hotels or purely resort communities are not included in census figures.

It is also useful to assess the distribution of the population within the fire district, since there is a direct correlation between population density and service demand. The following map displays the population density of the area, based on information from the 2000 U.S. Census.

Figure 8: Key Largo Population Density
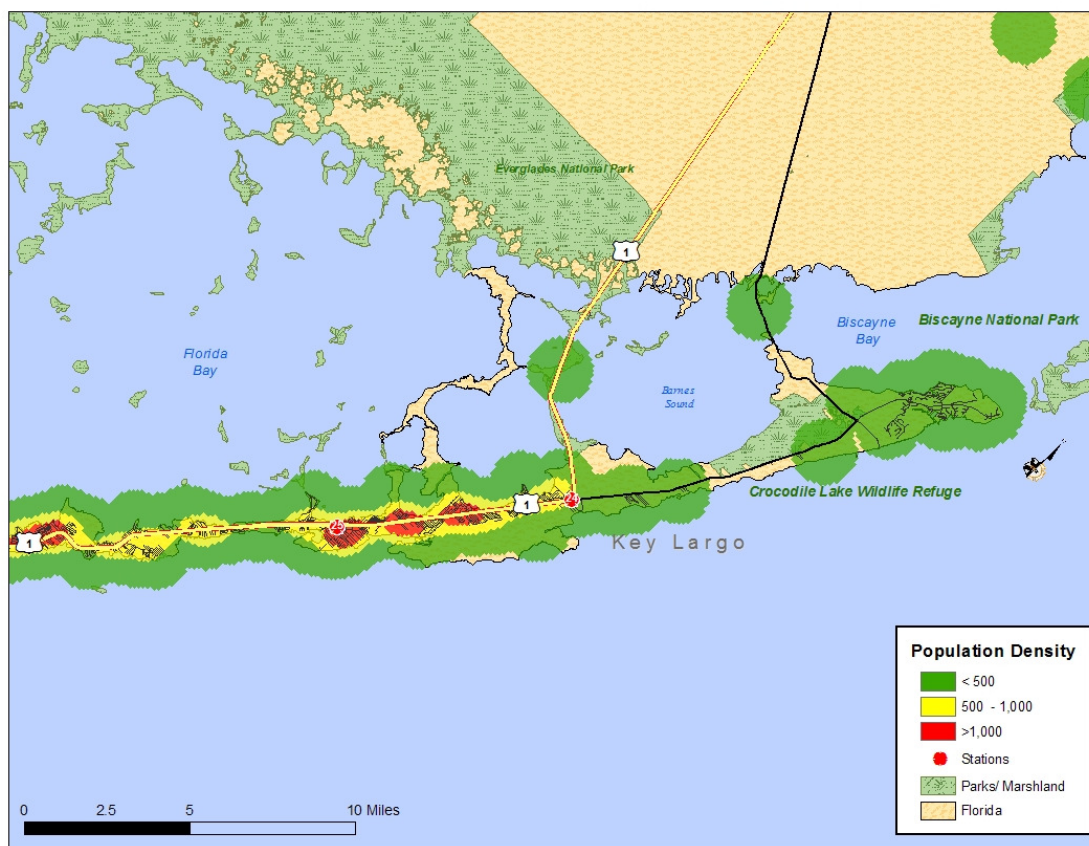
The population of the fire district is most concentrated between the fire stations along U.S. Route 1. This configuration allows the most fire protection within an area that will affect the most people and property should a fire occur.

Census-based Growth Projections

As indicated earlier in this section, the population of Key Largo has increased slightly in the last decade. ESCi anticipates additional modest growth will continue into the future.

According to historical housing data, most population growth occurred in the 1970s and 1980s.

Figure 9: Key Largo Housing Permits History
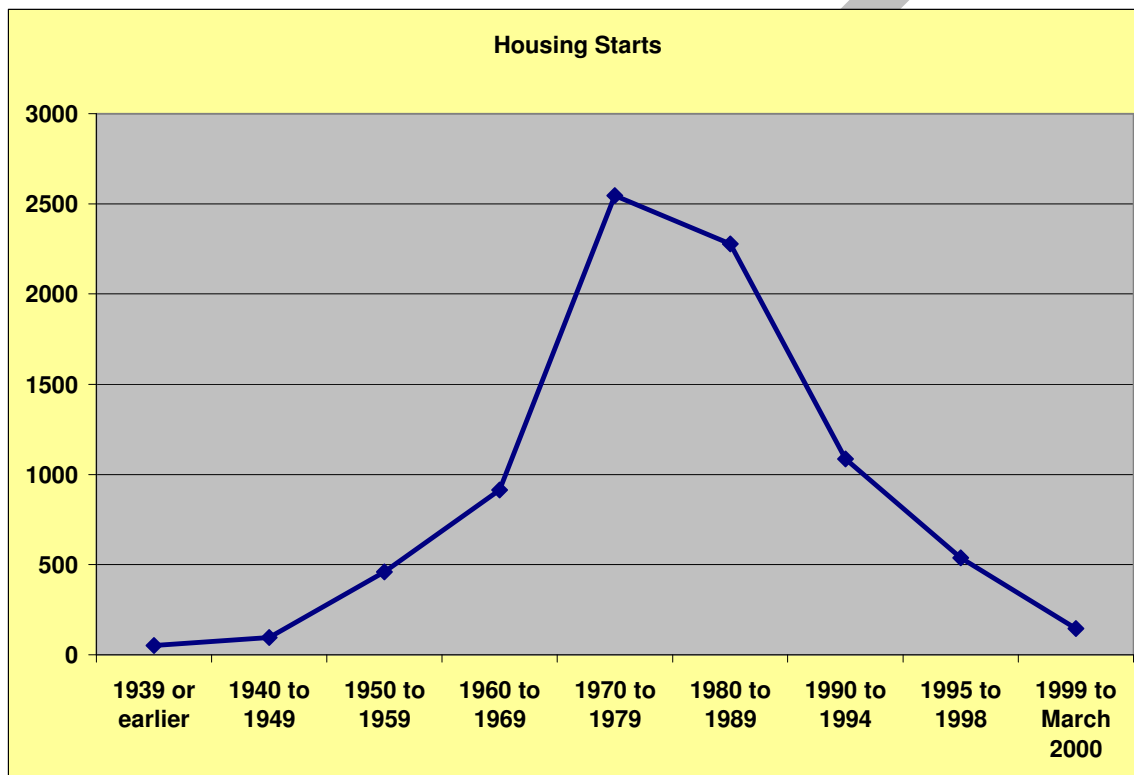
In developing forecasts for population growth, ESCi develops a forecast based on several decades of Census experience. A reversal of this new housing growth trend, as well as available space, would skew the forecast if inclusion were permitted. Therefore, in the case of Key Largo, ESCi used the decennial census figures from 1990 and 2000 to develop a mathematical forecast through the year 2030. The resulting population forecast appears as follows.

Figure 10: Census-based Population Forecast

Population Projection By Census Experience

	2010	2012	2014	2016	2018	2020	2022	2024	2026	2028	2030
Population	12436	12546	12656	12766	12876	12986	13096	13206	13316	13426	13536
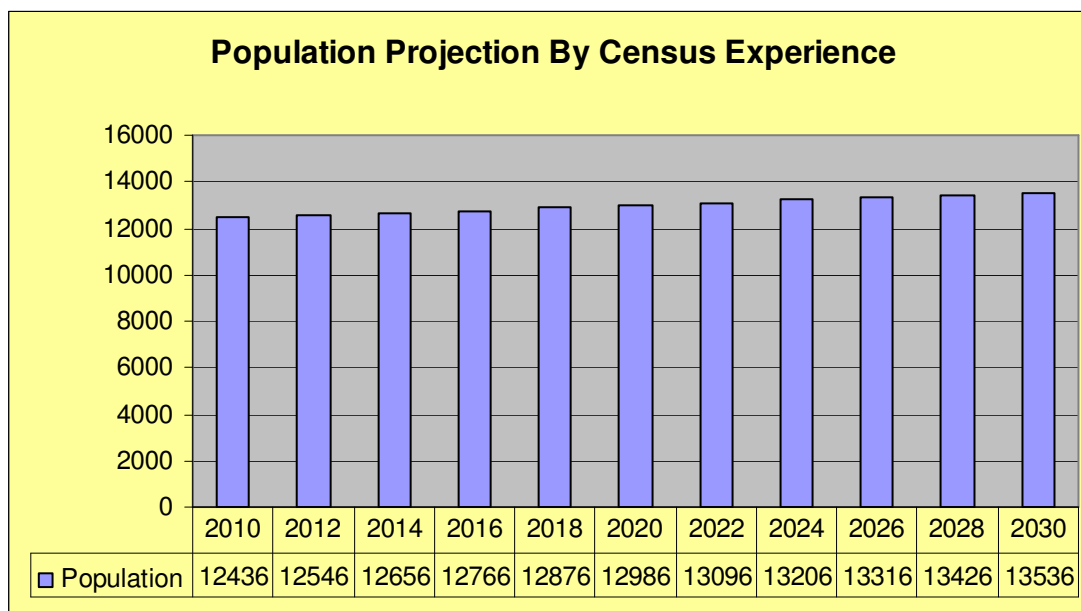
Development-based Growth Projections

While census-based population projections provide a mathematically-based estimate of future population based on historical data, they often fail to account for expected trends in the growth rate of an area. These changes often result from redevelopment, annexation, changes in employment capacity, or other socio-economic factors not reviewed in a census-based projection. For this reason, ESCi offers population projections based on review of available local development and business information.

In this case, acceptable specific data for development growth specific to Key Largo, including the Monroe County Comprehensive Plan were not sufficient to create a forecast. The development-based population forecast is typically higher than the census-based population forecast primarily due to local and regional issues that are expected to expand development opportunities, including annexation, additional transportation improvements, and adequate water and sewer infrastructure capacity.

It is not the intent of this study to be a definitive authority for the projection of future population in the service area, but rather to base recommendations for future fire protection needs on a reasonable association with projected service demand. Since it is known that service demand for emergency agencies is based almost entirely on human activity, it is important to have a

population-based projection of the future size of the community. While variation in population projections occurs, one thing that can be certain is that the Key Largo Volunteer Fire and Rescue Department, Inc. will continue to be an emergency service provider to a somewhat growing population, likely reaching over 13,000 by 2030.

Service Demand Projections

In evaluating the deployment of facilities, resources, and staffing, it is imperative that consideration be given to potential changes in workload that could directly affect such deployment. Any changes in service demand can require changes and adjustments in the deployment of staff and resources in order to maintain acceptable levels of performance.

For this study, ESCi utilized population projections obtained through census-based trend forecast, and multiplied these by a forecasted incident rate derived from a three-year history of incident per capita rates to identify workload potential through the year 2030. The results of the analysis are shown, by year and type of call, in the following chart and table.

Figure 11: Workload Projection by Type and Year

Workload Forecast

	2010	2012	2014	2016	2018	2020	2022	2024	2026	2028	2030
■ Fire	136	137	138	140	141	142	143	144	146	147	148
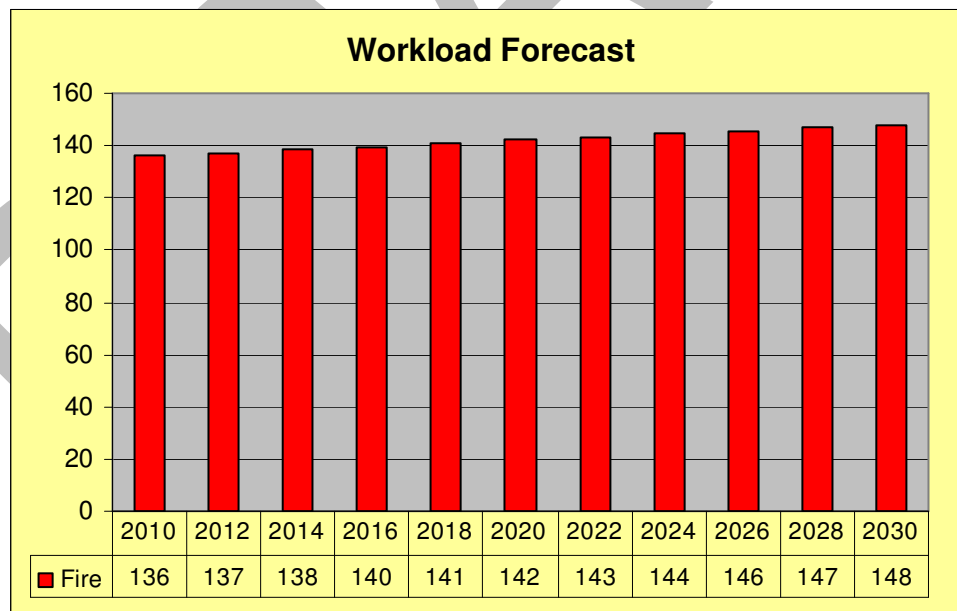
The increase in service demand is forecasted to be relatively low during the next several decades. Nationally, fire incidents per capita have been reducing due to improvements made in building codes and public fire education during the last three decades. Medical first responder

calls and other emergency service calls not involving actual fires is expected to continue to rise significantly. Once again, the dispatch data provided did not delineate fire alarms by type.

Community Risk Analysis

The fire service assesses the relative risk of properties based on a number of factors. Properties with high fire and life risk often require greater numbers of personnel and apparatus to effectively mitigate a fire emergency. Staffing and deployment decisions should be made with consideration of the level of risk within geographic sub-areas of a community.

The community's risk assessment has been developed based on potential land use within its boundaries. These potential uses are found in the County's development plans and zoning designations. The following map translates land use (potential scale and type of development within geographic sub-areas) to categories of relative fire and life risk.

- Low risk – Areas zoned and used for agricultural purposes, open space, low-density residential, and other low intensity uses.
- Moderate risk – Areas zoned for medium-density single family properties, small commercial and office uses, low-intensity retail sales, and equivalently sized business activities.
- High risk – Higher-intensity business districts, mixed use areas, high-density residential, industrial, warehousing, and large mercantile centers.

Figure 12: Community Risk Assessment
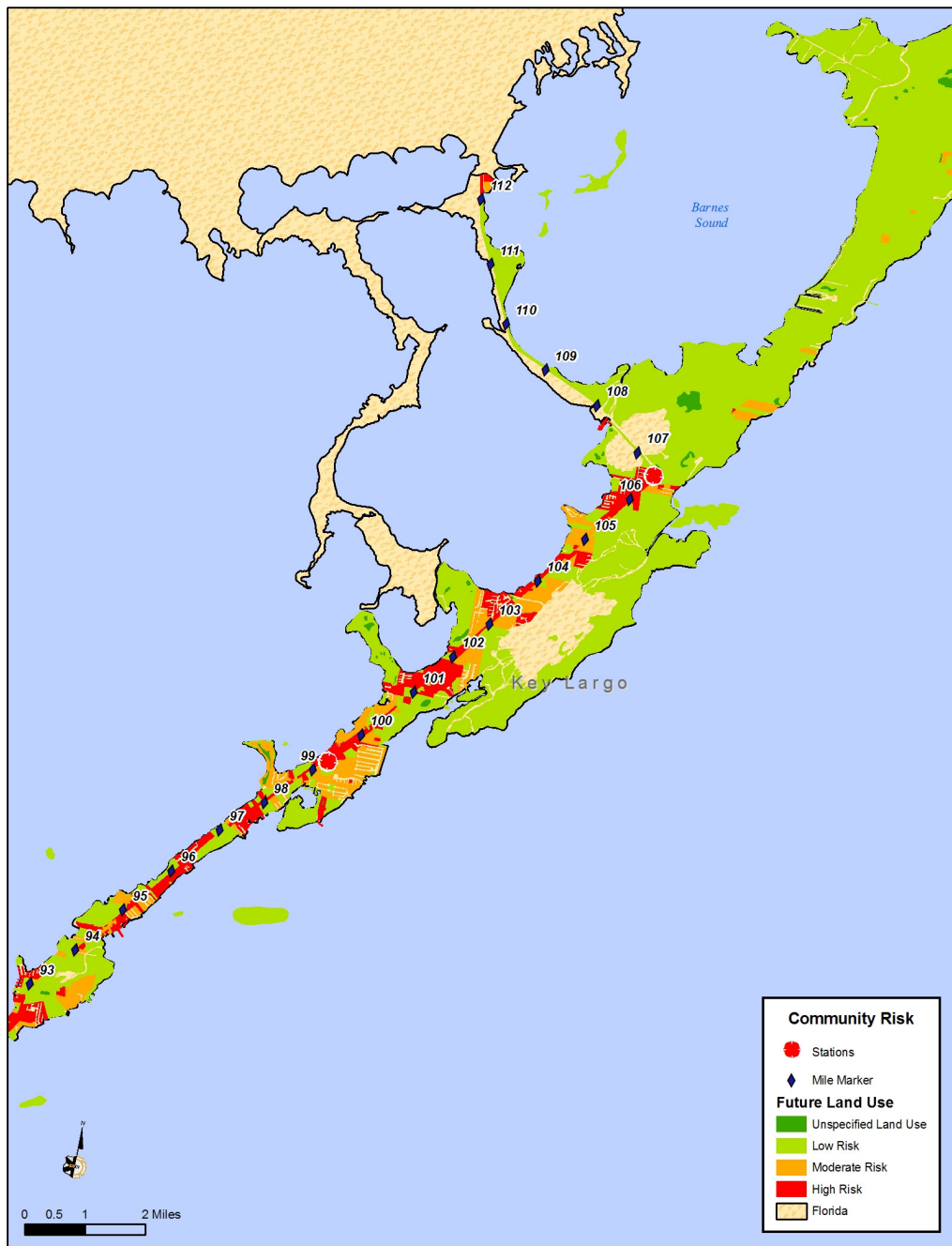
The community contains mostly low and moderate risk properties. The predominance of highest risk is located in the central highway corridor as expected. These properties include heavy commercial, mid-rise, mixed-use, institutional, and multi-family occupancies. These land use patterns generally contribute to development of an efficient fire resource deployment configuration.

Recommendations:

- The District should clarify its authority and role in setting the vision, determining the objectives for levels of service, and providing overall goals for the manner in which fire services are to be provided.

- Section 7 of the contract requires the department to provide its services "as provided for in the Monroe County Master Public Fire Defense Plan." The KLVFRD should be directed to improve its cooperation and relationship with the County, County officials, and County fire department members.

- Paragraph 10 of the contract directs the KLVFRD to submit its proposed budget "in a format specified by the District." The budget process, in general, should be in writing and clearly understood by both parties.

- Paragraph 11.3 indicates that travel expenses must be submitted in accordance with the "District's adopted Travel Authorization and Expense Policy." The clause in the contract or the described policy should be clarified and distributed.

- Paragraph 15 of the contract provides a requirement that all members of the department provide a policy of liability insurance on his/her private vehicle as required by Florida law and to provide "proof of insurance in a form acceptable to the District." This unusual requirement should be reviewed by legal counsel to ensure that the District is not inadvertently establishing a relationship between itself and the individual member's personal vehicles that could have unintended consequences.

- Paragraph 16 of the contract requires that KLVFRD provide a Length of Service Awards Program for the purpose or enhancing recruitment and retention of volunteer/POC personnel. No such program has been established. The paragraph should be enforced, eliminated, or revised.

- The KLVFRD has only two corporate officers, the President and the Chief. The concentration of power and authority to conduct the business activities of the organization are focused on its two officer positions. The KLVFRD should revisit its corporation roles, distribution of authority, and executive or administrative oversight. The return to the use of a Treasurer and Vice President may be advisable.

- Adopt the proposed, conceptual organizational chart/structure.

- Develop and adopt a position description for a District Public Safety Director/Fire Chief and supporting Administrative Assistant.

- Develop and adopt position descriptions for all career and volunteer fire/rescue positions.

- Adopt complete, accurate, and legal policies and procedures, standard operating guidelines, general orders, personnel regulations, or their appropriate combination, based on firm, enabling documents.

- The department should assign the responsibility for maintaining a scrapbook of historical items of interest for the agency.

- The department should produce an annual report and publish it for District and community distribution.

Objective Two – Management Component

As with most emergency service agencies, the KLVFRD faces challenges to organizational growth and management. In addition to the operational challenges of emergency response, the management of the business of a fire department always presents unique issues involving the administration of financial resources, the setting of goals and objectives, internal and external communications, information management, and security. This section of the report examines the department's efforts in this area and preparation for the future health of the organization.

Mission, Vision, Strategic Planning, Goals, and Objectives

The process of strategic planning involves clarifying an organization's mission, articulating its vision for the future, and specifying the values within which it will conduct itself.

This agency has not fully conducted formal strategic planning processes. Though the department does have an adopted mission statement, no clear organizational vision for the future has been developed. Member value statements do not exist, nor are goals and objectives formally established to direct organizational effort.

As such, this department's members direct their efforts at the immediate issues of the day, and are unable to commit significant time to planning for future service delivery, evaluating service improvement opportunities, or developing new programs and services desired by the customer. A Customer Centered Strategic Planning process could resolve much of this deficiency and give this department a clear sense of direction.

A departmental strategic plan, when developed, should include a review of the organizational mission statement, and clear vision and values. Service delivery goals should be developed and objectives defined for accomplishment of the goals. Critical tasks and timelines for accomplishment should also be produced. This effort is clearly important to the future of the fire and emergency services system.

In addition to overall organizational strategic planning, the District has not specified any performance objectives by which the emergency response system is to be designed and against which it is to be measured. Monroe County had previously proposed countywide emergency

service objectives, but these were never formally adopted by either the department or the District. This will be discussed again in later sections of this report, but ESCi cannot emphasize enough the importance of setting performance objectives for such basic deliverables as firefighter turnout time, overall emergency response time, incident staffing in relation to incident risk, and other critical components of emergency response outcome.

Availability of SOGs, Rules, Regulations, and Policies

As discussed previously, departmental management policies exist in the form of the departments bylaws, but these are extremely weak and disjointed. Regardless of the quality or condition of such policies and guidelines, their availability and familiarity to workers is critical.

Although these policy documents could be sought out on request, most members indicated they did not have day-to-day contact or access to the most current versions. Even the Fire Chief, the corporation president, and others had difficulty determining the most current version that had been promulgated in accordance with the corporation's Constitution. If present within the fire station work areas, members were unaware of their location and indicated they would not be able to quickly refer to them for guidance in decision-making.

In order to fully encourage the consistent use and application of policy, all such documents should be made available for regular review or reference by every member of the organization. The individual distribution of current versions of the policy documents to each individual member is highly encouraged. A method for confirmed distribution of revisions or additions should also be put in place. At a minimum, a current version should be maintained for easy access in the fire station and other major work areas.

Members also indicated that they did not have simple or easy access to the latest Standard Operating Guidelines (SOGs). The Fire Chief indicated that a new set of standard operating guidelines was being developed as a project of the Monroe County Chiefs Association. According to this information, the project is not yet complete and local revisions in the documents for the purposes of customizing them to Key Largo's operation have not been finished.

While the Chief provided the project team with an electronic version of the draft documents,

other members indicated they were completely unaware of their existence. This is a missed opportunity to reinforce the importance of the documents and gaining input of those who will use them. Lack of availability of adopted SOGs does not encourage daily use and application. In their absence, members must make decisions without the guidance of the department's management, as provided through operational guidelines. In addition, inadequate access to operating guidelines poses additional risk to the department, in the event a civil action results in court testimony regarding the application of department guidelines on an incident scene.

Local access to SOGs in the fire station is a critical minimum, and such documents must be kept updated with the latest revisions. Distribution to each individual member is even more desirable, as it provides each person with the ability to study the documents and commit critical areas to memory. The department may even wish to consider publishing a small, individual pocket-sized version of its operational guidelines to encourage field access and use.

Internal and External Communications

Quality communications is an achievable goal for any organization, but one that always seems to be most elusive. However, it is extremely important. To its credit, there are established communication processes within this department that provide opportunities for department personnel to be heard and be involved.

Regular staff meetings have been initiated, and include meetings for the corporation board once each month, and all primary staff and officers once per quarter. Such meetings encourage the sharing of ideas, issues and concerns, and encourage a teamwork approach to overall department management. According to the Chief, minutes or summaries of regular staff meetings are made available or distributed by the Corporation Board for review by all members of the organization, unless appropriate privacy is necessary. This further encourages internal communications, and permits members to share ideas on issues involving departmental issues, enhancing a feeling of empowerment among personnel.

Written, formal memorandums are regularly utilized for distribution of information, ensuring that all members receive critical data in an organized and consistent fashion. This process also provides a critical written record of internal communications that are important to organizational efficiency. A systematic method for distribution of written communications using individual

member's mailboxes is in place, and is followed regularly in order to make certain that no members are left out of the information loop. When certain types of critical memos or policies are released, a system should be in place for verification of the distribution to all personnel. This system would provide a record of confirmation that the information was received and improves accountability. Such a system is not currently used.

Monthly member meetings are conducted in a manner that provides personnel with an opportunity, or forum, for exchanging and discussing concerns, ideas, or issues directly with management personnel. These types of opportunities enhance the feeling of teamwork, open lines of communications, and encourage a feeling of ownership among the members. No employee/member newsletter has been initiated. Internal newsletters provide an excellent opportunity for distribution of agency news and information, as well as less formal information about members such as birthdays, marriages, or personal off-duty accomplishments. Though such newsletters require significant effort, they have proven very beneficial in organizations that utilize them.

Departmental bulletin boards are adequately controlled and organized, with information being sorted and updated on a regular basis.

Departmental business email addresses have been issued to appropriate personnel, offering an efficient and verifiable method of information distribution. Individual member mailboxes are used to exchange important hard-copy documents and prevent missing or misplaced documents. Voicemail is not currently available for primary staff and officers, with the exception of cell phones. These systems permit other members or the external customer to efficiently and quickly leave personal contact messages.

Various efforts are currently made to communicate with the public. The department publishes a community newsletter with its fund-raising letter for distribution to the public on an occasional basis. The newsletter permits the release of specific and detailed information, authored directly by the agency, to those served by its programs and is an excellent tool for improved public relations. No formal procedure has been established for handling complaints from the public. Such a policy should be established and all members should be made familiar with its contents in order to make certain such complaints are handled consistently, quickly, and with due process.

An active and useful website is currently maintained at *www.keylargofire.com,* and provides an additional means of distributing information and communicating with the public. The site is kept up-to-date and provides contact information for major programs operated by the department.

The department has not yet performed a public survey or questionnaire intended to provide customer feedback on service priorities, quality issues, or performance efforts. These surveys, when utilized appropriately, can provide valuable input for organizational planning.

Document Control and Security

Records management is a critical function to any organization. A variety of uses are made of written records and, therefore, their integrity must be protected. State law requires public access to certain fire and EMS department documents and data. The process of responding to public access records requests is inadequately formalized and should be initiated as a written policy and procedure to ensure that all legal requirements are met in a timely fashion.

Paper records (hard copy files) are inadequately secured. Many such records are located within the department's conference room, which is relatively open to use by most members. Security of these files should be improved through the increased use of passage and/or container locks with limited access. Important computer files are not adequately or consistently backed up, subjecting them to loss or damage in the event of critical problems on the host computer.

The KLVFRD has a significant investment in facilities, apparatus, equipment, and other items, along with its financial assets. Protecting these assets is very important. Station 24 is reported to be inconsistently locked and inadequately secured from unauthorized entry. Though the main entry door is locked and requires a doorbell to secure entry, the bay doors are often open and unobserved entry by the public is possible. Public access to the buildings is not sufficiently limited to business areas, and visitors are sometimes permitted to move about freely without being accompanied by an employee. Locks are changed, at least occasionally, to prevent orphan keys and unauthorized entry. No security alarm system is used to provide for automatic notification of unauthorized entry or break-in. Local fire alarm systems provide early smoke and fire detection for buildings, as well as an additional life-safety measure for occupants in the event of a fire.

Department computers are programmed with password security on sensitive file access and software to provide an additional level of security and data integrity. Firewall protection is in place for computers accessing the internet and other outside servers. The protection is adequately up-to-date and capable of preventing most unauthorized network intrusions. Up-to-date virus protection software is utilized on all incoming email and files or operating systems are regularly scanned for undetected virus infection.

The agency maintains a current inventory of capital assets whose value is in excess of a specified dollar value. This process was initiated by Monroe County, but is now kept up-to-date by the Station Manager. A process is in place to maintain this inventory and new assets are logged and recorded at purchase.

No business-related cash is routinely kept on the premises of the department, reducing or eliminating risks associated with burglary and theft. The use of petty cash has been eliminated. General-use credit cards, such as VISA™ or MASTERCARD™, are issued to key managers, but strict account controls, low credit limits, and zero liability fraud protection are in place. Written, formal purchasing policies and procedures are in place and are strictly enforced. Virtually all purchases require specific purchase orders (POs) with appropriate approval signatures and appropriation verifications.

Reporting and Records

The department's records management system for incidents is not sufficiently or effectively computerized. In addition, a physical review of each paper incident report for the last two years revealed extremely poor documentation of even the most basic incident information. Many incident reports contained very few entries for critical time components of the incident. Others had no call type. Still others had no record of the incident location or address.

In short, the incident reporting and records of this department are abysmal. The methods used are not fully compliant with NFIRS (National Fire Incident Reporting System) standards. Incident information, activity summary, and other analysis is difficult to obtain and requires extensive manual effort. If the department needed to reconstruct the records of an incident for an injury claim, insurance investigation, accident, or other legal matter, the results would be

unacceptable. There has been a clear lack of emphasis on proper recordkeeping, and an overall lack of accountability for those responsible.

Training records are not adequately maintained on computer, prohibiting easy retrieval of accurate reports on training attendance, certification status, and subject matter without extensive hand counting or processing. Code enforcement activities and occupancy records are not currently entered into a computerized database to permit analysis of prevention activities, community risks, and trends. Maintenance records are kept only in rough hard-copy format, making collection and analysis of fleet management processes more difficult.

The department has recently purchased a new records management software system. This new system should have the capability of adequately maintaining computerized records of incidents, maintenance, training, and prevention activities. Properly instituted, maintained, and with adequate training, this system should work well. However, accountability will still be a key to making sure information is entered appropriately. This needs to be a strong emphasis of the department in the short term.

Personnel records are weak or out-of-date. Full and complete records on employment history, discipline, commendations, work assignments, injuries, exposures, and leave time are not maintained or easily accessible to management. Financial activities, including budgets, expenditures, revenues, purchase orders, and other encumbrances are kept in a financial records management software system permitting consistent and up-to-date monitoring of all financial activities and accounts.

The department uses a PC-based computer system, with Windows XP as its primary operating system, and all computers are networked to a main server.

Recommendations:

- The District Commission should establish performance objectives for such basic deliverables as firefighter turnout time, overall emergency response time, incident staffing in relation to incident risk, and other critical components of emergency response outcome.

- A strategic planning process involving stakeholders from both the fire department and District Commission could provide this department with a clear sense of direction and greater focus on specific goals and objectives.

- In order to fully encourage the consistent use and application of policy, all policy documents should be made available for regular review or reference by every member of the organization.

- A system should be in place for verifying distribution of critical memos and policy documents to all personnel.

- A formal procedure should be established for handling complaints from the public.

- Paper records (hard copy files) should be adequately secured.

- Public access to the buildings should be better controlled.

- Record-keeping related to incident records, training, maintenance, and other department activities must be improved drastically. Initiation of the new records management software package should include adequate training and improved accountability, along with firm policies regarding its use.

- Full and complete records on employment history, discipline, commendations, work assignments, injuries, exposures, and leave time should be maintained.

Objective Three- Personnel Management

An organization's people are its most valuable resource. Careful attention must be paid to managing that resource to achieve maximum productivity for the organization and maximum satisfaction for the individual. A safe working environment, fair treatment, and recognition for a job well done are key components of membership and job satisfaction.

Personnel Policies and Rules

It is important that members of the organization know to whom they should go when they have a problem, question, or issue related to their relationship to the department. In large companies, this function is typically handled by a human resource department. Staff within such a department handles questions, issues, and tasks related to appointment, benefits, performance, disciplines, promotion, or termination. Smaller, volunteer oriented fire and rescue departments typically handle this function through chairpersons of standing committees, the chain of command, and/or an executive or full-time person hired by the independent corporation.

On a day-to-day basis, the KLVFRD provides members with a primary point of contact through the department's station manager. The Station Manager is delegated the authority to initially represent the Fire Chief and the corporate president depending on the matter at hand. Members are free, however, to directly approach appropriate officers and representatives of the department to discuss their questions or concerns.

KLVFRD has recently experience a major transition resulting in a contract for services with the District. This was a departure from providing services under the auspices of Monroe County, Florida.

This transition immediately mandated a significant workload to revise and update all matters relating to corporate and personnel management of the fire department. Those matters previously handled by Monroe County are now assumed by the District and/or KLVFRD; namely the District chairperson and the president and Fire Chief of KLVFRD. *This mandate has not been met.*

Several base documents governing fire department personnel management include the agreement between the District and the KLVFRD, the KLVFRD By-Laws, and the KLVFRD policies and procedures (standing orders and procedures).

The District agreement with KLVFRD addresses several areas pertinent to personnel management including, but not limited to, authority, personnel, minimum standards, paid employees, reimbursement, insurance, length of service awards program, records custodian, medical standards, and accountability.

The agreement should immediately and jointly be reviewed to confirm both parties have met their responsibilities to the requirements of the contract. As an example and as discussed earlier in this report, the agreement requires "The Department shall cause to be issued, and kept in full force, a Length of Service Awards Program for the volunteer personnel of the Department. Said program shall provide retirement benefits for the volunteer personnel." On-site interviews, document reviews, and data analysis indicate a Length of Service Awards Program (LOSAP) is not in place and that members are no longer participants in the Monroe County program. This *termination* occurred when KLVFRD transferred to the auspices of the District.

During the first on-site visit for this study, the department initiated a hiring process for two full-time firefighters. These firefighters, as well as the two incumbent employees, are being or have been hired without the benefit of formal by-laws, policies, procedures, and/or personnel regulations in place.

The current status of these documents exposes the department and the District to legal, administrative, and operational scrutiny and liability.

Reimbursement and Benefits

KLVFRD provides a comprehensive monthly stipend and reimbursement program for its volunteer members. The program is facilitated through an "Agreement of Understanding between the Individual Volunteer Firefighter and the Fire Department" and is based on member certifications, position, qualifications, and participation. The KLVFRD corporate president, the fire chief, and the volunteer member [service provider] are signators to the individual

agreements.

The preamble of the agreement is as follows:

"The agreement is entered into to allow the payment of a stipend to volunteers who provide more than minimal services to our local citizens, and in so doing, incur personal expenses. While it is beyond the scope of the relationship to maintain detailed expense and reimbursement record, this stipend will in some measure help to cover those personal expenses. Since this is not an 'accountable plan' these fees will be taxable to the volunteer recipient. The formula for calculating the stipend is included in 'Attachment A.' Although the fire department has a good faith belief that the acceptance of this stipend will not impair the personal tort liability protection afforded to volunteer firefighters under Section 768.28 (9)(b) 1., Florida Statutes, the parties hereto also recognized that this issue has never been specifically addressee by the courts of this state. Therefore, the Service Provider understands and agrees that his or her acceptance of this stipend might result in the loss of his or her volunteer firefighter status under Section 768.28(9)(b)1., Florida Statutes and its personal tort liability protection."

The following chart is an excerpt of the KLVFRD agreement's Attachment A outlining the monthly stipend, reimbursement criteria.

Figure 13: Stipend and Reimbursement Criteria

Position and Qualifications	$Base	$Per Call	$Not to Exceed/Month
Recruit/Support/Admin. Personnel	150	10	725
Firefighter I	250	20	1200
Firefighter II	275	20	1200
Engineer	300	20	1275
Additional Reimbursement Added to Base for Each			
Driver/Pump Operator		20	
Advanced Extrication		20	
EMT or Greater		20	
Advanced Rope Rescue		20	
Dive Rescue		20	
Board Member		20	
Line Officers			
Lieutenant FF I	325	25	1530
Captain FF I	350	25	
Lieutenant FFII	350	25	
Captain FF II	400	25	
Chief Officers			
Battalion and Assistant Chief	500	30	1800
Deputy Chief	600	30	
Chief	725	30	2000
Recommended Number of Call Participation/Years of Service Based on 40 Calls			
Up to 10 years 30%		12	
From 11-15 years 25%		10	
From 16-20 years 20%		8	
From 21-25 years 15%		6	
From 26-30 10%		4	
Over 30 years 5%		2	
Monthly Expectations			

1. Must attend two training meetings
2. Must be in good standing with the Department
3. Must meet participation level to qualify for base reimbursement
4. Chief or President may waive minimum requirements case by case
5. Each approved detail up to 3 hours equal to .5 call credit [Max 4 per/day]
6. Each approved station shift in 6 hour increments equals to 1 call credit
7. Home shifts must be taken in 6 hour increments equal to .5 call credit
8. Must reside within two miles of station and be FF I or greater for home shifts
9. All shifts must be approved by an officer in advance

Source: KLVFRD staff

This program, as carefully disclosed in the agreement between the fire department and each participating volunteer member, raises the question of whether or not *Service Providers* have forfeited their volunteer status and tort liability protection under Florida State Law. This concern, as well as whether $8,700 – $12,000 in annual, individual compensation triggers other employment and Department of Labor requirements, should be resolved immediately.

The District provides the following insurance coverage on and for the volunteer members of the KLVFRD:

- General liability insurance, with minimum limits of $2,000,000.
- Automobile liability insurance with minimum limits of $2,000,000 including physical damage insurance on all vehicles owned or leased by the District and used by KLVFRD. The policy shall provide secondary coverage on private vehicles only during such time as they are operated in response to a call, and ending, either at such time as the volunteer returns to his/her home, or to the first location to which a volunteer stops on the way home, after completion of participation in the emergency services that were subject to the call, whichever occurs first.

The KLVFRD provides the following insurance on all part-time and full-time employees:

- Workers compensation insurance in compliance with Florida Statutes Chapter 440 including minimum $500,000 employer's liability coverage.
- Unemployment compensation in compliance with Florida Statutes Chapter 443.
- General liability insurance with minimum limits of $300,000 combined single limit.
- Disability income insurance for a minimum of three hundred dollars ($300.00) weekly upon total disability for the first thirty (30) days and, thereafter, in an amount up to six hundred dollars ($600.00) weekly, not to exceed the employee's net income. Said benefit shall continue until the employee can return to his regular work duties.
- Death benefits insurance with a minimum amount of fifty thousand ($50,000) death/permanent disability benefits for the employee while engaged in the performance of his/her duties.

KLVFRD provides the following insurance on all volunteers of the department:

- Disability income insurance for a minimum of three hundred dollars ($300.00) weekly upon total disability for the first thirty (30) days and thereafter, in an amount up to six hundred dollars ($600.00) weekly, not to exceed the employee's net income. Said benefit shall continue until the employee can return to his regular work duties.

- Death benefits insurance with a minimum amount of fifty thousand ($50,000) death/permanent disability benefits for the employee while engaged in the performance of his/her duties.

- Workers compensation insurance as required by the Florida Statutes Chapter 440 including minimum $500,000 employer's liability coverage.

- Automobile liability insurance with minimum limits of $300,000 combined single limit.

Personnel Records

The maintenance of adequate and up-to-date personnel records is critical in every organization that depends on the effective performance of its people. KLVFRD maintains written and computerized records of its personnel at Headquarters Station 24.

Original application materials are retained in an attempt to create a full historical record of the member's participation in the organization, from initial appointment to separation. Additional documents and records referring to assignments, promotions, commendations, discipline and other personnel actions are maintained to a degree. Forms or other documentation pertaining to performance of the member are retained and reports describing details of accidents or other injuries or injury-related incidents are maintained should future reference and cumulative evaluation or analysis be needed.

Records of health evaluations, exposures to hazardous substances or contagious diseases, and other medical records are filed. All medical-related records, protected under federal privacy laws, are stored by the department and should be kept separate from routine personnel records. Access to these records should be on a need to know basis.

Access to personnel files, full-time and volunteer, during the first on-site visit appeared to be less secure than prudent. The lockable file cabinets are stored in the heavily traveled Station 24 conference room affording easy access by individuals without a need to know. The security of these files, hard copy and electronic, should be reviewed.

Disciplinary Process

A formal progressive disciplinary process for members and employees should be clearly identified and available. The process should provide for various levels of discipline focused on correcting unacceptable behaviors with the most reasonable actions considered appropriate and effective. The process under which discipline is applied should be clear and unambiguous.

A multi-level appeals process must be documented to afford the member or employee who feels aggrieved by an unreasonable disciplinary action the opportunity to have his/her issues reviewed by an impartial party. Informal interviews with members and employees give the impression that members feel organizational discipline practices are reasonable, fair, and consistently and equitably applied to all involved.

While KLVFRD is not inundated with disciplinary matters, the current disciplinary and appeal process is practically non-existent. This is a matter the department must resolve to avoid future liability exposure, should accusations of unfair and/or inconsistent disciplinary actions occur; especially when expanding the number of employees

The KLVFRD By-laws, as the department's disciplinary enabling document, under Article XII, simply address expulsion and removal for cause. Other departmental policies, procedures, and regulations are in question as to adoption and applicability at this time. KLVFRD should take immediate action to promulgate a clearly identifiable, available, formal, progressive disciplinary process with an appropriate appeal procedure.

Counseling Services

Emergency services bring otherwise ordinary people into life and death situations that sometimes end very tragically. Even though department personnel are trained responders, they do not have an impregnable shield that prevents them from being affected by traumatic events. Critical incident stress is a very real condition that affects all emergency service workers to some degree or another. It is how emergency workers deal with that stress that makes the difference. The trigger for significant psychological trauma may be a single event, or a series of events compounding on each other.

Progressive emergency services organizations have recognized the need to provide a support system for their personnel who are exposed to traumatic incidents. Critical incident stress interventions by this group are short-term processes only. Though normally sufficient to help emergency personnel cope with the event, on occasion longer-term support is needed. Failure to provide that support can ultimately lead to the loss of a very valuable member.

Employee/member assistance programs are available for members and employees of the department as a long-term stress intervention tool. An employee assistance program can provide additional support for other life problems that may affect a member's motivation and work quality such as substance abuse, marital difficulties, financial complications, and the like. The costs are reasonable, and the potential payback significant.

The recent transition from Monroe County to the District oversight has called the availability of critical incident stress debriefings and employee/member assistance programs into question for KLVFRD members. The availability of this valuable resource should be confirmed and made available to department members and employees.

Application and Recruitment Process

Recruitment of personnel is a critically important function for emergency service agencies. The community places a tremendous amount of trust in fire department members and employees. The process used to select personnel should be quite comprehensive.

The American's with Disabilities Act (ADA) prohibits discrimination against individuals with physical disabilities, but permits organizations to establish the physical standards that are required to perform the primary functions of any job safely and effectively. History has shown that the most effective method of avoiding a litigation suit involving ADA is through reasonable and consistent application of job-relevant pre-appointment physical ability testing. Applicants for operational positions are subjected to a formal physical ability test that is job-relevant and adequately measures the applicant's ability to perform critical physical tasks and functions as required by the KLVFRD and the State of Florida. The agreement between the District and the KLVFRD requires that medical examinations be provided in accordance with recommended applicable National Fire Protection Association (NFPA) Standards.

KLVFRD provides for three classifications of membership - Active, Associate, and Life. There are currently two full-time employees - Station Manager and Logistics Officer. At this writing, a selection process is in progress for two full-time firefighters.

Active members are classified as firefighters or fire officers that perform firefighting and/or rescue services, and have received or are receiving training for these positions. Active members may be classified as administrative in nature for *non-combat* roles in the department. They must be authorized by the department's board for valuable and specific activities or services.

Associate members are non-voting members that have been removed from active membership due to inactivity or non-participation. They may become associate members after recommendation of the board of directors or the Fire Chief.

Life members are active members having served 20 years in good standing as recommended by the board of directors and approved by a majority vote of the active membership. Active members having served 15 years in good standing or served as fire chief for two full terms may be considered for life membership.

Membership classifications are identified by the KLVFRD By-laws and Policy 3.01. The two documents, however, are in conflict. The By-laws, which normally take precedence over other administratively promulgate documents, identify three classifications of membership as Active, Associate, Life, and Honorary…actually four classifications. KLVFRD Policy 3.01 identifies conflicting and different requirements for Associate and Life membership. This should be resolved as soon as practical.

Membership in the KLVFRD is available to any person 18 years old or older living or doing business in the Key Largo area. The applicant must meet with the KLVFRD Membership Committee to receive a membership package. This completed package is returned to the Fire Chief so the applicant may be presented to the membership as a probationary member. Applicants may pursue one of the three classes of membership - active, associate, and life - although only active members are eligible to receive reimbursement and vote.

Applicants that come before the membership committee, and have their status confirmed by the

board of directors prior to a quarterly meeting, may be accepted as a probationary member for training and insurance purposes. The probationary member must serve a probationary period commencing with the next quarterly meeting.

The probationary period is currently in question. While all existing pertinent documents record six months as the term of probation, it is understood that the probationary period has been changed to three months. It is assumed this was done by due process at a departmental meeting.

KLVFRD Policy 3.01 (if enabled) presents a conflicting process for probationary members to become active members of the department. Currently, according to the policy, after a probationary member completes their three or six month probation, they shall be presented to the membership for a majority vote by a body of active members. The policy continues to specify that it shall be the discretion of the board of directors to accept or deny the applicant. This conflict should be resolved.

KLVFRD should, as soon as practical, discontinue the practice of having the membership vote to accept or reject new members. Should there be a challenge to the process, it is very difficult for the department to articulate non-discriminatory reasons for the selection decision when it was made by a vote. The selections should be made based on merit and qualification. This could be accomplished by simply accepting the recommendation of the membership committee after they have confirmed the merit, qualifications, and compliance of the probationer.

The KLVFRD recruitment and retention committee has recently undertaken several steps to increase the volunteer roster. Two significant steps include reducing the probationary period to three months so that perspective candidates may begin to receive financial reimbursement sooner and the active recruitment of individuals from the Miami-Dade area.

An obvious ramification of reducing the probationary period is the need for increased scrutiny of new members to confirm their fitness for duty, ability to complete required certifications, and their dedication to the department. A three month probation period does not always afford an appropriate period of time to efficiently observe an individual's performance.

The recruitment of Miami-Dade area candidates has been a two-edged sword for the department. While a win-win situation has been established for the department and the new members regarding their continuing education, experience, and certification and providing staff for KLVFRD responses, a *we/they* scenario has been established between the ten to twelve core (local Key Largo resident members) and the younger members from Miami-Dade.

The new, out of the area members generally participate on their own schedule leaving the core members to *pick-up the slack* at all other times. This phenomenon, coupled with the political voting block established by the ever increasing numbers of out of area young members, has been the basis of a certain animosity between the groups. Core members respond from home to drive and supervise members they have never met. This does not always promote a cohesive team or and understanding of what one member may expect from another.

Another phenomenon developing is the transition from the *come from home* response model to the *in station* response model. While using the *in station* response model, response times are obviously reduced. This must be weighed against the training and experience of the faster responding unit. Crews must be comprised of an adequate number of personnel qualified to enter hazardous atmospheres.

Promotion Processes

As prescribed by the KLVFRD By-laws, the active members of the department elect their fire chief, president, and five directors to two year terms. All other administrative and operational officers of the department are appointed. The president may recommend up to two additional directors for appointment by the board of directors. Board of director terms must be staggered so that not more than one half of the directors and one officer are elected each year. It is unclear whether or not the By-law provision limiting elected directors to three consecutive terms is applicable or not. If it is in effect, the body is not in compliance.

While numerous KLVFRD documents allude to the appointment of operational (combat) officers, documents enabling this process have not been provided. It is assumed that operational officers are appointed at the pleasure of the fire chief without minimum qualifications other than those requirements prescribed by the State of Florida or the reimbursement program.

Ongoing Competency Evaluation

Once achieving active membership or employment, individuals should be evaluated periodically to ensure their continued ability to perform their duties safely and efficiently. Technical and manipulative skills should be evaluated on a regular basis. This provides documentation about a person's ability to perform their responsibilities and provides valuable input into the training and education development process.

Physical competency is evaluated only through casual observation of personnel in their activities. This does not provide the department with solid information as to whether an individual remains physically capable of performing the rigorous tasks involved in emergency services. Physical competency testing should be conducted at least annually. The evaluation can mirror the entry physical capacity test but should, within limits, give some consideration for an individual's age. Competency testing involving common emergency scene tasks is also a common method of evaluation.

Physical capacity testing cannot detect all potential limiting conditions of an individual's health and fitness levels. A periodic medical evaluation is necessary. National safety standards for firefighters recommend an annual medical evaluation and bi-annual physical examinations. The examination should include all the criteria included in the entry-level exam, as well as periodic stress EKGs for persons over 40 and regular blood toxicology screening. Communicable disease vaccinations can also be updated as needed during this process. The NFPA standard on medical requirements for firefighters (*NFPA 1582*[7]), or equivalent, should is used as an excellent resource for establishing the criteria of both entry-level and ongoing medical evaluations, and is required by the State of Florida for operational personnel. Currently, ongoing medical evaluations are not required after entrance. KLVFRD should implement mandatory medical screening for all operational members and employees as soon as practical. This is enabled on an optional basis through the agreement with the District at this time.

Regular evaluation and feedback for personnel is critical to behavior modification and improvement. It has long been proven that members and employees sincerely wish to perform well and to be a contributing part of any organization. This desire to succeed is best cultivated through effective feedback that allows a member to know what he/she is doing well or what

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[7] *NFPA 1582: Comprehensive Occupational Medical Programs for Fire Departments*, 2007.

needs improvement. The honest and effective presentation of this feedback encourages the member to reinforce those talents and abilities they already excel in and to work harder to improve the areas where they fail to perform as desired. A formal performance evaluation system should be implemented for all members and employees of the department as soon as practical and such evaluations conducted on a regular scheduled basis.

Recommendations:

- Confirm whether or not *service providers* have forfeited their volunteer status and tort liability protection under Florida State Law by signing the "Agreement of Understanding Between the Individual Volunteer Firefighter and the Fire Department" document.

- Confirm whether the $8,700–$12,000 in annual, individual volunteer reimbursement compensation triggers other employment, Internal Revenue, and/or Department of Labor requirements.

- Confirm that all electronic and hard copy personnel and training files currently stored in the Station 24 conference room are secure and only accessible to those with a need to know.

- Confirm that member/employee medical records are stored in compliance with federal privacy laws and kept separate from routine personnel records.

- Immediately promulgate a clearly identifiable, formal, progressive disciplinary process with an appropriate appeal procedure.

- Confirm the availability of critical stress debriefing and member/employee assistance programs to the members and employees of KLVFRD since the transition from the auspices of Monroe County.

- Resolve the membership classification conflicts between the KLVFRD By-Laws and Policy 3.01.

- Review the wisdom of reducing the probation period for new members from six to three months. Other provisions to make reimbursement available earlier and attract members without reducing probation are available.

- Discontinue the practice of having the membership vote to accept or reject new members. The selections should be made based on merit and qualification.

- Confirm whether or not term limits are in place for elected officers and directors

- Confirm the enabling documents providing for the appointment of operational officers. While it is assumed that operational officers are appointed at the pleasure of the fire chief without minimum qualifications, documents enabling this process have not been provided.

- Develop and implement a plan to evaluate member/employee technical and manipulative skills on a regular basis.

- Conduct annual physical competency testing of operational members and employees

- Conduct annual medical evaluation and bi-annual physical examinations of members and

employees.

- Develop and implement a formal performance evaluation system for all members and employees

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Objective Four – Staffing

KLVFRD uses volunteer, paid on call (with stipend), personnel to accomplish its mission and responsibilities to the District Board. Day-to-day administrative/clerical functions are generally delegated to two full-time staff personnel with oversight provided operationally by the Fire Chief and administratively by the President of the Board of Directors. Support functions of the department are accomplished through ancillary responsibilities assigned to volunteer members although most of these functions are currently managed by the Fire Chief. Staffing for emergency response to fire, emergency medical, and related incidents is provided by volunteer members on a 24-hour basis. The department is in the process of hiring two full-time firefighters at this writing.

Administration and Support Staff

One of the primary responsibilities of the department's administration and support staff is to ensure that the operational entities of the organization have the ability and means to accomplish their responsibilities on an emergency incident. Efficient and effective administration and support are critical to the success of the department. Without sufficient oversight, planning, documentation, training, and maintenance, the operational entities of the department will fail any operational test. Like any other part of the department, administration and support require appropriate resources to function properly.

Analyzing the relationship and ratio of administration and support positions to the total positions of the department facilitates an understanding of the relative number of resources committed to this important function. The appropriate balance of the administration and support component to the operational component is crucial to the success of the department's mission and responsibilities.

The administration and support resource of the KLVFRD is comprised of the corporate board of directors, the full-time station manager, the full-time logistics officer, various administrative and support committees, and certain ancillary responsibilities managed by the Fire Chief and 29 support members.

The following figure summarizes the personnel assigned to administration and support.

Figure 14: Administrative/Support Staff by Position

Position	Number	Compensation
President	1	None
Fire Chief*	1	Stipend/POC
Secretary**	1	Stipend/POC
Director	6	Stipend/POC
Station Manager	1	Full-time
Logistics Officer	1	Full-time
Support Personnel	29	Stipend/POC
Total	40	

Source: KLVFRD Organization Chart, Worksheets 2 & 3
*The Fire Chief is a corporate officer as well as the senior operational officer
**The Secretary is not a corporate officer

The department maintains eleven standing administrative and support committees as follows:

- Membership
- Recruitment and Retention
- House
- Building
- Functions
- Ways and Means
- Budget
- By-Laws
- Health and Safety
- Fund Raising
- Nominating

Member committees are involved in research, discussion, and resolution of various issues and matters of the organization. Special roles are often assigned based on the personal interests, talents, and abilities of individual members.

The assignment of roles and responsibilities must occasionally be based on the time availability of individuals. Assigning roles to qualified individuals who have no time to complete the responsibility has proven ineffective. Many times small cadres of members are required to assume multiple roles. These are common problems for volunteer agencies and can only be countered by increased motivation of qualified personnel and increased training and experience for those with fewer qualifications, but more time available.

Certified Emergency Response Personnel

It takes an adequate and well trained staff of emergency responders to put the appropriate emergency apparatus and equipment to its best use in mitigating incidents. Insufficient staffing at an operational scene decreases the effectiveness of the response and increases the risk of injury to all individuals involved. The following figures summarize the personnel assigned to *street-level* service delivery.

Figure 15: Certified Response Personnel by Rank

Positions	Number
Fire Chief [FF I]	1
Assistant Chief [FF II]	1
Captain-Station 24 [FF II]	1
Captain-Station 25 Rescue [FF I]	1
Lieutenant-Station 25 [FF I]	1
Engineer [FF I]	3
Firefighter [FF I & II]	54
Total	62

Source: KLVFRD Worksheet #3

At this writing, KLVFRD is in the process of hiring two full-time firefighters. While their assignments have not been formally determined, it appears to be a consensus that they will initially fulfill an engineer/driver/operator role for the department.

An analysis of emergency service staffing begins with a comparison of available emergency service personnel to other communities of similar size and organization. The following chart, using National Fire Protection Association (NFPA) benchmark data for the southern region, provides an overview of the staffing level of the KLVFRD on the basis of firefighters per 1,000 population including the two career firefighter positions.

Figure 16: Comparison of Firefighters per 1,000 Population
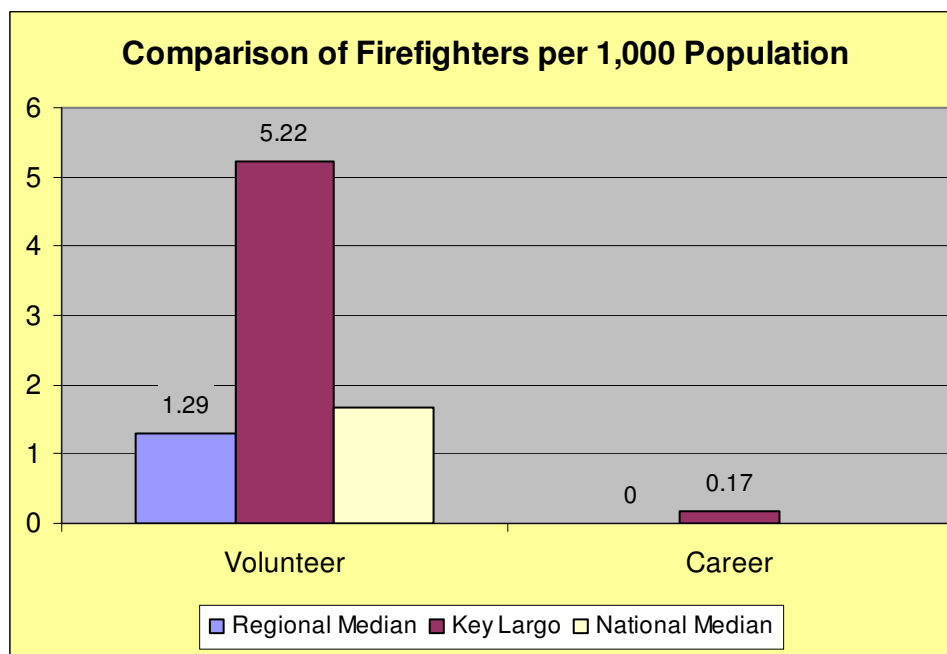
Source: NFPA

The chart provides a good indication that KLVFRD is experiencing a greater than *normal* level of emergency response staff in comparison with other jurisdictions of similar size in the region. KLVFRD enjoys a roster of volunteer personnel that is more than four times the regional median number of volunteers per 1,000 population found in other similar jurisdictions. KLVFRD provides 5.17 firefighters per 1,000 population, while similar communities maintain a median of 1.29.

Regardless of the raw numbers of personnel available to a department, what matters most is actual numbers of emergency responders available for immediate deployment at any given time or on any given day. While KLVFRD's currently maintains a membership of 62 operational response personnel, it is important to note that this number is not reflective of the actual number of personnel available for immediate emergency response.

The following chart displays the relationship of the departmental Administrative/Support staff to the Operational staff.

Figure 17: KLVFRD Organization Chart 01/07
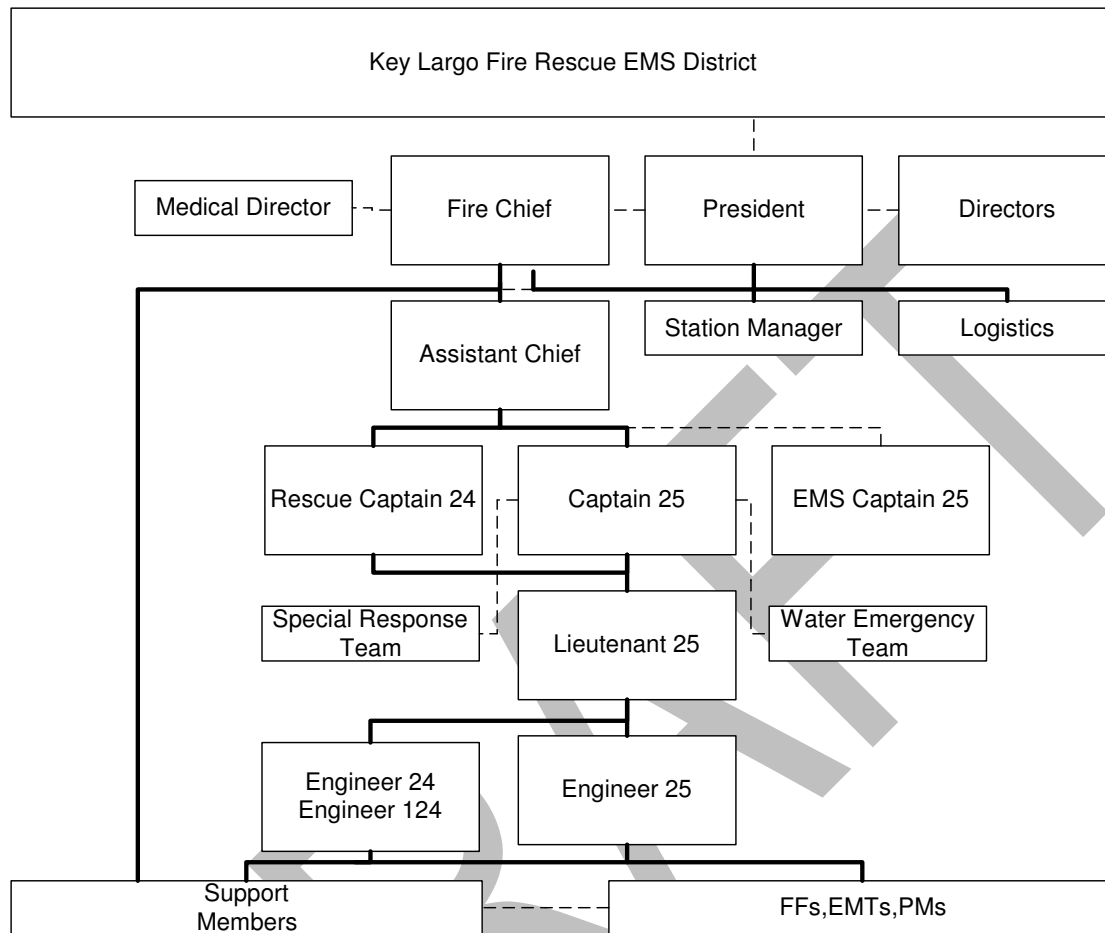
Incident Staffing Performance

Tasks that must be performed at a fire can be broken down into two key components - life safety and fire flow. Life safety tasks are based on the number of building occupants, their location, status, and ability to take self-preservation action. Life related tasks involve the search, rescue, and evacuation of victims. The fire flow component involves delivering sufficient water to extinguish the fire and create an environment within the building that allows entry by firefighters.

The number and types of tasks needing simultaneous action will dictate the minimum number of firefighters required to combat different types of fires. In the absence of adequate personnel to perform concurrent action, the command officer must prioritize the tasks and complete some in

chronological order, rather than concurrently. These tasks include:

- Command
- Scene safety
- Search and rescue
- Fire attack

- Water supply
- Pump operation
- Ventilation
- Back-up/rapid intervention

The Commission on Fire Accreditation International (CFAI) of the International Association of Fire Chiefs (IAFC) has sample critical tasking analysis for the number of personnel required on scene for various levels of risk. This information is shown in the following chart.

Figure 18: CFAI Critical Task Staffing Needs by Risk

Minimum Firefighting Personnel Needed Based On Level of Risk				
Critical Task[8]	Max. Risk	High Risk	Mod. Risk	Low Risk
Attack line	4	4	2	2
Search and rescue	4	2	2	
Ventilation	4	2	2	
Backup line/rapid intervention	4	3	2	2
Pump operator	1	1	1	1
Water supply	1	1	1	
Utilities support	1	1	1	
Command/safety	2	2	2	1#
Forcible entry	*			
Salvage	*			
Overhaul	1*			
Communication	1			
Chief's aide	1	1		
Operations section chief	1			
Logistics	1			
Planning	1*			
Staging	1*			
Rehabilitation	1			
Division/group supervisors	2*			
High-rise evacuation	10*			
Stairwell support	10*			
Total	**49**	**17**	**13**	**6**

Can often be handled by the first due officer.
* At maximum and high-risk fires, additional personnel may be needed.

A moderate risk, for example, would include a typical single family dwelling and a low risk is associated with a vehicle or incipient brush fire.

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[8] All tasks may be functional during the early moments of firefighting, but sometimes certain duties take place in sequence depending on the situation, thus reducing the total number of people needed.

In order to assess the adequacy of KLVFRD's staffing methodology, ESCi analyzed available historical incident data to determine the number of members recorded as responding to incidents of various types. Data was analyzed for CY2005 through CY2006 and includes personnel responding to the incident scene and on station standby during the incident.

The average number of KLVFRD personnel responding to fire incidents for the two year period was 8.18 per incident. The documented trend identifies the months of January and February in both CY2005 and CY2006 as the lowest participation months with the average number of personnel ranging from five to six responders per fire calls during those months.

Figure 19: Number of Personnel Responding to Fire Incidents
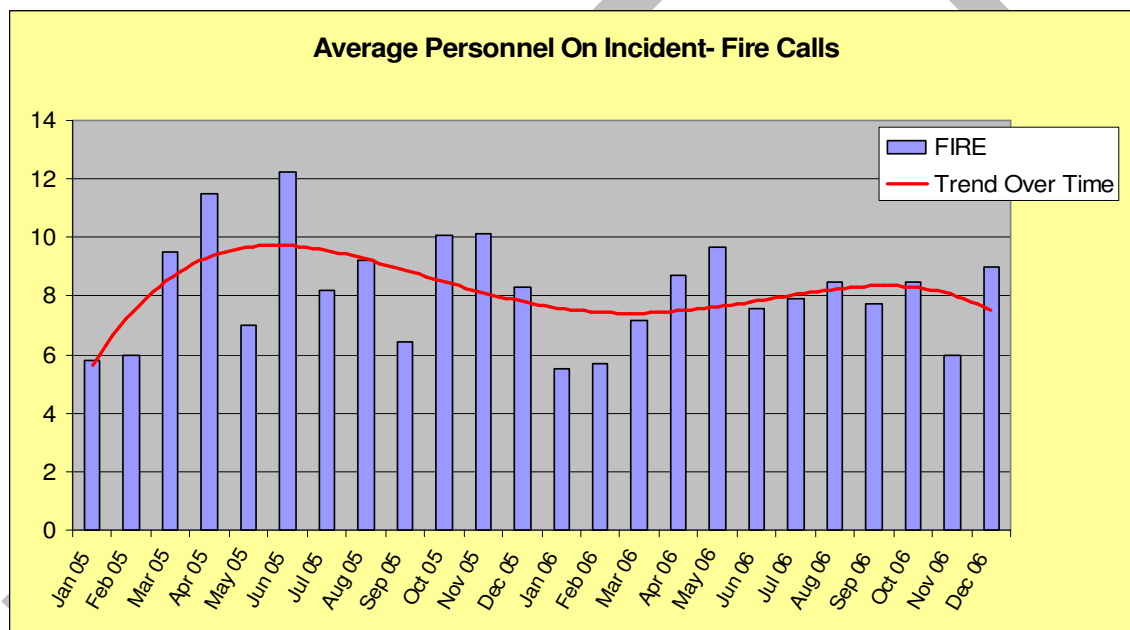
Source: KLVFRD Incident Reports

KLVFRD has a unit staffing average of 3.85 personnel for fire calls. This sum is comprised of an average of 2.3 certified firefighters and 1.52 probationary firefighters per unit response. Considering the Florida State *two-in/two-out* requirement, multiple units must arrive before interior fire attack can be initiated based on current staffing totals and certified personnel available. This may change as additional probationary firefighters receive proper certification.

Figure 20: Certified and Probationary FF Unit Staffing Trend
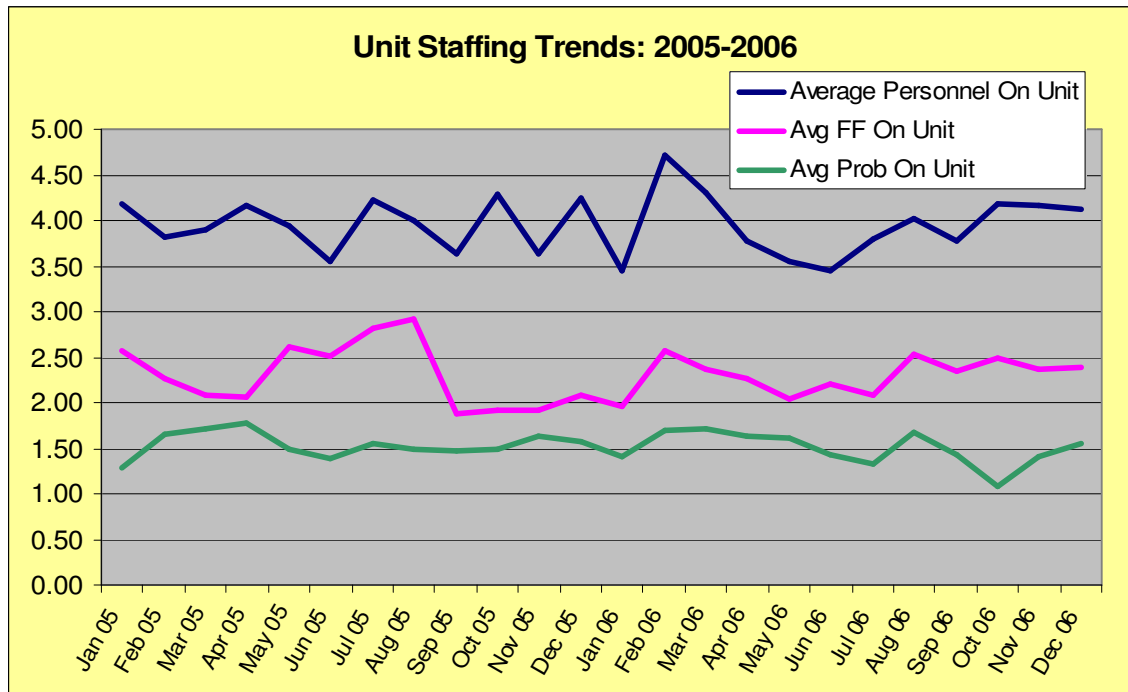
Source: KLVFRD Incident Reports

The average KLVFRD incident staffing by hour of the day characteristics for all incidents are typical for a volunteer organization (Figure 21). Multiple factors influence this phenomenon. Volunteer members are readily available in the evening hours between 1700 hours and 2400 hours and typically respond regardless of the incident type with limited personal *screening* of calls. After 2400 hours, during sleeping hours and in consideration of reporting for work the next day, volunteers typically prioritize, or screen, incident types before deciding to respond. As an example, turnout for an automatic fire alarm actuation may generate fewer members than a dwelling fire incident. Obviously, members are less available during weekday business hours.

Figure 21: Incident Staffing by Hour of the Day

Average Personnel On Incident By Hour: 2005-2006
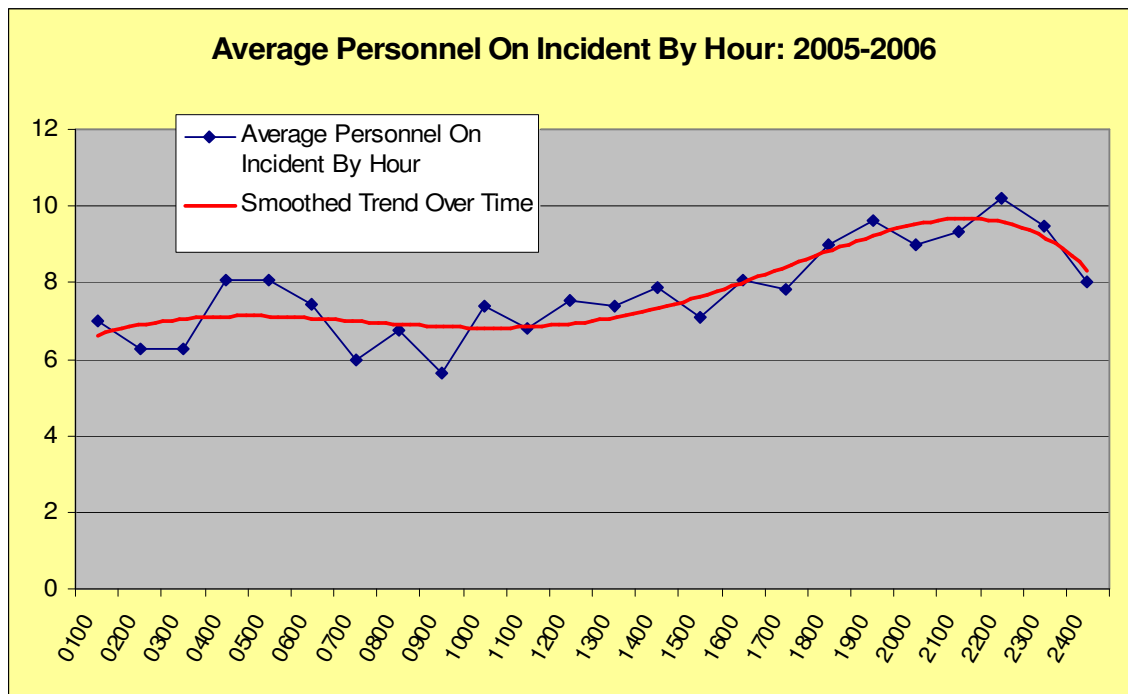
The average staffing for alarm actuation incidents was 7.27 for CY2005 and CY2006. The average per unit staffing response was 3.74 (Figures 22 and 23).

Figure 22: Staffing for Alarm Actuation Incidents

Average Personnel On Incident- Alarm Calls
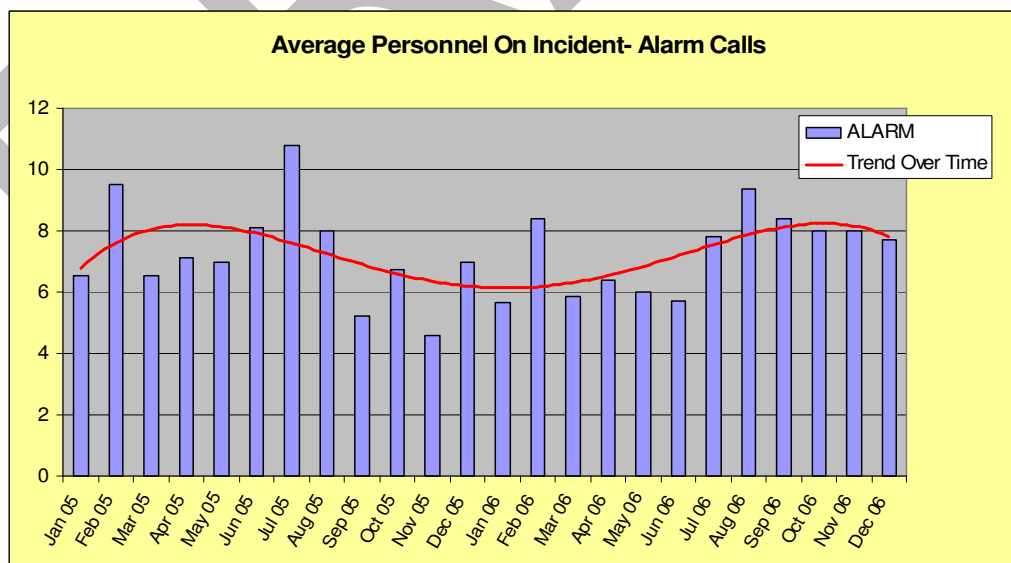
Source: KLVFRD Incident Reports

The average staffing for motor vehicle accident incidents was 8.23 for CY2005 and CY2006. The average per unit staffing response was 4.17.

Figure 23: Staffing for MVA Incidents
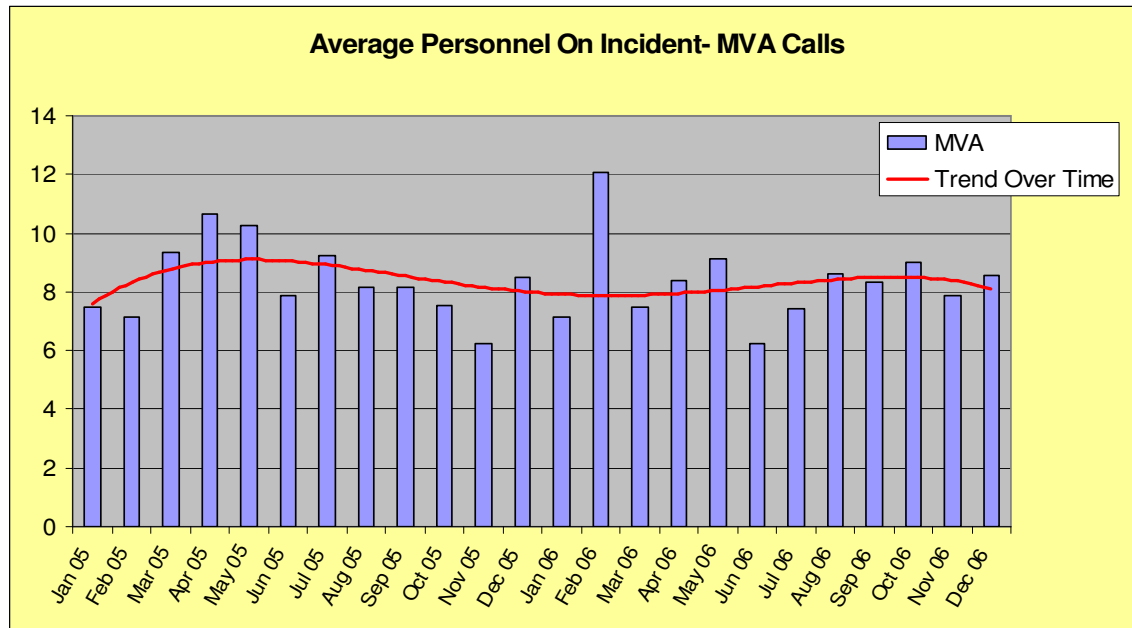
Source: KLVFRD Incident Reports

The average staffing for *Other* incidents was 7.31 for CY2005 and CY2006. The average per unit staffing response was 3.94 (Figure 24 below).

Figure 24: Staffing for Other Incidents

Average Personnel On Incident- Other Calls
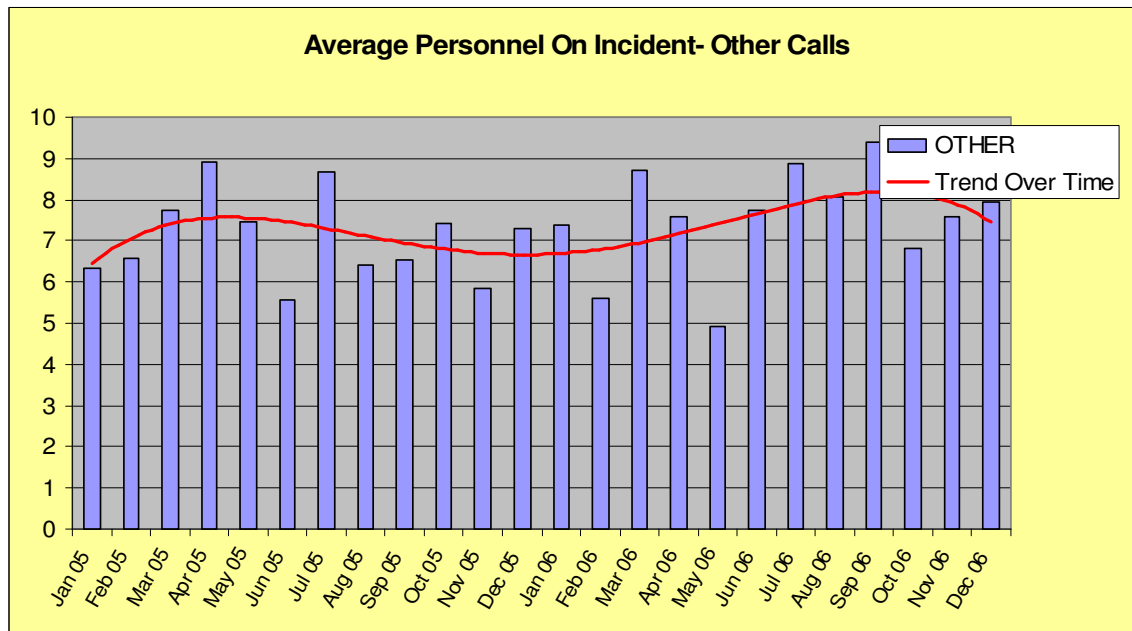
Source: KLVFRD Incident Reports

Figures 25 and 26 below, reference a summary of the average unit and incident response of personnel for the data period of CY2005 through CY2006. The average overall per unit response average was 3.93.

Figure 25: Unit Staffing by Incident Type

Unit Staffing Trends by Call Type
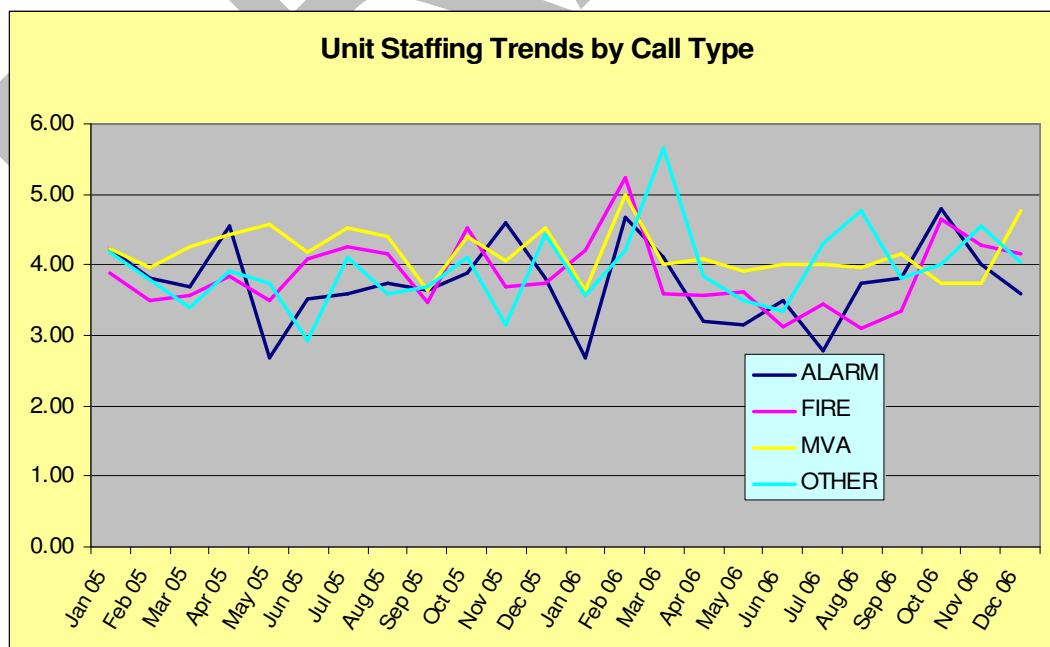
Figure 26: Summary of Personnel Responding by Unit & by Incident

Type of Incident	Average/Unit	Average/Incident
Fire	3.85	8.18
Alarm Actuation	3.74	7.27
Motor Vehicle Accident	4.17	8.23
Other	3.94	7.31
All	**3.93**	**7.75**

Source: CY05/CY06 Incident Reports

KLVFRD has not formally established a standard of coverage for the jurisdiction. Generally, the department is dispatched by the closest station, but apparatus responds from both stations as available. Structure fires and hazardous material incidents require the automatic dispatch of a mutual aid station that is usually answered with an engine and two personnel. The KLVFRD incident commander may modify the response at any time. The KLVFRD ladder truck is rarely able to respond due to lack of a driver and/or crew.

The current, informal standard of coverage is the culmination of the department's average response staff with the addition of the two mutual aid personnel and an engine on structure and hazardous materials incidents.

The following chart outlines the comparison of the KLVFRD informal standard of coverage to the CFAI typical standard of coverage based on risk.

Figure 27: KLVFRD Typical Standard of Coverage

General Incident Type	Risk	CFAI Critical Tasking Staff Required	KLVFRD Average Staff Response	Mutual-Aid Average Staff Response	Total Average Staff Response
Commercial	High	17	8	2	10
Dwelling	Moderate	13	8	2	10
Commercial	Moderate	13	8	2	10
HazMat	Moderate	13	8	2	10
Brush/Grass	Low	6	8	-	8
Vehicle Fire	Low	6	7	-	7
MVA	Low	6	8	-	8
EMS	Low	6	7	2	9

Source: CY05/CY06 Incident Reports/CFAI

With the exception of low risk incidents, KLVFRD is unable to meet the typical standard of coverage recommended by the International Association of Fire Chiefs and the Commission of Fire Accreditation International (CFAI).

KLVFRD consistently maintains an average initial staff response of ten personnel for moderate and high risk incidents assuming mutual aid support. The CFAI recommends 13 personnel for initial response for moderate risk properties and 17 personnel for high risk properties.

The KLVFRD 3.93 overall average per unit staffing falls short of the recommended four person per unit response. This is especially true when considering that this sum includes the average of 1.52 probationary, non-certified personnel per unit response.

Critical Staffing Issues

In previous and subsequent sections of this report, the need for adequate levels of management and administrative support and staffing are discussed. In some areas, the KLVFRD is challenged to meet the staffing demands of a modern emergency services organization. Analysis of the department's current staffing and membership arrangement will determine where recommendations for improvement may be indicated.

The analysis of available data, on-site interviews and observation indicates a number of areas of concern relating to staffing:

There are insufficient numbers of qualified apparatus driver/operators available.

There are three engineers in the department chain of command with an additional 23 individuals certified as driver/engineers.

A number of factors surfaced including the inefficient use and/or deployment of existing driver/engineer personnel; a passive driver/operator training/check out process, and a heavy reliance on *come from home* driver/operators for initial response.

The ladder truck rarely responds due to the lack of available driver/operators and qualified crew.

KLVFRD should immediately develop and implement an aggressive driver/operator training and

check-out program. Apparently a number of members are poised to aspire to driver/operator but are unable to readily obtain approval.

There is insufficient staffing for the recommended initial response to moderate and high risk property fire incidents. The existing response staff is not being deployed as efficiently as possible.

KLVFRD has consistently provided an average of eight responders to fire incidents during the past two calendar years. This is an admirable accomplishment, but falls short of the CFAI recommendation of 13 personnel for moderate risk property hazards and 17 for high risk property hazards. The anticipated support of mutual aid fire departments with two additional personnel is still short of the desired initial staffing for these hazards.

Volunteer Paid on Call Resources

Currently, the 62 members of the department *come and go* as they desire operationally. While significant incentives are being provided and recruitment and retention efforts being deployed there is no sustainable expectation that the *next call* will be staffed. This is especially true with the imminent opening of the new second station. The effectiveness of the traditional *come from home* response model is being strained in Key Largo. The transition to the *in-station* response model has presented *growing pains* that are usually difficult to manage.

Recent efforts by the KLVFRD volunteer recruitment and retention committee, including an updated reimbursement/stipend process, have been effective. This effort, however, needs to be enhanced.

The department has apparently initiated half-hearted attempts to establish an in-station standby program. It has lacked, among other things, assertive oversight, increased association with the reimbursement/stipend program, and follow-through. Volunteer standby programs have been an effective volunteer staffing strategy nationwide.

Full-time Driver/Operator/EMT Firefighter Resources

The District should immediately pursue the hiring of a sufficient number of career, full-time driver/operator/emergency medical technician (EMT) firefighters to provide one driver/operator at each of the two KLVFRD stations on a 24 hour, seven days per week basis to supplement the

volunteer response staff. This would include funding for their associated equipment and employment expenses.

Typically, to provide for one individual on duty on a 24 hour basis, seven days per week, 4.2 driver/operator/EMT firefighter individuals must be hired. This allows for training, personal/sick leave, and other absences while maintaining minimum staffing with limited overtime. Another approach includes hiring a minimum staff of six (three at each station) to staff on a 24 hour basis and pay overtime for their absences.

Using the 4.2-formula, 8.4 or 9 individuals would be required. Using the overtime-formula, six individuals would be required. KLVFRD has recently hired two firefighters. Incorporating these incumbents, seven additional individuals would be hired for the 4.2-formula, or four additional individuals would be hired for the overtime-formula.

However, in deference to the employment method currently in place, ESCi recommends that the driver/operator/EMT firefighters be employees of the District, since KLVFRD is a contractor and funding is enabled through the District. The current KLVFRD career firefighters could transfer to the District as their employer.

The acquisition of career, full-time personnel and other innovative programs, coupled with a coordinated volunteer staffing plan, a weekly volunteer standby program, and an enhanced, automatic, reciprocal mutual aid response process can facilitate the safe, efficient, timely response of the appropriate numbers of personnel and other resources in Key Largo.

The Fire Chief does not delegate or permit appropriate command assumption or decision making by subordinates at all levels.

Staffing of the appointed departmental operational and functional leadership positions is accomplished on a subjective, inconsistent, personality driven, political allegiance basis instead of a merit, objective, effective service delivery, or what's-best-for-the-department basis. Operational and administrative officers are insecure to make independent decisions, delegate, and/or exercise their authority without fear of reprisal or intimidation.

The current management/promotion/staffing style has resulted in company and command

officers not being clearly aware of their duties and responsibilities, ongoing vacancies, and most major functional areas of the department being managed directly by the Fire Chief, and little or no succession planning.

During the term of this study, three organizational charts for the department have been implemented or discussed.

The department enjoys the significant generosity of the Fire Chief's employer allowing his almost full-time participation as their senior officer. This phenomenon, however, has a negative side in that the Fire Chief unilaterally makes almost every decision for the organization; operationally and administratively with little or no delegation to or participation by peers or subordinates.

The fiscal, operational, and administrative check and balance process of the department no longer exists. This is further exacerbated by the disarray of corporate and organizational governance documents, policies and procedures, and current culture of the department.

The District and the fire department corporate and operational organization elements prevailing in this phenomenon must quickly move to resolve these and other matters identified in this agency analysis. The first step in addressing these matters is providing for professional, full-time leadership dedicated to accomplishing the goals, objectives, duties and responsibilities of the District.

The T District should immediately pursue the hiring of a full-time Public Safety Director/Fire Chief employed by and reporting to the District. Assuming the District would wish to continue to contract with the KLVFRD, the hiring of a District Director/Fire Chief would proceed in concert with the department accomplishing the required corporate and operational modifications to enable a legal and seamless relationship.

The incumbent and recommended full-time firefighters, together with other designated employees, would report to the proposed District Director/Fire Chief or his/her designee.

The Logistics Officer may be working in violation of Department of Labor regulations

The Logistics Officer is employed in an administrative/support position. During his scheduled employment, he clocks off duty as the Logistics Officer when the station is dispatched to an incident and assumes his paid on call/stipend role as an operational firefighter or driver/operator.

Appropriately assigning functional officers in the department would alleviate the need for the logistics officer.

There is no consideration for temporary administrative support in the absence of the Station Manager.

The incumbent Station Manager, reporting to both the Fire Chief and the corporate president, is frequently called away from her job. In her absence, her duties and responsibilities are unattended. This occurrence, coupled with daily changes in her work priorities and taking direction from two supervisors, keeps the department's administrative office in complete disarray.

Legal, fiscal, employer, and other organizational and corporate tasks are not being completed setting the department up for liability, safety, and employer woes in the future. This is especially true with increasing the number of employees in the department

There is a lack of up-to-date, formally adopted position descriptions for the department.

As stated earlier in the report, a number of position descriptions were presented for review as part of this agency evaluation. These position descriptions are generic in nature and do not appear to be the result of formal adoption or approval. Position descriptions for all volunteer and career positions need to be developed and formally adopted.

Recommendations:

- Hire a full-time Public Safety Director/Fire Chief to by employed by and report to the Key Largo Fire Rescue & EMS Taxing District.

- Hire full-time driver/operator/EMT firefighters, employed by the District, to provide for one career firefighter on duty at each station on a 24 hour, seven day per week basis to supplement the volunteer response staff.

- Initiate a critical tasking analysis for common community risk types and ensure that the number of personnel dispatched to calls equals the identified critical tasks.

- Conduct an ongoing analysis of on-scene staffing strength to confirm the department's standard of coverage.

- Hire temporary administrative/clerical assistance when the Station Manager is away from the office until such time as a District Administrative Assistant is in place.

- Conduct a job analysis of the Station Manager and Logistics Officer positions to confirm the incumbents are working within their job descriptions and expectations.

- Develop and implement an aggressive driver/operator training and check out program for all department vehicles.

- Design and implement a weekly in-station volunteer personnel standby program for both stations.

- Confirm the Logistics Officer's employment status is in compliance with the Department of Labor's regulations.

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Objective Five - Capital Assets and Replacement Programs

Fire departments need a balance of three basic resources to successfully carry out their emergency mission - people, equipment, and facilities. Because firefighting is an extremely physical pursuit, the adequacy of personnel resources is a primary concern, but no matter how competent or numerous the firefighters are, the department will fail to execute its mission if it lacks sufficient fire apparatus distributed in an efficient manner.

As mentioned previously, KLVFRD has several million dollars worth of capital assets. These assets are necessary to provide service and must be maintained and replaced as needed. Maintenance and replacement plans should be created and maintained for facilities, apparatus, and other high value equipment. A funding mechanism should be established to ensure money is available to cover the cost of this effort.

Facilities

The department operates two fire stations. Consideration should be given to the ability of the oldest facility, Station 24, to support department functions, as it may exist in the future.

The primary functions that should take place within the fire station environment should be closely examined and adequate, efficient space for all functions should be provided. Here are some examples:

- Fire chief's office
- Classroom in the fire station
- Housing and cleaning apparatus and equipment
- Residential living for on-duty crew members (male and female)
- Administrative office duties
- Firefighter training and fitness

While this list may seem elementary, compromises in the ability of the facility to support any of these functions can detract from its primary purpose for existing. The KLVFRD Station #1 requires occasional enterprising and creative compromises of the staff.

The following evaluation and general condition assessment was conducted on the facilities.

Station 24
1 East Drive

Built in 1995, this main Headquarters, 6,655 square foot facility consists of three drive-thru apparatus bays. The building serves as the headquarters for the KLVFRD.

Any specific observations with this facility can be classified into the following seven categories.

• **Design:**	*Several major issues were noted in regards to the design. First, the facility is not adequate to serve as a manned fire station. There is some room for future expansion as long as the older, out building is demolished. The parking lot is not of sufficient for the staff or visitors. Apparatus have a limited area for station exit and entry into traffic. It does, however, blend well with the surrounding structures.*
• **Construction:**	*The building consists of class IV masonary construction with rebar reinforced concrete. This building is designed to withstand hurricane force winds up to 155 mph. The roof is in good condition with several issues surrounding the building. The septic system occasionally backs up. The bays do not have floor drains or a pitch sufficient to allow for drainage of water. This causes pooling on the apparatus floor and saturation issues into the block wall.*
• **Safety:**	*This building is only protected by local smoke detectors. There is no alarm system or automatic door closures in the event of a fire. This building only contains residential cooking applainces and therefore is not required to have a fire extinguishing system. It also does not have a central shut-off for the cooking equipment. There are well located fire extinguishers throughout the building. The facility is equipped with a back-up generator which is fueled from the 2500 gallon deisel supply tank and also has an auto transfer switch.*
• **Environment:**	*Building does not have an exhaust removal system. Fuel is storred in a 2500 gallon underground tank that is equipped with an electric alarm for leakage detection and has monthly manual inspections.*
• **Code Compliance:**	*Building is ADA compliant and has no major issues noted.*

• **Staff Facilities:**		*There is plenty of space in the bays for movement around apparatus and maintenace of small equipment. The kitchen is too small for proper use and there is no dining area or table for staff to use. The dorm is well sized but, serves dually as a lounge area and is awkward for its purpose. There is no quiet area for staff to study or take phone calls. The offices lack area for future growth.*
• **Efficiency:**		*Overall appearance is not desireable. There is a large amount of clutter and miscellaneous storage outside the facility. Also the storage areas and interior closets are poorly organized with clutter build up. Finally, the pull through bays are unable to be utilized because of equipment blocking access.*

Station 24 Out Building

1 East Drive

Built around 1955, this storage-type, 2,790 square foot facility consists of two back-in apparatus bays. This older building serves as a storage facility.

Station 24's appearance is compromised by extremely poor maintenance and upkeep. As can be seen from the photograph, the grounds are cluttered with discarded items, equipment, trash, and other eyesores. The result is a poor display of professionalism to the surrounding community, neighbors, and passing citizens. The appearance should be considered unacceptable for either a career or volunteer fire department.

Within the annex building at Station 24, a significant water leak was noted under and around the ladder truck. Members of the department, including the Logistics Officer responsible for equipment maintenance, were unable to identify the source of the water leak and provided no explanation of efforts to correct the problem. The ESCi project team pointed out that the leak had been going on long enough that the water had soaked into, and been drawn up, the masonry wall. The result, as can be seen in the accompanying photograph, is damage to the wall and paint. The problem should be corrected immediately and, more importantly, the management practices that permitted the condition to go uncorrected should be called into question and those responsible should be held to greater accountability.

An additional condition noted at Station 24 was the apparatus bay crowding, particularly severe at the annex building. As can be seen from the accompanying photo, the clutter was actually up against the back of Ladder 24, making passage around the truck impossible. The result is a safety and operational condition that should be considered unacceptable and corrected immediately. The problem appears to be the result of poor storage practices, retention of too much old clutter, and a lack of accountability.

Station 25
Reef Drive

Built in 2007, this newly constructed satellite, 8,312 square foot facility consists of three back-in apparatus bays. This station is in final stages of the construction and set to open for operation within a few months.

Any specific observations with this facility can be classified into the following seven categories.

•	**Design:**	No major design issues were noted, this facility is well suited for use as a fire station.
•	**Construction:**	This building consists of masonry and steel frame construction. It has a fiberglass shingled, peaked roof with a vertical vent design.
•	**Safety:**	The facility is completely sprinklered and will have an alarm with local smoke and water flow detection. No other safety issues were noted at this time due to being in the construction phase.
•	**Environment:**	Building will have an direct connect exhaust removal system and above ground deisel storage tanks. No other information was available at this time.
•	**Code Compliance:**	Building is ADA compliant and has no major issues noted.
•	**Staff Facilities:**	Building is very well designed and will function well as a fire department
•	**Efficiency:**	None noted as the building is not open.

Apparatus

KLVFRD maintains a fleet of response vehicles with an average overall age of 10 years. Average condition is considered good. The department needs to make apparatus replacement a significant issue in both the short and long term to ensure continued reliability for emergency service use.

The following chart lists all primary apparatus used by KLVFRD, excluding smaller commercial-

style utility or staff vehicles. It is based on current age, life expectancy, and roughly estimated replacement-funding requirements.

Figure 28: Key Largo Apparatus Replacement Funding

UNIT	YEAR	REPLACEMENT COST	ANNUAL FUND CONTRIBUTIONS	CURRENT CASH REQUIREMENTS
Engine 24	2001	$ 320,000	$ 21,333	$ 106,667
Engine 25	2001	$ 320,000	$ 21,333	$ 106,667
Ladder 24	1988	$ 700,000	$ 35,000	$ 630,000
Tanker 24	1993	$ 200,000	$ 13,333	$ 173,333
Squad 24	1994	$ 300,000	$ 20,000	$ 240,000
Dive 25	1988	$ 125,000	NA	$ 125,000
Air 24	2002	$ 300,000	$ 20,000	$ 80,000
TOTALS			$ 131,000	$ 1,461,667

This chart shows that in order to meet apparatus replacement needs of current resources, $1,461,667 should be contributed to a reserve fund each year. This is based on a continuation of the current number and type of apparatus that KLVFRD maintains. Strong consideration should be given to regional cooperation and cost-sharing for special-use apparatus to reduce the cost of this technically specialized equipment.

It should be noted that the chart represents funding levels needed for a capital replacement fund that is both adequate and up-to-date, assuring cash is available for purchase at the expected time of replacement. This is not meant to exclude other funding methods from consideration.

For instance, during time periods when the market provides low rates, municipal lease-purchase programs can be financially efficient. It does, however, require firm commitment on the part of the elected officials toward a scheduled apparatus replacement program. It is far too common, when faced with a large capital purchase that is competing with other community needs, for cities to delay such purchases to the point where efficiency or safety are compromised. The department can avoid such conditions by remaining firmly committed to a reasonable and effective capital replacement program for fire apparatus.

Each apparatus was given a basic review for condition and safety. The following paragraphs describe any notations made during this review.

Ladder 24
1988 E-One Straight Stick Ladder

Seating Capacity: **4**
Pump Capacity: **1500**
Tank Capacity: **1000**
Condition: **Good**

Additional Comments or Observations: 80' Straight stick, electrical cord needs repair near outlet. Also has a significant leak in the pump packing.

Air 24
2002 Pierce Ford F-350 Utility Truck

Seating Capacity: **2**
Pump Capacity: **N/A**
Tank Capacity: **N/A**
Condition: **Excellent**

Additional Comments or Observations: Contains air bottles, confined space equipment, and lights. Also has eight tank cascade system.

Tanker 24
1993 Freightliner Tanker

Seating Capacity: **2**
Pump Capacity: **1250**
Tank Capacity: **3000**
Condition: **Fair**

Additional Comments or Observations: All guages leak oil. Tank or baffle leaks into compartments. Corrosion throughout the vehicle and compartments

Squad 24
1994 Salisbury Rescue Pumper

Seating Capacity: **6**
Pump Capacity: **1250**
Tank Capacity: **500**
Condition: **Fair**

Additional Comments or Observations: Doors have faulty latch system. This has resulted in cracks in the doors and bending of springs. Doors are loose and no longer shut properly.

Engine 24
2001 Pierce Enforcer Pumper

Seating Capacity: **5**
Pump Capacity: **1500**
Tank Capacity: **1500**
Condition: **Good**

Additional Comments or Observations: No specific problems noted.

Trailer 24
 Utility Trailer

Seating Capacity: **N/A**
Pump Capacity: **N/A**
Tank Capacity: **N/A**
Condition: **Excellent**

Additional Comments or Observations: Houses extrication equipment

Rescue 71
1983 E-One Ford Mini Pumper

Seating Capacity: **2**
Pump Capacity: **>500**
Tank Capacity: **250**
Condition: **Poor**

Additional Comments or Observations: Reserve (unknown if the vehicle runs) Needs to be retired as surplus.

Engine 25
2001 Pierce Enforcer Pumper

Seating Capacity: **5**
Pump Capacity: **1500**
Tank Capacity: **1000**
Condition: **Good**

Additional Comments or Observations: Some surface corrosion.

Dive 25
1988 Ford E-350 Ambulance Utility

Seating Capacity: **2**
Pump Capacity: **N/A**
Tank Capacity: **N/A**
Condition: **Poor**

Additional Comments or Observations: Difficult to start and has emissions issues.

Boat 24
2000 Mckee Craft 18 Foot Dive Support Boat

Seating Capacity: **N/A**
Pump Capacity: **N/A**
Tank Capacity: **N/A**
Condition: **Excellent**

Additional Comments or Observations: Powered by 150 HP Mercury outboard.

Boat 25
Mako 25 Foot Dive Support Boat

Seating Capacity: **N/A**
Pump Capacity: **N/A**
Tank Capacity: **N/A**
Condition: **Excellent**

Additional Comments or Observations: On loan to the department, powered by a 225 HP Mercury outboard.

Support and Small Equipment

Small equipment can take a significant bite out of an annual budget. Small equipment can be quite expensive and has the additional challenge of having its life limited by technology improvements. A small equipment replacement plan should also be established. The department has no such a plan, however they do include replacement funding in their annual budget for equipment that is known to be in need of replacement, but this is not done by a scheduled replacement plan.

The plan, like facilities and apparatus, should include a schedule of equipment covered, estimated life expectancy, replacement cost, and annual contributions required to replace equipment as needed. It is recommended that all equipment with a value of more than $5,000, as well as groups of equipment with an aggregate value of more than $5,000, be included in the plan. Examples include:

- Heart defibrillators
- Portable and mobile radios
- Computer equipment and systems
- Shop diagnostic and maintenance equipment
- Breathing apparatus
- Computer software (major systems)

Recommendations:

- Conditions at Station 24 involving building maintenance and storage should be corrected immediately. Improved accountability should be put in place to ensure the conditions do not return.
- Maintain the established plan to adequately fund the apparatus replacement fund or prepare for capital purchases based on apparatus replacement schedule.
- Develop and fund a small equipment replacement program that anticipates replacement schedules and builds necessary funding in order to spread cost over multiple years.

Objective Six – Delivery System

The delivery of fire suppression and rescue services is no more effective than the sum of its parts. It requires efficient notification of an emergency, rapid response from well-located facilities in appropriate apparatus, and with sufficient staffing, following a well-practiced plan of action.

This section evaluates these various components and provides observations of the elements that make up the delivery of the most critical core services provided by Key Largo Fire & Life Safety Services.

Notification System

KLVFRD is provided radio communication and dispatch service by the Monroe County Emergency Communications Center (MCECC). This is a division of the County Sheriff's Department that is managed by a full-time staff and supervisor. This agency is the district's primary public safety answering point (PSAP) and receives all incoming 9-1-1 calls from Key Largo telephones. The PSAP has an automatic generator and an uninterruptible power supply on emergency phone systems. Call processing and dispatch methodology is reasonably up-to-date, and dispatchers are available to be dedicated specifically to the fire/EMS function.

Call processing time standards in the MCECC have not yet been formally established. However, a quality assurance program reviews a random selection of calls handled to determine if performance is considered acceptable. NFPA Standard 1221, Section 6.4.2 (*Installation, Maintenance, and Use of Emergency Services Communications Systems*) specifies that, "Ninety-five percent of alarms shall be answered within 15 seconds, and 99 percent of alarms shall be answered within 40 seconds." Section 6.4.3 specifies that, "Ninety-five percent of emergency dispatching shall be completed within 60 seconds." These or similar standards should be considered for formal adoption and performance monitoring should be conducted regularly with reports provided to the District officials.

SmartCop™ computer-aided dispatch software is in use, but the CAD program is not integrated with KLVFRD's records management system. It operates on a Windows server and uses geographic information tables manually maintained by the County's Information Management Systems staff. Dispatch methodology for KLVFRD is through general station announcement

only without any programmed assignment of specific apparatus quantities and types (resource-based dispatching). Similarly, no back-up response programming by apparatus type has occurred to a level several alarms deep. Specific fire apparatus availability is not tracked by the software.

Communications are provided through conventional analogue UHF frequencies, with several channels accessible by fire units. The system is further linked to a set of conventional satellite receivers.

The MCECC has established basic plans for system failure. A functionally redundant dispatch site is available in the County's Emergency Operations Center or mobile command center. Back up power, transmitters, and consoles are in place. However, the plans to move dispatching in an emergency are not regularly tested with evacuation. Thus, an evacuation of the dispatch center could cause disruption. These system failure and evacuation plans should be fully completed, and annual drills to simulate a total system failure and evacuation should be conducted.

KLVFRD uses encoded radio alert and voice paging for notification of personnel. Notification systems do not currently include in-station printers.

Distribution Analysis

The following sections illustrate the fire department capability from the currently operated stations. KLVFRD currently operates out of two facilities. One station in the north part of the key where Route 1 connects to the mainland and a south station further down the key toward Tavernier. The District encompasses all of Cross Key that is between Key Largo and the mainland on US Route 1. It also covers that part of Key Largo from South Bay Harbor Drive and Lobster Lane (MM95) to the intersection of County Roads 905 and 905A. This intersection is on the northeast corner of the Crocodile Lake Wildlife Refuge. County Road 905A provides the other mainland crossing besides US Route 1. The following map depicts the locations of the fire stations on Key Largo.

**Figure 29: Key Largo Fire Station Deployment**
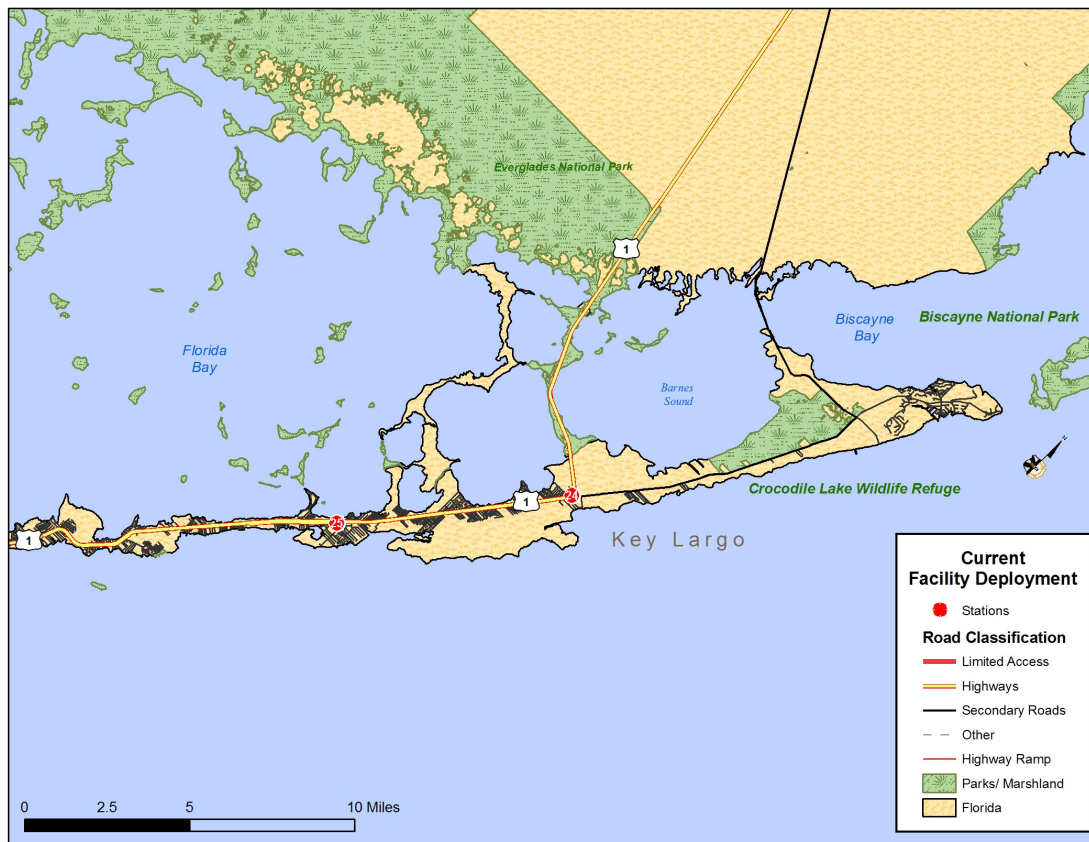
The northern tip of the key is the Ocean Reef Club Resort, a gated community that caters to a primarily seasonal population, although some permanent residents exist. This community provides it own fire protection.

In order to visualize response time capabilities, the following map demonstrates those areas within several travel time capabilities of these stations. The travel time is modeled excluding turnout time[9] on the actual roadway network. Reduction of speed has been calculated to account for turning apparatus. Areas shaded dark gray are within the five-minute response profile of a District fire station. Yellow shaded areas are within six minutes, while the red shaded areas measure an eight minute travel time.

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[9] Turnout time is the amount of time after dispatch to assemble an apparatus crew, don equipment, and begin enroute to an assignment.

Figure 30: Current Response Time Capability of KLVFRD Stations
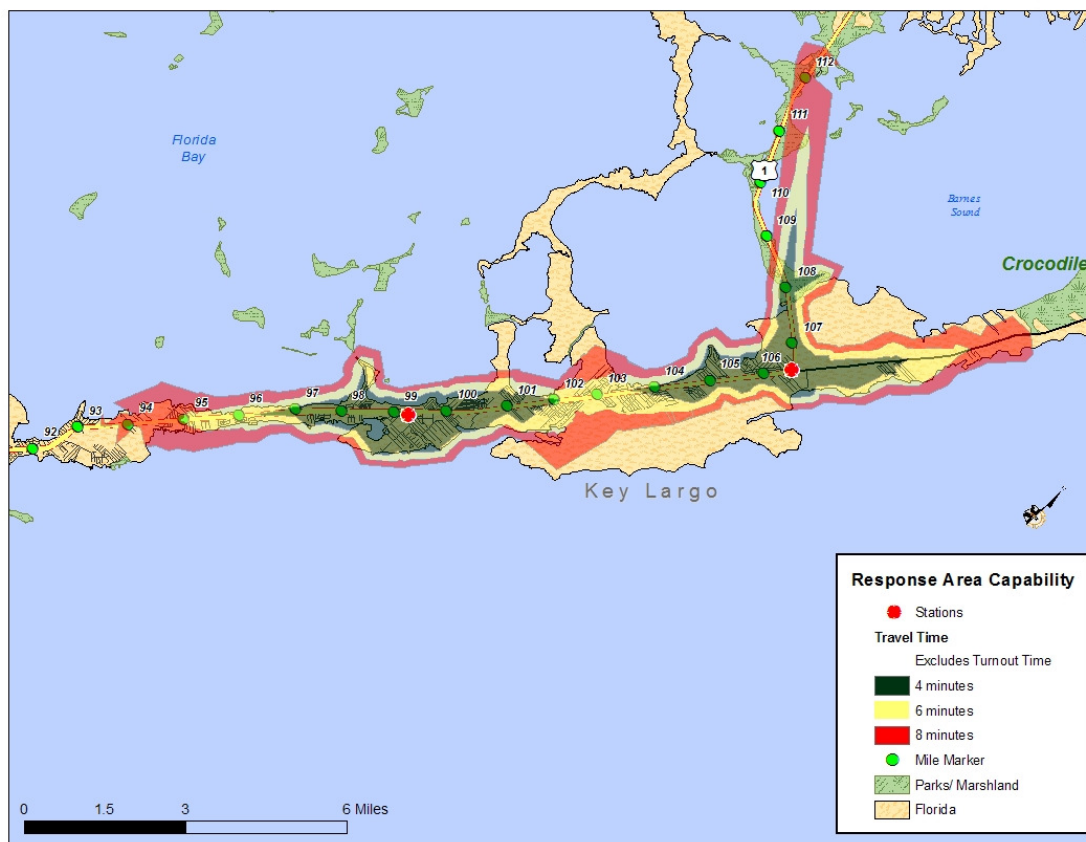
The majority of the fire service area can be reached within a six minute travel time except areas of Cross Key and roadways near the Crocodile Lake Wildlife Refuge.

As stated earlier, KLVFRD maintains a fleet of fire vehicles including two fire engines, one squad, and one aerial truck. There are also several smaller utility, specialty or staff vehicles, as well as reserve apparatus. This represents an acceptable apparatus fleet for a department of this size.

In order to achieve optimum credit for the number of engine companies, the Insurance Services Office (ISO) reviews the response area of each existing engine and identifies the number of fire hydrants within those response areas. ISO analyzes whether there are additional geographic areas of the District outside of the existing station response areas where at least 50 percent of the number of hydrants served by the largest existing response area could be served by a new engine. For ISO purposes, the response area is measured at 1.5 miles of travel distance from each engine company on existing roadways.

Since hydrant location data was made available, an analysis to indicate the percentage of the District's hydrants that are within 1.5 miles of an engine was completed. There were 60 hydrants located within the District, 45 percent of the hydrants were within 1.5 miles of an engine company. Thirty-one percent of the uncovered hydrants exist between the two stations, therefore, it can be determined that the areas not covered are, individually, not large enough to contain more than 50 percent of the hydrants within the average engine company coverage. This is the threshold that ISO uses to determine the need for additional engines. The following map displays the areas of the district that are within 1.5 miles of an existing engine company.

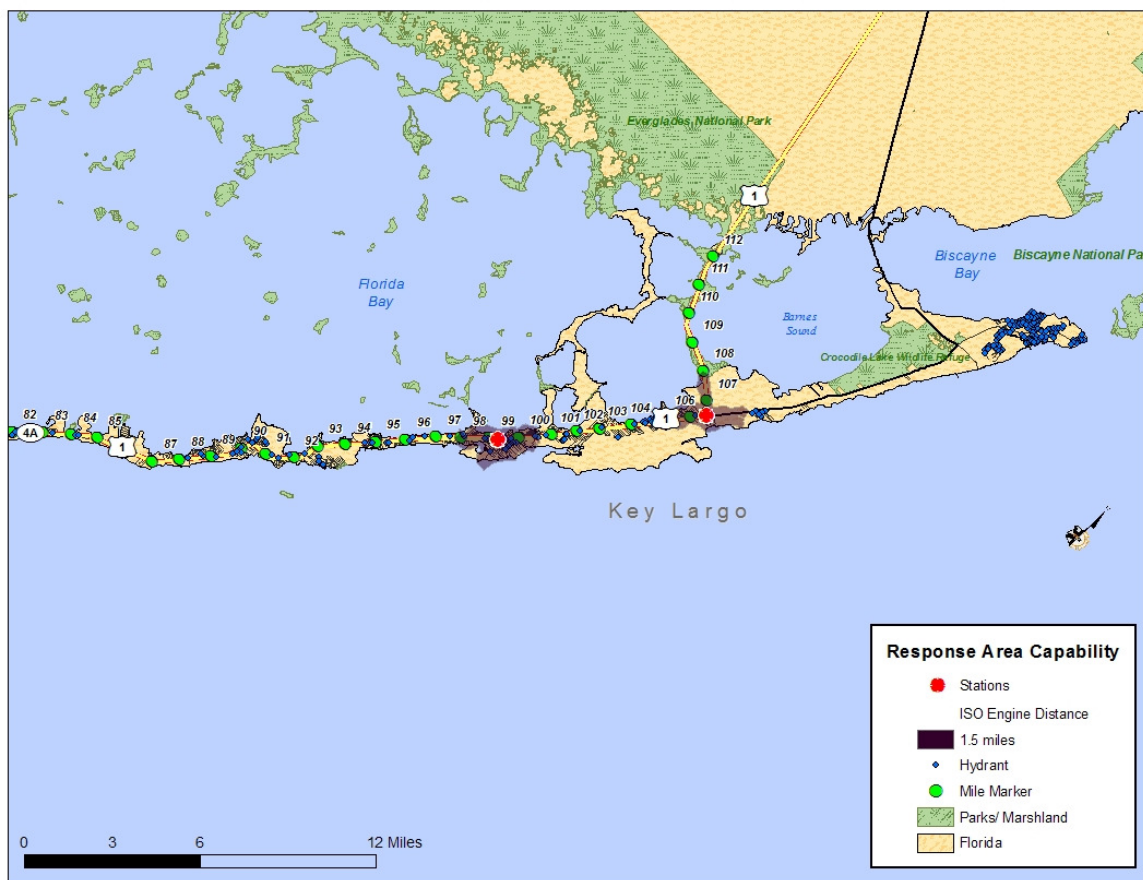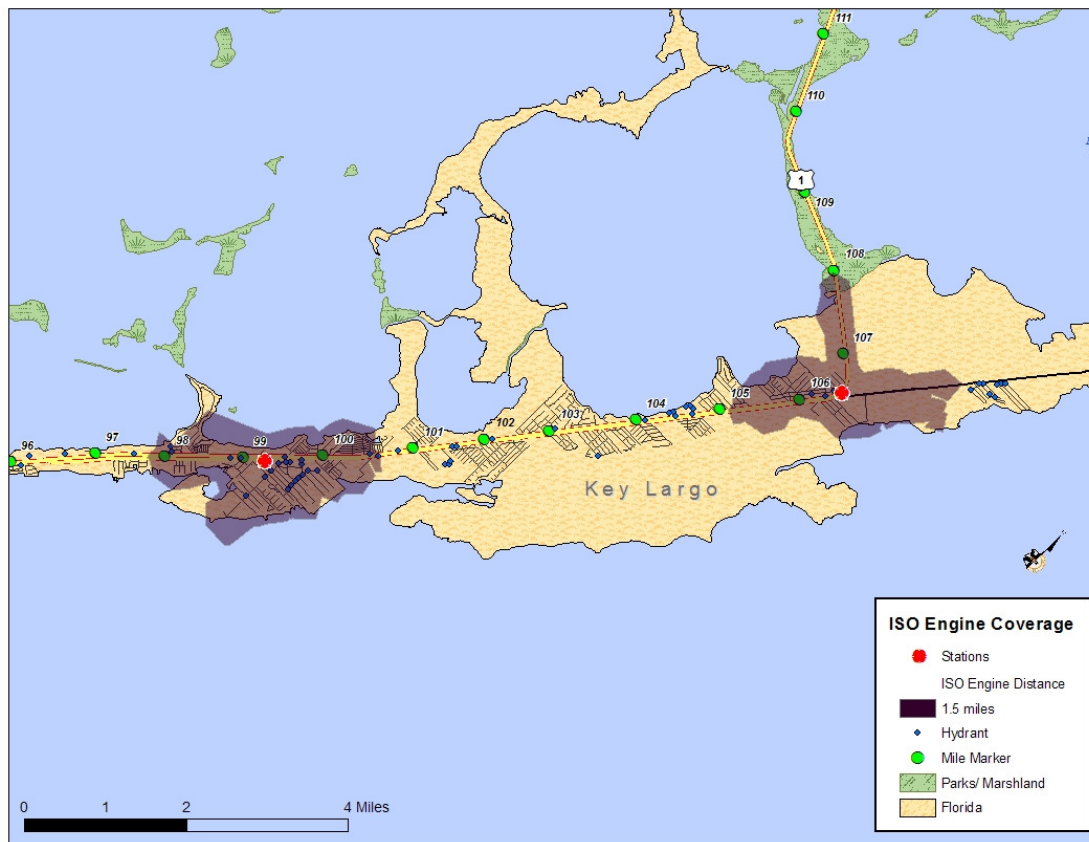**Figure 31: 1.5 Mile Engine Coverage (ISO)**

Figure 32: Figure 31 Close-up

In similar fashion, to achieve optimum credit for the number of Truck companies, ISO reviews the response area of each existing truck and identifies the number of buildings greater than three floors or over 30,000 square feet that are within 2.5 miles of travel distance from each truck company on existing roadways. ISO analyzes whether there are additional geographic areas of the District outside of the existing truck response areas that would benefit from by a new truck company were one to be added.

A truck company is not required to have an elevating ladder or aerial device unless there are a sufficient number of buildings that would meet the three-story height and square footage limits. Other areas can receive credit for a truck company without the requirement of an elevated device and can even receive partial credit for a truck company if other apparatus, such as an engine, carries a complement of truck company equipment. It is unclear precisely how much of the District's protection area would meet the necessary requirements for a aerial devices or elevated ladders, since geographical data regarding building height and square footage was not

made available. However, utilizing parcel data codes, buildings which typically meet the size criteria were identified. These buildings include condominiums, timeshare resorts, hotels, and multi-story office buildings. The following map displays District areas that are within 2.5 miles of an existing truck company, and the locations of presumably sizeable structures.

Figure 33: 2.5 Mile Ladder Truck Coverage (ISO)
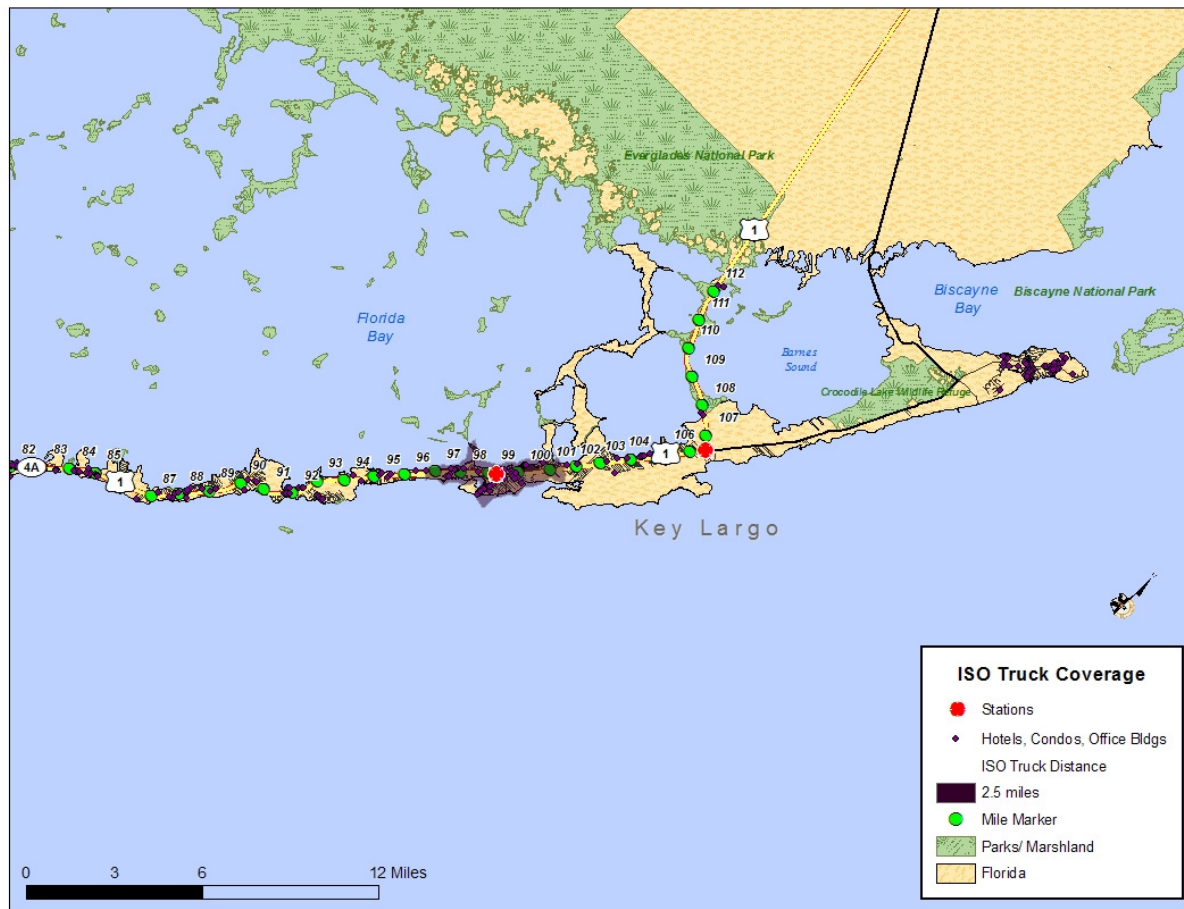
Figure 34: Figure 33 Close-up
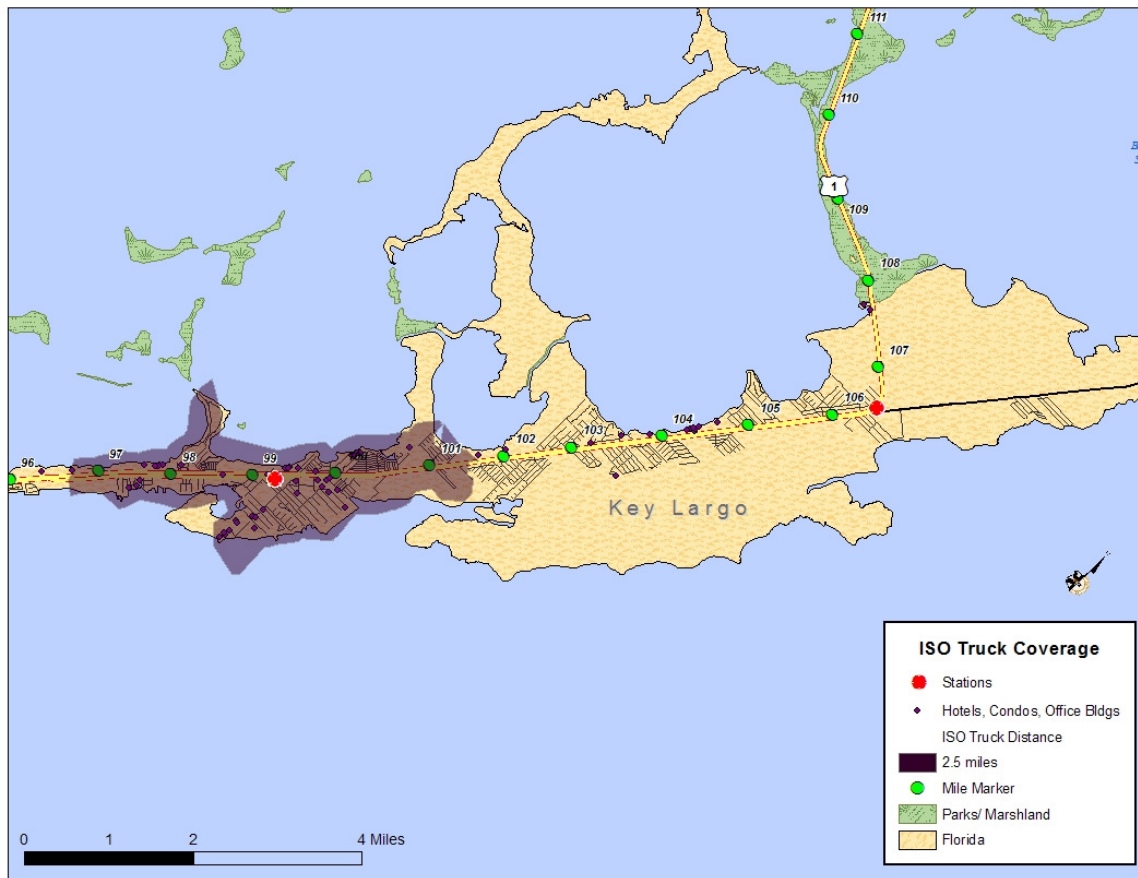
The map illustrates that the truck company, as currently stationed, covers 69.5 percent of the 1,649 parcels identified as potentially high-rise or large structures that would require truck company services during a fire incident.

Demand Analysis

The KLVFRD has experienced a decreasing number of alarms according to computer aided dispatch (CAD) data provided by the Monroe County Sheriff's office. The following chart shows how response volume has changed over the last three years.[10]

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[10] The chart includes mutual aid responses provided to areas outside the limits of the District.

Figure 35: Workload Historical Data
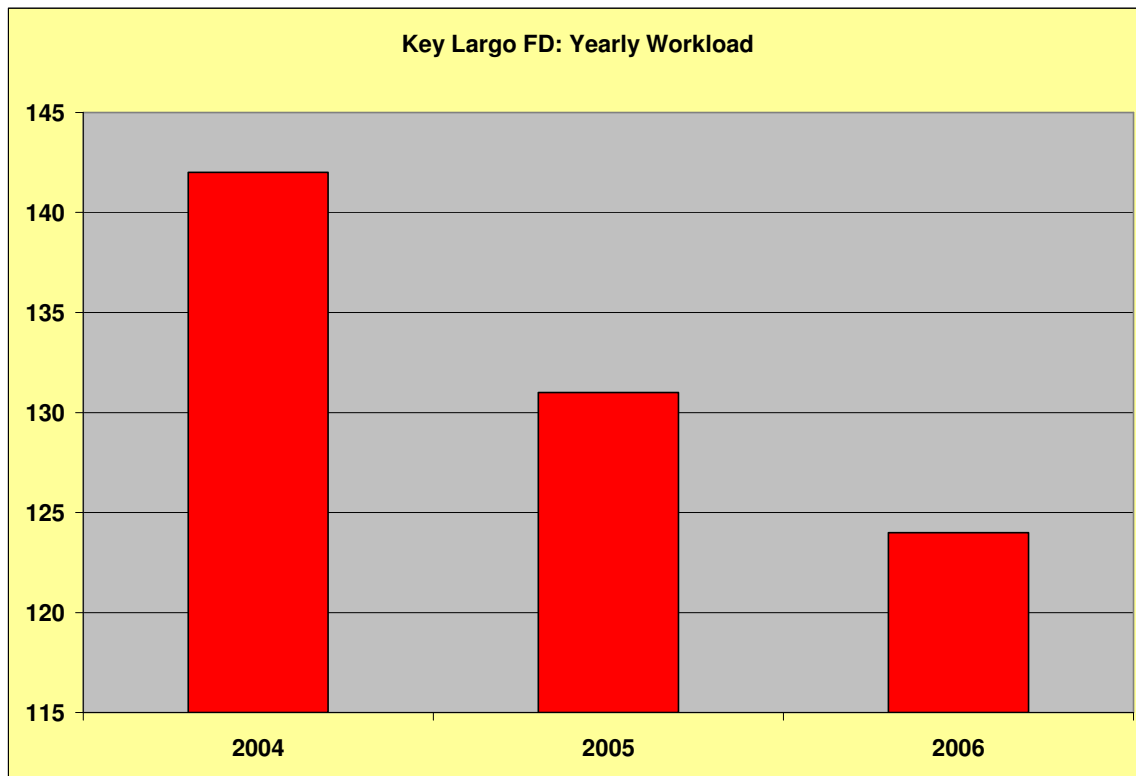
A review of incidents by time of occurrence also reveals when the greatest response demand is occurring. The following charts show how activity and demand changes for KLVFRD based on various measures of time. ESCi began by breaking down yearly workload into monthly increments.

Figure 36: Monthly Workload
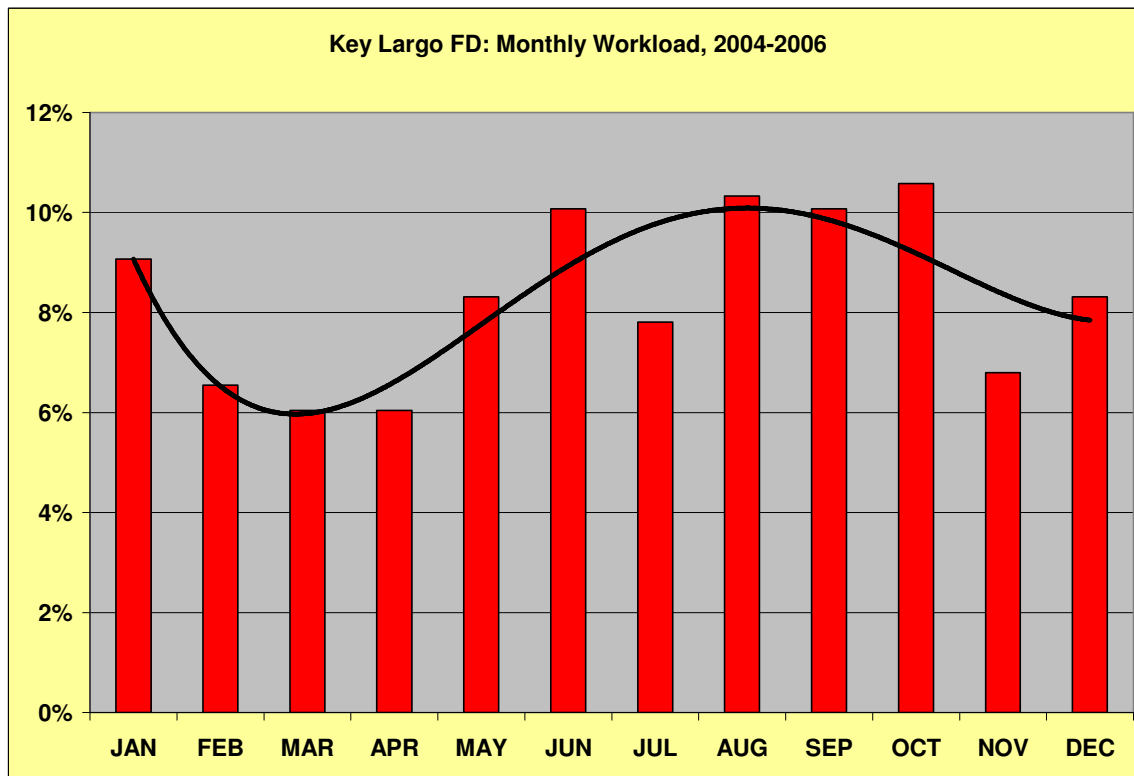
Monthly workload for all types of calls within the department appear to increase as the summer months approach and decline into the autumn. This variation is surprising in that the seasonal population does not coordinate with an increase in alarms.

In further analysis, workload is examined by day of the week. The following depicts the department's workload by day of week for all calls.

Figure 37: Workload by Day of Week
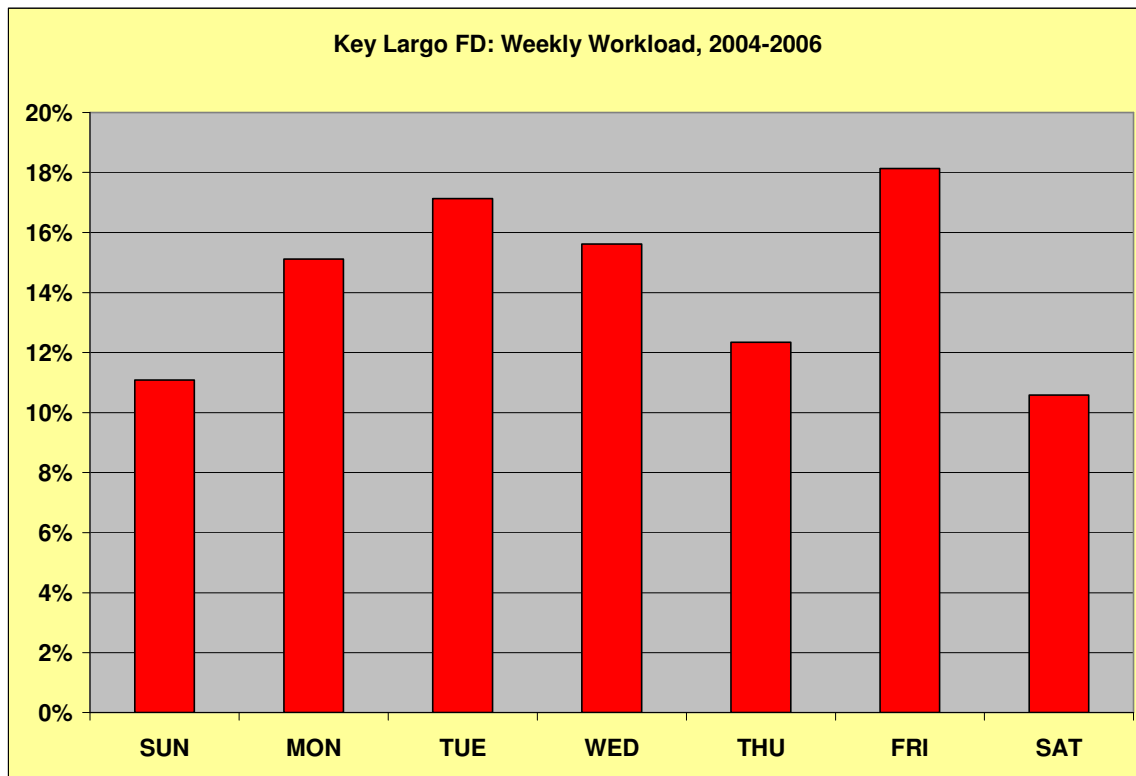
It can be seen that EMS calls exhibit a rising workload form Saturday until Tuesday, decreasing in volume until Friday, where a spike in activity occurs.

The final analysis of historical workload concludes with examination of call types by hour of day. The hours of peak activity can strain an under-equipped or under-staffed department. Understanding when peak activity occurs begins the process of developing deployment strategies and needs assessment.

Figure 38: EMS Workload by Hour of Day
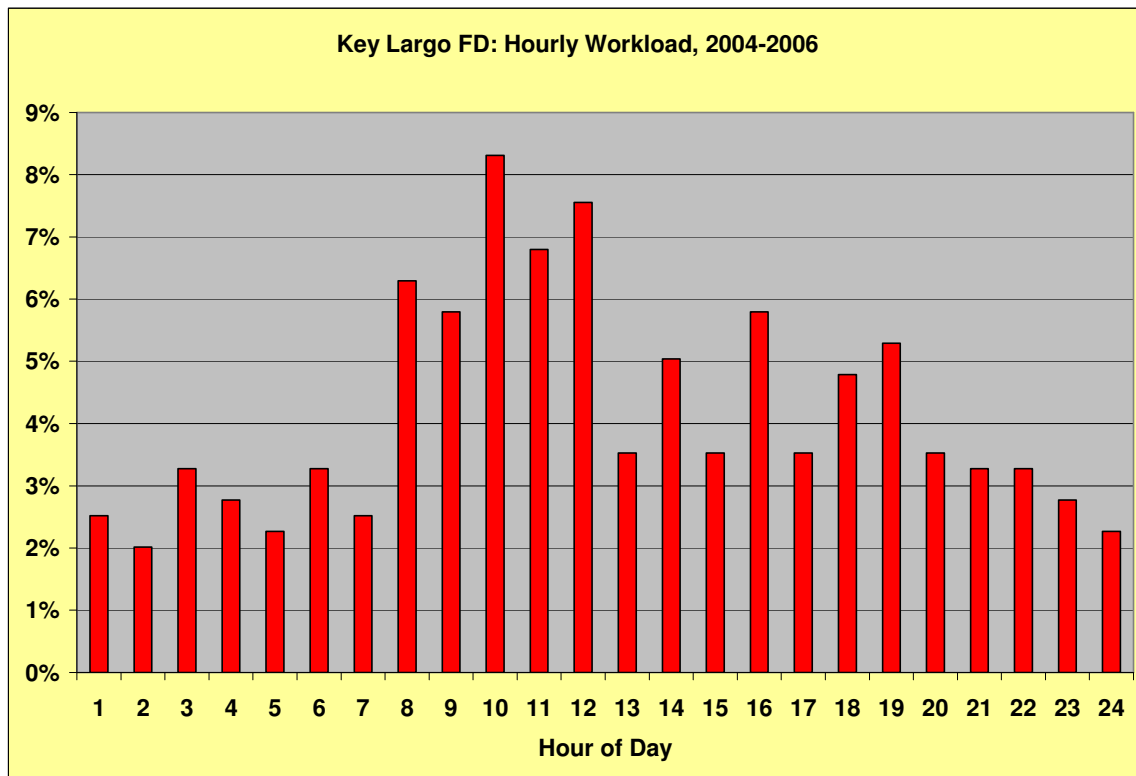
Activity for calls begins to climb by 8:00 AM reaching peak by 10:00 AM. An early afternoon lull precedes an early evening wave of activity that begins to decrease steadily by 8:00 PM. This pattern follows the typical active hours of most people's daily lives.

Peak activity times can be reflected in response time performance in certain cases. The impact of response time on the outcome of emergency incidents has been exhaustively studied, both in the laboratory and in historical data, with predictable correlation between the two. Though seemingly intuitive, it is still useful to review how longer response times can have a negative effect on the ability to suppress fires, particularly in structures, or to successfully intervene in a life-threatening medical emergency. Response time performance is examined in a separate section.

In addition to the temporal analysis of the current service demand, it is useful to examine geographic distribution of service demand. Later in this study, this will allow for assessing the location of stations in comparison to the actual service demand within the area. The following maps indicate the distribution of emergency incidents responded to by the department over the

last full thirty six months of data.

Figure 39: Service Demand - KLVFRD Incident Density
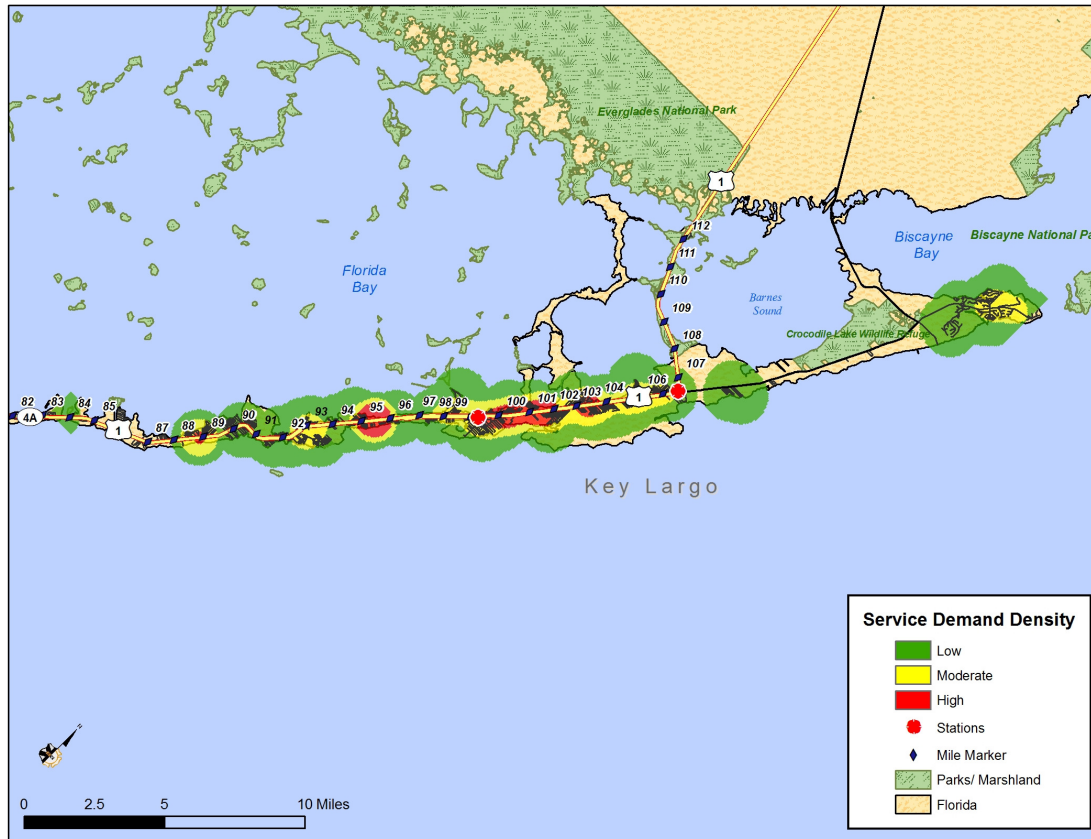
Most areas of highest service demand are located in areas of high residential population density and near the fire stations. A few pockets of moderate service demand outside the District can also be seen in the figure. The data provided did not adequately define the call types mainly referring to them as *Alarm: Fire,* therefore, a differential analysis of call dispositions cannot be performed.

Reliability Analysis

The workload on emergency response units can be a factor in response time performance. The busier a given unit, the less available it is for the next emergency. If a response unit is unavailable, then a unit from a more distant station must respond, increasing overall response time. A cushion of surplus response capacity above average values must be maintained due to

less frequent, but very critical times, when atypical demand patterns appear in the system. Multiple medical calls, simultaneous fires, multi-casualty events, or multiple alarm fires are all examples.

Dispatch data from the Monroe County Sheriff's dispatch center was utilized for this analysis. Using the total time on incident, unit hour utilization is calculated for the calls within Key Largo each year. Unit hour utilization is an important workload indicator because it describes the amount of time a unit is not available for response since it's already committed to an incident. The larger the number, the greater its utilization and the less available it is for assignment to an incident. The highest unit hour utilization (UHU) figures for fire department suppression units are typically around 0.20 with some studies indicating that unit failure rates[11] at this workload will begin to hit 10 percent. All KLVFRD response units are currently well below those maximum targets, indicating unit workload is not likely a factor in achieving improved response times.

Figure 40: Unit Hour Utilization

Year	Total Time	UHU
2004	30:19:51	0.0035
2005	26:50:01	0.0031
2006	41:56:18	0.0048

Response Time Performance Objectives

The ultimate goal of any emergency service delivery system is to provide sufficient resources (personnel, apparatus, and equipment) to the scene of an emergency in time to take effective action to minimize the impacts of the emergency. This need applies to fires, medical emergencies, and any other emergency situation to which the fire department responds.

Before discussing the department's current performance, it is important to gain an understanding of the dynamics of fire and medical emergencies.

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[11] The unit failure rate is the percentage of calls for which a unit is unavailable due to handling an existing call where it otherwise would have been dispatched as the primary unit.

Dynamics of Fire in Buildings

Most fires within buildings develop in a predictable fashion, unless influenced by highly flammable material. Ignition, or the beginning of a fire, starts the sequence of events. It may take some minutes or even hours from the time of ignition until flame is visible. This smoldering stage is very dangerous, especially during times when people are sleeping, since large amounts of highly toxic smoke may be generated during early phases.

Once flames do appear, the sequence continues rapidly. Combustible material adjacent to the flame heats and ignites which in turn heats and ignites other adjacent materials if sufficient oxygen is present. As the objects burn, heated gases accumulate at the ceiling of the room. Some of the gases are flammable and highly toxic.

The spread of the fire continues quickly. Soon the flammable gases at the ceiling reach ignition temperature. At that point, an event termed *flashover* takes place; the gases ignite, that in turn ignites everything in the room. Once flashover occurs, damage caused by the fire is significant and the environment within the room can no longer support human life.

Flashover usually happens about five to eight minutes from the appearance of flame in typically furnished and ventilated buildings. Since flashover has such a dramatic influence on the outcome of a fire event, the goal of any fire agency is to apply water to a fire before flashover takes place.

Perhaps as important as preventing flashover is the need to control a fire before it does damage to the structural framing of a building. Materials used to construct buildings today are often less fire resistive than the heavy structural skeletons of older frame buildings. Roof trusses and floor joists are commonly made with lighter materials more easily weakened by the effects of fire. *Light weight* roof trusses fail after five to seven minutes of direct flame impingement. Plywood I-beam joists can fail after as little as three minutes of flame contact. This creates a very dangerous environment for firefighters.

In addition, the contents of buildings today have a much greater potential for heat production than in the past. The widespread use of plastics in furnishings and other building contents

rapidly accelerate fire spread and increase the amount of water needed to effectively control a fire. All of these factors make the need for early application of water essential to a successful fire outcome.

A number of things must happen quickly to make it possible to achieve fire suppression prior to flashover. The figure below illustrates the sequence of events.

Figure 41: Fire Growth vs. Reflex Time
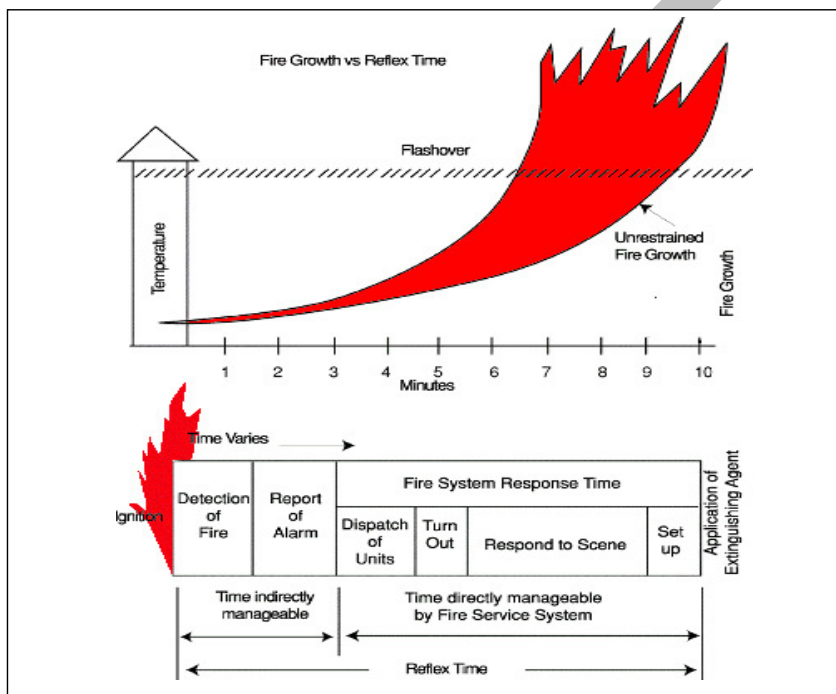
The reflex time continuum consists of six steps, beginning with ignition and concluding with the application of (usually) water. The time required for each of the six components varies. The policies and practices of the fire department directly influence four of the steps, but two are only indirectly manageable. The six parts of the continuum are:

1. **Detection**: The detection of a fire may occur immediately if someone happens to be present or if an automatic system is functioning. Otherwise, detection may be delayed, sometimes for a considerable period.

2. **Report**: Today most fires are reported by telephone to the 9-1-1 center. Call takers must quickly elicit accurate information about the nature and location of the fire from persons who are apt to be excited. A citizen well trained in how to report emergencies can reduce the time required for this phase.

3. **Dispatch**: The dispatcher must identify the correct fire units, subsequently dispatch them to the emergency, and continue to update information about the emergency while the units respond. This step offers a number of technological opportunities to speed the process including computer aided dispatch and global positioning systems.

4. **Turnout**: Firefighters must don firefighting equipment, assemble on the response vehicle, and begin travel to the fire. Good training and proper fire station design can minimize the time required for this step.

5. **Response**: This is potentially the longest phase of the continuum. The distance between the fire station and the location of the emergency influences reflex time the most. The quality and connectivity of streets, traffic, driver training, geography, and environmental conditions are also a factor.

6. **Set up**: Last, once firefighters arrive on the scene of a fire emergency, fire apparatus are positioned, hose lines stretched out, additional equipment assembled, and certain preliminary tasks performed (such as rescue) before entry is made to the structure and water is applied to the fire.

As is apparent by this description of the sequence of events, application of water in time to prevent flashover is a serious challenge for any fire department. It is critical, though, as studies of historical fire loss data can demonstrate.

The National Fire Protection Association studied data from residential structures occurring between 1994 and 1998 in order to analytically quantify the relationship between the growth of a fire beyond the room of origin and losses in life and property. As the figure below clearly indicate, fires contained to the room of origin (typically extinguished prior to or immediately following flashover) had significantly lower rates of death, injury, and property loss when compared to fires that had an opportunity to spread beyond the room of origin (typically extinguished post-flashover). Incidents in which a fire spreads beyond the room where it originates are likely to experience six times the amount of property loss and have almost nine times greater chance of resulting in a fatality.

Figure 42: National Data- Fire Growth to Life and Property Loss

Fire Extension in Residential Structure Fires 1994-1998			
	Rates Per 1,000 Fires		
Extension	Civilian Deaths	Civilian Injuries	Dollar Loss Per Fire
Confined to room of origin	2.32	35.19	$3,385
Beyond room of origin; confined to floor of origin	19.68	96.86	$22,720
Beyond floor of origin	26.54	63.48	$31,912

*Data from NFPA Annual Fire Experience Survey and USFA National Incident Reporting System

People, Tools, and Time

Time matters a great deal in the achievement of an effective outcome to an emergency event. Time, however, isn't the only factor. Delivering sufficient numbers of properly trained, appropriately equipped, personnel within the critical time period completes the equation. This is the only practical method to reverse the continuing internal temperature increases and ultimately prevent flashover. The arrival of one person with a portable radio does not provide fire intervention capability and should not be counted as "arrival" by the fire department.

In order to legally enter a building to conduct interior firefighting operations at least four personnel must be on scene. The initial arrival of effective resources should be measured at the point in time when at least four personnel, properly trained and equipped, have assembled at the fire.

Emergency service agencies should have clearly defined response performance objectives established to allow evaluation of capability and service delivery. An organization's performance objectives should clearly state both the current and desired emergency service capabilities in very measurable terms. For emergency response, performance objectives should define response performance using both time and resource criteria. For example:

- *Provide for the arrival of adequate resources to initiate basic emergency medical services at the scene of any medical emergency within "X" minutes following dispatch, 90% of the time.*

- *Provide for the arrival of adequate resources to initiate interior fire suppression operations at the scene of any fire within "X" minutes following dispatch, 90% of the time.*

With specific performance criteria a fire department can develop deployment methodologies to

achieve desired levels of performance, and can quickly identify when conditions in the environment degrade performance.

NFPA 1720

The National Fire Protection Association issued a response performance standard for all or mostly volunteer-staffed fire departments. In recognizing that volunteer departments across the United States cover a variety of communities, the recommended standards are classified according to population densities.

- Population greater than 1000 persons per square mile: U*rban*
  - o Within theses types of communities, NFPA 1720[12] recommends that the first company arrive at the scene of a structure fire within nine minutes of dispatch, 90 percent of the time.
- 500-1000 persons per square mile in population: *Suburban*
  - o 10 minutes from time of dispatch, 80 percent of the time.
- Less than 500 persons per square mile: *Rural*
  - o 14 minute response time, 80 percent of the time
- Greater than eight miles from a fire station: *Remote*
  - o No response time requirement

The standard establishes that a response *company* consists of four personnel. The standard does not require that all four be on the same vehicle, but does expect that the four will operate as a single functioning unit once on scene. The *NFPA 1720* response time standard also requires that all four personnel be on scene within the recommended time frame.

KLVFRD Response Time Performance Objective

As stated earlier, KLVFRD has not established a response time objective for its emergency services; nonetheless, *NFPA 1720* is a reasonable target against which to compare current performance of the primary response units within the District.

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[12] *NFPA 1720: Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments,* 2004.

Recorded Response Time Performance and Outcomes

Throughout this document, certain descriptive statistical measures are utilized which may not be familiar to all readers. In an effort to reduce confusion or the drawing of inaccurate conclusions, this section seeks to provide a brief explanation of these measures. The measures most often used which require clarification are the use of *average* and *percentile* measures.

Average

The average measure is a commonly used descriptive statistic also called the mean of a data set. It is a measure which is a way to describe the central tendency, or the center of a data set. The average is the sum of all the points of data in a set divided by the total number of data points. In this measurement, each data point is counted and the value of each data point has an impact on the overall performance. Averages should be viewed with a certain amount of caution because the average measure can be skewed if an unusual data point, known as an outlier, is present within the data set. Depending on the sample size of the data set, the skewness can be either very large or very small.

As an example, assume that a particular fire station with a response time objective of six minutes or less had five calls on a particular day. If four of the calls had a response time of eight minutes while the other call was across the street and only a few seconds away, the average would indicate the station was achieving its performance goal. However, four of the five calls, or 80 percent, were beyond the stated response time performance objective.

The opposite can also be true where one call with an unusually long response time can make otherwise satisfactory performance appear unacceptable. These calls with unusually short or long response time have a direct impact on the total performance measurements and the farther they are from the desired performance, the greater the impact.

The reason one computes an average is its common use and ease of understanding that is associated with it. The most important reason for not using averages for performance standards is that it does not accurately reflect the performance for the entire data set. As illustrated above, one extremely good or bad call skewed the entire average. While it does reflect all values, it does not really speak to the level of accomplishment in a strong manner.

Percentile

With the average measure, it is recognized that some data points are below the average and some are above the average. The same is true for a median measure which simply arranges the data set in order and finds the value in which 50 percent of the data points are below the median and the other half are above the median value. This is also called the 50th percentile.

When you deal with fractiles or percentages, the actual value of the individual data does not have the same impact as it did in the average. The reason for this is that the fractile is nothing more than the ranking of the data set. The 90th percentile means that 10 percent of the data is greater than the value stated and all other data is at or below this level.

Higher fractile measurements are normally used for performance objectives and performance measurement because they show that the large majority of the data set has achieved a particular level of performance. This can then be compared to the desired performance objective to determine the degree of success in achieving the goal.

As previously discussed, the *NFPA 1720* standard recommends response time performance for first arriving fire apparatus from volunteer fire departments in suburban population densities at ten minutes or less, 90 percent of the time. The *1720* standard does not include call processing time that is covered in other related NFPA standards that call for a performance of one minute or less for this activity. KLVFRD should establish a performance objective is consistent with the NFPA standard and based on nationally accepted scientific data regarding the effect of time on fire growth, life and property outcomes, and medical crisis survivability.

Although there are many factors which can inhibit response times such as weather, traffic volume, street connectivity, and traffic calming devices; there is one element that the fire department can control. Turnout time, as explained previously, is the duration of time it takes after being dispatched, for a unit to become enroute to a scene. NFPA recommends career staffed departments strive for less than one minute, while volunteers responding from home or work are expected to take longer than that.

The following chart illustrates the overall response time frequency for the KLVFRD over the

nearly 36 months of data.[13]

Figure 43: KLVFRD Response Time Performance History
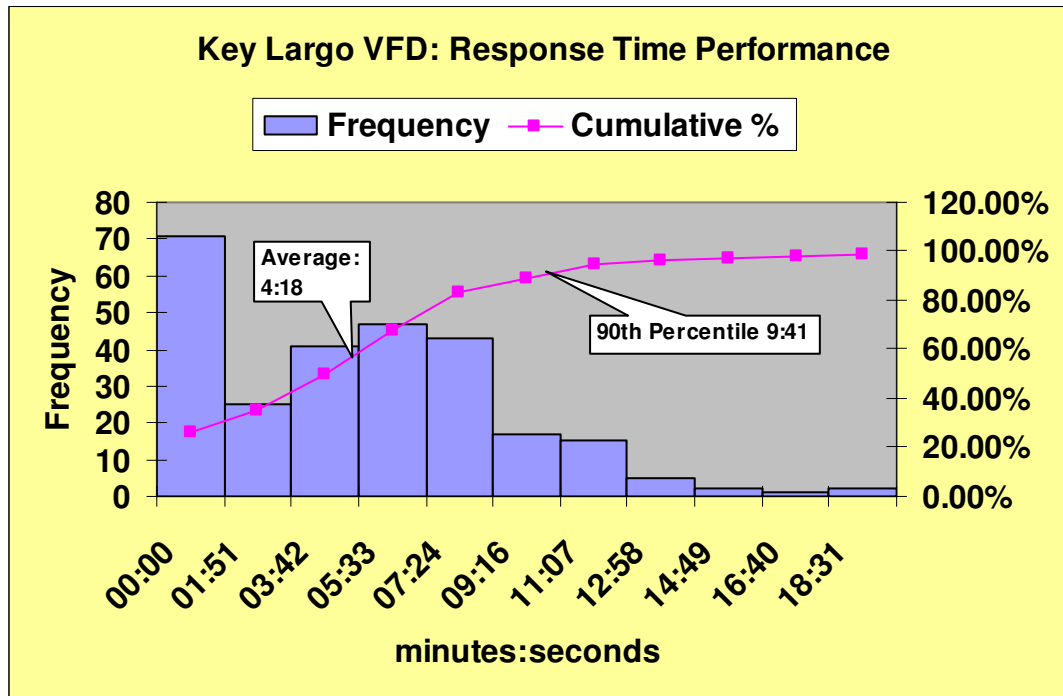
The most frequently recorded response time was within the five minute range; however the average response time for all four minutes and eighteen seconds. The prevalence of zero response times skews the average lower than mode of the dataset. This may indicate a recording of time stamps issue within the dispatch center. If so, the accuracy of these reported times are suspect.

Response times can vary by time of day in reflection of service demand workload and when the firefighters are available for responding to calls. The *average* response time for emergency incidents ranged from a high average of eleven minutes and twenty-four seconds for calls between the hours of 1:00 PM and 2:00 PM, to a low average of one minutes and fifty seconds for incidents between the hours of 9:00 AM and 10:00 AM.

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[13] Mutual aid calls and non-emergent calls were removed from response time analyses. Response times in excess of 60 minutes were considered anomalous and also removed from the analyses.

Figure 44: Average Response Time by Hour of Day
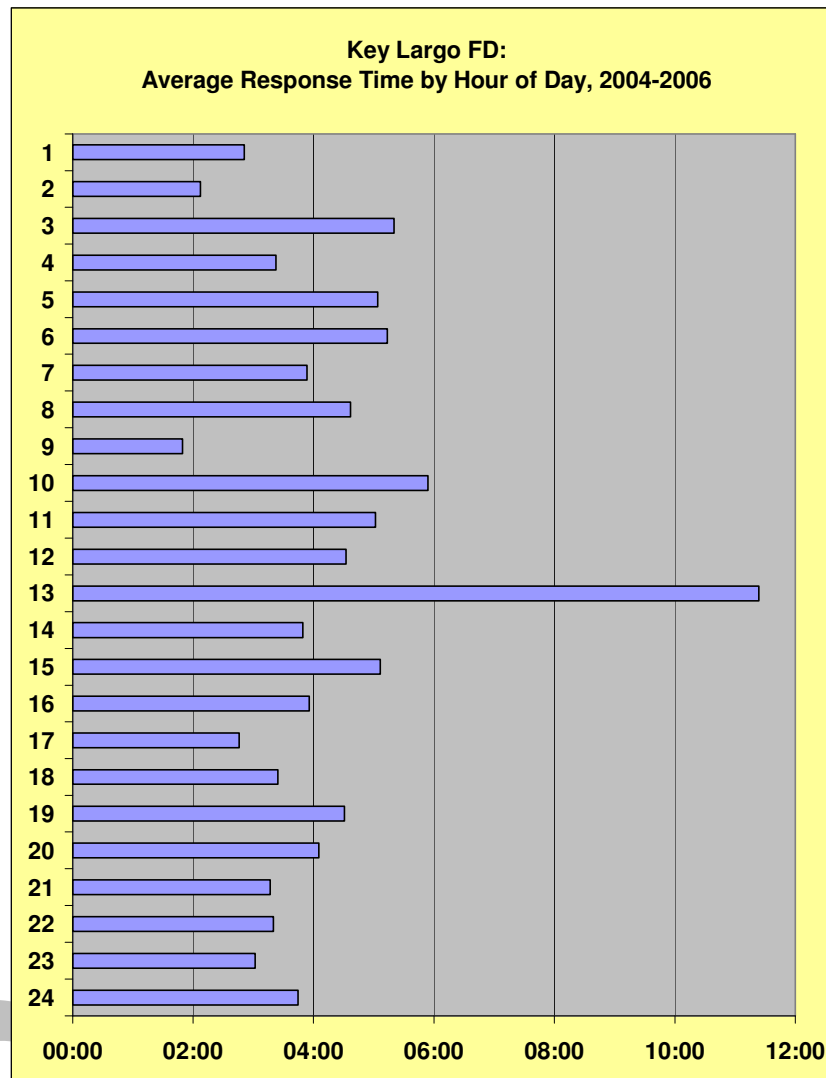
Average response time is one useful measure to determine how well geographic-based coverage is achieved. As discussed previously, more significant is how well the majority of emergency response demand is being serviced. One useful way to determine how well demand-based coverage is achieved is by determining maximum response time to a larger percentage of the incidents, in most cases 90 percent.

The *90th percentile* response time for emergency incidents occurring within KLVFRD ranged from a high of twenty-one minutes and thirty-eight seconds during the 1:00 PM to 2:00 PM hours to a low of five minutes and thirty-nine seconds during the 5:00 PM to 6:00 PM hours. As illustrated, the overall 90th percentile response time of the department within its primary

jurisdiction was **nine minutes and forty-one seconds** for all call types. The following figure displays the 90th percentile response time performance by hour of day for all calls within the District.

Figure 45: 90th Percentile Response Time by Hour of Day
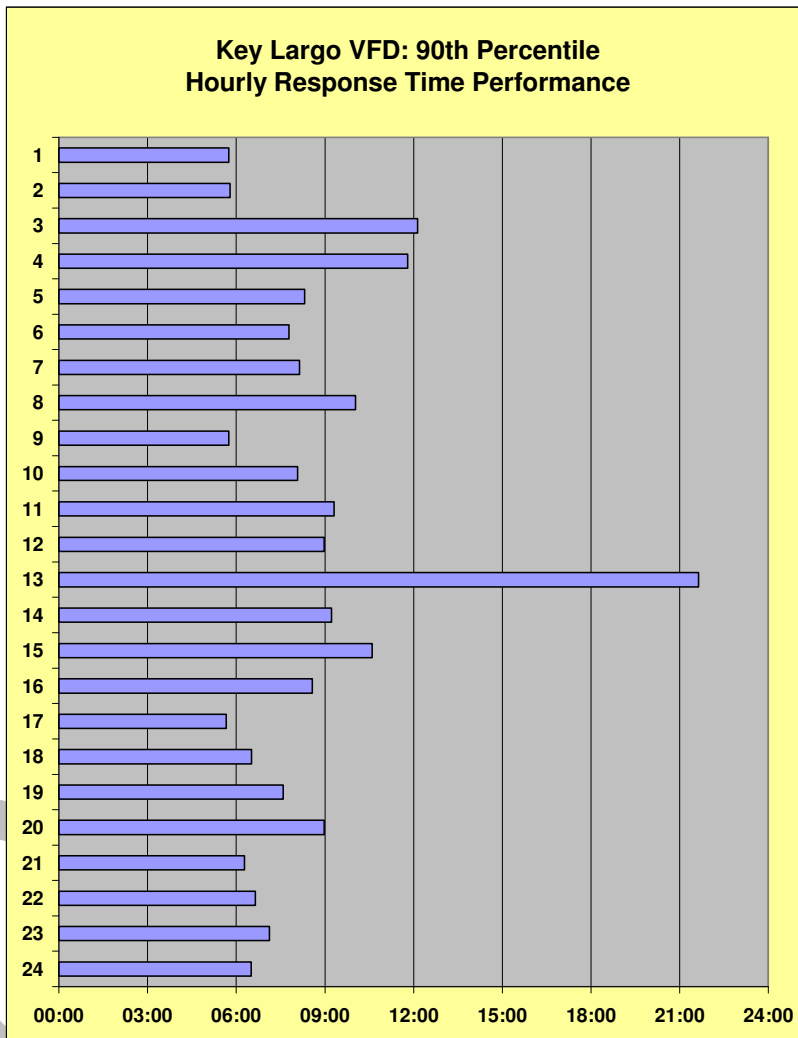
Various factor can effect response times including weather, construction, and traffic congestion. Although these are uncontrollable variables, there is one aspect of response time performance that can be controlled by the fire department - turnout time. The use of sleep-over crews and other policy decisions can effectively reduce turnout time in which can translate into shorter response times. Following is an examination of turnout time within the department.

The overall average for turnout time is fifty-one seconds; this may also reflect the method that is employed in the dispatch center to capture these time elements from dispatch to time enroute. On an hour by hour analysis, turnout times vary widely from a high of two minutes and thirty one seconds at 6:00 AM to 7:00 AM to a low of one second during the 4:00 AM hour. The following graph illustrates this performance on an hourly basis over the last 36 months.

Figure 46: Average Hourly Turnout Time Performance

Key Largo FD:
Average Turnout Time Performance by Hour of Day,
2004-2006

Emergency Services Consulting inc.
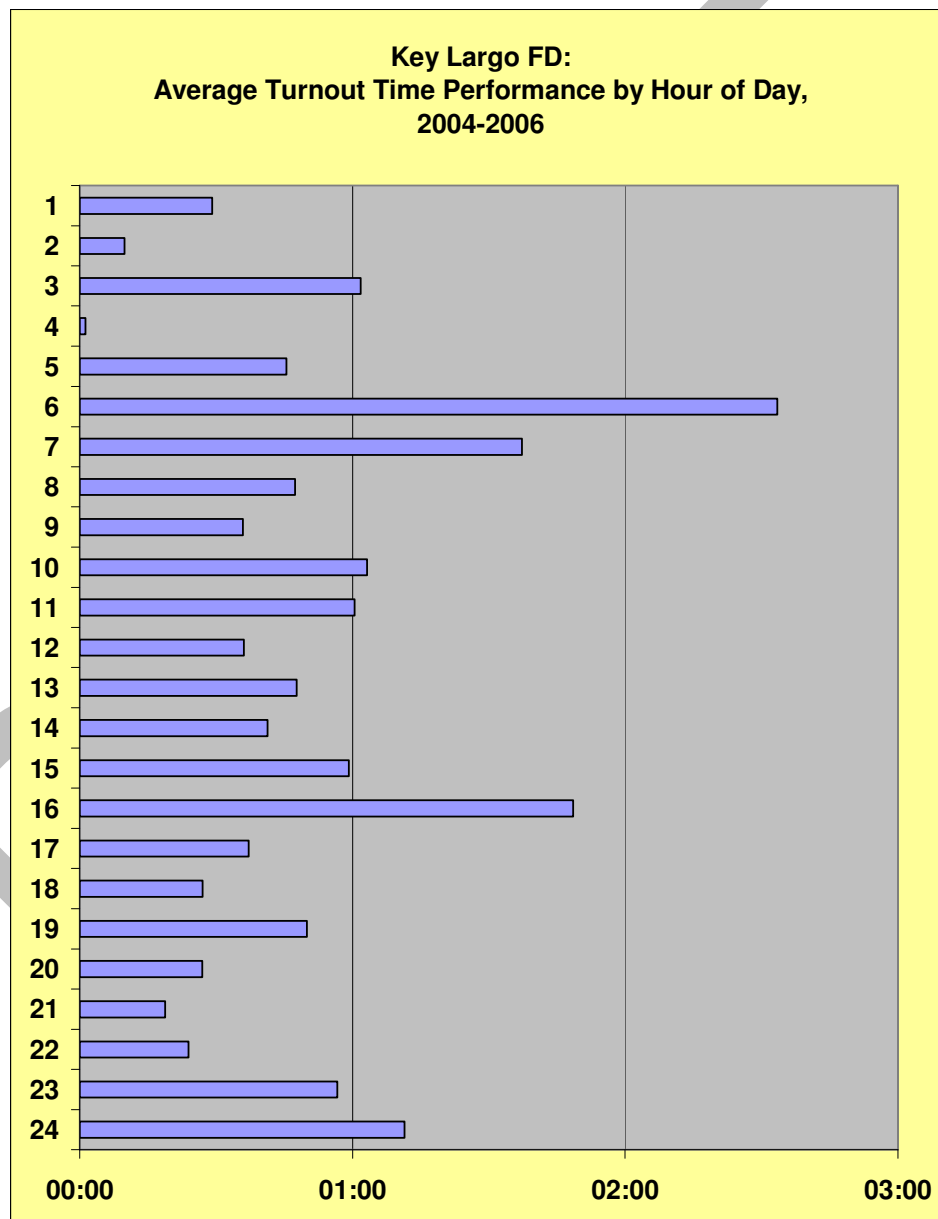
When examining turnout times as a fractal analysis, the majority (90 percent) of the turnout times measure three minutes and three seconds department-wide. Hourly variations are similarly chaotic as the average measures with a high of six minutes and forty-three seconds during the hour of 4:00 PM and 5:00 PM to a low of one second at 4:00 AM hour. The following graph details the hourly variation of turnout times recorded at the 90th percentile.

Figure 47: 90th Percentile Turnout Time Performance

Key Largo VFD: 90th Percentile
Hourly Turnout Time Performance
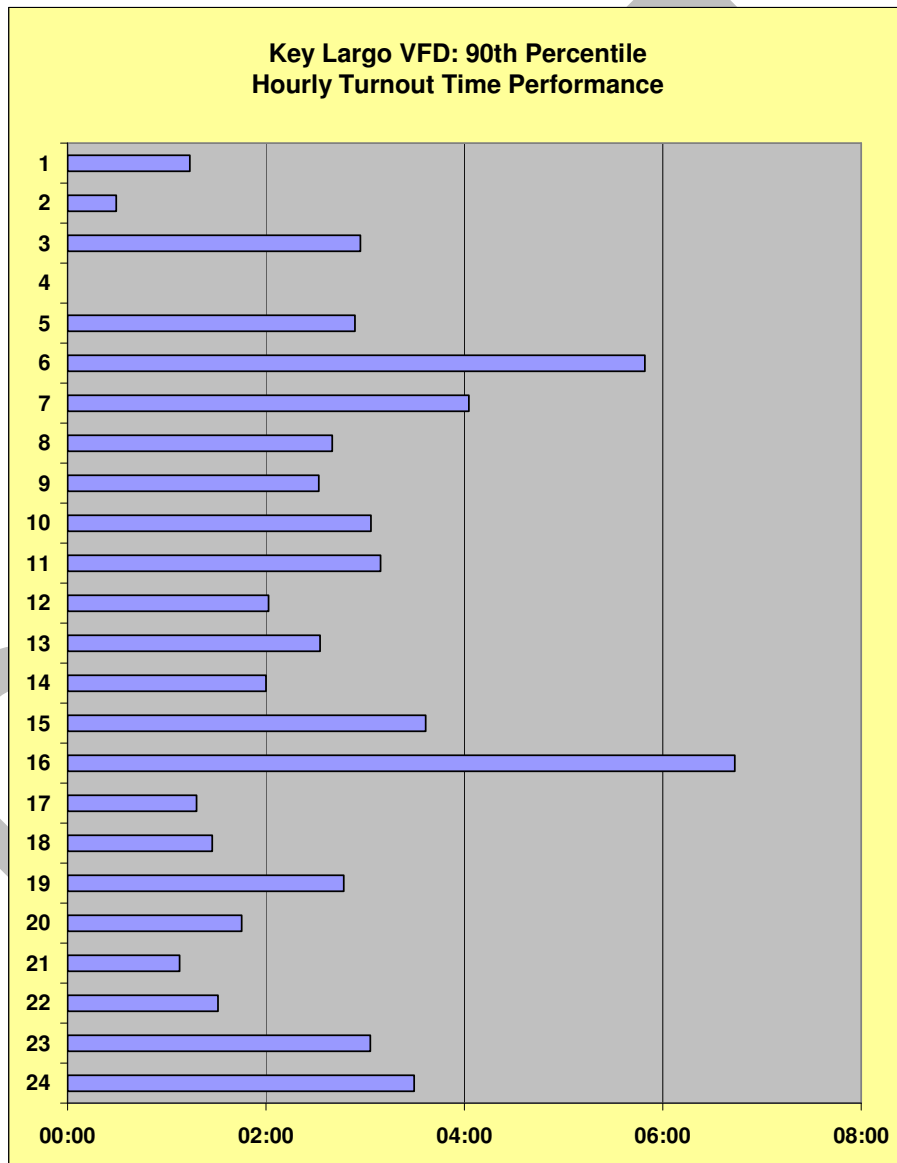
Incident Management

KLVFRD uses standardized response assignments based on the type of call dispatched. This includes a target staff assignment of at least three on each suppression vehicle before the unit responds to the scene.

These assignments are intended to provide the quantity and type of apparatus needed for the incident, as well as the correct number of staff to accomplish the critical tasks necessary to mitigate the emergency. Though the full critical task analysis used by the department to develop its standard of cover was informal, it appears that the response protocols provide a reasonable level of apparatus and manpower for many of the incident types reviewed by the study team when apparatus staffing is at target level. Structural fires and other high-risk incidents require mutual or automatic aid.

One area of concern, however, is the observation that the department does not consistently establish four-person companies on arrival at incidents where a single fire suppression apparatus was dispatched. When just a single apparatus is dispatched with only three persons on board, it would not comply with the objective under NFPA standards of a four-person company. The four-person company need not be accomplished through deployment of four-person apparatus, and can be accomplished instead through standard procedure or command direction that assembles personnel arriving on multiple apparatus into four-person crews. If the department or District desires to comply with the four-person company staffing standard, it will need to send more than one apparatus or have written policies for assembling a four-person company once units arrive on scene.

KLVFRD indicates that District maps are available in all department apparatus. The maps include neighborhood by neighborhood custom directions that hasten locating the proper street. Pressurized hydrants and water main sizes are identified on maps in the command vehicle. No static water points have been mapped, nor have any pre-designated water shuttle plans been prepared in the event of water system failure.

The department does not maintain a shift officer system, and cannot ensure that an individual designated for incident command will be available 24 hours a day. The agency reports that the incident command system is used on all calls.

The department has worked to adapt its incident command system to the new National Incident Management System. Developed by the Secretary of Homeland Security at the request of the President, the National Incident Management System (NIMS) integrates effective practices in emergency preparedness and response into a comprehensive national framework for incident management. The NIMS will enable responders at all levels to work together more effectively and efficiently to manage domestic incidents no matter what the cause, size, or complexity, including catastrophic acts of terrorism and disasters.

The NIMS system will eventually involve:
- Standardized organizational structures, processes, and procedures
- Standards for planning, training and exercising, and personnel qualification standards
- Equipment acquisition and certification standards
- Interoperable communications processes, procedures, and systems
- Information management systems
- Supporting technologies – voice and data communications systems, information systems, data display systems, and specialized technologies

Because NIMS will soon become a standard that must be met to secure certain federal funds and grants, the department is wise to complete the basic training, adoption, and transition.

A fireground accountability system is in place for the department using the passport helmet tag program. However, interviews provided conflicting information as to the extent of compliance that is achieved on various incidents. Most reports indicated the system is primarily implemented in major (mutual aid) alarms involving significant incidents.

Thermal imaging units are available for immediate use by first-arriving firefighters from either station on Engine 24 and Engine 25.

Mutual Aid Systems

There are numerous mutual aid agreements, both formal and informal, in place between fire, police, and emergency medical agencies in Monroe County and surrounding areas through both local and statewide programs. This system provides for pre-designated automatic aid responses

to structure fire calls, typically an engine from Tavernier Station 22.

According to interviews, multi-agency training has been limited in the past few years, with a lack of attention focused on developing interoperability with other agencies. For the most effective mutual and automatic aid programs, as well as maximum credit in the ISO Fire Protection Rating system, multi-agency drills should be scheduled regularly. Ideally, these should occur at least once per quarter and be recorded as multi-agency training in all agency records. In addition to the ISO credit, these trainings will naturally lead to enhanced working relationships, more regional thinking, and perhaps cooperative planning, policy, and procedural development.

From a formal standpoint, KLVFRD regularly interacts with the Sheriff's Department. Interviews indicated that this relationship is effective and efficient with no problems or issues cited by either fire or Sheriff officials.

Overall, the mutual aid systems in place for KLVFRD are reasonable and effective. No specific problems, issues, or concerns were raised by agencies with whom they interact.

Technical Rescue Response

KLVFRD operates an active water rescue program. The department operates two boats, one of which is privately owned and available through agreement. One boat remains trailered and available for mobile deployment, while the other is moored on the water behind a local dive shop.

The dive team is supported by an additional equipment vehicle. This unit is actually a converted ambulance that was surplus from the nearby ambulance service. As such, the vehicle is old and in rough condition. During the time of our field visit, the unit would not start. However, the department indicates this unit will be replaced soon.

According to interviews, the department conducts regular dive training and practice drills and has sufficient certified divers to cover most water rescue incidents. Of course, there will be times when manpower runs short, but efforts are made to recruit and maintain a reasonable number of personnel for this purpose.

In addition to its dive rescue program, the department also prides itself in its vehicle extrication skills. Members of the department have participated in regional competitions involving vehicle rescue, with admirable results. Given the major transportation corridor that runs through the District, the skills are put to practical use on a fairly regular basis. The department is to be commended for its efforts in this regard.

Homeland Security Integration

Fire departments are considered *first responders* in the national systems for homeland defense and security. Recent changes in the structure of the federal government have placed even the United States Fire Administration (USFA) under the umbrella of the Department of Homeland Security. Given this status, emergency service agencies should continue to assess their capabilities for response and integration into larger incidents involving acts of terrorism or threats to national defense.

Key Largo's response area is not a likely primary target for an act of terror by foreign threats. It does not contain sensitive military or government facilities, nor is it home to any high-profile institutions or enclaves of controversial immigrant societies. The area is far more likely to be a secondary, collateral damage area in the event of a significant act of international terrorism, particularly due to its proximity to the city of Miami. While this may be of some comfort, it should be remembered that acts of domestic terror can also have significant and far-reaching effects on even small communities, and that acts of international terrorism can go awry, as in the case of rural Pennsylvania on September 11, 2001.

From the standpoint of the first responders, the results of an act of domestic or international terrorism will typically fall into one or more categories:
- Large fire and/or explosion accompanied by fire
- Mass Casualty Incident (MCI)
- Hazardous Substance Release
- Secondary threat (timed or triggered event following arrival of first responders)

Emergency agencies are, to some degree, trained to respond and mitigate the first three categories in this list. However, this statement is not intended to oversimplify the challenges. The resulting incident caused by an act or terror can be much larger, more complex, and more

demanding than most local incidents that might fall into these same major categories. Still, the agencies must rely on the same training, procedures, command structures, and strategies that are taught for such incidents.

The primary key to success will be familiarity with response plans for such incidents, practice, and integration with other agencies at the regional, state, and federal level.

Key Largo has at least some level of planning and procedure in place for large fires, mass casualty incidents, and hazardous substance releases. Additional training on the recognition and response to incidents with likely secondary threats to first responders will continue to help prepare personnel. And, of course, the agency should continue to seek out additional, advanced training on the following areas:

- Explosions and threats
- Conflagration fire incidents
- Mass casualty incidents
- Radiation response strategies
- Large-scale quarantine, containment, and decontamination
- Hazardous substance response, evacuation, containment, and decontamination
- Regional and federal incident command strategies

Recommendations:

- Call answering and call processing time standards should be formally established and performance monitoring should be conducted.

- Since the operations of the MCECC directly affect the ISO Community Fire Protection Rating, the District should be provided a written performance report identifying 90th percentile call handling and processing times on at least a quarterly basis.

- Additional emergency plans, including practice with a redundant site in the event of extended evacuation, should be completed and tested at least annually.

- KLVFRD should comply with the four-person company staffing standard. To do so, it will need to send more than one apparatus or have written policies for assembling a four-person company once units arrive on scene.

- The department should establish a duty officer system, even using volunteer officers, to ensure that an individual designated for incident command will be available 24 hours a day.

- KLVFRD should continue multi-company and multi-agency drills and trainings at least quarterly to enhance mutual aid operations and improve relationships and planning efforts.

Objective Seven – Training Programs

Providing quality and safe fire and emergency services requires a well-trained force. Training and education of department personnel are critical functions for the Key Largo Volunteer Fire and Rescue Department. Without quality, comprehensive training programs, emergency outcomes are compromised and departmental personnel are at risk.

> "One of the most important jobs in any department is the thorough training of personnel. The personnel have the right to demand good training and the department has the obligation to provide it.[14]"

General Training Competencies

In order to ensure quality training is provided it should be based on established standards of good practice. There are a variety of sources available for training standards. In concert with the State of Florida, KLVFRD has selected Jones and Bartlett and National Fire Protection Association as its main source of standards and materials for fire rescue training.

With the recent transition from contracting for services with Monroe County to contracting with the District, KLVFRD is currently in the process of establishing new first responder and emergency medical technician medical references and protocols. A departmental medical director is being selected at this writing.

Hazardous material training is provided to the awareness level for all members. KLVFRD maintains a Water Emergency Team (WET) and a Special Response Extrication Team (SRET)

Figure 48 below summarizes the training certifications held by KLVFRD members:

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[14] Klinoff, Robert. "Introduction to Fire Protection," Delmar Publishers. 1997. New York, NY.

Figure 48: Training Certification Summary

Member Status	FF I	FF II	Driver Eng.	Adv. Ext.	EMT	PM	HAZ Ops.	HAZ Tech.	Rope Tech.	Dive Rescue	Conf. Space	Fire Inst.
Active	31	20	21	19	22	4	18	9	11	12	6	6
Probation	1	7	2	0	3	1	7	3	2	0	2	0
Support/Active	0	0	2	11	2	1	1	0	2	0	0	0
Support/Prob	0	0	0	0	0	0	0	0	0	0	0	0
Associate	0	1	1	1	1	0	0	0	0	0	0	0
Total	32	28	26	31	28	6	26	12	15	12	8	6

Source: KLVFRD Roster 01/17/07

Training Facilities

Quality hands-on training occurs when simulations are available that closely mimics real life emergencies. KLVFRD uses their state-of-the-art smart classroom technology extensively for their in-house certification and re-certification training. This technology, currently installed at their headquarters station, was acquired by taking advantage of a recent grant opportunity.

The headquarters station and adjoining property are utilized for practical training evolutions. Live burn and smoke training, however, must be accomplished outside the department's response district. Acquired structures are rarely available. The closest appropriate live burn training tower/facility is approximately 50 miles away at the Monroe County Joe London Training Center. KLVFRD should consider pursuing a more practical regional approach to providing a live burn training tower/facility with Monroe County and neighboring public safety organizations.

First responder emergency medical certification is provided through a 60 hour module as a companion course to the 190 hour Firefighter I certification. Firefighter I and first responder courses are regularly provided at the department.

Students are provided with all required reference materials for training programs and a modest library is maintained at the headquarters fire station. Training references, equipment and props are generally not inventoried and a check-out procedure is not provided.

Training Staff

The KLVFRD has not appointed a dedicated training officer. The training program is coordinated by the department's chief officer cadre recently reduced to the Fire Chief and an Assistant Fire Chief. In addition to numerous seminars and conferences, the chief officers are formally certified by the State of Florida as follows:

Fire Chief

Firefighter I

EMT

Instructor

Assistant Fire Chief

Firefighter II

EMT

The department has nine Florida State certified instructors, including three live burn instructors, and contracts with others as needed. Clerical assistance to the training program is available from the Station Manager as priorities and workload allow.

The department's primary, ongoing, skills maintenance training program is conducted by the certified instructors with support from other members.

Entry Level Training

Prior to being considered for membership by the KLVFRD applicants must meet minimum requirements prescribed by the department. To qualify, an applicant must:

- Be at least 18 years of age
- Live or do business in the area of Key Largo
- Abide by the Bylaws and policies of the KLVFRD
- Be recommended for a three month probationary membership to the board of directors by the membership committee.
- Be accepted by majority vote of the membership at the department's next quarterly meeting after completing probation.

There are no documented minimum certification/training requirements for *active* membership status in the department. Members must, however, achieve and maintain the minimum training requirements prescribed by the State of Florida.

The minimum requirements for firefighter in the State of Florida are as follows:

Firefighter – Employment

- High school graduate or equivalent
- At least 18 years of age
- Neither have been convicted or a felony or of a misdemeanor directly related to the position of employment sought nor have pled nolo contendere to any charge of a felony.
- Have a good moral character as determined by investigation under procedure established by the State Fire Marshal. This includes submitting fingerprint cards.
- Be in good physical condition as determined by a medical examination by a medical professional licensed to practice pursuant to Florida Chapter 458. The physical examination may include but not be limited to National Fire Protection Association Standard 1582.
- Be a non-user of tobacco or tobacco products for at least one year immediately preceding application.
- Completed and passed the Minimum Standards Course and has received Firefighter II certification (this includes emergency medical first responder and hazardous materials awareness).

Firefighter – Volunteer

- Florida Firefighter I (160 hours including emergency medical first responder and hazardous materials awareness)
- Incumbent volunteer members as of 06/24/2003 may meet *grandfathered* requirements

KLVFRD requires that new members successfully complete a medical physical commensurate with *NFPA 1582*.

Ongoing Skills Maintenance Training

Members must routinely be provided with refresher training and continuing education to avoid degradation of skills learned during entry-level training and certification. Additionally, training and education must be provided to deal with emerging risks and changing service demands.

KLVFRD schedules in-service training on the third, fourth, and when available, the fifth Thursdays of each month. The training topics for these sessions are determined by an officer preceding the session although the department has been unable to provide documentation that this scheduled training has been conducted or what subject matter has been provided. When conducted, these sessions typically involve 70 percent didactic instruction and 30 percent practical. Lesson plans are not provided. A safety officer for practical/manipulative, in-service, training sessions is not formally designated as outlined in NFPA Standard 1500.[15] Officer training is not provided.

KLVFRD has not completed physical ability testing or minimum skills competency testing for its existing members.

With the exception of senior officers, outside training for members is not provided. KLVFRD has not provided an opportunity for senior officers to attend the National Fire Academy.

Generally regional disaster drills are not conducted although KLVFRD has participated in the Miami/Turkey Point Nuclear Power Plant radiological emergency training exercises.

Multi-agency, mutual aid, and multi-station training is rarely conducted. Post incident analysis has been informally conducted in the past for major and controversial incidents.

Promotional Development Training

National standards recommend that personnel demonstrate the skills and knowledge required of a more responsible position prior to being promoted within the organization. Pre-promotional training is often provided to ensure candidates for promotion meet the minimum educational and certification requirements for the position. The promotional process is used to select the most

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[15] *NFPA 1500: Fire Department Occupational Safety and Health Programs*, 2007.

qualified individual based on a demonstration of proficiency.

KLVFRD does not formally provide organized pre-promotional training to potential or aspiring officers using a standardized curriculum or evaluation system. The National Fire Protection Association has standards for fire rescue service positions and specialty skills. The fire officer standard is NFPA 1021.[16]

The department has provided an excellent physical training resource at the station. Consideration should be given to requiring operational employees to participate in a formal physical training program. Volunteer members should be encouraged to participate.

Pre-promotion training programs should be developed. Completion of the program should be required of members prior to consideration for promotion. In a predominately volunteer system, establishing an officer eligibility list by rank, based on predetermined certifications, and minimum knowledge, skills, and abilities is an effective element of an organizational promotional process. In the KLVFRD officer appointment process, this approach would have a predetermine cadre of qualified individuals identified for promotion and also provide for acting officers as a method of gaining experience for future appointment.

Training Program Planning

Like any other activity, training and education of personnel should be conducted under a comprehensive plan. The plan should include a clear definition of the goals and objectives of the training program department-wide with a schedule and process to achieve them.

Ideally, a comprehensive department training plan would include:
- Departmental training goals and objectives
- Performance standards for all personnel
- Scheduled training on appropriate topic to prevent skills degradation
- Remedial skills improvement training
- Outside training opportunities
- A process for monitoring learning accomplishments
- Centralized, department-wide training data collection and standard reporting

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[16] *NFPA 1021: Fire Officer Professional Qualifications*, 2003.

- Monitoring of individual certification, continuing education, and re-certification requirements

KLVFRD has not designated a departmental training officer or committee to coordinate fire, specialty team, or EMS first responder training. This function is administered by the Fire Chief.

KLVFRD should, as soon as practical, appoint a departmental training officer supported by a training committee to determine the departmental training goals and objectives and a plan for achieving them. This committee would be comprised of representatives from all disciplines and ranks across the department to provide for the input needed for an effective, department-wide approach to training.

Competency Based Training

Ongoing training should follow an identified plan based on demonstrated training needs. Such a plan is best developed as a result of periodic evaluation of the current skill levels of members (competency-based training).

Under a competency-based system, an evaluation of skill performance is conducted at scheduled intervals to determine if the person being evaluated can perform the task in accordance with pre-determined standards. Those skills that are performed well require no additional training. Those skills not performed well are practiced until the standard is met.

This approach maximizes the time used for training. Further, it ensures that members are performing at an established level. Specialty skills can be evaluated in the same manner with further training provided as needed. Ideally, the competency based training approach is used on an ongoing basis. For example, each quarter different skills are evaluated on an individual-by-individual basis.

To institute a competency-based approach to training, all of the needed skills must be documented to describe the standard of performance expected. This would include all skills such as hose handling, apparatus operation, EMS procedures and protocols, use of equipment and tools, forcible entry, ventilation, tactics and strategy, and others. This determination could easily mirror the Florida State *Minimum Standards Course* requirements.

To operate an effective ongoing training program, even under the competency based approach, sufficient resources must be available to conduct skill evaluations and to assist with performance improvement training.

Training Records and Reports

KLVFRD members are required to manually complete a Training Activity Record for each training activity attended. This document is signed by the instructor and submitted to the Station Manager for filing.

For various reasons ranging from the recent transition from Monroe County to the District, to trial periods for new software, to excessive workload, documentation of training activity has waned. The department is unable to produce training records for their members and employees.

A centralized, consistent, automated, departmental training database should be established and maintained, with routine accountability and oversight, and regular reporting frequencies, all commensurate with current confidentiality requirements.

Recommendations:
- Appoint a department training officer
- Appoint a departmental training committee
- Develop and implement a comprehensive departmental training plan including minimum training and certification requirements for members and employees
- Implement a comprehensive, structured skills maintenance training program for all employees
- Consider implementing a formal, mandated physical training program for all operational employees
- Consider implementing a formal competency based approach to the department's training program
- Require lesson plans for all training sessions
- Establish a training reference, equipment and props inventory and member check-out procedure
- Provide regular training for officers

- Immediately implement the requirement for an assigned safety officer in attendance at all manipulative training sessions
- Design and implement a pre-promotion training program
- Develop and implement a centralized, consistent, training data collection and reporting data base under direct oversight of the training officer
- Implement an ongoing medical physical for all members and employees commensurate with NFPA Standard 1582
- Consider pursuing a more practical regional approach to providing a live burn training tower/facility with Monroe County and neighboring public safety organizations

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APPENDICES

Table of Recommendations

1. The District should clarify its authority and role in setting the vision, determining the objectives for levels of service, and providing overall goals for the manner in which fire services are to be provided.
2. Section 7 of the contract requires the department to provide its services "as provided for in the Monroe County Master Public Fire Defense Plan." The KLVFRD should be directed to improve its cooperation and relationship with the County, County officials, and County fire department members.
3. Paragraph 10 of the contract directs the KLVFRD to submit its proposed budget "in a format specified by the District." The budget process, in general, should be in writing and clearly understood by both parties.
4. Paragraph 11.3 indicates that travel expenses must be submitted in accordance with the "District's adopted Travel Authorization and Expense Policy." The clause in the contract or the described policy should be clarified and distributed.
5. Paragraph 15 of the contract provides a requirement that all members of the department provide a policy of liability insurance on his/her private vehicle as required by Florida law and to provide "proof of insurance in a form acceptable to the District." This unusual requirement should be reviewed by legal counsel to ensure that the District is not inadvertently establishing a relationship between itself and the individual member's personal vehicles that could have unintended consequences.
6. Paragraph 16 of the contract requires that KLVFRD provide a Length of Service Awards Program for the purpose or enhancing recruitment and retention of volunteer/POC personnel. No such program has been established. The paragraph should be enforced, eliminated, or revised.
7. The KLVFRD has only two corporate officers - the President and the Chief. The concentration of power and authority to conduct the business activities of the organization are focused on its two Officer positions. The KLVFRD should revisit its corporation roles, distribution of authority and executive or administrative oversight. The return to the use of a Treasurer and Vice President may be advisable.
8. Adopt the proposed, conceptual organizational chart/structure.
9. Develop and adopt a position description for a District Public Safety Director/Fire Chief and supporting Administrative Assistant.
10. Develop and adopt position descriptions for all career and volunteer fire/rescue positions.
11. Adopt complete, accurate and legal policies and procedures, standard operating guidelines, general orders, personnel regulations, or their appropriate combination, based on firm, enabling documents.
12. The department should assign the responsibility for maintaining a scrapbook of historical items of interest for the agency.
13. The department should produce an annual report and publish it for District and community distribution.
14. The District Commission should establish performance objectives for such basic deliverables as firefighter turnout time, overall emergency response time, incident staffing in relation to incident risk, and other critical components of emergency response outcome.
15. A strategic planning process involving stakeholders from both the fire department and

District Commission could provide this department with a clear sense of direction and greater focus on specific goals and objectives.

16. In order to fully encourage the consistent use and application of policy, all policy documents should be made available for regular review or reference by every member of the organization.

17. A system should be in place for verification of distribution of critical memos and policy documents to all personnel.

18. A formal procedure should be established for handling complaints from the public.

19. Paper records (hard copy files) should be adequately secured.

20. Public access to the buildings should be better controlled.

21. Record-keeping related to incident records, training, maintenance, and other department activities must be improved drastically. Initiation of the new records management software package should include adequate training and improved accountability, along with firm policies regarding its use.

22. Full and complete records on employment history, discipline, commendations, work assignments, injuries, exposures and leave time should be maintained.

23. Confirm whether or not service providers have forfeited their volunteer status and tort liability protection under Florida State Law by signing the "Agreement of Understanding Between the Individual Volunteer Firefighter and the Fire Department" document.

24. Confirm whether the $8,700–$12,000 in annual, individual volunteer reimbursement compensation triggers other employment, Internal Revenue, and/or Department of Labor requirements.

25. Confirm that all electronic and hard copy personnel and training files currently stored in the Station 24 conference room are secure and only accessible to those with a need to know.

26. Confirm that member/employee medical records are stored in compliance with federal privacy laws and kept separate from routine personnel records.

27. Immediately promulgate a clearly identifiable, formal, progressive disciplinary process with an appropriate appeal procedure.

28. Confirm the availability of critical stress debriefing and member/employee assistance programs to the members and employees of KLVFRD since the transition from the auspices of Monroe County.

29. Resolve the membership classification conflicts between the KLVFRD By-Laws and Policy 3.01.

30. Review the wisdom of reducing the probation period for new members from six to three months. Other provisions to make reimbursement available earlier and attract members without reducing probation are available.

31. Discontinue the practice of having the membership vote to accept or reject new members. The selections should be made based on merit and qualification.

32. Confirm whether or not term limits are in place for elected officers and directors

33. Confirm the enabling documents providing for the appointment of operational officers. While it is assumed that operational officers are appointed at the pleasure of the Fire Chief without minimum qualifications, documents enabling this process have not been provided.

34. Develop and implement a plan to evaluate member/employee technical and manipulative skills on a regular basis.

35. Conduct annual physical competency testing of operational members and employees

36. Conduct annual medical evaluation and bi-annual physical examinations of members and employees.

37. Develop and implement a formal performance evaluation system for all members and employees

38. Hire a full-time Public Safety Director/Fire Chief to by employed by and report to the District.

39. Hire full-time driver/operator/EMT firefighters, employed by the District, to provide for one career firefighter on duty at each station on a 24-hour, seven day per week basis to supplement the volunteer response staff.

40. Initiate a critical tasking analysis for common community risk types and ensure that the number of personnel dispatched to calls equals the identified critical tasks.

41. Conduct an ongoing analysis of on-scene staffing strength to confirm the department's standard of coverage.

42. Hire temporary administrative/clerical assistance when the Station Manager is away from the office until such time as a District Administrative Assistant is in place.

43. Conduct a job analysis of the Station Manager and Logistics Officer positions to confirm the incumbents are working within their job descriptions and expectations.

44. Develop and implement an aggressive driver/operator training and check out program for all department vehicles.

45. Design and implement a weekly in-station volunteer personnel standby program for both stations.

46. Confirm the Logistics Officer's employment status is in compliance with the Department of Labor's regulations.

47. Conditions at Station 24 involving building maintenance and storage should be corrected immediately. Improved accountability should be put in place to ensure the conditions do not return.

48. Maintain the established plan to adequately fund the apparatus replacement fund or prepare for capital purchases based on apparatus replacement schedule.

49. Develop and fund a small equipment replacement program that anticipates replacement schedules and builds necessary funding in order to spread cost over multiple years.

50. Call answering and call processing time standards should be formally established and performance monitoring should be conducted.

51. Since the operations of the MCECC directly affect the ISO Community Fire Protection Rating, the District should be provided a written performance report identifying 90th percentile call handling and processing times on at least a quarterly basis.

52. Additional emergency plans, including practice with a redundant site in the event of extended evacuation, should be completed and tested at least annually.

53. KLVFRD should comply with the four-person company staffing standard. To do so, it will need to send more than one apparatus or have written policies for assembling a four-person company once units arrive on scene.

54. The department should establish a duty officer system, even using volunteer officers, to ensure that an individual designated for incident command will be available 24 hours a day.

55. KLVFRD should continue multi-company and multi-agency drills and trainings at least quarterly to enhance mutual aid operations and improve relationships and planning efforts.

56. Appoint a department training officer.

57. Appoint a departmental training committee.

58. Develop and implement a comprehensive departmental training plan including minimum training and certification requirements for members and employees.

59. Implement a comprehensive, structured skills maintenance training program for all employees.

60. Consider implementing a formal, mandated physical training program for all operational employees.

61. Consider implementing a formal competency based approach to the department's training program.

62. Require lesson plans for all training sessions.

63. Establish a training reference, equipment and props inventory, and member check-out

procedure.

64. Provide regular training for officers.
65. Immediately implement the requirement for an assigned safety officer in attendance at all manipulative training sessions.
66. Design and implement a pre-promotion training program.
67. Develop and implement a centralized, consistent, training data collection and reporting data base under direct oversight of the training officer.
68. Implement an ongoing medical physical for all members and employees commensurate with *NFPA 1582*.
69. Consider pursuing a more practical regional approach to providing a live burn training tower/facility with Monroe County and neighboring public safety organizations.

Apparatus Condition Chart

The following chart identifies the criteria used by ESCi in the evaluation of apparatus for this report.

Excellent	Like new condition. No body or paint defects. Clean compartmentation. Interior cab complete, in full working order with no modifications. No significant defect history. Age is less than 25 percent of life expectancy.
Good	Body and cab have good appearance with no rust and only minor cosmetic defects or dents. Clean compartmentation with no visible rust or corrosion. Interior cab is in full working order and good appearance. Normal maintenance history with no significant defects or high downtime. Age is less than 75 percent of life expectancy.
Fair	Body and cab have weathered appearance with minor surface rust and some cosmetic defects or dents. Unimpeded compartmentation with only surface rust or corrosion. Interior cab is in reasonable working order and appearance. Only repairable tank or plumbing leakage. Showing increasing age-related maintenance, but with no major defects or unreasonable downtime. Age is less than 100 percent of life expectancy.
Serviceable	Body and cab have weathered appearance with surface corrosion, cosmetic defects or dents, and minor rust-through of non-structural metals (body panels). Unimpeded compartmentation with significant surface rust or corrosion and/or minor rust-through (not affecting use). Interior cab is in rough, but working order, often with local repairs or modifications to compensate for problems. Occasional or intermittent tank or plumbing leakage. Showing increasing age-related maintenance, but with no major defects or unreasonable downtime. Most service parts still available. Age is greater than 100 percent of life expectancy.
Poor	Body and cab have weathered appearance with surface corrosion, cosmetic defects or dents, and visible rust-through of non-structural metals (body panels). Significant rust or corrosion is present in structural or support members. Use of compartmentation is impeded with significant corrosion and rust-through. Interior cab is in rough condition with defects impeding safe and proper use. Unrepairable tank or plumbing leakage. Problematic age-related maintenance, major defects, or unreasonable downtime are evident. Service parts difficult or impossible to obtain. Age is greater than 100 percent of life expectancy. Vehicle exceeds its GVWR.