Fire Services Assessment for Mecklenburg County, North Carolina

March, 2009

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Preface

During the period of January trough March 2009, a consulting team from Emergency Services Education and Consulting Group (ESECG, a division of VFIS, Inc.) conducted a documentation review and site analysis of the fire services provided to Mecklenburg County, North Carolina. This work effort was consistent with the scope of work described in the proposal agreed upon between Mecklenburg County and ESECG, which is detailed later in this report.

The Board of Commissioners of Mecklenburg County is to be congratulated for their proactive initiative to evaluate its fire department services and in developing a plan for the future. Too frequently communities undertake such activities following major adverse events, functioning reactively, instead of proactively such as Mecklenburg County officials have done.

It must be noted that the interests expressed by the Board of Commissioners, the county staff and the members and staff of the fire departments were focused upon providing quality service to the residents, workers, and visitors to Mecklenburg County. There were many positive efforts and programs found to be in place within the services provided to the County. While much of this report centers upon action to be taken to enhance long term performance, everyone recognized the fire companies perform the work that needs to be conducted at the time of an emergency.

There were seven (7) primary activities involved in this project.

1. An introductory meeting was held with the County Fire Marshal and Deputy Fire Marshal to establish an understanding of project involvement and expectation as well as a timeline to complete the project. The individual fire departments were provided with self-assessment tools and a series of questions to complete in order to establish baselines of performance. A list of necessary documents needed for review and people to contact was also submitted prior to the consulting team arrival.
2. “Self Assessments” and “Statements of Issues and Concerns” were obtained, and a compilation and analysis of the data provided, were completed.
3. Site visits to each fire station were made to confirm self assessment information, review commentaries submitted, and establish a structure for possible solutions to identified issues. In most cases, the fire department officers were open and provided applicable documentation to the teams and provided “tours” of facilities and apparatus.
4. A number of documents were reviewed as submitted by the township, including, but not limited to:
    - State Fire Marshal/Insurance Services Office Report,
    - Various fire department response summaries and documents,
    - Existing Standard Operating Procedures/Guidelines,
    - Emergency dispatch center data files, and
    - Miscellaneous pertinent information.

5. Specific meetings were conducted with Mecklenburg County Management, fire departments, town managers, and self-assessments were completed and analyzed. In addition, meetings were conducted with county staff as well as town managers to assess their perceptions and comments.
6. Follow-up activities with the County Fire Marshal, Town Managers, and selected Fire Chiefs, were conducted as necessary.
7. This document is the result of the completed and consolidated efforts of the six aforementioned activities.

We wish to complement the Board of Commissioners of Mecklenburg County, North Carolina, and the officers and membership of the various Fire Departments for their proactive initiative and participation to evaluate long-term needs of the community's fire services; and for their willing and active participation in the process of completing the evaluation.

Statement of Work

This proposal provides for ESECG to analyze and assess the fire service delivery system for a changing Mecklenburg County, North Carolina, and make recommendations as appropriate, regarding the key performance areas that will address those changes and subsequently serve to provide an integrated fire service delivery system for proposed use.

Scope of Work

OVERVIEW:

It is recognized that as the Charlotte region has evolved from a predominantly rural environment to a planned urban environment, Mecklenburg County is rapidly approaching a transition in fire service delivery in the areas outside the City of Charlotte's corporate limits. Currently, all fire and rescue services in that area are provided by eighteen Volunteer Fire Departments (VFD's), only 1 of which is a Town Department. As residential development continues to spread into the most remote corners of the County, the VFD's ability to maintain appropriate response time, and acceptable Insurance Services Office (ISO) grades becomes a greater challenge every day. This problem will not diminish until the City and Towns fully annex their extra territorial jurisdiction (ETJ) areas. Consequently, it makes sense for the County to have a fire service strategy that addresses service demand and funding, which will serve as a bridge to the day when fire service responsibility is fully in the realm of the City and Towns.

There are three significant pressures which must be evaluated

1. As the City of Charlotte annexes parts of their ETJ, it fragments the remaining areas serviced by the VFD's. Essentially, these areas are left to a waiting game, still providing fire service, until the day they completely disappear.
2. At the same time, residential development continues, and consequently VFD's are further challenged in the ability to respond, within ISO standards.
3. As service becomes more fragmented, unless a transition is well planned, significant inefficiencies could develop. Because the County's ETJ areas are planned differently and will develop differently, this problem has at least three perspectives;
    - the City's ETJ,
    - the Mint Hill ETJ, and
    - the North Towns ETJ (either collectively or individually).

ESECG believes that "state of the art" approaches to these issues are best managed through the establishment of a comprehensive service delivery system, with defined standard(s) of cover for fire, rescue and emergency medical events.

PHASE I: ASSESSMENT

This phase includes collecting and analysis of data from Mecklenburg County. It also requires a review of agency reports; analysis of response data; physical resources, human resources assigned; training data and call workload volume. All data shall be provided by Mecklenburg County and/or individual agencies within the county.

Phase I would involve the following objectives:

1. Evaluate the impact of the upcoming City of Charlotte annexation on County VFD fire service areas, including;
    a. Identify the remaining areas, outside the City's corporate limits, to be serviced by the VFD's
    b. Identify the demand for service, and related critical issues in each VFD's designated area.
2. Evaluate each existing VFD service capability as it relates to item 1.b above, identifying critical deficiencies, excess capacities or other significant observations.
3. Evaluate the opportunities for:
    a. Creating a critical service mass and higher level of efficiency (setting aside current boundaries and looking at service demand and identify how to best respond).
    b. Developing strategies for long term solutions to fund the VFD operations outside the City and Towns. This should consider the role targeted service districts may serve in funding VFD operations, or other comparable tools.

This would include a definition and evaluation of the current service delivery system and standard of response cover within the county.

1. Identify service capabilities and cooperation from nearby communities/counties and develop a closest station response policy and deployment matrix for the remaining areas of the county.
2. Inspect, review records and evaluate the current capabilities to determine where key deficiencies (if any) exist and recommend a course of action.
3. Review and evaluate operational readiness including county-wide Standard Operating Procedures (SOP's) and policies ensuring they are in compliance with industry standards for emergency services.
4. Establish the minimum standards (i.e. staffing, training, qualifications, and equipment etc.) for Mecklenburg County to meet.
5. Determine gaps in current capabilities and those capabilities recommended as a result of the study, developing costs and time frames to achieve full implementation

Work Elements of Phase I include:

1. Evaluate the county-wide mission, goals, objectives, and planning processes, and regulatory requirements regarding rescue services.
2. Survey each agency regarding current service delivery status.
3. Review and evaluate operational readiness including:

- Determine availability of SOPs, rules, regulations, and policies ensuring they are in compliance with standards for emergency services, and that they are being adhered to
- Review dispatch protocols
- Determine availability of accessing necessary information and documentation
- Review historical data and collective performance

4. Review and make recommendations relative to personnel management and practices:
    - Assess member recruitment, selection, training and officer qualifications
    - Assess overall member assessment process
5. Identify operations and the staffing requirements based on current workload, including staffing requirements and activities for supervisory, administrative and support staff
6. Conduct review of existing volunteer service structure:
    - manpower statistics and response data,
    - existing coordination/SOPs between township companies relating to fire ground operations and administrative and command procedures,
    - financial and organizational viability, delivery system, specialized services, fire prevention program, and related systems identified in place
7. Consideration of historical incident data and collective performance of the county system relative to recognized fire service standards appropriate for volunteer and combination organizations (ISO, NFPA 1720, CFAI, etc.)
8. Make recommendations in areas critical to management, staffing, training, supervision, and operational performance
9. Determine organizational options and present for consideration

For purposes of this project, the following standards of performance and state of the art best practices will be used to establish benchmarks:

- NFPA Standard 1720, "Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public, by Volunteer Fire Departments.
- NFPA Standard 1201, "Standard for Providing Emergency Services to the Public"
- Commission On Fire Accreditation, Self-Assessment Manual, Special Operations Core Criteria and Standards
- North Carolina Association of Rescue and EMS, Inc.; Standard Documents
- North Carolina Department of Insurance requirements.

PHASE II: DELIVERABLES

The primary objective of this project is to provide a credible analysis of the Mecklenburg County fire services and determine a reasonable and affordable matrix of coverage. This will be completed through the following deliverables.

1.A report will be provided that will illustrate two options for continued service in

the unincorporated areas of the County. Options will be structured to allow for a smooth transition of fire service as areas are annexed.

2. Cost of service estimates for each option will be provided as well as recommended sources of funding.
3. A recommendation, based on ESECG's experience in developing local fire service Strategies will be provided.
4. Provide 6 copies of both a draft report that will be delivered for technical review and 6 copies of the final report and plan.

It is anticipated that this project will require ninety (90) days to complete (this would be from the day of the start of the project). This assumes a timely response of input data from questionnaires submitted to agencies in the county (30 day turn-around time), and similar response time of response related data from the 911 centers.

PHASE III: ORAL PRESENTATION

An oral presentation(s) of study and plan, as necessary or requested.

Executive Summary

The nation's volunteer fire service is changing. Given the extent of these changes and at times the lack of awareness or even unwillingness to accept external forces on the volunteer system, it is important to help drive change before it drives an organization.

Longtime volunteers often look back on the "way it used to be." They recall a time when training was much less demanding and time consuming and the local fire department had fewer responsibilities. Fires and accidents were pretty much the game. Attendance and training standards were achievable. There were fewer calls but each was an event that required the assistance of neighbors, who took great pride in their membership in the local department. The community appreciated their neighbors' help, local businesses supported the volunteer fire department, and the call volume was small enough so as not to interfere with the requirements of the members' jobs. The system was manageable, the emergencies were mitigated, and it was fun to be a member.

The reality today is that in many communities, to be a contributing, effective firefighter, a person has to meet significantly higher standards physically, in terms of training, and in terms of time "on the job" gaining experience. Not everyone has the luxury of time or in some cases the inclination, to meet those requirements in today's hectic environment. Anymore, the fire department is not just a group of people trained to suppress fire and render first aid. It has become the premiere provider of choice for different levels of emergency medical services and in many cases transportation, as well as the provider of just about every other service that is not provided by the police department—hazardous materials response, high-rise and below-grade rescue, inspections, prevention and education, and community emergency planning and management, to name a few.

This is not to say that volunteers can't handle the job, for their abilities and successes are demonstrated daily in many places from coast to coast and border to border. But where they can not, community and fire leaders are challenged to meet their community's needs. In some cases, they will find ways to reinvigorate the volunteer members of their departments and improve their performance. In others, they will recognize the need for another type of change, moving to some form of partial or fully paid department, and they will set out to make it happen. The fire departments that serve Mecklenburg County have rich and proud traditions. To this day, the departments strive to maintain volunteer/combination status, serving the community with state of the art equipment. The departments have progressed significantly since that era. While they continue to serve, challenges posed today present many more risks requiring capabilities for not only structure fires, but various rescue scenarios, hazardous materials incidents, mass casualty incidents, brush fires and more; all of which require specialized training, equipment and capabilities. In addition, fire and injury prevention services are provided to help mitigate potential incidents, with children, as well as adults, learning on a continuous basis about the dangers of fire and how best to avoid and prevent the devastation that fire can cause.

Mecklenburg County is a located in the state of North Carolina. As of 2008, the population was 902,803. The county seat is Charlotte. It is the most populous county in the state. Formed in 1762 from the western part of Anson County, it was named for the German Princess Charlotee of Mecklenburg-Strelita from the German state of Mecklenburg-Strelitz. In 1768 the part of Mecklenburg County west of the Catawba River became Tryon County. In 1792 the northeastern part of Mecklenburg County became Cabarrus County. Finally, in 1842 the southeastern part of Mecklenburg County was combined with the western part of Anson County to become Union County.

According to the U.S. Census Bureau, the county has a total area of 546 square miles (1,415 km²), of which, 526 square miles (1,363 km²) of it is land and 20 square miles (52 km²) of it (3.65%) is water. The county boasts a population of 935,304 and a population density of 1,650 persons per square mile.

Mecklenburg County contains seven municipalities including the City of Charlotte and the towns of Cornelius, Davidson, and Huntersville (north of Charlotte); and the towns of Matthews, Mint Hill, and Pineville (south and east of Charlotte). A small portion of the town of Stallings is also in Mecklenburg County, though most of it is in Union County. Extra-territorial jurisdictions within the county are annexed by municipalities as soon as they reach sufficient concentrations.

In 1959, the North Carolina State Legislature revised laws that govern how cities may annex adjacent areas, allowing municipalities to annex unincorporated lands without permission of those residents.[2] Due to decades of an aggressive annexation policy, cities (especially Charlotte) have greatly expanded their borders,[3] diminishing or totally engulfing all of the original 15 Townships of Mecklenburg County. Although seldom mentioned by residents anymore, the U.S. Census still recognizes all of the Townships except Sharon Township.

- Charlotte Township - completely annexed into the City of Charlotte
- Mallard Creek Township - greatly reduced by Charlotte annexation
- Crab Orchard Township - greatly reduced by Charlotte annexation
- Clear Creek Township - greatly reduced by Charlotte and Mint Hill annexation
- Morning Star Township - almost entirely annexed by Charlotte, Mint Hill, and Matthews
- Sharon Township - completely annexed into Charlotte *and eliminated*
- Providence Township - almost entirely annexed into Charlotte
- Pineville Township - mostly annexed by the City of Pineville
- Steele Creek Township - greatly reduced by Charlotte annexation
- Berryhill Township - greatly reduced by Charlotte annexation
- Paw Creek Township - greatly reduced by Charlotte annexation
- Long Creek Township - greatly reduced by Charlotte annexation
- Deweese Township - reduced by Davidson and Cornelius annexation
- Huntersville Township - reduced by Huntersville annexation
- Lemley Township - mostly beneath Lake Norman since it was created in 1963, and reduced by Huntersville annexation

The county's primary commercial aviation airport is Charlotte Douglas International Airport in Charlotte. With twenty-five freight trains a day, Mecklenburg is a freight railroad transportation center, largely due to its place on the NS main line between Washington and Atlanta and the large volumes of freight moving in and out of the county via truck. Mecklenburg County is served daily by three Amtrak routes.

Light rail service in Mecklennburg County is provided by LYNX Rapid Transit Services. Currently a 9.6-mile (15.4 km) line running from Uptown to Pineville, build-out is expected to be complete by 2034. Charlotte Area Transit System (CATS) bus service serves all of Mecklenburg County, including Charlotte, and the townships of Davidson, Huntersville, Cornelius, Matthews, Pineville, and Mint Hill.

Mecklenburg's manufacturing base, its central location on the Eastern Seaboard and the intersection of two major interstates in the county have made it a hub for the trucking industry. Mecklenburg County is home to seven Fortune 500 companies,[4] including 9th-ranked Bank of America. Mecklenburg County is home to seven (7) Fortune 500 companies, including Bank of America, Nucor, Duke Energy, Sonic Automotive, Family Dollar, Goodrich and SPX Electronics. An eighth Fortune 500 company, Wachovia, will retain its headquarters in Mecklenburg while its acquisition by Wells Fargo for $15.1 billion in stock is being completed. The Federal Reserve approved the merger on October 12, 2008.[5] Mecklenburg County's largest employer is Carolinas Healthcare System, with 26,283 employees, followed closely by Wachovia (20,000) and Bank of America (13,960).[6]

As of the census[7] of 2000, there were 695,454 people, 273,416 households, and 174,986 families residing in the county. The population density was 1,322 people per square mile (510/km²). There were 292,780 housing units at an average density of 556 per square mile (215/km²). The racial makeup of the county was 64.02% White, 27.87% Black or African American, 0.35% Native American, 3.15% Asian, 0.05% Pacific Islander, 3.01% from other races, and 1.55% from two or more races. 6.45% of the population were Hispanic or Latino of any race .

There were 273,416 households out of which 32.10% had children under the age of 18 living with them, 47.70% were married couples living together, 12.40% had a female householder with no husband present, and 36.00% were non-families. 27.60% of all households were made up of individuals and 5.90% had someone living alone who was 65 years of age or older. The average household size was 2.49 and the average family size was 3.06.

In the county the population was spread out with 25.10% under the age of 18, 9.70% from 18 to 24, 36.40% from 25 to 44, 20.30% from 45 to 64, and 8.60% who were 65 years of age or older. The median age was 33 years. For every 100 females there were 96.50 males. For every 100 females age 18 and over, there were 93.60 males.

The median income for a household in the county was $50,579, and the median income for a family was $60,608. Males had a median income of $40,934 versus $30,100 for

females. The per capita income for the county was $27,352. About 6.60% of families and 9.20% of the population were below the poverty line, including 11.50% of those under age 18 and 9.30% of those age 65 or over.

The County is governed by the Mecklenburg Board of County Commissioners (BOCC), The current chairman of the Mecklenburg BOCC is Jennifer Roberts. The county has eight governing bodies including; the City of Charlotte and the towns of Cornelius, Davidson, and Huntersville (north of Charlotte); and the towns of Matthews, Mint Hill, and Pineville (south and east of Charlotte). A small portion of the town of Stallings is also in Mecklenburg County. Extra-territorial jurisdictions within the county are annexed by municipalities as soon as they reach sufficient concentrations.

The county contains an extensive assemblage of sites of interest ranging from museums and libraries, to key sports and entertainment facilities, music and performing arts venues, amusement parks and more.

As can be seen from this description, Mecklenburg County is protected by the City of Charlotte Fire Department and 17 volunteer/combination fire departments. The county's risk provide a full range of exposure from light to extra-hazard, and require the variety of resources necessary to meet the need of an emergency an any of these risks. While the assemblage of key equipment is provided for, its coordination and deployment can be enhanced with a comprehensive oversight effort.

Data from the emergency dispatch center indicates responses over the past three years as 14,851. These included the following:

Incident Type	2006	2007	2008	Total
Fire Alarms	1762	1755	1861	5378
Carbon Monoxide Alarms	294	316	341	951
Fire Incidents	2097	2276	2029	6402
Other	11	22	38	71
Vegetation Fires	380	436	509	1325
Vehicle Fires	255	267	202	724
TOTAL	***4799***	***5072***	***4980***	***14,851***

Note, structure fires could not be ascertained from data. Based on input from the Fire Departments, they are estimated at 200 annually.

Mecklenburg County's Emergency Services are provided through a combination of county, municipality, and private organization resources. There are 17 volunteer/combination fire departments, 18 fire stations, 38 fire engines, 17 brush trucks, 10 water tenders/tankers, 7 aerial ladders, and 24 support/rescue vehicles providing services. The average response, per station is calculated to be 6 persons based on data provided by the fire departments.

The Mecklenburg County Fire Services have not adopted a consolidated mission statement, goals or objectives. A suggested set, to use as a starting point for discussion, is provided later in this document.

Agencies tend to be extremely proud of their service to the community. Obvious to the team that there are a lot of good people, doing the best they can with what they have.

The observations, analyses, and subsequent recommendations are provided in the following categories.

- Management Issues,
- Operational Issues,
- Personnel,
- Apparatus,
- Facilities,
- Standard Operating Procedures,
- Mutual/Automatic Aid, and
- Response Time and Station Locations

Without question, financing and staffing are the concerns of the fire departments. By comparison to other metropolitan counties in the mid-Atlantic states, the fire departments are not as extensively funded by the community or the political subdivision. If the county reduces its funding to the Volunteer Fire Departments, towns will be put into a position of whether or not to provide the service, at what level, and with what financial impact on the community. Town managers were consistent in their comments that while stronger codes would be nice, and that the fire marshal's office role was necessary and could be expanded, the concern over funding was paramount. **AT THE END OF THE DAY, THE OVER-RIDING ISSUE IS: WHAT THE WILLINGNESS OF THE POPULACE IS TO PAY ADDITIONAL FUNDS FOR FIRE PROTECTION SERVICES, AT WHAT RATE ARE THEY WILLING TO PAY, AND WHAT IS THE WILLINGNESS OF ELECTED OFFICIALS TO POLITICALLY DEAL WITH FUNDING INCREASES, TAX ASSESSMENTS, ETC.** The information within this report provides analytical input into the process, which is a local management and political decision making scenario.

The following chart is provided for consideration as a starting point for long term transition. While all actions must be determined locally, the following chart indicates that some agencies may be absorbed in future annexations and it is imperative that discussions begin with all agencies involved so that a smooth transition takes place to insure adequate fire service is maintained throughout this process. Based on future annexations, a time line needs to be developed for affected departments. It is critical that the affected departments are involved with this process at the onset of the planning.

MECKLENBURG COUNTY FIRE DEPARTMENT STATUS SUMMARY

Department	Current Status	Interim Recommendation	Long Term Suggestion
Carolina VFD	As a result of 7/09 Charlotte Annexation, fire station will be in the city limits of Charlotte and not close to its response area.	Begin discussion to convert to coverage by Charlotte FD for a fee.	Establish a tax district which will provide appropriate funding to Charlotte. Dissolve Carolina VFD, recommending personnel join neighboring organizations.
Cooks & Community VFD	As a result of 7/09 Charlotte Annexation, resulting fire district has no area within 1+ miles of existing station.	Reallocate response district as follows - area adjacent to West Mecklenburg and area in close proximity to it, to West Mecklenburg VFD; remaining fee service by City of Charlotte FD	Establish a tax district which will provide appropriate funding to new service agencies. Dissolve Cooks and Community VFD, recommending personnel join neighboring organizations.
Cornelius-Lemly VFD	Located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
Davidson-North Star VFD	Located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
Gilead FD	Located in a growing area, and operating as an individual VFD, Gilead should look to merge with Huntersville.	Work toward merger with expansion station of Huntersville	Merged with Huntersville, establish a tax district for the consolidated Huntersville fire service system.
Huntersville-Craighead VFD	Located in a growing area which will support a growing fire service delivery system.	Continue with expansion/merger Long Creek, & Mallard, and accept Gilead in merger.	Merged Agency, established as a tax district. A growth management plan is also recommended for the department.

Department	Current Status	Interim Recommendation	Long Term Suggestion
Idlewild FD	Located in an area of incorporated Town of Mint Hill, with growing response requirements	Work toward merger with Idlewild as a second Mint Hill station.	Merged with Mint Hill FD, establish a tax district for the consolidated Mint Hill fire service system.
Long Creek VFD	Located in area adjacent to Huntersville (HFD), where HFD is planning a new station.	Work toward merger with expansion station of Huntersville	Merged with Huntersville, establish a tax district for the consolidated Huntersville fire service system.
Mallard VFD	Located in area adjacent to Huntersville (HFD), where HFD is planning a new station.	Work toward merger with expansion station of Huntersville	Merged with Huntersville, establish a tax district for the consolidated Huntersville fire service system.
Matthews-Morningstar	Town fire department in growing community	Status quo	City establishes tax rate.
Mint Hill VFD	Town fire department in growing community	Work toward merger with Idlewild as a second Mint Hill station.	Establish a tax district to support the agency and merge Idlewild FD into the organization.
Newell VFD	As a result of 7/09 Charlotte Annexation, fire station will have a minimal response area in Mecklenburg County.	Begin discussion to convert to coverage by Charlotte FD for a fee.	Establish a tax district which will provide appropriate funding to Charlotte which is closer to majority of district.
Pineville-Morrow VFD	Town fire department in growing community	Status quo	Establish a tax district to support the agency.
Providence VFD	As a result of 7/09 Charlotte Annexation, fire station will have a minimal response area in Mecklenburg County.	Begin discussion to convert to coverage by Charlotte FD for a fee.	Establish a tax district which will provide appropriate funding to Charlotte which is closer to majority of district.
Robinson VFD	Located in a growing area which will support a growing fire service delivery system..	Status quo	Look at true const of service (VFD cost with full time employees and compare to City of Charlotte.

Department	Current Status	Interim Recommendation	Long Term Suggestion
Steele Creek 1 & 2 VFD	Despite annexation, located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
West Mecklenburg VFD	Despite annexation, located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
COUNTY-WIDE SUMMARY	**17 individual agencies with variable funding, and support services**	**Transition Period**	**Establish Taxing process and expand Charlotte FD coverage**
COUNTY-WIDE FIRE DEPARTMENT STANDARDIZATION	**Fire Commission with limited role & responsibility in true direction setting**	**Establish/redefine fire commission role to one of county standardization and interface with Charlotte FD**	**Fire commission responsible for - assuring deployment - standardized SOGs - training standards**
COUNTY FIRE MARSHAL'S OFFICE	***Fire Inspections *Fire Investigations *Public Education program guidance *Coordinate radio maintenance & pagers * Liaison to Fire Departments**	**Expand to include: * Standard Operating Guideline Coordination * Training Services Coordination**	***Fire Inspections *Fire Investigations *Public Education program guidance * overview with ISO *Coordinate radio maintenance & pagers * Liaison to Fire Departments * Standard Operating Guideline Coordination * Training Services Coordination**

Based upon this assessment, there are19 recommendations provided for consideration. It intended that these recommendations are provided in an effort to raise issues for resolution. There may indeed be alternatives and the ultimate decision may be to do nothing. These are political decisions that need to be made locally. The recommendations have foundation in current national best practices as identified for each recommendation. The decision to implement them is a local one, based on local resources, local concerns, an ability or inability to pay for fire protection, and political influence.

The recommendations include:

09-01 Develop a Service Delivery Statement which would indicate the types of services to be provided, the area to be covered, and the delegation of authority to perform those services. This will also serve as the basis for development and implementation of a mission statement, vision statement, and development of annual goals, objectives and funding requests. Consistent with the development of these documents is a Standard of Response Cover for use in Mecklenburg County as a method to define a service expectation the community will accept. This will also serve as a benchmark to determine when and where career staff is needed for fire-fighting services. Examples of these draft statements (Mission, Vision, and Service Delivery Statement/Standard of Cover are provided in the body of the text).

09-02 Based upon the annexation activities of the City of Charlotte and other Towns within the county, begin a three step process for long term consolidation of services to improve the long-term performance of the delivery of emergency services in the county. A hypothetical model is detailed in the report. The three step process involves a transition plan to move from "current status" to an "interim recommended status" to a "long term suggestion". These are defined in the "Management and Governance" section of this report, and characterized/defined as follows:

Step 1 – Current status of the department

Step 2 – A transitional approach to management/funding/operations model to move between Step 1 and 3. Consideration must be given to assuring the operational and funding processes are defined and in place before full transition occurs.

Step 3 – Long term (estimated three to five year objective) to serve as the delivery system for that fire response area.

09-03 Develop a county-wide procedure/guideline to strategically manage emergency operations which clearly defines a process for emergency response personnel and officers to use, regardless of when officers arrive and what stage the emergency is in. (Example provided in Appendix 3)

09-04 A standardized approach to incident reporting should be established with each fire company and the emergency medical service providing computerized monthly statistical information to the Fire Marshal's office for consolidation into a

monthly report on fire and EMS activities within Mecklenburg County. This will enable the County to demonstrate the need for expending funds for fire and EMS provision and provide data for analysis of developing fire and EMS situations within the County. This should be part of a more comprehensive information technology policy for all facets of the Fire and EMS system. The overall IT function should work within the current County IT function and support all aspects of the organization, including

- fire inspection management and record keeping
- pre-emergency planning
- permit issuance
- building maintenance
- incident reporting
- training information
- training programs
- emergency response

09-05 Develop a county-wide annual report for consolidated service delivery provided to the County, including a projected costs savings to the taxpayers, through the utilization of the National Volunteer Fire Council's Cost Savings Calculator, available at www.nvfc.org.

09-06 A long-term capital funding model is recommended. A projected plan for apparatus to be purchased at the rate of one engine per year, one rescue-engine per year, one aerial device every other year, one heavy rescue every three years, one brush truck every year and two small vehicles each year, is a general average purchase resulting in a funding requirement of approximately $1,500,000 each year on average. Each service district would purchase the item individually. In either case, the funding would come from some tax-based source.

09-07 A process for determining replacement fire apparatus needs to be implemented. Appendix 7 provides an evaluation tool which should be completed for each piece of apparatus in the fleet. This will help determine potential longevity of the apparatus as well as help in determining financing operations.

09-08 Establish service districts for the towns, towns ETJ, and unincorporated area of the county. A tax rate comparable to support the immediate and long term needs of the fire departments in the county shall be set after consulting with the towns.

09-09 Going forward, in concert with any funding provided by the county, assurance should be made that a signed contract is secured. The contract should include the following language to assure, if the agency is dissolved for any reason, that the assets obtained with public funds going forward, are properly disposed of.

In the event of a dissolution of a Volunteer Fire Department (VFD) or the termination of its affairs, or other liquidation of its assets, the VFD's property shall not be conveyed to any organization created or operated for profit or to

any individual for less than the fair market value of such property. All assets remaining, after all debts and expenses of the corporation have been paid, shall be conveyed or distributed by the Board of Trustees to one or more organizations qualifying for the exemption afforded by Section 501 (c) (3) of the Code. Any assets not so distributed shall be disposed of by a Court of Common Pleas of competent jurisdiction exclusively for such purposes or to such organization or organizations, as said or shall determine which are organized and operated exclusively for such purposes.

No part of the net earnings of the VFD shall inure to the benefit of any Trustee of the VFD, Officer of the VFD or any private individual (except that reasonable compensation may be paid for services rendered to or for the VFD affecting one or more of it's purposes), and no Trustee or Officer of the VFD shall be entitled to share in the distribution of any of the VFD assets upon dissolution of the VFD. No substantial part of the activities of the VFD shall be the carrying on of propaganda, or otherwise attempting to influence legislation, (including the publication or distribution of statements), any political campaign on behalf of any candidate of public office.

09-10 Develop and implement a comprehensive approach to the recruitment and retention of an adequate force of competent fire and rescue service personnel. Coupled with this should be minimal criteria for membership.

09-11 Develop a standardized set of data and documents to be maintained for each member, by each company. This should include, as a minimum, an application, physician's release to perform firefighter duties, training information, driver license, working papers, etc., as deemed appropriate. Sample information and forms are provided in VFIS safety and management publications which are forwarded under separate cover.

09-12 Establish a standardized set of training requirements to qualify as a firefighter.

09-13 A comprehensive approach to enhancing operations through addressing the identified operational expectations established by NFPA Standard 1720 should be developed as a long-term objective and goal by the Fire Commission.

09-14 Develop a process for the development, distribution, and training of pre-emergency plans for target locations as identified in the risk assessment process. This should include water supply information, as well as a hydrant out-of-service notification process. The fire marshal's office should serve as an integral part of this process.

09-15 Establish and implement a county-wide strategic guideline for operations.

09-16 Continue the development of Standard Operating Procedures/Guidelines using existing Mecklenburg County Fire Department procedures/guidelines as the

basic data/model using the proposed procedure format and develop a prioritization for development and revision, using the information provided in this section as a guideline. It is suggested that due to the unique joint dispatching and response protocols that a team be established with no less than five members from county fire departments. As a start to this process, the study team is providing under separate cover, three suggested documents to be modified as appropriate for use in Mecklenburg County. These include a:
- high rise incident standard operating guideline
- accountability standard operating guideline
- calling a mayday standard operating guideline.

09-17 To standardize deployment to properties in Mecklenburg County, the following "box system" methodology for structure fires should be applied.

- For single family dwelling fires, a dispatch involving a complement of two engines from the two closest stations
- For commercial structures, educational facility (non-residence), non-habitational, three engines and one ladder from the four closest stations
- For health care, educational residence facilities, and industrial facilities four engines and two ladders from the four closest stations
- For automatic fire alarms, one engine and one ladder from the two closest stations.

The long term goal should be to intelligently identify when equipment beyond two engines is required on single family residential fires, based on hazard, structure size, and level of internal protection.

09-18 The current contract in use was initiated in 1991 and required updating. Contracts should be modified to include the following items:
- revise and update from 1991 (periodically update at least on a 5-year basis)
- include a dissolution clause for funds provided for capital investments, going forward
- include the standard of cover expectation in future contracts

09-19 Redefine the role and composition of the fire commission for more effectiveness. In addition to existing responsibilities, they should assure, develop and direct areas noted below. Define the roles of the fire commission and the county fire marshal's office along the lines of responsibility of:

The Fire Commission should be responsible for
- Assuring deployment consistency
- Develop standardized Standard Operating Guidelines
- Direct training standards
- Interface with Charlotte Fire Department as well as Towns, as they expand fire services delivery.

The Fire Marshal's Office should be responsible for
- Fire Inspections

- Fire Investigations
- Overview issues of coordination with State Fire Marshal/Insurance Service Office
- Public Education Program Guidance
- Coordinate Radio Maintenance and Pagers
- Liaison to Fire Departments
- Standard Operating Guideline Coordination
- Training Services Coordination
- Assist in Technology Development

Signals of Change[1]

As noted earlier, the volunteer fire service is changing. Recent studies by the International Association of Fire Chiefs – Volunteer/Combination Officer Section have validated reasons for these changes and what can and should be done to manage the future changes impacting on the volunteer fire service. Given the extent of these changes and at times the lack of awareness or even unwillingness to accept these external forces on the volunteer system, we thought it would be appropriate to begin this report with "Signals of Change".

"Signals of Change" presents an interesting look at the changing system of volunteer emergency services. It is excerpted from the document "Lighting the Path of Evolution, The Red Ribbon Report, Leading the Transition in Volunteer and Combination Fire Departments", a 2005 publication of the International Association of Fire Chiefs – Volunteer/Combination Officer Section.

Indicators for change

A natural evolution for a volunteer department is the growth in services and added responsibilities as the demographics of the community change. When the system develops problems, people generally know about them long before they are willing to admit that they need serious attention. For fire department managers and local government leaders, it is critical that they recognize the signs of problems ahead and prepare for change before it is forced on them by external circumstances. It is helpful when they recognize these pointers to change:

Community Growth. Emergency services are directly impacted by community growth—more people, more businesses, more emergencies. The larger a community, the higher level of service people expect. In many areas people moving to "suburbs" assume wrongly that emergency services are delivered in the same way they are provided in the more established cities and towns. A history of community growth and projected increases in demand can help managers forecast and plan for changes in the delivery of emergency services. In some cases, population growth projections might even help a department determine to limit its services based on available staffing.

Community Aging. A fire department's ability to recruit new members in part depends on the supply of new, younger people who can be tapped for service. A community's age profile, can he an indicator of problems ahead. The age factor in your community is revealed by data showing the age of those moving in and moving out. If the younger people are moving away, or if schools are showing or expecting declining enrollment, the fire department may have a difficult time maintaining appropriate levels of service in the

[1] International Association of Fire Chiefs – Volunteer/Combination Officer Section, "Lighting the Path of Evolution, The Red Ribbon Report, Leading the Transition in Volunteer and Combination Fire Departments", IAFC-VCOS, Fairfax, VA, 2005, Pages 3-6.

future.

Missed Calls. When an emergency call goes unanswered—a "scratch" on the East Coast or in other communities a "did not respond"— the fire department has a serious problem, not just because life and property are at stake, but also because it is a failure highly visible to the public. Equally serious is a department's over-reliance on mutual aid for coverage and the lack of adequate personnel to handle subsequent calls when primary units are on an assignment

Extended Response Times. When units regularly fail to get out of the fire station in a timely manner because of inadequate staffing resources, the community is endangered and fire department managers have a reliability problem. Response time is a critical factor or any fire department determined to provide appropriate service to the public. It is especially critical for medical calls when the first-due company fails to respond for whatever reason and an EMS unit responds but fails to meet the response-time standard, a common occurrence even when mutual aid is not involved.

Reduced Staffing. Units responding with fewer than the required number of people needed to perform that unit's functions pose a serious problem for the safety of citizens and the responders. This is another indicator of reduced service capability.

All of these situations indicate an inconsistency in a department's ability to provide necessary service, though not all are necessarily caused by a shortage of volunteer members. Staffing deficits can be related to other factors, such as changes in local business and industry policies regarding employees leaving the workplace, the number of volunteers who are employed outside their response areas, a lack of understanding on the part of new corporate managers of the community's needs, a tight labor market driven by rapid community growth, or even members' apathy. Where workforce restrictions are at play in the community, they typically lead to daytime response shortages and a significant challenge for the department.

Other Considerations. While employment issues tend to be the major factor in volunteer staffing shortages, other factors also contribute. Decreased interest among members who fail to participate could be the result of unreasonable community expectations, some problem with the fire department's internal requirements, or other organizational issues, such as:

- *Responsibilities outpace capabilities.* Mandated and selected responsibilities and response commitments exceed the department's capability to manage outcomes properly. Mandated responsibilities may have their basis in state statutes or local resolutions, proclamations and ordinances. Selected responsibilities are response categories that result from self-imposed obligations to provide a service.
- *Inability to raise funds.* Growth in the department as it faces new demands outpaces the volunteers' ability to raise capital and operational funds.
- *Waning political support.* A once-supportive political climate begins to falter

and less emphasis is placed on the volunteer-staffed fire company. This becomes noticeable when apparatus is not replaced, new purchases are postponed, or local government wants the volunteer company to operate less expensively. The volunteer-staffed fire company needs to be a vital, supportive and healthy part of the local governmental infrastructure.

- *Internal conflict.* A department has internal struggles over its mission in the community and that conflict involves the preservation of the system as a fraternal organization rather than a service-delivery system.
- *Officers filling lower operational positions.* Staffing shortages that result in the fire chief driving the fire truck or fulfilling the responsibilities of other line firefighters is another sign of a serious staffing problem.
- *Mission creep*. When first-responder programs that once managed to provide essential services and also extra staffing for critical events and rescues become subject to all kinds of other assignments, or to policies that dictate that fire units respond every time an ambulance is dispatched, chronic staffing shortages can be a problem.
- *Controversy*. When internal controversy becomes the focal point and public image of the department, its effectiveness is impaired. Controversy can he inflamed by a poorly managed emergency, an event that exceeds the capabilities of the volunteers, or public criticism that home response is no longer adequate for the number of emergency calls handled by the department. The problems are exacerbated when the volunteers are unable to reorganize and meet the increased demands, or when the news media begins to publicly question the effectiveness of the service. Few volunteers join the department to fail or be exposed to a community philosophy that "they tried hard, but they are just volunteers."
- *Too many jobs, too little time.* Another indicator: The department cannot provide fire prevention, public education or inspection responsibilities because of training and response demands occupy the time volunteers have to commit.
- *Kingdoms come first.* Some jurisdictions consider their response areas their "kingdoms." Boundary disputes can occur when department leaders fail to understand that the public does not care what color or name is on the fire truck. The "kingdom" attitude also leads to contentious working environments with neighboring agencies.
- *Lack of budget support.* Failure by elected officials to approve budgets that include capital expenditures for the department is an ominous sign.
- *Missed deadlines.* When critical administrative deadlines, such as daily response reports, training records, and legally required documentation are not completed or budget deadlines are not met, the department's effectiveness is compromised.
- *Catastrophic losses.* Catastrophic events, such as the loss of a firefighter or a civilian fatality, focus great attention on the department, and perhaps its problems and deficits, which can discourage members.
- *Volunteers priced out of the community.* In many communities the price of homes and property taxes makes it difficult for the children of current

volunteers or others who have time to volunteer to live in the community, thus reducing the pool of potential members.

- *Demographic Changes.* Shifts in the community that drive decisions by current members to purchase homes outside the fire district are a detriment to member retention.

When the time for change has come

Once a department recognizes there is a need for change, it must examine carefully both the organization and the options available to it. It is essential that all members of the organization identify the department's mission and core values. Whether in the end the change is a revitalized volunteer organization or a move to some type of paid or part-paid organization, a careful articulation of core values is critical to the success of the organization. Those core values must be incorporated and reinforced as employee strategies in new career positions and the core values must be carried throughout the evolution process. If the members expect the organization to be a mirror of what it once was, everyone must believe in and apply its core values. If you expect to maintain big city services with small town pride, the organization must maintain the focus on their core values and reinforce those values at every opportunity.

Once it is clear that change is necessary to preserve the department's ability to engage in its core mission, creating a paid staff is not necessarily the first option to consider. Having the answers to a number of key questions may help resolve a department's staffing issues.

Does the department have the right leadership? An initial examination of problems should always include a review of the fire department's leadership. The lack of dynamic, adequately prepared leaders has long been identified as a significant issue for the volunteer fire service. Poor leadership has a significant impact on the retention rate of volunteers, on a department's desire and ability to meet new levels of service demand, and on the quality of the service provided.

Does the department offer benefits and incentives? Benefits are safeguards provided by the community or the department to protect firefighters and their families against unexpected financial strain should the firefighter be injured, disabled or killed while on the job. As demands for service increase, so do the chances that firefighters will be injured or worse at the emergency scene. Departments need to provide protection—such as insurance and retirement or wage supplement plans—to ensure that the health, welfare and financial stability of firefighters and their families are protected. Such benefits are essential to assure that members are treated as valuable assets.

Incentives can provide motivation for members to improve personal performance and participation. These are defined by personal or team recognition programs or awards. Young people today, the future lifeblood of all fire departments, are interested in immediate feedback and that includes benefits and incentives. It is more cost-effective to pay for benefits than it is to pay people. It is imperative that the community be involved

in determining the level of support for volunteer or part-time firefighters. How willingly the community provides benefits for them now may help department leaders gauge its willingness to sustain a combination system, if one is needed.

Are department membership standards appropriate? Fire department leaders should review membership standards to ensure that they are appropriate for the services provided. Do you need to increase requirements to ensure that volunteers have adequate skills to deal with the dominant types of calls to which the department responds? Does the department really need a requirement that all members have the expertise and the responsibility to respond to all types of calls?

Can you use diversification strategies? It is critical for department leaders to understand that not everyone is equal in skills or abilities. Diversification strategies—essentially, not everyone in the department has to be proficient in all the jobs in the department—can be helpful in attracting new members. Diversification strategies are fairly simple. Recruit subject-matter experts for the different disciplines within the department. You can take advantage of that to attract new members and take pressure off of a small group of dedicated responders. For example, you might recruit from a number of professions within the community that deal with hazardous materials. Attract and train those individuals as volunteers and use them when chemical emergencies are dispatched. By implementing diversification strategies, you may actually improve your volunteer base by reducing the demand on all your members and enhancing their subject-matter expertise.

Trim the non-essentials. Review your organization's mission and values and identify the essential functions and services it is required to deliver. A review can, in some cases, lead to reducing or eliminating non-essential services. Remember, you can't be all things to all people.

These "Signals of Change" presented by the International Association of Fire Chief's Volunteer-Combination Officers Section, provide a sound basis for questions and concerns as one evaluates its emergency service delivery system. This information is incorporated into the assessment process for Mecklenburg County.

Assumptions and Current Trends

Any conceptual project begins with a set of assumptions and analysis of current trends within the industry. This project is no exception. There were four (4) basic assumptions established prior to the assessment and development of a report for Mecklenburg County. The assumptions included:

- The desire is to maintain a volunteer/combination system to deliver cost effective fire and rescue services as long as possible.
- There is a possible need for consolidation, merger and other changes that should be evaluated.
- Nationally recognized standards would be used as the baselines for any recommended changes in operations.
- Programs, best practices policies, guidelines, etc. recommended for use, should be recognized as successful programs, best practices policies, guidelines, etc. in other volunteer fire and rescue service agencies.

In addition, time was taken to compare the individual departments within the county to fire services in similar sized communities around the Unites States. A national study was conducted by the National Fire Protection Association entitled "U.S. Fire Department Profile through 2007", printed in 2008, measured service provision in several key areas. These are compared in the following chart.[2]

Structure of Fire Departments

Type Department	0-10,000 population	10,001 to 24,999 population	25,000 to 49,999 population	50,000+ population	Mecklenburg County
Total Departments	10,156	3,555	1,277	513	17
All career	2.0%	20.8%	41.2%	69.2%	0
Mostly career	3.1%	18.8%	28.2%	22.8%	0
Mostly volunteer	19.4%	42.3%	22.5%	6.2%	17
All Volunteer	75.5%	18.1%	8.0%	1.8%	0

While we were not able to determine the age range of members of the department, each agency can compare themselves to national data as follows:

Age Range	0-10,000 population	10,001 to 24,999 population	25,000 to 49,999 population	50,000+ population
Under 30	29.8%	30.5%	24.2%	20.3%
30-39	27.4%	29.4%	32.4%	33.1%
40-49	23.7%	30.8%	26.8%	30.8%
50+	19.1%	15.5%	16.6%	15.8%

[2] Michael J. Karter, "U.S. Fire Department Profile Through 2007", NFPA, Quincy, MA, 2008, 26 pages.

COMPARISON OF MECKLENBURG COUNTY FIRE DEPARTMENTS TO NATIONAL AVERAGES

Nationwide Area of Comparison UP TO 10,000 POPULATION	*National Result**	*Carolina FD*	*Davidson FD*	*Gilead FD*	*Idlewild FD*	*Long Creek FD*	*Mallard Creek FD*	*Newell FD*
Percentage of communities under 10,000 population with all volunteer fire services	See below*	Combination	Combination	Combination	Combination	Combination	Combination	Volunteer
Number of stations per 1,000 population	.195	.250	.010	.166	.166	.100	.100	.400
Number of pumpers per 1,000 population	.322	.500	.031	.300	.500	.200	.200	1.20
Number of aerial trucks per 1,000 population	.036	.250	.010	N/A	N/A	N/A	N/A	N/A
% Departments in communities under 10,000 population with 3-4 Pumpers	2 = 44.1% 3/4 = 37.3%	2 engines	3 engines	2 engines	3 engines	2 engines	2 engines	3 engines
% Departments in communities under 10,000 population with Aerials	1 Aerial 25.4%	1 aerial	1 aerial	None	None	None	None	None
% Departments in communities under 10,000 population with fire stations	0 – 0.0% 1 - 69.6% 2 – 20.8%	1 station	1 station	1 station	1 station	1 station	1 station	1 station
% Departments in communities under 10,000 population where fire department provides EMS Service.	NO EMS – 41% BLS – 41% ALS – 18%	BLS	BLS	BLS	BLS	BLS	BLS	BLS

Nationwide Area of Comparison UP TO 10,000 POPULATION	***National Result****	***Pineville FD***	***Providence FD***	***Steele Creek FD***	***West Mecklenburg FD***	
Percentage of communities between 10,000 and 24,999 population with all volunteer fire services	See below*	Combination	Combination	Combination	Combination	
Number of stations per 1,000 population	.195	.166	N/A	.200	.200	
Number of pumpers per 1,000 population	.322	.300	N/A	.200	.200	
Number of aerial trucks per 1,000 population	.036	.166	N/A	N/A	N/A	
% Departments in communities between 10,000 and 24,999 population with 3-4 Pumpers	2 = 44.1% 3/4 = 37.3%	2 engines	2 engines	2 engines	1 engine	
% Departments in communities between 10,000 and 24,999 population with Aerials	1 Aerial 25.4%	1 aerial	N/A	N/A	N/A	
% Departments in communities between 10,000 and 24,999 population with Stations	0 – 0.0% 1 - 69.6% 2 – 20.8%	1 station	1 station	2 stations	1 station	
% Departments in communities between 10,000 and 24,999 population where fire department provides EMS Service.	NO EMS – 41% BLS – 41% ALS – 18%	BLS	BLS	BLS	BLS	

Nationwide Area of Comparison 25,000 TO 49,999 POPULATION	***National Result****	***Cornelius FD***	***Mint Hill FD***	***Robinson FD***
Percentage of communities between 25,000 and 49,999 population with all volunteer fire services	See below*	Combination	Combination	Combination
Number of stations per 1,000 population	.127	.086	.040	.071
Number of pumpers per 1,000 population	.186	.173	.080	.214
Number of aerial trucks per 1,000 population	.033	.086	.040	N/A
% Departments in communities between 25,000 and 49,999 population with 3-4 Pumpers	2 = 20.6% 3/4 =48.4%	3 engines	2 engines	3 engines
% Departments in communities between 25,000 and 49,999 population with Aerials	1=49.5% 2 = 11.9%	2 aerials	1 aerial	N/A
% Departments in communities between 25,000 and 49,999 population with Stations	0 - 0 1 – 13.4% 2 – 23.9%	2 stations	1 station	1 station
% Departments in communities between 25,000 and 49,999 population where fire department provides EMS Service.	NO EMS – 17% BLS – 38% ALS – 45%	BLS	ALS	BLS

Nationwide Area of Comparison 50,000 TO 99.999 POPULATION	***National Result****	***Huntersville FD***	***Matthews FD***
Percentage of communities between 50,000 and 99,999 population with all volunteer fire services	See below*	Combination	Combination
Number of stations per 1,000 population	.127	.026	.058
Number of pumpers per 1,000 population	.186	.066	.104
Number of aerial trucks per 1,000 population	.033	.022	.058
% Departments in communities between 50,000 and 99,999 population with 3-4 Pumpers	49.5%	3 engines	3 engines
% Departments in communities between 50,000 and 99,999 population with Aerials	1 Aerial 45.5%	1 aerial	N/A
% Departments in communities between 50,000 and 99,999 population with Stations	1 – 1.1% 2 -4.2%	1 station	1 station
% Departments in communities between 50,000 and 99,999 population where fire department provides EMS Service.	NO EMS – 10% BLS – 37% ALS – 53%	BLS	BLS

Management & Governance

The Mecklenburg County Fire Services system is comprised of 17 volunteer/combination Fire Departments, providing fire, rescue, emergency medical, hazardous material, and hazard management services to the towns and unincorporated areas outside the city of Charlotte, North Carolina, and within the boundaries of Mecklenburg County, North Carolina. Over the years, this has become a "fragmented" system, driven by the annexation practices of the City of Charlotte and ultimate control of fire protection in the city and annexed areas by the fire department of the City of Charlotte.

The management and governance of each volunteer/combination fire department is left to each agency and is found to vary based upon the era of incorporation/chartering as a fire department, and the operational/business needs of each agency. In some cases they are further managed by a town form of government, in other cases they remain independent agencies. They range from what could be considered small/rural fire companies to major suburban combination fire department business models.

As noted earlier, the fire departments and their staff do their best to provide emergency response services to the community. The lack of significant major loss events and very few service complaints, are a tribute to the performance of the organization as a whole.

There was no requirement identified that the county, as a public entity, is required to provide for fire and emergency medical services in North Carolina. Contracts between the county and each fire department thus serve as the basis for any provision of service. A discussion of the contract in use today is provided under the mutual aid section of this report.

There is no established mission or vision statement for Mecklenburg County Fire Services. This makes it difficult for the county's 17 fire departments to understand and work toward what is services are expected from them, and for the public to understand what services are available to them, for the funding they provide.

A draft of a proposed mission statement and vision statement is provided as follows:

VISION STATEMENT
(proposed draft for review, agreement and revision)

Mecklenburg County provides a state of the art fire and rescue service to the people of the County through the services of dedicated fire and EMS agencies with superior leadership and technology, that fosters a climate of openness, trust, and diversity that recognizes the achievement of people working together.

MISSION STATEMENT
(proposed draft for review, agreement, and revision)

The mission of Fire and Rescue Services in Mecklenburg County is to minimize the loss of life and property through effective and efficient response capability to natural and man-made emergencies through planning, prevention through public education, pre-emergency assessment, and the effective use of human resources, technology, and equipment when needed."

Integral to these operations are defined procedures for:

a. officer qualifications and incident command,
b. apparatus response procedures,
c. firefighter and officer training, and
d. standard of cover/service delivery statement

which are addressed in appropriate sections later in this report.

The issue of a Service Delivery is best quantified via a "Service Delivery Statement or Standard of Response Cover". Based upon an analysis of the information and data presented to the project team and subsequently discussed with the Chief officers of the fire departments, the following Service Delivery Statement is recommended for consideration of adoption in Mecklenburg County. These are consistent with the current delivery of service to the community.

SERVICE DELIVERY STATEMENT
STANDARD OF RESPONSE COVER
(proposed draft for review, agreement, and revision)

Fire department response to a structure fire or rescue in Mecklenburg County will be provided by a fire department contracted with by the county, and will respond within six minutes of dispatch and be on scene with one piece of fire apparatus in ten minutes, with a crew of four qualified members, 80 percent of the time.

It should be noted, that one agency (Providence Fire Department) had excellent advanced Standards of Cover developed as follows:

For 2006, 2007, and 2008, the Providence Volunteer Fire Department averaged 5 firefighters per call. The standard of cover is as follows:

For 80% of all emergency incidents, Providence VFD will

- respond an initial apparatus appropriate for the reported nature of the incident, with a crew of three firefighters.
- The initial apparatus will be enroute within two (2) minutes (turnout time) of notification of the incident by the county communication center,
- The initial apparatus and crew will be on the scene of incidents within the Providence District within 10 minutes response time.

This initial apparatus and crew shall have the capability to establish command per the requirements of NIMS and ICS; investigate to determine the actual nature of the incident, and to initiate mitigation efforts

- For fire incidents, the initial apparatus and crew shall have the capability to place into service one (1) attack line with a minimum flow rate of 150 gallons per minute.
- Fire EMS incidents, the initial apparatus and crew shall have the capability to ensure scene safety, assess patient condition, treat patient consistent with established EMS protocols
- For extrication incidents, the initial apparatus and crew shall have the capability to assess patient's medical status, stabilize one (1) patient, and place into service one (1) piece of hydraulic or pneumatic extrication equipment.

This is considered an excellent model to aspire to for all county agencies.

Management information is maintained at the discretion of each fire department. An overall approach to Information Management was not clear, but should include monthly reporting of incidents responded to within the township, injuries and damage sustained, personnel and companies who responded, and fire inspections/plan reviews conducted. This type of data is necessary for appropriate public safety analysis and planning by the elected officials.

In general, the departments indicated training as a hallmark of their performance, individual staff development, and value to the community. The consistent record of performance would validate that the companies integrated training within their operational activities. However, based on the documentation provided and the responses to questions during site visits, it is clear that the overall approach to training and development of standard operating guidelines needs refinement to truly be effective over the long term. A suggested model for comprehensive training and resultant officer qualifications is provided as Appendix 2 of this report. It should be used as a baseline for discussions to develop the ultimate model for use in the County. While standard operating guidelines are in place and others are being developed, an over-riding guideline for strategically operating at incidents should be developed to provide both a risk

management and over-riding philosophical approach to the management of emergencies. A sample is provided as Appendix 3.

The most significant issue observed by the project team was the staffing and deployment method currently in use. The various fire departments have developed a positive working relationship to meet the needs of both communities, but remains a "fragile" deployment system due to the limited staffing, deployment from multiple stations and using emergency medical staff as firefighters. In addition, there are multiple scenarios where either a Charlotte Fire Department station is in closer proximity to properties covered by county stations, or county stations have to travel through city territory and past a city fire station to respond to the volunteer fire department response area. Each of these situations needs to be evaluated to assure that closest stations are responding as appropriate. **When an emergency occurs, the victim does not care about the color of the vehicle or the community it responds from, it wants the closest unit that will get there the quickest.**

Transfer of some territory, agency consolidation, etc. all become viable considerations for utilization as annexation continues.[3]

The following chart is provided for consideration as a starting point for long term transition. While all actions must be determined locally, the following chart indicates that some agencies may be absorbed in future annexations and it is imperative that discussions begin with all agencies involved so that a smooth transition takes place to insure adequate fire service is maintained throughout this process. Based on future annexations, a time line needs to be developed for affected departments. It is critical that the affected departments are involved with this process at the onset of the planning.

[3] VFIS, Fire Department Consolidation: Why and How to do It … Right, VFIS, York, PA, 1994, Page 4.

MECKLENBURG COUNTY FIRE DEPARTMENT STATUS SUMMARY

Department	Current Status	Interim Recommendation	Long Term Suggestion
Carolina VFD	As a result of 7/09 Charlotte Annexation, fire station will be in the city limits of Charlotte and not close to its response area.	Begin discussion to convert to coverage by Charlotte FD for a fee.	Establish a tax district which will provide appropriate funding to Charlotte. Dissolve Carolina VFD, recommending personnel join neighboring organizations.
Cooks & Community VFD	As a result of 7/09 Charlotte Annexation, resulting fire district has no area within 1+ miles of existing station.	Reallocate response district as follows - area adjacent to West Mecklenburg and area in close proximity to it, to West Mecklenburg VFD; remaining fee service by City of Charlotte FD	Establish a tax district which will provide appropriate funding to new service agencies. Dissolve Cooks and Community VFD, recommending personnel join neighboring organizations.
Cornelius-Lemly VFD	Located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
Davidson-North Star VFD	Located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
Gilead FD	Located in a growing area, and operating as an individual VFD, Gilead should look to merge with Huntersville.	Work toward merger with expansion station of Huntersville	Merged with Huntersville, establish a tax district for the consolidated Huntersville fire service system.
Huntersville-Craighead VFD	Located in a growing area which will support a growing fire service delivery system.	Continue with expansion/merger Long Creek, & Mallard, and accept Gilead in merger.	Merged Agency, established as a tax district. A growth management plan is also recommended for the department.

Department	Current Status	Interim Recommendation	Long Term Suggestion
Idlewild FD	Located in an area of incorporated Town of Mint Hill, with growing response requirements	Work toward merger with Idlewild as a second Mint Hill station.	Merged with Mint Hill FD, establish a tax district for the consolidated Mint Hill fire service system.
Long Creek VFD	Located in area adjacent to Huntersville (HFD), where HFD is planning a new station.	Work toward merger with expansion station of Huntersville	Merged with Huntersville, establish a tax district for the consolidated Huntersville fire service system.
Mallard VFD	Located in area adjacent to Huntersville (HFD), where HFD is planning a new station.	Work toward merger with expansion station of Huntersville	Merged with Huntersville, establish a tax district for the consolidated Huntersville fire service system.
Matthews-Morningstar	Town fire department in growing community	Status quo	City establishes tax rate.
Mint Hill VFD	Town fire department in growing community	Work toward merger with Idlewild as a second Mint Hill station.	Establish a tax district to support the agency and merge Idlewild FD into the organization.
Newell VFD	As a result of 7/09 Charlotte Annexation, fire station will have a minimal response area in Mecklenburg County.	Begin discussion to convert to coverage by Charlotte FD for a fee.	Establish a tax district which will provide appropriate funding to Charlotte which is closer to majority of district.
Pineville-Morrow VFD	Town fire department in growing community	Status quo	Establish a tax district to support the agency.
Providence VFD	As a result of 7/09 Charlotte Annexation, fire station will have a minimal response area in Mecklenburg County.	Begin discussion to convert to coverage by Charlotte FD for a fee.	Establish a tax district which will provide appropriate funding to Charlotte which is closer to majority of district.
Robinson VFD	Located in a growing area which will support a growing fire service delivery system..	Status quo	Look at true const of service (VFD cost with full time employees and compare to City of Charlotte.

Department	Current Status	Interim Recommendation	Long Term Suggestion
Steele Creek 1 & 2 VFD	Despite annexation, located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
West Mecklenburg VFD	Despite annexation, located in a growing area which will support a growing fire service delivery system.	Status Quo	Establish a tax district to support the agency.
COUNTY-WIDE SUMMARY	**17 individual agencies with variable funding, and support services**	**Transition Period**	**Establish Taxing process and expand Charlotte FD coverage**
COUNTY-WIDE FIRE DEPARTMENT STANDARDIZATION	**Fire Commission with limited role & responsibility in true direction setting**	**Establish/redefine fire commission role to one of county standardization and interface with Charlotte FD**	**Fire commission responsible for - assuring deployment - standardized SOGs - training standards**
COUNTY FIRE MARSHAL'S OFFICE	***Fire Inspections *Fire Investigations *Public Education program guidance *Coordinate radio maintenance & pagers * Liaison to Fire Departments**	**Expand to include: * Standard Operating Guideline Coordination * Training Services Coordination**	***Fire Inspections *Fire Investigations *Public Education program guidance * overview with ISO *Coordinate radio maintenance & pagers * Liaison to Fire Departments * Standard Operating Guideline Coordination * Training Services Coordination**

RECOMMENDATIONS (as noted in the Executive Summary)

09-01 Develop a Service Delivery Statement which would indicate the types of services to be provided, the area to be covered, and the delegation of authority to perform those services. This will also serve as the basis for development and implementation of a mission statement, vision statement, and development of annual goals, objectives and funding requests. Consistent with the development of these documents is a Standard of Response Cover for use in Mecklenburg County as a method to define a service expectation the community will accept. This will also serve as a benchmark to determine when and where career staff is needed for fire-fighting services. Examples of these draft statements (Mission, Vision, and Service Delivery Statement/Standard of Cover are provided within this report).

09-02 Based upon the annexation activities of the City of Charlotte and other Towns within the county, begin a three step process for long term consolidation of services to improve the long-term performance of the delivery of emergency services in the county. A hypothetical model is detailed in the report. The three step process involves a transition plan to move from "current status" to an "interim recommended status" to a "long term suggestion". These are defined in the "Management and Governance" section of this report, and characterized/defined as follows:

Step 1 – Current status of the department

Step 2 – A transitional approach to management/funding/operations model to move between Step 1 and 3. Consideration must be given to assuring the operational and funding processes are defined and in place before full transition occurs.

Step 3 – Long term (estimated three to five year objective) to serve as the delivery system for that fire response area

09-03 Develop a county-wide procedure/guideline to strategically manage emergency operations which clearly defines a process for emergency response personnel and officers to use, regardless of when officers arrive and what stage the emergency is in. (Example provided in Appendix 3)

09-04 A standardized approach to incident reporting should be established with each fire company and the emergency medical service providing computerized monthly statistical information to the Fire Marshal's office for consolidation into a monthly report on fire and EMS activities within Mecklenburg County. This will enable the County to demonstrate the need for expending funds for fire and EMS provision and provide data for analysis of developing fire and EMS situations within the County. This should be part of a more comprehensive information technology policy for all facets of the Fire and EMS system. The overall IT function should work within the current County IT function and support all aspects of the organization, including

- fire inspection management and record keeping

- pre-emergency planning
- permit issuance
- building maintenance
- incident reporting
- training information
- training programs

09-05 Develop a county-wide annual report for consolidated service delivery provided to the County, including a projected costs savings to the taxpayers, through the utilization of the National Volunteer Fire Council's "Volunteer Fire Service Cost Savings Model", available at www.nvfc.org.

Insurance Services Office (ISO) Ratings

Fire departments serving rural or municipal fire districts in North Carolina whether volunteer, combination, or career (paid) must meet an initial certification standard which is referenced with an identifier of Class 9S. This classification is provided through inspection and certification by the North Carolina Department of Insurance/Office of State Fire Marshal as authorized by North Carolina General Statutes and Administrative Rules.

When a fire department serving a locally recognized fire district is certified Class 9S, property owners in that fire district who are within 5 road miles of the fire station qualify for a reduction in the insurance rates. Fire departments may be listed as Class 9E (extended) upon meeting optional criteria which will allow property owners located beyond 5 road miles but within the 6th road mile from the fire station to qualify a Class 9 rating.

Fire Departments may also seek to provide additional fire insurance rate reductions by requiring a Response Rating Survey through the Office of State Fire Marshal. This voluntary process surveys the fire department, the water supply and the emergency communication s system applying the survey results to a nationally recognized grading schedule. The result is a Response Rating Classification ranging from Class 8 to Class 1 being assigned to the fire department serving the recognized and identified fire district(s).

In this process, fire departments may be assigned a split classification rating for various factors as opposed to a straight classification rating.

With split classification ratings, protected properties in the recognizes fire district within 1,000 feet of a fire hydrant by which route fire hose can be laid and within 5 road miles of the fire station qualify for a lower rating. The protected properties in the fire district over 1,000 feet from a fire hydrant and within 5 road miles of the fire station qualify for the Class 9 rating.

Fire departments may have a split classification rating and qualify for a Class 9E (extended rating upon meeting required criteria. The Class 9E rating will allow protected properties located beyond 5 road miles but less than 6 road miles from the fire station to qualify for a Class 9 rating only.

It is not uncommon for the same fire department to serve a municipal district (town) and a rural district (county) with a straight rating in the municipality and a split rating in the rural district mostly due to the lack of fire hydrants.

THE RESPONSE RATING OR PUBLIC PROTECTION CLASS RATING ASSIGNED TO A FIRE INSURANCE POLICY IS THE RESPONSIBILITY OF THE INSURANCE AGENT/CARRIER AND NOT THE FIRE DEPARTMENT OR MECKLENBURG COUNTY. THE INFORMATION PROVIDED HERE IS INTENDED TO PROVIDE BACKGROUND INFORMATION ON THE FIRE PROTECTION IN THE VARIOUS FIRE DEPARTMENT RESPONSE AREAS COMPARED TO INSURANCE CRITERIA.

Departments are currently rated by the NCSFMO criteria and NFPA 1720 as follows

Department	Size*	Response Rating	1720 Status*
Carolina FD	5	6/9S	Urban
Cooks FD	5	5/9S	Suburban
Cornelius-Lemly FD	5	4/9S	Suburban
Davidson-North Star Volunteer Fire Department	5/6	6/9E	Urban
Gilead Volunteer Fire Department	5/6	6/9E	Urban
Huntersville/Craigshead Volunteer Fire Department	6	6/9S	Urban
Idlewild Volunteer Fire Department		6	Urban
Long Creek Volunteer Fire Department	5/6	5/9E	Urban
Mallard Creek Volunteer Fire Department	5/6	5/6	Urban
Matthews-Morningstar Volunteer Fire Department		5	Urban
Mint Hill Volunteer Fire Department	5/6	6/9E	Suburban
Newell Volunteer Fire Department	5/6	5/9E	Rural
Pineville-Morrow Volunteer Fire Department	5	6/9S	Suburban
Providence Volunteer Fire Department	5	6	Rural
Robinson Volunteer Fire Department	5/6	6/9E	Suburban
Steele Creek 1 & 2 Volunteer Fire Department	5/6	5/9E	Rural
West Mecklenburg Volunteer Fire Department	5	5/9S	Rural

* Size is mileage distance allowed from station (there are no 7 mile districts in the county)

** This is the projected NFPA Standard 1720 standard of cover rating for each

Urban = >1000 population per sq. mi. Suburban = 500-1000 population per sq. mi.

Rural = <500 population per sq. mi. Remote

The NFPA 1720 Status noted above correlates to the following national guideline on standard of cover. While there is no mandate to use this criteria, it does serve as a hypothetical model to consider while each community or county develops its specific standard of cover.

Demand Zone	Demographics	Staffing & Response Time	Percentage
Special Risk	AHJ	AHJ	90%
Urban	>1000 population per square mile	15/9	90%
Suburban	500 to 1000 population per square mile	10/10	80%
Rural	<500 population per square mile	6/14	80%
Remote	Travel distance 8 miles	4	90%

Standard of Cover (SOC), Response Times, & Station Locations

One of the analytical models which was part of this process involves an evaluation of station location in proximity to the location and types of calls for assistance. A study such as this can determine where additional stations can be located to meet service delivery demands. Using a standard model advanced by the Insurance Services Office for basic station location analysis, Mecklenburg County was found to have unique locations, for several reasons.

The Insurance Services Office process uses the approach for response time that road distance criteria for engines (1.5 miles), ladders (2.5 miles) and in North Carolina a maximum distance (5 miles) translates into response time. The distances are based on a formula developed years ago by the RAND institute, and uses the equation:

$$T = 0.65 + 1.7D$$

T = travel time in minutes
D = distance in miles

The formula is based on an average 35 mph road speed, which is quite realistic for most areas considering road conditions and type, weather, intersections, traffic, etc. Mathematically, this converts to engines 3.2 minutes, ladders 4.9 minutes, and a maximum response distance of 9.15 minutes. It is easy to see that times much greater than these are pushing the limits of the fire department's ability to successfully control a fire (especially considering that these are only travel times, not dispatch and turnout time etc). It is very easy to see why for most states the Insurance Services Office has a maximum 5 road mile distance for which a protected class (class 1 through 9) will apply; and anything over 5 road miles is almost a known higher loss and insurance industry data supports that.

Based on a three year average of data received from the dispatch center, countywide SOC's were determined and found to range from

- One staffed apparatus on scene within 4:45 of dispatch (Cornelius), to
- One staffed apparatus on scene within 9:19 of dispatch (Steele Creek).

Unfortunately, the data provided was limited in analysis. The data was provided in the form of three Excel files – one for each of the three years examined. While there is a large amount of data in the files that pertain to the calls and apparatus activity, every piece of apparatus that responded to each call is not accounted for. We therefore were unable to definitively determine response times for any unit other than the first unit recorded as at-scene. All other data was therefore coded in our analysis such that it was excluded from response-time analyses.

What we cannot know for each call is:

- The response times for latter-due units
- How many units from each jurisdiction responded other than the first unit to arrive at scene.

By extension, what we could not report on was:

- Concentration (how many units were committed and for how long)
- Availability (how often a unit and/or department was not available to respond to a call)
- Committed times of latter-due units
- Units cancelled in-route other than the first from each jurisdiction
- Travel times of latter-due units

What we could report on was:

- Call volume by city, hour of day, day of week, month, year and call type
- Committed times for first unit from each department at scene
- Turnout times or first unit from each department at scene
- Turnout times for first department unit at-scene by hour of day, day of week, call type
- Travel times for first department unit at-scene (with unit identified)
- Travel times for first department at-scene units by hour of day, day of week, call type
- Response times for first department unit at-scene (with unit identified)
- Response times for first department at-scene units by hour of day, day of week, call type
- Mutual aid provided (first unit only)

The final analyses within each grouping are cumulative frequencies for the response times of the first unit to arrive at an incident where the response is emergency response and under 25 minutes.

More extensive detail based on this data analysis can be found in Appendix 4.

Based on the data that could be analyzed, and input from the chiefs during the interview process, the following can be defined as local standards of cover as of this assessment.

Fire Department	Staffing*	Response Time**	Paid staff Daytime	Paid staff Nighttime
Carolina FD	4	8:49	2	0
Cooks FD	6	8.03	2	0
Cornelius-Lemly FD	8	4:45	8	6
Davidson-North Star Volunteer Fire Department	6		2	2
Gilead Volunteer Fire Department	7	5:54	4	0
Huntersville/Craigshead Volunteer Fire Department	8	5:54	5	2
Idlewild Volunteer Fire Department	6	5:54	5	0
Long Creek Volunteer Fire Department	7	7:14	2	1
Mallard Creek Volunteer Fire Department	5	7:33	2	0
Matthews-Morningstar Volunteer Fire Department	7	6:46	6	0
Mint Hill Volunteer Fire Department	8	6:54	4	4
Newell Volunteer Fire Department	8	8:22	3	0
Pineville-Morrow Volunteer Fire Department	6	7:25	4	2
Providence Volunteer Fire Department	5	7:52	3	0
Robinson Volunteer Fire Department	5	8:05	2	0
Steele Creek 1 & 2 Volunteer Fire Department	6	9:05	2	0
West Mecklenburg Volunteer Fire Department	7	7:46	2	0

* Average staff responding per call as reported by each fire chief for 2008

** Response time, based on extracted data from dispatch center, which indicates the time from dispatch of department to arrival of first unit on scene, an average of 80% of the time.

Facilities

The facilities were evaluated to consider suitability, maintenance, and safety considering the current operational requirements of each fire department. Conditions are as follows:

Agency	Assessment *	Comment	Needs replaced in 5 Years
Carolina VFD	E	New station	
Cooks VFD	P	Older with tight quarters, Apparatus barely fits in facility.	Depends upon long term VFD status
Cornelius-Lemly FD #1	E	Relatively new, well designed	
Cornelius-Lemly FD #2	E		
Davidson-North Star VFD	G		Second station now being planned
Gilead VFD	F	Older with tight quarters, Apparatus barely fits in facility.	Within 10 years
Huntersville/Craigshead VFD	G		
Idlewild VFD	G	Meets local need, recent renovations	
Long Creek VFD	P	Older with tight quarters, apparatus barely fits in facility	Station planned w/ Huntersville
Mallard Creek VFD	P	Older with tight quarters, apparatus barely fits in facility	Station planned w/ Huntersville
Matthews-Morningstar VFD	G		
Mint Hill VFD	E		
Newell VFD	F	Meets local need	
Pineville-Morrow VFD	G		
Providence VFD	G		
Robinson VFD	F	Meets local need	
Steele Creek 1 VFD	F		Capitalizing should be considered
Steele Creek 2 VFD	F		
West Mecklenburg VFD	G		

*The ratings are based on project team assessment as observed during visit
Excellent = relatively new & above average in construction, maintenance, functionality
Good = useful and meets needs, is well maintained and functional
Fair = meets need, but has deficiencies
Poor = old, needs maintenance, not useful as fire/EMS station

Given that several stations are nearing the end of their suitability life cycle, a section will be provided in Appendix 8 which will detail minimum requirements for any new fire stations to be constructed.

Two stations nearing the end of useful life (pictured below) are Long Creek and Mallard Creek. These stations were designed for fire department operations and equipment, two generations removed. The facilities are tight, do not provide adequate ventilation or suitability for 24-hour operations. These stations can reportedly be replaced with the addition of stations in the Huntersville Fire Department fire district.

By contrast, several stations are modern and will meet department needs for some time into the future, such as Cornelius and Mint Hill, pictured below.

Apparatus

This project included an assessment of the apparatus needs of the county, as defined by risk evaluations conducted to date, are provided for and in adequate functioning and reliable condition. The apparatus located in the county are indicated in the accompanying chart.

The fire departments have provided the equipment to meet the actual demands being placed upon the companies (water for fire suppression), with secondary needs (threat/hazard based).

Based on physical observation and discussion with officers and members, as well as the review of records management, the project team evaluated the apparatus as follows:

This plan developed and documented an assumption that future allocated tax dollars would fund the apparatus.

Critical to the longevity, service ability, functional ability, and reliability is the maintenance of the apparatus. The apparatus in service today is in good repair with just a few pieces of equipment considered nearing its functional performance life to Mecklenburg County. There are a couple of fundamental decisions that have to be made with regard to replacing fire apparatus. These decisions include "what warrants replacement";

- age alone,
- age coupled with level of performance, or
- performance only
- usefulness (is the apparatus necessary)

In general, the apparatus of Mecklenburg County was found to be on varied type of service/maintenance program. File information found indicates the maintenance is conducted and appropriate records are maintained in a paper file.

Some departments indicated that the State Fire Marshal's office/Insurance Services Office (ISO) reports found that annual fire pump tests were not meeting their requirements and that there was insufficient equipment. It was confirmed that annual tests are not being conducted in all departments. It is recommended that fire pumps and the aerial device be inspected/tested annually. Hose and ground ladder testing should be conducted annually as well, and every other year in the worst case. When deficiencies or conditions warranting attention are found, annual testing is imperative.

To assure the departments can maintain currency with ISO required equipment expectations, copies of documents indicating ISO required equipment and equivalencies will be provided under separate cover. The companies should develop a computer database to manage vehicle maintenance information for apparatus to provide an easy method of identifying expense by unit and purpose to assist in budgeting and replacement processes.

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There is no "long term" purchasing plan/projection in place within the county. The project team did develop a "hypothetical schedule" to assist in long term planning and financial projections (based on what Mecklenburg County may need for fire apparatus).

Fire & Rescue Vehicle Inventory

Vehicle Designation	Manufacturer	Year	GPM	Water Tank Size (gals)	Vehicle Condition 1=good, 2=average 3=fair 4=poor, If rated 3 or 4 indicate why.
CAROLINA VFD					
Engine 3	Sutphan	2001	1500	750	2
Engine 4 (tanker)	KME	1990	1250	1000	2
Ladder 1	HME	1997	1500	300	2
Rescue 8	GMC	1988			3
Rescue 12	Ford	1995			
Brush 6	GMC	1973	300	100	
Brush 7	Ford	1964	300	100	3
COOKS VFD					
Engine 1	Spartan	1999	1500	750	2
Rescue 12	Ford F450	2001	-	-	2
Tanker 4	Freightliner	1996	1510	1250	3
Brush 6	Ford F250	1977	200	250	3
Boat 1	SVI/ 25'	2007	1250	-	2
Boat 2	Zumro	2002	100	-	2
CORNELIUS-LEMLY FD					
Station 1					
Engine 3	Segrave	1995	1500	750	3
Engine 5	Segrave	2005	2000	750	2
Ladder 4	Segrave 105'	1999	2000	250	3
Rescue 4	Pierce	2006			2
Brush 6	Ford	2003	300	225	1
Operations 1	Dodge	2004		1	
Station 2					
Engine 4	Segrave	2001	2000	750	2
Engine 1 (tanker)	Emerg. One	1991	1250	1000	3
Marine 1	Zodiac	1999	500		1
DAVIDSON-NORTH STAR VFD					
Engine 1	Pierce	2000	500		2
Engine 2	Pierce	1992	500		3
Engine 3	Pierce	2000	1000		2
Engine 4	GMC	1984	1000		3
Ladder 1	Pierce 105'	1996	300		2
Rescue 8	Ford Econoline	2001			2
Rescue 14	Ford Econoline	2000			2
Boat	Zumro	2000			2

Vehicle Designation	Manufacturer	Year	GPM	Water Tank Size (gals)	Vehicle Condition 1=good, 2=average 3=fair 4=poor, If rated 3 or 4 indicate why.
GILEAD VFD					
Engine 1	Spartan/Marion	1998	1500	750	2
Engine 2	Spartan/Marion	2002	1500	1050	2
Rescue 1	Spartan/Marion	2005			1
Brush 6	Dodge	1945	200	200	2
Brush 7	Ford F350	2003	250	300	2
Rescue 12	Ford F350	1999			2
Rescue 13	Ford Exc.	2002			2
	Boston Whaler 23’	1996	500		
	Zodiac	1992			
HUNTERSVILLE -CRAIGSHEAD VFD					
Engine 1	Spartan/Marion	2003	2000	850	2
Engine 2 (tanker)	Ford	1982	1000	1000	3
Engine 3	Spartan	1993	2000	950	2
Ladder 1	Spartan 75’	1999	1500	475	2
Tanker 1	Sterling	2005	1000	3000	2
Tanker 4	Ford 750	1974	500	1500	3
Tanker 5	Ford 700	1963	500	1250	4
Brush 6	Dodge	1946	150	300	4
IDLEWILD VFD					
Engine 1	Grumman	1989	1500	1000	3
Engine 3	Saulsbury	1999	1500	750	3
Engine 2 (tanker)	Grumman	1981	1000	1000	3
Brush 8	Ford F350	1991	100	200	2
Rescue 12	Chevrolet	1998	-	-	3
LONG CREEK VFD					
Engine 1	Marion/Spartan	1996	1500	750	1
Engine 3	Smeal/Spartan	2007	1500	1000	2
Brush 6	Ford F350	1992	-	-	3
Rescue 12	Ford Expedition	1998	-	-	2
MALLARD CREEK VFD					
Engine 1	Pierce	2001	1500	750	2
Engine 2	Pierce	1995	1250	1000	2
Tanker 4	Ford	1983	450	1500	3
Brush 6	Ford 550	2005	220	370	2
Rescue 8	Ford 250	2001			2

Vehicle Designation	Manufacturer	Year	GPM	Water Tank Size (gals)	Vehicle Condition 1=good, 2=average 3=fair 4=poor, If rated 3 or 4 indicate why.
MATTHEWS – MORNINGSTAR VFD					
Engine 1	Fire Cat	1982	1500	1000	
Engine 2	KME	1992	1500	1000	
Engine 12	Segrave	2007	720	2000	
Rescue 1	Chiefs	1997	-	-	
Rescue 8	AmerLafrance	1998	-	-	
Brush 6	Ford F350	1990	200	200	3
MINT HILL VFD					
Engine 1	Pierce	2002	790	1500	2
Engine 2	Pierce	2007	2000	1000	2
Ladder 1	Mack Grumman	1987	1500	300	2
Rescue 1	Mack	1997	-	-	3
Rescue 8	Ford F350	2006	-	-	3
Tanker 4	Mack	1993	1000	2500	4
Brush 6	Ford 350	1994	120	300	
Medic 212	Chevrolet	2008			1
Reserve Engine	N/A				
NEWELL VFD					
Engine 1	Spartan Smeal	2003	2000	850	2
Engine 2	Mack/KME	1987	1500	1000	3
Engine 3	Mack	1984	1500	1000	3
Rescue 1	AmLaf/Sauls	1998	-	-	2
PINEVILLE – MORROW VFD					
Engine 2	Pierce	2004	1500	705	2
Engine 3	Pierce	2004	1500	750	2
Ladder 1	Pierce 100’	1995	1500	100	3
Squad 8	Spartan	1999			3
Rescue 12	Ford F550	2003			2
Brush 6	Dodge	2004	200	250	2
Rescue 13	Ford F350	2004			2
PROVIDENCE VFD					
Engine 321	KME	2006	1250	770	1
Engine 322	Southern Coach	1999	1250	1000	2
Tanker 324	Red Diamond	2002	500	3000	2
Brush 326	Ford	2002	200	250	2
Rescue 22	Hackney Intl.	1992			3

Vehicle Designation	Manufacturer	Year	GPM	Water Tank	Vehicle Condition 1= good, 2=average, 3=fair, 4=poor If rated 3 or 4 indicate why.
ROBINSON VFD					
Engine 1	Pierce	1998	1500	750	3
Engine 2	Pierce	2001	1250	1000	2
Engine 4	Ford	1989	1250	1000	3
Rescue 8	Spartan/Marion	2001	-	-	2
Brush 6	Chev.	1991	250	300	
STEELE CREEK 1 VFD					
Engine 1	Pierce	1998	1500	750	3
Rescue 12	Ford F350	2002	-	-	3
Tanker 5	Pierce	1992	1250	2500	3
Brush 7	Dodge	1954	100	250	4
Boat	18' Jonboat	1997	100		
STEELE CREEK 2 VFD					
Engine 2	Pierce	2009	1500	1555	1
Rescue 8	Freightliner	2001	--	-	2
Tanker 4	Freightliner	2003	750	3625	2
Brush 6		1954	100	250	4
WEST MECKLENBURG VFD					
Engine 1	Spartan/Marion	1997	1500	750	3
Tanker 3	Ford 700	1964	500	1000	4
Tanker 4	Kenworth	1994	1500	1000	3
Rescue 1	Spartan/Marion	2000	-	-	2
Rescue 2	Chev. 2500	2005	-	-	
Brush 6	Ford 250	2005	200	200	
Boat	Zumro	2000	-	-	

It must be noted that the apparatus assessment ranging from good to poor was done by visual inspection only. The apparatus were not driven or operated for this assessment.

RECOMMENDATION (<u>as previously noted in the Executive Summary)</u>

SUGGESTED CONSIDERATION FOR APPARATUS ALLOCATION PER DEPARTMENT (based on risks posed and ability to staff, plus expanded use of mutual aid)

DEPARTMENT	PUMPER	RESCUE PUMPER	AERIAL	TANKER	BRUSH	HEAVY RESCUE	CAR/ OTHER
Carolina	-	-	-	-	-	-	-
Cooks	-	-	-	-	-	-	-
Cornelius	2	1	2	1	1	1	2
Davidson	1	1	1	1	1	-	1
Gilead	1	1	0	1	1	-	2
Huntersville	1	1	2	1	1	1	2
Idlewild	1	1	-	-	1	-	1
Long Creek	1	1	-	-	1	-	1
Mallard Creek	1	1	-	-	1	-	1
Matthews	1	1	1	-	1	1	1
Mint Hill	1	1	1	-	1	1	1
Newell	-	-	-	-	-	-	-
Pineville	1	1	1	1	1	1	1
Providence	-	-	-	-	-	-	-
Robinson	1	1	-	1	1	-	1
Steele Creek 1	1	1	-	1	1	-	1
Steele Creek 2	1	1	1	1	1	-	1
W. Mecklenburg	1	1	-	1	1	-	1
TOTAL	15	14	9	9	14	5	17

PURCHASE PLAN SUGGESTION

(standard specification vehicle purchased from group purchasing program)

- 1 pumper each year, estimated at $400,000 in 2009
- 1 rescue pumper every other year at $425,000 in 2009
- 1 tanker every other year, estimated at $250,000 in 2009
- 1 brush truck every other year, estimated at $140,000 in 2009
- 1 aerial every 3 years, estimated at $750,000 in 2009
- 1 heavy rescue every 6 years, estimated at $600,000 in 2009
- Three (3) small vehicles each year, estimated at $150,000 in 2009

Finances

Mecklenburg County currently has a practice of providing funds from $87,500 to $137,500 to each fire department. This is **THE** primary funding source for many of the county Fire Departments. Without this income, they cannot survive. **To stop the funding at any point in time, without ample notice to replace revenue streams, would result in a loss of fire protection (closing of the department) or a delay in fire protection (reduced funding warrants reduction of part-time paid staffing, which would result in a longer response time than is provided for today).**

When discussing revenue streams with each agency, it was found that the revenue streams vary by agency. As a synopsis, the following were found as revenue streams in place in the county, but NOT by all agencies.

- Town funding
- County Funding
- Medic Service Contract
- Medic Fee per incident response
- Fundraisers
- Fund Raising letters to residents
- Rental Properties
- Grants – some have received FEMA and state grants
  (Carolina VFD received a $111,000 SAFER grant to pay for web design, pay per call and pay for training.)

As noted above, like any typical volunteer fire departments, those servicing Mecklenburg County utilize multiple revenue streams (e.g. fund raising, municipal contribution, contributions to fund drives) to fund their operations. Typical operational expenditures are for firefighting equipment, vehicle and structure maintenance, fuel and utilities, communication equipment, personal protective equipment, training, fire prevention, administration, etc. Mecklenburg County fire departments however, were found to expend the majority of their funds on part-time staffing. The issues of funding and personnel were identified by fire department officers as the key issues facing them in the future. The discussions with the fire departments regarding operating budgets appear appropriate for organizations of their type, size and complexity; with staffing/personnel expenses the primary expenditure. Again, to cut funding to the agencies will result first in reducing the part-time paid staffing which will no doubt result in an increase in response time.

Prior Feasibility Study on Establishing a Special Fire-Rescue Tax District

A review was conducted of a 2005-6 study by the Sage Group, of Cornelius, Davidson, and Huntersville and their ETJ's; to determine the feasibility of a Fire-Rescue Tax District. The study perspective established that it was in the best interests of the Towns and their citizens to maintain a volunteer based system for delivering fire and rescue services given the expense of providing those services by a fully paid fire department.

THIS PERSPECTIVE CONTINUES TODAY, NOT ONLY FOR THE THREE TOWNS PREVIOUSLY STUDIED, BUT FOR THE COUNTY AS A WHOLE. Since the study was completed, costs have continued to rise, capital expenses have not been planned for/reserved for, and volunteer availability continues to diminish. Coupled with a difficult economy, a more defined funding system for public safety is called for.

The previous study identified the following cost projection for a fully-paid fire department for all three communities to be $22,300,000, or a tax rate of:

Davidson	$0.1995 per $100 assessed value
Cornelius	$0.2265 per $100 assessed value
Huntersville	$0.1995 per $100 assessed value

The study conducted by the Sage Group suggested an initial funding rate for the special Fire-Rescue Tax District of $0.04 per $100 assessed value, and ultimately called for a $0.10 per $100 assessed value tax rate.

Similar to the findings of this study, the volunteer fire departments have been very successful in meeting the emergency services needs of the communities they serve. However, continue growth, changing customers, new public expectations of fire service agencies, and the increasing capital and operating costs continue to escalate throughout the county, not just in the three communities evaluated in the prior study.

As noted later in this report, we recommend Mecklenburg County Board of Commissioners implement a fire-rescue tax district/funding system, consistent with its enabling legislations under North Carolina General Statutes 153A-233, 153A-301, and 153A-309, (which provide for the legal basis to establish special districts),

Input from Town Managers

The various town managers were asked to comment on a variety of specific impact factors regarding county support to town and volunteer fire departments. The input was found to be quite consistent among the managers. Their key points of concern were:

- Fire Marshal should continue with radio, pager, and related coordination activities as well as fire inspections.
- Reduction of county funding to volunteer fire departments would probably place more responsibility for funding onto the towns, with tax districts being the only potential funding source.
- Recommendations for standardized equipment purchasing and funding would be helpful.
- Enhanced code requirements for fire protection would be positive.
- Showing the financial benefit of any changes would be helpful.

Future Considerations

There are two critical considerations that must be primary focal points in any redesign of financial system to pay for fire protection. These are to stabilize the funding model and normalize the process to provide the funding.

There are only a few types of systems which can develop the types of funding needed to pay for fire protection in Mecklenburg County. These include:

- a fee based system based on use (requires excessive follow-up and is extremely volatile)
- create an annual assessment (requires annual recalculation of funding model)
- create a fire tax based support system.

A countywide fire tax base (of $.01/$100) as of 3/09 is reflected in the following chart. At present $1,862,500 is being provided in direct funding to the departments. This would no doubt be an unpopular action, but does provide the most realistic approach to adequate funding for public safety. It will also be accompanied with reporting requirements by the fire departments in increased accounting and auditing requirements, as well as more long term planning, budgeting and coordination, to effect integrated fire protection throughout the county. Again, this may prove to be unpopular, but does achieve the goal everyone desires – improved fire protection.

Capital expenditure processes were also discussed with each department. The projected team noted that the fire departments specifically plan and request a capital expense in a particular year for inclusion in the following year budget. While practical from a single year budgeting process, it can create a major challenge when the expenditure is of significant dollars, such as a fire engine for $500,000. Recent business models for municipal government have shown these expenditures to be better handled by either leasing, pre-funding the capital expense, borrowing funds for a period of years, or floating bonds. In this fashion, funds can be allocated over a period of years and upon purchase of a high cost vehicle or station, the funds are already in place for use. While each municipal manager had a different approach to how they would pay for the vehicles, independent fire departments used loans as the primary method to pay for fire apparatus.

The project team found the budgeting process as acceptable given the size and complexity of the organization, but believes long term capital planning is necessary for fire apparatus replacement and fire station construction purposes.

As the volunteers fire departments all rely heavily on the funding provided by the county, to extract that funding would put several of the departments into financial crisis immediately and affect routine operations. To others it would immediately resulting cutbacks and/or use of reserve funds. Cutbacks would no doubt first affect part-time paid staff, which would in turn result in longer response times to incidents and possible non-response to some incidents. This in turn would result in even further problems as mutual aid requirements would expand, placing even further challenges on the agencies. The contracts currently in place do not provide for a dissolution clause which would direct the disposition of assets obtained through public funds, from the point of next contract initiation forward.

Fire Tax Funding Potential

VFD Area	Square Miles	Real Estate Property Value	Tax Income at $.01 per $100	Comment
Carolina	2.18	$279,036,750	$27,904	To Charlotte
Cooks	7.23	$303,873,350	$30,387	To Charlotte
Cornelius-Lemly	24.75	$3,110,861,458	$311,086	
Davidson-North Star	13.80	$1,200,448,310	$120,045	
Huntersville	38.03	$4,440,062,765	$444,006	**Combined 4 Agency $563,260**
Craighead	17.23			
Gilead	8.36	$687,620,776	Combined for	---
Long Creek	10.34	$366,252,049	Three agencies	---
Mallard Creek	7.12	$138,770,130	$119,254	---
Matthews	17.18	$2,427,256,856	$242,726	
Mint Hill	32.58	$1,745,907,643	$174,590	**Combined 2 Agency $211,562**
Idlewild	3.82	$369,720,279	$36,972	---
Newell	5.15	$173,073,151	$17,307	
Pineville	6.73	$1,077,092,755	$107,709	
Providence	1.85	$59,868,158	$5,987	To Charlotte
Robinson	15.02	$403,120,435	$40,312	
Steele Creek 1	13.02	$346,748,809	$34,675	**Combined 2 Agency $130,729**
Steele Creek 2	18.32	$960,538,074	$96,054	---
West Mecklenburg	15.98	$400,124,237	$40,012	

RECOMMENDATIONS (as previously noted in the Executive Summary)

09-06 A long-term capital funding model is recommended. A projected plan for apparatus to be purchased at the rate of one engine per year, one rescue-engine per year, one aerial device every other year, one heavy rescue every three years, one brush truck every year and two small vehicles each year, is a general average purchase resulting in a funding requirement of approximately $1,500,000 each year on average. The decision is whether this would be the responsibility of the buying agency or through the county purchasing system. In either case, the funding would come from some tax-based source.

09-07 A process for determining replacement fire apparatus needs to be implemented. Appendix 7 provides an evaluation tool which should be completed for each piece of apparatus in the fleet. This will help determine potential longevity of the apparatus as well as help in determining financing operations.

09-08 Establish service districts for the towns, towns ETJ, and unincorporated area of the county. A tax rate comparable to support the immediate and long term needs of the fire departments in the county shall be set after consulting with the towns.

09-09 Going forward, in concert with any funding provided by the county, assurance should be made that a signed contract is secured. The contract should include the following language to assure, if the agency is dissolved for any reason, that the assets obtained with public funds going forward, are properly disposed of.

In the event of a dissolution of the VFD or the winding up of its affairs, or other liquidation of its assets, the VFD's property shall not be conveyed to any organization created or operated for profit or to any individual for less than the fair market value of such property, all assets remaining after all debts and expenses of the VFD have been paid provided for shall be conveyed or distributed by the Board of Trustees to one or more organizations qualifying for the exemption afforded by Section 501 (c) (3) of the Code. Any assets not so distributed shall be disposed of by a Court of Common Pleas of competent jurisdiction exclusively for such purposes or to such organization or organizations, as said or shall determine which are organized and operated exclusively for such purposes.

No part of the net earnings of the VFD shall inure to the benefit of any Trustee of the VFD, Officer of the VFD or any private individual (except that reasonable compensation may be paid for services rendered to or for the VFD affecting one or more of it's purposes), and no Trustee or Officer of the VFD shall be entitled to share in the distribution of any of the VFD assets upon dissolution of the VFD. No substantial part of the activities of the VFD shall be the carrying on of propaganda, or otherwise attempting to influence legislation, (including the publication or distribution of statements), any political campaign on behalf of any candidate of public office.

Personnel & Training

The departments serving the County collectively indicated an average of 6 members responding per call. Based on the fact that three departments are generally dispatched to structure fires and assuming two departments or units are dispatched to all other calls, this represents a standard response that meets or exceeds expected response staffing of the NFPA 1720 standard.

The departments all indicated a challenge in recruiting and retaining members in their respective organizations.

Personnel represent the most significant resource of the fire departments' services. Without trained people who are willing to respond to emergencies, raise funds, perform maintenance work, and train, there would be a mammoth challenge to assuring the safety of the people and properties of the township. Unfortunately, like many similar communities, less time to volunteer, more calls, more required training, and expanded fund raising needs are all reported to be situations challenging the staffing of the companies.

Using the basic data of 21 responders (assuming 6 part-time paid and 15 volunteers) on three responding units, a cost savings calculation can be made to determine the savings to the taxpayers of Mecklenburg County, by using a volunteer component to their combination system. The National Volunteer Fire Council's (NVFC), Volunteer Fire Service Cost Savings Calculator, computes this savings (for salaries and benefits of firefighter/EMTs) to be in excess of $4,500,000 annually to Mecklenburg County. The NVFC Cost Savings Calculator was created by St. Joseph's University Graduate Program in Public Safety and Environmental Protection with the following objectives;

* develop a model to calculate the cost savings of an emergency service organization
* develop a model power-point slide presentation for an emergency service, organization to use with elected officials and public groups to promote their service and the value created by the service, and
* develop a projection of annualized savings of volunteer Emergency Service Organizations within the United States.

The study found the savings, nationwide, to be $37 billion. The program and additional information can be found at www.nvfc.com.

The question was asked how Retention and Recruitment activities are conducted. There was no structure to the process, individually or collectively. However, three items in use were found to be extremely positive. These included outside signs, the use of an Internet website, and placement of website addresses on fire apparatus.

While the departments indicated they conduct a variety of activities, they gave no baseline for goals, expectations, or consolidated approach to the process of recruitment and retention. Without a comprehensive approach to recruiting and retaining members,

which is local in design and responsive to members needs, the continuation of an all-volunteer system is questionable.

Personnel information maintained by each fire company is not consistent. A common set of informational components and a standardized format should be developed, including what should be maintained electronically and what should be maintained in paper fashion. Copies of these records should be maintained by a designated individual to which documents in each department. For example, there are no minimum standards to which documents should be maintained in personnel files. A proposed recommendation is provided as well as samples forms (under separate cover).

Training was essentially limited to:
09-06 State required 36 hours of annual training
09-07 Structural burn (NFPA 1403) training
09-08 Required NIMS training
A suggested minimum training for firefighters and officers is provided (Appendix 2) for consideration. Standardizing training is critical to the assurance of

- firefighter safety,
- efficient fire operations, and
- successful event outcomes.

Finally, many of the departments have websites to provide important department information to the community, as well as being used as a recruitment tool. The placement of the website address on vehicles, such as provided in the photo of the Idlewild Fire Department in the photo below, is an excellent marketing and promotion effort.

RECOMMENDATIONS (as previously noted in the Executive Summary)

09-10 Develop and implement a comprehensive approach to the recruitment and retention of an adequate force of competent fire and rescue service personnel. Coupled with this should be minimal criteria for membership.

09-11 Develop a standardized set of data and documents to be maintained for each member, by each company. This should include, as a minimum, an application, physician's release to perform firefighter duties, training information, driver license, working papers, etc., as deemed appropriate. Sample information and forms is provided in VFIS safety and management documents which are forwarded under separate cover.

09-12 Establish a standardized set of training requirements to qualify as a firefighter.

Operations

To assist in the evaluation of operational practices, each fire department in Mecklenburg County was asked to complete a self-assessment process, using NFPA 1720, the Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments as the baseline. The assessment tool was developed by ESECG in concert with the International Association of Fire Chiefs Volunteer Combination Officer Section. This assessment tool is nationally recognized as a tool to determine achievement of various recognized fire service benchmarks.

This standard was developed to identify minimum requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and volunteer fire departments. Approximately three of every four fire departments in the United States are volunteer; therefore this standard as well as related practices (accreditation, certification, etc.) have a profound effect on the direction of the volunteer fire service.

The standard does NOT include Fire Prevention, Community Education, Fire Investigations, Support Services, Personnel Management, and Budgeting.

This standard may, in the minds of some create a benchmark to aspire and plan to. To others, it represents a minimum baseline. To others it will serve as an expectation that contracted services must meet or plan to meet. In reality the standard will mean different things to different entities because a key section indicates, "The Authority Having Jurisdiction determines if this standard is applicable to their fire department".

Therefore, the first question to ask and resolve is whether or not the Authority Having Jurisdiction (AHJ) will use/apply the standard. The AHJ will vary by municipality/district/etc. applying this standard.

The next step is to determine how the organization meets the "substantially volunteer" definition. There is no defined calculation method or model; thus, you may establish your criteria based on:

- Number of volunteers versus number of paid staff.
- Hours contributed by volunteers versus number of hours worked by paid staff.
- Average response (number of persons) by volunteer staff versus paid staff, or any similar calculations process.

It should also be recognized that this standard recommends a predefined approach in some cases, where an "equivalency" may occur locally. If there is an equivalency, documentation of how that is achieved is warranted. There is an intent in this standard to enhance effectiveness and efficiency, even though they may not be compatible at all times. The intent of this guide and your evaluation and assessment should be to determine gaps and establish a plan to close those gaps over time.

As you review the NFPA 1720 document and this implementation guide you will quickly notice that there are enhanced expectations for volunteer units in organization, communication, planning documentation and scheduling; in some ways being modeled after career services. These can be narrowed to six key critical criteria, in addition to defining the level and type of services to be provided; as well as assuring a training program is in place to achieve performance competency.

Surveys have been completed by all but three of the agencies. The comparison document illustrates that the strengths and weakness of each fire company are different. As such, this report attempts to provide a snapshot of fire protection from the county's perspective, looking at the strengths and weaknesses of each department and comparing them to fire service standards. It should be noted that all parts of the assessment were completed by the individual fire departments.

Completing this self review is simple and straight forward. In order to help ensure accuracy, it is advisable to utilize the actual NFPA 1720 document in conjunction with the self review. This document is designed to assist departments in understanding and initiating the review process to determine key areas requiring action by the fire department. Many of these components can be achieved in a variety of ways. It is up to each agency to determine how achievement is measured. Simply indicating compliance with this document does not validate compliance. Appropriate support detail must be collected and maintained, and assurance made that any related references within the standard are complied with.

This matrix is not intended to replace or assure compliance with NFPA 1720, The Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments (2007 Edition). A copy of the entire NFPA 1720, including the appendices and related introductory detail, can be obtained from the National Fire Protection Association at www.nfpa.org.

A summary document follows, illustrating how each fire department has achieved the various criteria. The categories are rated as "Attains", "Partially Attains", or "Fails to Attain", based on the review of various best practice implementation in each criteria. These include (Section Criteria from NFPA 1720 is noted in parentheses):

Fire Suppression Organization

- Are fire suppression operations organized to ensure the fire department's suppression capability includes sufficient resources to efficiently, effectively and safely deploy fire suppression resources? (4.1*)
- Has authority having jurisdiction promulgated the Fire Department's organizational, operational, and deployment procedures with written regulations, orders, and standard operating procedures/guidelines? (4.1.1*)
- Do Fire Department SOP's clearly state succession of command responsibility? (4.1.1.1*)

Community Risk Management

The fire department shall participate in a process that develops a community fire and emergency medical services risk management plan (4.2*)

The specific role of the fire department and other responding agencies shall be defined by the community risk management plan. (4.2.1)

The number and type of units assigned to respond to a reported incident shall be determined by risk analysis and/or pre-fire planning. (4.2.2*)

Has the fire department participated in development of a community risk management plan regarding associated risks with storage, use and transportation of hazardous materials? (4.2.3.1)

Does the plan define the role of the fire department and other agencies for hazardous materials operations management as well as including other special operations? (4.2.3.2)

Fire Suppression Organization

Has the fire department identified minimum staffing requirements that ensure sufficient numbers of members are available to operate safely and efficiently? (4.3.1)

Table 4.3.2 indicated in Critical Criteria Assessment 11 completed by AHJ to determine staffing and response time capabilities, and the federal accomplishment for reporting purpose (4.3.2*)

After assembling necessary resources at emergency scene, does FD have the capability to safely initiate the initial attack within 2 minutes 90 percent of the time? (4.2.2.1)

Are FD personnel responding to emergencies:

1. Organized into company units or response teams?
2. Equipped with appropriate apparatus & equipment? (4.3.3*)

Do standard response assignments (including mutual aid response & mutual aid agreements) predetermined by location, & nature of reported emergency regulate the dispatch of companies, response groups and command officers to emergency incidents? (4.1.7*)

Does FD maintain standard reports for each response that contains:

1. Nature?
2. Location?
3. Description of ops performed?
4. Identification of members responding? (4.4.1*, 4.4.1.1, 4.4.1.2)

Annual Evaluation

Does the fire department evaluate its level of service and deployment delivery and response time objective on an annual basis? (4.4.2.1)

Annual evaluation shall be based on data relating to level of service, deployment, and the achievement of each response time objective in each demand zone within the jurisdiction of the fire department? (4.4.2.2)

Quadrennial Report

Does the fire department provide the AHJ with a written report, quadrennially, that shall be based on annual evaluations required by (4.4.3.1)?

Does the report explain the predictable consequences of identified differences and address steps within a fire department strategic plan necessary to achieve compliance? (4.4.3.2)

Standard response assignments and procedures, including mutual aid response and mutual aid agreements predetermined by location and nature of reported incident, shall regulate dispatch of companies, response groups, and command officers to fires and other emergency incidents.

Fire Suppression Operations

Do SOP's require one individual assigned as the incident commander (IC)? (4.5.1*)

Do SOP's require the assumption of command to be communicated to all units involved in the incident? (4.5.1.1*)

Do SOP's require the IC to be responsible for overall coordination & direction of all activities for the duration of incident? (4.5.1.2)

Do SOP's require the IC to ensure an accountability system is immediately established to ensure rapid accounting of all on-scene personnel? (4.5.1.3)

Do SOP's require the company officer/crew leader to be aware of the identity, location, & activity of each member assigned to the company at all times? (4.5.2)

Do SOP's require the company members to be aware of the identity of the company officer/crew leader? (4.5.2.1)

Initial Attack

Are orders to crew members, particularly verbal, and those at emergency scenes transmitted through the company officer? (4.5.2.2)

Are initial attack ops organized to ensure that at least four members are assembled before initiating internal fire attack at a working structure fire? (4.6.1*)

Do two members work as a team while in hazardous area? (4.6.2)

Do SOP's provide for the assignment of two members outside of hazardous area to assist or rescue team operating within the hazardous area?

1. One of these rescue team members is permitted to engage in other activities (4.6.3)
2. Members performing critical tasks that if abandoned to perform rescue, would endanger any firefighter operating at the incident are prohibited from assignment to the two-person rescue team (4.6.4)

Where immediate action could prevent loss of life or serious injury, are initial attack ops organized to ensure that first arriving attack personnel who find an imminent life-threatening situation take appropriate action (even with less than 4 personnel on-scene) in accordance with NFPA 1500[4]? (4.6.5)

Beyond the capability of the initial attack, can FD provide for sustained ops including:

1. Fire suppression?
2. Search & rescue?
3. Forcible entry?
4. Ventilation?
5. Preservation of Property?
6. Accountability of personnel?
7. Dedicated rapid intervention crew (RIC)?

Support activities beyond capabilities of initial attack? (4.6.6)

Intercommunity Organization

Are mutual aid, automatic aid and other fire protection agreements in writing and complete and include issues such as:

1. Liability for deaths and injuries?
2. Disability retirements?
3. Cost of services?
4. Authorization to respond?
5. Staffing and equipment?
6. Resources made available?

[4] NFPA 1500 – Standard on Fire Department Health and Safety Program

Designation of incident commander (IC)? (4.7.1*)

Are procedures and training of personnel for all FD's involved in agreements sufficiently comprehensive to produce an effective fire force and insure uniform operations? (4.7.2)

Are units responding to mutual aid incidents equipped with communications equipment to permit communications with IC, division, group and/or sector officers? (4.7.3)

Emergency Medical Services

Are EMS services organized to ensure FD's EMS capability includes sufficient resources to deploy initial arriving company & additional alarm assignments? (4.8.1.1)

Automatic and mutual aid agreements are permitted to satisfy this requirement. (4.8.1.2)

The provisions of this chapter apply to FD's that provide EMS services. (4.8.2*)

Has FD clearly documented its role, responsibilities, functions & objectives for EMS delivery? (4.8.3*)

System Components

Basic EMS system treatment levels as used in this standard are categorized as:

1. First responder.
2. Basic Life support (BLS)
3. Advanced life support (ALS) (4.8.4.1)

Specific treatment capabilities associated with each level are determined by authority for approval & licensing of EMS providers in each state & province. (4.8.4.2)

EMS System Functions

Determine FD's level of EMS service delivery. The five basic functions within an EMS system include:

1. First responder.
2. BLS response.
3. ALS response.
4. Patient transport with uninterrupted patient care at ALS or BLS levels while enroute to medical facility.

EMS quality assurance program. (4.8.5.1)

Is FD involved in providing any or all of the functions identified in 4.4.3.1(1) thru 4.4.3.1 (5)? (4.8.5.2)

Quality Management

Does FD have a quality management program? (4.8.6.1)

Is first responder and BLS care provided by FD documented & reviewed by FD medical personnel? (4.8.6.2)

If ALS is provided, does FD have a named medical director who oversees and assures quality medical care in accordance with state or provincial regulations?
Is process documented? (4.8.6.3)

If ALS is provided, does FD provide mechanism for immediate communications with EMS supervision & medical oversight? (4.8.6.4)

Special Operations Response

IF PROVIDED, are FD's special operations (special ops) organized to insure special ops capability includes sufficient:

1. Personnel
2. Equipment
3. Resources

to deploy the initial arriving company and additional alarm assignments providing such special ops services? (4.9.1.1)

Established automatic and mutual aid agreements are permitted to comply with these requirements. (4.9.1.1)

Has FD adopted a special ops response plan and related standard operations procedures (SOP's) that specify:

1. Role and responsibilities of the FD in special operations?
2. Authorized functions of members responding to HazMat incidents? (4.9.3)

Are FD members expected to respond to HazMat incidents beyond first responder operations level trained to applicable requirements of NFPA 472[5]? (4.9.4)

Does FD have capacity to implement RIC during special operations incidents that would subject firefighters to immediate danger of injury, or in the event of equipment failure or other sudden events per NFPA 1500[6]? (4.9.5)

If a higher level of response is needed beyond the capability of the FD for special ops, does the FD have procedures to determine:

1. Availability of outside resources to deploy these capabilities
2. Method of contact and response

[5] NFPA 472-Standard for Professional Competence of Responders to Hazardous Materials Incidents
[6] NFPA 1500-Standard on Fire Department Occupational Safety and Health Program

3. Integration with local resources? (4.9.6.1)

Do procedures limit FD to performing only those specific special ops functions for which their personnel are trained and equipped? (4.9.6.2)

Safety & Health Systems

Does FD provide occupational safety and health program in accordance with NFPA 1500[7] that forms the basic structure of protecting the health & safety of firefighters, regardless of the scale of the department or emergency? (5.1*)

Incident Management System

Does FD provide an incident management system in accordance with NFPA 1561 that forms the basic structure of all emergency ops regardless of scale of department or emergency? (5.2.1)

Is incident mgmt system designed to manage incidents of all different types, including structure fires, wildland fires. haz-mat incidents, emergency medical operations and others? (5.2.2)

Does FD have a training program and policy to ensure that personnel are trained and their competency is maintained to execute their responsibilities consistent with FD's organization and deployment addressed in Chapter 4? (5.3)

Communication Systems

Does FD have a reliable communication system to facilitate prompt delivery of fire suppression, EMS, and special operations? (5.4.1*)

Do FD's communications facilities, equipment, staffing and operation procedures comply with NFPA 1221[8]? (5.4.2)

Do operating procedures for radio communications provide for standard protocols and terminology at all types of incidents? (5.4.3)

In compliance with NFPA 1561, is standard terminology established to transmit information including:

1. Strategic modes of operation?
2. Situation reports?

Emergency notifications of imminent hazards? (5.4.4)

[7] NFPA 1500-Standard on Fire Department Occupational Safety and Health Program
[8] NFPA 1221-Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems

Pre-Incident Planning

Does FD have operational requirements to conduct pre-incident planning, with particular attention to target hazards? (5.5)

In summary, the self-evaluation identified six areas of consideration for action.

1. ANNUAL EVALUATION - Several departments indicated they are not conducting any type of annual evaluation.

   Each agency should conduct some type of annual evaluation, if only to determine what equipment is needed, what personnel issues exist, what short and long range needs exist, etc. Without conducting an annual review, planning can not effectively be established and facilitated, making budgeting, staffing, and performance more challenging.

2. QUADRENNIAL REPORTS – Again, several departments indicated they are not conducting multi-year reporting and analysis. However, there were a few departments that had developed excellent multi-year strategies. None of these were integrated into any long range county-wide strategy.

3. FIRE SUPPRESSION – Five departments indicated less than fully attains in fire suppression operations, which leads to an opportunity for planning, training, and performance standards to be established in the area of fire suppression operations.

4. INCIDENT MANAGEMENT SYSTEM – There were several departments indicating lack of full compliance with this section. Further analysis found that this was attributable to not having completed all of the required National Incident Management System classes.

5. SAFETY AND HEALTH – While indicated as very important, several of the departments indicated they do little to support firefighter safety and health, other than to provide personal protective equipment to the best degree possible.

6. PRE-INCIDENT PLANNING – Again, recognized as important, there was limited activity in pre-incident planning and development of formal pre-plans

	Carolina VFD	Cooks VFD	Cornelius/Lemly VFD	Davidson/North Star VFD	Gilead VFD	Huntersville/Craighead VFD	Idlewild VFD	Long Creek VFD	Mallard Creek VFD	Matthews/Morning Star VFD	Mint Hill VFD	Newell VFD	Pineville/Morrow VFD	Providence VFD	Robinson VFD	Steele Creek 1 & 2 VFD	West Meckolenburg VFD	Needs
Organization / Operations / Deployment	A	A	A	PA	A	A	A	A	PA		PA	A	PA	A		A		
Community Risk Management	A	PA	A	PA	A	A	PA	PA	PA		PA	PA	PA	A		PA		
Fire Department Suppression	A	PA	PA	A	A	PA	A	PA	PA		PA	PA	PA	A		PA		
Annual Evaluation	PA	PA	A	A	A	A	A	PA	FA		FA	PA	FA	FA		FA		
Quadrennial Report	A	PA	A	PA	PA	A	PA	FA	FA		PA	FA	FA	FA		FA		
Fire Suppression Operations	A	A	A	A	PA	A	A	PA	FA		PA	FA	A	A		A		
Initial Attack	PA	PA	PA	A	A	A	A	PA	PA		PA	A	PA	A		PA		
Intercommunity Organization	PA	PA	A	PA	A	A	A	PA	PA		PA	PA	PA	A		PA		
Incident Management System	PA	A	A	A	PA	PA	A	PA	PA		PA	PA	PA	FA		FA		
Special Operation Response	A	A	A	A	A	A	A	A	A		A	A	A	A		A		**
Safety & Health	PA	FA	A	PA	PA	PA	A	PA	PA		FA	PA	PA	FA		FA		
Communication Systems	A	A	PA	PA	PA	PA	A	A	PA		PA	A	PA	A		A		
Pre-Incident Planning	A	FA	A	PA	PA	A	PA	PA	PA		PA	PA	A	FA		A		

** Awareness only, operations handled by Charlotte or Monroe

FIRE DEPARTMENT NFPA STANDARD 1720 SELF-ASSESSMENT SUMMARY

As noted earlier, the fire department operates as a whole under long-standing procedures, using mutual aid, automatic aid, and standard operating practices. This culture and tradition has built organizations that have performed as needed for the community for decades. The delivery system for fire, rescue and emergency medical services, as well as the fire department response models have not been integrated into a single, seamless delivery system. As a result, there is no assurance the closest fire station(s) always are dispatched and that the same level of response is provided for similar types of incidents. However, a "box" system was implemented as an attempt to better address this. The county has a variety of situations where in one case the closest station responds with an apparatus complement different than a similar type structure in another part of the county. However, EMS response is consistent throughout the county.

The changing demands and expectations on emergency services, creates conflicts in performance and develops potential operational and liability issues.

The same scenario exists with standard operating procedures. There were multiple cases where two and three departments respond together, yet they use standard operating guidelines developed for individual fire company needs and are not coordinated for use despite the fact that the organizations run together on the majority of incidents. This will be addressed later in this report.

In looking at the delivery of service as compared to communities of similar size and complexity, firefighting, rescue, hazardous materials, terrorism, and emergency medical services were all evaluated. A summary document of services for proposed use is included in Appendix 1.

To determine the operational needs of the fire department, there must first be an understanding of the hazards being faced. There is no community risk analysis at this time, so it becomes important to gain as much an understanding of the hazards posed as possible. This can be done by analyzing response data, defining and inventorying what are considered major or target hazards, and developing plans to deal with these hazards individually and comprehensively.

Risk Analysis was found to be left to each department to conduct on their own.

The primary mission of the fire departments, since their inception, was fire suppression and the primary tool to suppress fire was and remains water. Therefore, once target and routine hazards are analyzed, water supply becomes the first point of consideration. The ISO report evaluates water supply and availability and is addressed in each fire district report. Essentially departments are required to have one or more pumpers and one or more tankers to provide such water at the time of a fire. Today, a common practice is for departments to conduct pre-emergency planning should consider water supply required versus water supply available to determine any gaps and how that water should be provided to the scene, or the related risks that must be managed as a result of a less than needed water supply. Once the water supply needed and available to suppress fires in the

community is defined, one can move on to the demand for operational staffing, apparatus, stations, and their respective positioning and availability. A sample pre-planning form is provided as Appendix 5 for consideration of use.

While the county provides financial support to each agency and other support in a variety of ways, the "system consistency" needs to be addressed to assure citizens will receive a standard of care throughout the county. This should include policies on the standardized box alarm concept using the closest fire stations. This should be consistent with the Service Delivery Statement/Standard of Response Cover as recommended in the Management Section of this report.

RECOMMENDATIONS (as noted in the Executive Summary)

09-13 A comprehensive approach to enhancing operations through addressing the identified operational expectations established by NFPA Standard 1720 should be developed as a long-term objective and goal by the Fire Commission.

09-14 Develop a process for the development, distribution, and training of pre-emergency plans for target locations as identified in the risk assessment process. This should include water supply information, as well as a hydrant out-of-service notification process. The fire marshal's office should serve as an integral part of this process.

Standard Operating Guidelines

An item of significant concern is that fire departments utilize automatic aid to a significant degree in order to assure an adequate response can be assured to respond to an incident. Given the extent of this activity it is important to realize that if departments “run together” they need to operate together. Thus need county wide operational practices that are similar become very important to efficient and safe operation.

Several of the county fire departments have developed standard operating procedures. The standard operating procedures developed illustrate state of the art approaches to many issues, however, they are department specific, not county wide, and thus have limited value. The project team found that there are separate department processes in place to develop, implement and monitor the standard operating procedures. The format that is generally found to be most effective including the indication of the date adopted, date reviewed date, and date posted as well as the following components of a standard operating procedure, including

- purpose
- scope
- responsibility
- safety
- definitions
- references and attachments, and
- guideline

These should be comprehensive and consistent with the various training, implementation, performance, and monitoring components that standard operating procedures should include. However they should be flexible enough to assure situational awareness is used to make the appropriate decision.

Standard Operating Procedures serve several functions in today’s emergency services. Not only do they provide an understanding of how certain activities are to be accomplished, but they establish basic training criteria. A plan needs to be established to review the existing Standard Operating Procedures and begin the development of township wide standard operating procedures.

In today's society it is essential that all emergency service organizations develop, adopt, and implement standard operating procedures and guidelines. The principal of public kindness is no longer acceptable practice. Concepts, such as sovereign immunity (individual vs. government) have been significantly limited and narrowed by the courts.

Many of the federal, state, and provincial laws allow for suits against individual leaders of emergency service organizations. Terms such as "duty of care," "breach of omission or commission," and "joint and several liability" are entering the vocabulary of emergency service personnel.

One important way to prepare for this challenge is to develop, adopt, and implement a comprehensive set of Standard Operating Procedures/Standard Operating Guidelines (SOP/SOGs.)[9] Standard Operating Procedures/Standard Operating Guidelines are a fundamental safety practice, not only for emergency services, but business and industry as well.

During the process of compiling SOP/SOGs, the difference between these varied documents may become blurred. For instance, often the distinction between policy and procedure do not seem so clear. Policy is different from a SOP/SOG. All procedures and guidelines are based on an over-riding policy. Policy should be viewed as the attitude, philosophy and intent of top management to the organization's personnel. It provides a framework and guidance to organization personnel in making decisions. To aid in the development of SOP/SOGs, understanding specific definitions of terms is essential.[10]

As a starting point, we suggest that four procedures be developed each month and reviewed. The following priority listing is provided for consideration in reviewing existing SOPs/SOGs and developing a related township-wide SOP/SOG.

Priority 1

- Vision Statement
- Mission Statement
- Standard of Response Cover
- Incident Command Policy, Chain of Command, & Transfer of Command
- Officer and Firefighter Qualifications
- Training Requirements
- Incident Size Up
- Radio Procedures
- Pre-plan and map books
- Response to Incidents
- Safety and Risk management
- Mayday policy

Priority 2

- Collapse Indicators
- Vehicle Operations and Regulations
- Alcohol and substance abuse policy
- General Rules and Regulations
- Harassment Policy
- Automatic Fire Alarms
- Accountability
- FAST/RIT Teams
- Imminent Life Hazard and Initial Fire Attack
- Highway/Roadway Response
- Hydraulic Rescue Tool
- Incident Rehabilitation

[9] Developing and Implementing SOP and SOG for Emergency Service Organizations, VFIS, York, PA 2001, Page 2.
[10] Ibid, Page 9

Priority 3

- Incident Reports
- Incident Signals and Radio Procedures
- Ladder Company Operations
- Conduct at incident scenes
- Equipment Failure – member responsibility
- Thermal Detector Use
- Vehicle Accidents
- Vehicle Fires
- Water Supply Operations
- Child labor laws
- Conduct policy
- Disciplinary policy

Priority 5

- Communication Devices
- Helicopter Operations
- SCBA qualifications, testing, use & filling
- Station Guidelines
- Apparatus Response
- Apparatus Backing
- Carbon Monoxide Emergencies
- Dispatch Procedures
- Elevator Emergencies
- Fire Police Officer Procedures
- Ice/Water Rescue
- Natural Gas Emergencies

Finally, as noted earlier there is no one document which establishes a Strategic Guideline which identifies and outlines some basic rules and principles that relate to the major areas of fire fighting strategy and subsequent fireground activity. The uniform application of this guideline will produce favorable fireground outcomes. This guideline is designed to offer a basis and simple framework for use in Mecklenburg County fireground operations and command. It also represents many existing practices, and a defining of how this department is expected to perform during certain emergencies. A model guideline is provided as Appendix 3.

RECOMMENDATIONS (as noted in the Executive Summary)

09-15 Establish and implement a county-wide strategic guideline for operations.

09-16 Continue the development of Standard Operating Procedures/Guidelines using existing Mecklenburg County Fire Department procedures/guidelines as the basic data/model.using the proposed procedure format and develop a prioritization for development and revision, using the information provided in this section as a guideline. It is suggested that due to the unique joint dispatching and response protocols that a team be established with no less than five members from county

fire departments. As a start to this process, the study team is providing under separate cover, three suggested documents to be modified as appropriate for use in Mecklenburg County. These include a:

- high rise incident standard operating guideline
- accountability standard operating guideline
- calling a mayday standard operating guideline.

Mutual/Automatic Aid

The fire departments use a mix of mutual and automatic aid. The philosophies for the number and types of apparatus being deployed to calls and the related use of mutual and automatic aid is established by each response grid, however, the mutual/automatic aid company may not respond or may respond with minimum personnel. Also, the companies may not be responding from the closest station to the incident and similar deployments may not be provided for similar hazards.

Overall, Mutual Aid agreements in place are verbally agreed to and are not based on any structured concept of service delivery, although a traditional "box system" is applied and at least two, or in many cases three departments are dispatched simultaneously to reports of structure fires.

The response deployment should be standardized as noted earlier in this report. Given that Mecklenburg County has not mandated the use of Mutual Aid agreements, the are considered highly desirable and necessary for assurance of proper reimbursement should a major disaster strike.

Contracts currently in use were reviewed. The contracts should be modified to include the following criteria.
- revise and update from 1991 (periodically update at least on a 5-year basis)
- include a dissolution clause for funds provided for capital investments, going forward
- include the standard of cover expectation in future contracts.

RECOMMENDATIONS (as previously noted in the Executive Summary)

09-17 To standardize deployment to properties in Mecklenburg County, the following "box system" methodology for structure fires should be applied.

- For single family dwelling fires, a dispatch involving a complement of two engines from the two closest stations
- For commercial structures, educational facility (non-residence), non-habitational, three engines and one ladder from the four closest stations
- For health care, educational residence facilities, and industrial facilities four engines and two ladders from the four closest stations
- For automatic fire alarms, one engine and one ladder from the two closest stations.

The long term goal should be to intelligently identify when equipment beyond two engines is required on single family residential fires, based on hazard, structure size, and level of internal protection.

09-18 Contracts should be modified to include the following items:
- revise and update from 1991 (periodically update at least on a 5-year basis)
- include a dissolution clause for funds provided for capital investments, going

forward
- include the standard of cover expectation in future contracts

Mecklenburg County Fire Marshal's Office

The County Fire Marshal's office is reportedly responsible for:

- fire inspections
- fire investigations
- public Education Program Guidance
- coordinate Radio Maintenance and Pagers
- liaison to Fire Departments

However, the county fire departments clearly look to the county fire marshal staff for more in support. In addition the county fire departments are seeking guidance and direction from the county officials. The fire departments want to do as good a job as they can possibly do. However, they need resources to do that job, or if annexation and county decisions change their role or lifespan, there is an understanding of that. However, they seek input on a regular basis.

The role of the fire commission seems "fuzzy" in the mind of many fire officers the project team spoke with. This can be due to a variety of reasons, or it could simply be the times require a restructuring of the fire commission's mission and activities to meet changing demands in the county's fire service delivery system.

RECOMMENDATIONS (as noted in the Executive Summary)

09-19 Redesign the role and composition of the fire commission for more effectiveness. Define the roles of the fire commission and the county fire marshal's office along the lines of responsibility of :

The Fire Commission should be responsible for

- Assuring deployment consistency
  Service Office
- Develop standardized Standard Operating Guidelines
- Direct training standards

The Fire Marshal's Office should be responsible for

- Fire Inspections
- Fire Investigations
- Overview issues of coordination with State Fire Marshal/Insurance
- Public Education Program Guidance
- Coordinate Radio Maintenance and Pagers
- Liaison to Fire Departments
- Standard Operating Guideline Coordination
- Training Services Coordination
- Assist in Technology Development

Recommendation Action Plan

Based upon the input, findings and assessments conducted as part of this project, the assessment team provides the following recommendations. Each recommendation is provided with a problem statement and reason that it is a problem, and a solution. Where possible, a priority level is assigned, a projected completion time is provided, and if costs are foreseen, an estimate of that cost is provided.

The recommendations are submitted with the following considerations; the findings and improvement recommendations of the Insurance Services Office; state of the art best practices in risk assessment, standard of response cover, strategic planning; and practices and protocols defined within the reference documents for this project which are detailed in the References section of this report.

It must be recognized that the purpose of this process is to facilitate discussion and action on the problem. In reality, you may find alternative solutions which are more (or less) efficient, more (or less) costly, more (or less) politically expedient, take more (or less) time, and have more (or less) success. However, the fact that elected municipal officials, municipal administrative staff, and municipal fire and rescue service provider officers develop a consensus approach to managing the risks posed is the ultimate goal. The use of these recommendations as discussion and action points should assist you in achieving local progress in the management of fire and rescue services.

RECOMMENDATION 09-01

ISSUE/PROBLEM

Currently, there is no documented statement of what services are to be provided by the companies, as related to the needs and wants of the community. Understanding the parameters of the service to be provided and the related expectations from elected officials and members of the general public is critical to effective performance and the delivery of emergency services. Coupled with this statement of services should be the revision of the mission and vision statement for these municipal services. Without a lack of clarity regarding what services will be provided by whom, and when, will allow for multiple levels of standard of care and delivery, all of which could actually present both operational and risk management challenges for the municipality. The current approach has multiple mission and vision approaches for a single municipality, which may create service delivery conflict. Also, no Standard of Response Cover exists for the community's fire protection system. Without a standard of response cover defined, there is no true understanding and definition via "policy, procedure or guideline that determines the distribution, concentration and reliability of fixed and mobile response forces to fire, emergency medical service, hazardous materials, and other forces of technical response". Therefore decisions on level of service become arbitrary decision points, instead of being based on empirical evidence and rational discussion.

SUGGESTED ACTION

Develop a Service Delivery Statement which would indicate the types of services to be provided, the area to be covered, and the delegation of authority to perform those services. This will also serve as the basis for development and implementation of a mission statement, vision statement, and development of annual goals, objectives and funding requests. Consistent with the development of these documents is a Standard of Response Cover for use in Mecklenburg County as a method to define a service expectation the community will accept. This will also serve as a benchmark to determine when and where career staff is needed for fire-fighting services. Examples of these draft statements (Mission, Vision, and Service Delivery Statement/Standard of Cover are provided within this report).

PRIORITY – 1

TIME FRAME – 6 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – NFPA STANDARD 1201, STANDARD FOR PROVIDING EMERGENCY SERVICES TO THE PUBLIC; NFPA 1720, STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION, EMERGENCY MEDICAL OPERATIONS AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS (Section 4.3.2); & COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS (Standard of Cover).

RECOMMENDATION 09-02

ISSUE/PROBLEM

Currently there are 18 stations and 17 agencies providing the fire protection services for the county. As the annexation process by the City of Charlotte continue to absorb portions of the county, the existing number of "county fire stations" will reduce in need, and necessitate consolidation or closure.

SUGGESTED ACTION

Based upon the annexation activities of the City of Charlotte and other Towns within the county, begin a three step process for long term consolidation of services to improve the long-term performance of the delivery of emergency services in the county. A hypothetical model is detailed in the report. The three step process involves a transition plan to move from "current status" to an "interim recommended status" to a "long term suggestion". These are defined in the "Management and Governance" section of this report, and characterized/defined as follows:

Step 1 – Current status of the department

Step 2 – A transitional approach to management/funding/operations model to move between Step 1 and 3. Consideration must be given to assuring the operational and funding processes are defined and in place before full transition occurs.

Step 3 – Long term (estimated three to five year objective) to serve as the delivery system for that fire response area.

PRIORITY – 2

TIME FRAME – 12 TO 70 MONTHS, PHASED IN

COST – THERE SHOULD BE NO UNUSUAL ADDITIONAL COSTS ASSOCIATED WITH THIS PROCESS, BASED ON THE ASSUMPTION THAT THE CURRENT FUNDING MODEL IS REPLACED WITH A TAX BASED FUNDING SYSTEM, AS PROPOSED IN RECOMMENDATION.

JUSTIFICATION/SUPPORT – FIRE DEPARTMENT CONSOLIDATION TEXT, AND COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS (Standard of Cover).

RECOMMENDATION 09-03

ISSUE/PROBLEM

Most of the fire departments have some standard operating guidelines. However, a strategic guideline which offers a framework for combating fire and dealing with emergencies both offensively and defensively, should be used as a foundation document in their approach to managing emergencies.

SUGGESTED ACTION

Develop a county-wide procedure/guideline to strategically manage emergency operations which clearly defines a process for emergency response personnel and officers to use, regardless of when officers arrive and what stage the emergency is in. (Example provided in Appendix 3)

All Standard Operating Guidelines should be web-based to allow for easy staff reference.

PRIORITY – 1

TIME FRAME – 3 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS (Section 4.2*).

RECOMMENDATION 09-04

ISSUE/PROBLEM

There is no definition or statement of information to be maintained or provided to the County on a regular basis nor is there determination of necessary data to develop and use to analyze operations for financial justification of expenditures, budgeting, etc.

SUGGESTED ACTION

The information technology needs and function for the fire departments, as identified by Mecklenburg County, should be consolidated in the administrative function of the organization as a process that provides data to all facets of the fire companies. The overall IT function should be coordinated through the Fire Marshal's office and the Township Information Technology Manager. Suggested data for maintenance by the companies and the fire marshal includes:

- fire inspection management and record keeping
- pre-emergency planning
- permit issuance
- personnel information
- apparatus maintenance
- building maintenance
- incident reporting
- training information
- training programs

Monthly reporting on specific data should be provided by the companies to the Fire Marshal.

PRIORITY – 2

TIME FRAME – 6 TO 9 MONTHS

COST – NONE ANTICIPATED AT THIS TIME, HOWEVER, SOME COSTS MAY NEED TO BE INCURRED BY THE FIRE COMPANIES OVER TIME AS PART OF ROUTINE INFORMATION MANAGEMENT COSTS.

JUSTIFICATION/SUPPORT – NFPA 1201 STANDARD ON PROVIDING EMERGENCY SERVICES TO THE PUBLIC, NFPA 1250 EMERGENCY SERVICE ADMINISTRATIVE RISK MANAGEMENT, VFIS TEXT "MANAGING VOLUNTEER AND COMBINATION EMERGENCY SERVICE ORGANIZATIONS", and THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS (Human Resource Management Section).

RECOMMENDATION 09-05

ISSUE/PROBLEM

Annual Reports are not developed to summarize and ultimately analyze service delivery.

SUGGESTED ACTION

Develop a county-wide annual report for consolidated service delivery provided to the County, including a projected costs savings to the taxpayers, through the utilization of the National Volunteer Fire Council's Cost Savings Calculator, available at www.nvfc.org

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – $12,000 ESTIMATED PER YEAR

JUSTIFICATION/SUPPORT – STATE FIRE MARSHAL AND INSURANCE SERVICES OFFICE RECOMMENDATIONS, APPARATUS MANUFACTURER RECOMMENDED MAINTENANCE PROGRAM.

RECOMMENDATION 09-06

ISSUE/PROBLEM

The project team identified that both a new stations and an apparatus replacement plan are needed for the county. This requires the development of a long-range capital funding plan.

SUGGESTED ACTION

A long-term capital funding model is recommended. A projected plan for apparatus to be purchased at the rate of one engine per year, one rescue-engine per year, one aerial device every other year, one heavy rescue every three years, one brush truck every year and two small vehicles each year, is a general average purchase resulting in a funding requirement of approximately $1,500,000 each year on average. The decision is whether this would be the responsibility of the buying agency or the county. In either case, the funding would come from some tax-based source.

County officials should begin the process of determining the long term capitalized financial needs for emergency services in the township and establish a methodology to pay for these long term needs. Typical methods of funding these needs are:

- annual reserving of funds
- bonds
- acquiring loans
- fund drives through community sources

However, the county staff and elected officials may have alternative sources or ideas to fund capital projects.

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIAPTED TO DEVELOP THE PLAN

JUSTIFICATION/SUPPORT – THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

RECOMMENDATION 09-07

ISSUE/PROBLEM
There is currently no specific process to determine the need for replacing apparatus.

SUGGESTED ACTION
A process for determining replacement of fire apparatus needs to be implemented. Appendix 7 provides an evaluation tool which should be completed for each piece of apparatus in the fleet. This will help determine potential longevity of the apparatus as well as help in determining financing options.

PRIORITY – 1

TIME FRAME – IMMEDIATE

COST – NONE ANTICIPATED TO DEVELOP PROCESS

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, and NFPA STANDARD 1901, STANDARD FOR AUTOMOTIVE FIRE APPARATUS.

RECOMMENDATION 09-08

ISSUE/PROBLEM

The overall fire protection system for the county is considered to be less than adequately funded.

SUGGESTED ACTION

Establish service districts for the towns, towns ETJ's and unincorporated area of the county. A rate comparable to support the immediate and long term needs of fire departments in the county and towns should be established after consultation with the towns.

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED OT START THE PROCESS.

JUSTIFICATION/SUPPORT – THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

RECOMMENDATION 09-09

ISSUE/PROBLEM

The county currently provides funding to the Volunteer Fire Departments, however, there is no requirement to repay the funds or assure assets paid for with public money, are provided back to the public, if an organization dissolves.

SUGGESTED ACTION

Going forward, in concert with any funding provided by the county, assurance should be made that a signed contract is secured. The contract should include the following language to assure, if the agency is dissolved for any reason, that the assets obtained with public funds going forward, are properly disposed of.

In the event of a dissolution of the VFD or the winding up of its affairs, or other liquidation of its assets, the VFD's property shall not be conveyed to any organization created or operated for profit or to any individual for les that the fair market value of such property. All assets remaining after all debts and expenses of the VFD have been paid shall be conveyed or distributed by the Board of Trustees to one or more organizations qualifying for the exemption afforded by Section 501 (c) (3) of the Code. Any assets not so distributed shall be disposed of by a Court of Common Pleas of competent jurisdiction exclusively for such purposes or to such organization or organizations, as said or shall determine which are organized and operated exclusively for such purposes.

No part of the net earnings of the VFD shall inure to the benefit of any Trustee of the VFD, Officer of the VFD or any private individual (except that reasonable compensation may be paid for services rendered to or for the VFD affecting one or more of it's purposes), and no Trustee or Officer of the VFD shall be entitled to share in the distribution of any of the VFD assets upon dissolution of the VFD. No substantial part of the activities of the VFD shall be the carrying on of propaganda, or otherwise attempting to influence legislation, (including the publication or distribution of statements), any political campaign on behalf of any candidate of public office

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED OT START THE PROCESS.

JUSTIFICATION/SUPPORT – THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

RECOMMENDATION 09-10

ISSUE/PROBLEM
There is no structured approach to recruitment and retention.

People are the most valuable resource to any emergency agency, volunteer or career. Without people, apparatus cannot respond and incidents cannot be handled. The program must be developed based on what members want as benefits or incentives, what members value in the organization and effective leadership.

SUGGESTED ACTION
Develop and implement a comprehensive approach to the recruitment and retention of an adequate force of competent fire and rescue service personnel. Coupled with this should be minimal criteria for membership.

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – $30,000 PER YEAR IN 2ND AND 3RD YEARS, $0 IN FIRST YEAR

JUSTIFICATION/SUPPORT – USFA REPORT "RECRUITMENT AND RETENTION PRACTICES FOR VOLUNTEER EMERGENCY SERVICE ORGANIZATIONS, COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, and US FIRE ADMINISTRATION AND NATIONAL VOLUNTEER FIRE COUNCIL PROGRAMS WHICH HAVE DEMONSTRATED SUCCESS..

RECOMMENDATION 09-11

ISSUE/PROBLEM

Personnel, training, health, and operational data are all critical to effective performance of a fire company. The lack of consistent data and its accessibility create challenges and conflicts to efficient operation of companies.

SUGGESTED ACTION

Develop a standardized set of data and documents to be maintained for each member, by each company. This should include, as a minimum, an application, physician's release to perform firefighter duties, training information, driver license, working papers, etc., as deemed appropriate. Sample information and forms is provided in VFIS safety and management forms which are forwarded under separate cover.

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS, NFPA STANDARD 1201 STANDARD FOR PROVIDING EMERGENCY SERVICES TO THE PUBLIC, and USFA/NVFC PROGRAMS

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RECOMMENDATION 09-12

ISSUE/PROBLEM

The Training Requirements for individual fire departments vary by department. Given that county fire stations typically respond on automatic aid, training levels should be consistent among agencies.

SUGGESTED ACTION

Establish a standardized set of training requirements to qualify as a firefighter. A draft document to begin discussion is provided as an appendix to this report.

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS, NFPA STANDARD 1201 STANDARD FOR PROVIDING EMERGENCY SERVICES TO THE PUBLIC, and USFA/NVFC PROGRAMS

RECOMMENDATION 09-13

ISSUE/PROBLEM

A self assessment of operations by each agency found opportunities for improvement in several areas of operational performance, which are detailed in the report.

SUGGESTED ACTION

A comprehensive approach to enhancing operations through addressing the identified operational expectations established by NFPA Standard 1720 should be developed as a long-term objective and goal by the Fire Commission.

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS, NFPA STANDARD 1201 STANDARD FOR PROVIDING EMERGENCY SERVICES TO THE PUBLIC, and USFA/NVFC PROGRAMS

RECOMMENDATION 09-14

ISSUE/PROBLEM

Pre-emergency plans have been initiated, but not been conducted for all facilities and target hazards.

Without a predefined plan to identify potential hazardous facilities and emergency situations, resource needs cannot be planned for, offering the potential for greater than expected losses. While some preplanning is conducted and some plans are available, a more consistent flow of information to the Fire Chiefs, including the development of appropriate plans, photos, data sources, etc. will enhance this planning effort and ultimately improve efficiency and performance at emergencies.

SUGGESTED ACTION

Develop a process for the development, distribution, and training of pre-emergency plans for target locations as identified in the risk assessment process. This should include water supply information, as well as a hydrant out-of-service notification process. The Fire Marshal's office should serve as an integral part of this process.

PRIORITY – 3

TIME FRAME – 18 MONTHS

COST – $10,000 PER YEAR FOR OUTSIDE CONSULTING SERVICES OR TO INCREASE STAFF CAPABILITY.

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, and NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS.

RECOMMENDATION 09-15

ISSUE/PROBLEM

There are existing Standard Operating Guidelines, developed by each company which are not integrated for the combined use in the county. There is also no over-riding conceptual strategic guideline for emergency efforts.

SUGGESTED ACTION

A strategic guideline which establishes philosophical concepts for managing emergencies should be developed and implemented county-wide. An example of such a document is provided in the Appendix of this report.

PRIORITY – 1

TIME FRAME – 6 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, and NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS.

RECOMMENDATION 09-16

ISSUE/PROBLEM

There are existing Standard Operating Guidelines, developed by each department which are not integrated for the combined use in the county.

SUGGESTED ACTION

Continue the development of Standard Operating Procedures/Guidelines using a combination of the existing standard operating procedures/guidelines as the basic data/model.using the proposed procedure format and develop a prioritization for development and revision, using the information provided in this section as a guideline. It is suggested that due to the unique joint dispatching and response protocols that a team be established with no less than five members from county fire departments. As a start to this process, the study team is providing under separate cover, three suggested documents to be modified as appropriate for use in Mecklenburg County. These include a:

- high rise incident standard operating guideline
- accountability standard operating guideline
- calling a mayday standard operating guideline.

PRIORITY – 1

TIME FRAME – 6 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS, and NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS.

RECOMMENDATION 09-17

ISSUE/PROBLEM

Automatic and Mutual Aid plans are in place, but are not formalized and are not consistent. For consistency, a "box alarm" system should be developed and implemented for consistent use within the Township.

SUGGESTED ACTION

To standardize deployment to properties in Mecklenburg County, the following "box system" methodology for structure fires should be applied.

- For single family dwelling fires, a dispatch involving a complement of two engines from the two closest stations
- For commercial structures, educational facility (non-residence), non-habitational, three engines and one ladder from the four closest stations
- For health care, educational residence facilities, and industrial facilities four engines and two ladders from the four closest stations
- For automatic fire alarms, one engine and one ladder from the two closest station.

The long term goal should be to intelligently identify when equipment beyond two engines is required on single family residential fires, based on hazard, structure size, and level of internal protection.

THESE CAN BE MODIFIED BASED UPON ACTUAL RISK LEVEL, ONCE A RISK ASSESSMENT IS COMPLETED.

PRIORITY – 1

TIME FRAME – 6 MONTHS

COST – NONE ANTICIPATED

JUSTIFICATION/SUPPORT – COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS; NFPA STANDARD 1720 STANDARD FOR THE ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION EMERGENCY MEDICAL OPERATIONS, AND SPECIAL OPERATIONS TO THE PUBLIC BY VOLUNTEER FIRE DEPARTMENTS; and 2008 MONTGOMERY COUNTY FIRE SERVICE SUMMIT REPORT.

RECOMMENDATION 09-18

ISSUE/PROBLEM

The current contract in use was initiated in 1991 and required updating.

SUGGESTED ACTION

Contracts should be modified to include the following items:

- revise and update from 1991 (periodically update at least on a 5-year basis)
- include a dissolution clause for funds provided for capital investments, going forward
- include the standard of cover expectation in future contracts

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED OT START THE PROCESS.

JUSTIFICATION/SUPPORT – THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS (Management and Governance Section).

RECOMMENDATION 09-19

ISSUE/PROBLEM

The Fire Commission should be better defined to meet the current and future needs of the County Fire Services.

SUGGESTED ACTION

Define the roles of the fire commission and the county fire marshal's office along the lines of responsibility of :

The Fire Commission should be responsible for

- Assuring deployment consistency
- Develop standardized Standard Operating Guidelines
- Direct training standards

The Fire Marshal's Office should be responsible for

- Fire Inspections
- Fire Investigations
- Overview issues of coordination with State Fire Marshal/Insurance Service Office
- Public Education Program Guidance
- Coordinate Radio Maintenance and Pagers
- Liaison to Fire Departments
- Standard Operating Guideline Coordination
- Training Services Coordination
- Assist with Technology Development

PRIORITY – 2

TIME FRAME – 12 MONTHS

COST – NONE ANTICIPATED OT START THE PROCESS.

JUSTIFICATION/SUPPORT – THE COMMISSION ON FIRE ACCREDITATION SELF-ASSESSMENT PROCESS.

APPENDICES

APPENDICES

APPENDIX 1 – Municipal Fire and EMS Service Delivery Model
APPENDIX 2 – Training Requirements and Officer Qualifications by Position
APPENDIX 3 – Strategic Guidelines for Emergency Operations
APPENDIX 4 – Fire Response Data Analysis
APPENDIX 5 – Sample Pre-Emergency Planning Form
APPENDIX 6 – Recruitment and Retention Plan
APPENDIX 7 - Vehicle Assessment Form
APPENDIX 8 - Fire Station Planning Cycle and Potential Design
APPENDIX 9 - Consolidation Process Activities
APPENDIX 10 - Consulting Team
APPENDIX 11 – References

APPENDIX 1

MUNICIPAL
FIRE AND
EMERGENCY MEDICAL SERVICE
DELIVERY MODEL

MUNICIPAL FIRE/EMS SERVICE DELIVERY CHART

Based upon a meeting of the undersigned, this summary chart identifies the primary provider of services to the community.

Fire Suppression*	**ASSIGNED VFD PER TERRITORY**
Hazardous Materials – Awareness Level	**ASSIGNED VFD PER TERRITORY**
Hazardous Materials – Operations Level	**CITY OF CHARLOTTE FIRE DEPT.**
Rescue (vehicle, elevator, light entrapment)	**ASSIGNED VFD PER TERRITORY**
Confined Space Rescue	**CITY OF CHARLOTTE FIRE DEPT.**
Trench Rescue	**CITY OF CHARLOTTE FIRE DEPT.**
Technical (structural collapse) Rescue	**CITY OF CHARLOTTE FIRE DEPT.**
Water Rescue	**ASSIGNED VFD PER TERRITORY**
High Angle Rescue	**CITY OF CHARLOTTE FIRE DEPT.**
Basic Life Support – EMS	**ASSIGNED VFD PER TERRITORY & MEDIC EMS**
Advanced Life Support – EMS	**MEDIC EMS**

.

APPENDIX 2

TRAINING REQUIREMENTS BY POSITION AND OFFICER QUALIFICATIONS

Mecklenburg County Fire Services
Training Requirements By Position (Recommended)

	HM Awareness	HM Operations	Infection Control	NFPA 1403 Training	Annual 36 hour training	CPR/AED	NIMS	ICS*	EVOC	VRT	E First Responder	Firefighter I	Fire Officer I
Chief	X	X	X	X	X	X	X	X	X	X	X	X	X
Deputy Chief	X	X	X	X	X	X	X	X	X	X	X	X	X
Assistant Chief(s)	X		X	X	X	X	X	X	X	X	X	X	X
Captain(s)	X		X	X	X	X	X	X	X	X	-	-	-
Lieutenant(s)	X		X	X	X	X	X	X	X	X	-	-	-
Rescue Officer	X		X	X	X	X	X	X	X	X	X	-	-
Senior Firefighter(s)	X		X	X	X	X	X	X	X	X	-	-	-
Firefighter(s)	X		X	X	X	X	X	X	X	X	-	-	-
Probation Firefighter(s)	X		X	X	-	X	X	X	X	-	-	-	
EMS First Responder											X		

* Recruit orientation program
** If member responds to these type calls, they must have this training
NOTE: Anyone may be responsible for a task that may be within the ICS and should be understanding of the system. ICS is required by NIMS (IC 100, IC 200, IC 700).
NOTE: Physical Exams required as denoted by age.
NOTE: Fire Officer I Equivalent includes: Tactics and Strategy, INSTRUCTOR Supervision classes

APPENDIX 3

STRATEGIC GUIDELINE
FOR
EMERGENCY OPERATIONS

Mecklenburg County Fire Services

DRAFT - Standard Operational Guideline - DRAFT

S.O.P Title: Strategic Guidelines
Original Issue Date:
Latest Revision:

Authorized By_____

This Strategic Guideline identifies and outlines some basic rules and principles that relate to the major areas of fire fighting strategy and subsequent fireground activity. The uniform application of this guideline will produce favorable fireground outcomes. This guideline is designed to offer a basis and simple framework for Mecklenburg County Fire Services fireground operations and command; it also represents many existing practices, and a defining of how this department is expected to perform during certain emergencies.

STRATEGIC PRIORITIES

There are four separate strategic priorities that must be considered in order to stabilize fireground situations - these priorities also establish the order that other basic fireground functions must be performed. These strategic priorities should be regarded as separate, yet interrelated, activities that must be considered in order. The Incident Commander cannot proceed on to the next priority until the objective of the current function has been completed.

The Basic Strategic Priorities are as follows:

Life Safety (Rescue) - The activities required to protect occupants, and to treat the injured.

a) Removing victims from threat
b) Removing threat from victims
c) Defending in place, to buy time

Exposure Protection - Keep things (persons or property) that are threatened by fire from being damaged by fire.

Fire Control/Extinguishment - The activities required to stop the forward progress of the fire and to bring the fire under control, and complete extinguishment.

Property Conservation - The activities required to stop or reduce additional loss to property. This includes but is not limited to salvage.

All four strategic priorities require a somewhat different tactical approach from both a command and an operational standpoint. While the Incident Commander should satisfy the objectives of each function in its priority order, he must, in many cases, overlap and "mix" the activities of each to achieve completion. Notable examples of this are the need many times to achieve interior tenability with active/extensive fire control efforts before getting on with primary search, or the need to initiate salvage operations while active fire control efforts are being extended.

1. LIFE SAFETY

It shall be a standard Mecklenburg County Fire Services guideline to extend a primary and secondary search in ALL involved and dangerously exposed areas that can be entered in accordance with the Occupational Safety & Health Administration (OSHA) 2 in 2 out rule. The Incident Commander and operating companies cannot depend upon reports from spectators to determine status of victims. Fire Department personnel should utilize such civilian reports as to the location, number and condition of victims as information that "supports" routine primary search efforts. Positive information from spectators about victims inside shall be considered sufficient for the OSHA rescue exception. Other probabilities as well may indicate a situation where the OSHA exception applies. Such activity must only be carried out with the knowledge and consent of the Incident Commander in order to insure the safety of the rescuers.

The Incident Commander must structure initial operations around the completion of the **primary search**. Primary search means companies have quickly gone through ALL occupiable area(s) and verify the removal and/or safety of all occupants. Asking spectators or one time occupants "is everybody out?", or the status of the fire, is not enough. Time is the critical factor in the primary search process and successful primary search operations must be extended quickly and during initial fire stages to be regarded as being primary. The completion of the primary search shall be reported to the Incident Commander using plain language by those who were assigned the task. It is the responsibility the Incident Commander to coordinate primary search assignments, secure completion reports from interior companies and to communicate the search accomplishment to all units operating on the scene. The Incident Commander must make specific primary search assignments to companies to cover specific areas of large complex occupancies and maintain on-going control of such companies until the entire area is searched. Once the primary search has been completed and communicated to all units, the Incident Commander must take steps to maintain control of access to the fire area; beware of occupants (and others) re-entering the building.

The life safety functions that follow lengthy fire control activities are regarded as representing a **secondary search**. A secondary search means that fire companies thoroughly search the interior of the fire area after initial fire

control and ventilation activities have been completed. Different companies should preferably complete a secondary search than those involved in the primary search activities. Thoroughness (rather than time) is the critical factor in a secondary search.

The *stage of the fire* becomes a critical factor that affects the life safety approach developed by the Incident Commander. The following items outline the basic approach of the Incident Commander to standard fire stages:

Nothing Showing - In nothing showing situations or in very minor fire cases that clearly pose no life hazard, the officer in charge must organize and direct a rapid interior search and those carrying out that task must promptly report their findings. In such cases, the interior search for victims will also verify no fire.

Smoke Showing - In smoke showing and working fire situations, fire control efforts must be extended simultaneously with rescue operations to gain entry and to control interior access to complete the primary search. In such cases, the Incident Commander and all operating companies must be aware that the operation is in a rescue mode until primary search is complete, regardless of the fire control required. In working fire situations, primary search must be followed by a secondary search.

Fully Involved - In cases of fully involved buildings or sections of buildings, immediate entry (and primary search activities) becomes impossible and survival of the occupants improbable, the incident commander must initially report fully involved conditions and that a primary search is not possible. As quickly as fire control is achieved, Command must then structure what is in effect a secondary search for victims.

The Incident Commander must consider the following factors in developing a basic life safety size-up:

Number, location and condition of victims.
Effect the fire has on the victims.
Capability of the fire-rescue forces to enter the building, remove and protect the victims and control the fire.

The most urgent reason for the special calling of additional units is for the purpose of covering life safety. It is the responsibility of the Incident Commander to develop a realistic (and pessimistic) rescue size up as early as possible.

The Incident Commander must make one of these three basic life safety decisions.

Do we remove victims from the threat?

Do we remove the threat from the victims?

Do we buy time until more resources are available?

In some cases occupants may be safer in their rooms than moving through contaminated hallways and interior areas. Also, such movement may impede interior fire fighting. In still other cases the fire-rescue personnel may have no choice in the matter; some occupants will insist in evacuation while others will refuse to leave the relative safety of their rooms.

Life Safety efforts should be extended in the following order:

Most severely threatened.
The largest number (groups).
People in the remainder of the fire area.
People in the exposed areas.

All initial attack forces must be directed toward supporting rescue efforts and hose lines must be placed in a manner to control interior access, confine the fire, and protect avenues of escape. Hose line placement becomes a critical factor in these cases and all operating companies must realize that the operation is in a Life Safety (rescue) Mode and if necessary operate in a manner that writes off the structure in order to buy rescue time.

Normal means of interior access (stairs, halls, interior public areas, etc.) should be utilized to remove victims whenever possible. Secondary means of rescue (ladders, fire escapes, and the like), should be utilized only in their order of effectiveness.

It shall be the responsibility of the incident commander to structure the treatment of victims after removal. Multiple victims should be removed to the same location for more effective treatment. The incident commander should direct and coordinate the "EMS" structure whenever possible. Implementation of the "Mass Casualty" might be in order depending upon circumstances and the number of victims.

2. FIRE CONTROL

It shall be the standard _____ Fire and Emergency Medical Services operating procedure to attempt to stabilize fire conditions by extending wherever possible an **aggressive**[11] well-placed and adequate interior fire attack effort and to support that attack with whatever resource and

[11] A well- thought out, staffed, equipped, and supplied (GPM) fire fighting\life safety effort.

action is required to reduce fire extension and to bring the fire under control. Incident commanders must develop a fire control plan of attack that first stops the forward progress of the fire and then brings the fire under control. In most cases, the first arriving company will not *immediately* have adequate resources to accomplish all of the attack needs that may be faced. The initial Incident Commander must prioritize attack efforts, act as a resource allocator and determine the resources the fire will eventually require. Accurate forecasting of conditions by the Incident Commander becomes critical during this initial evaluation process.

There will be cases where the entire first arriving engine company (as a whole, fully geared unit!) may be required to enter a structure to locate, search, and operate an attack line from a standpipe system. This situation will most likely occur in buildings such as college dormitories, high rise, and modern low-rise buildings. When this "total engine company" enters the structure, **the second arriving engine must function as the water supply company feeding the various fixed fire protection systems being used.** Radio communication becomes critical during this process. Other arriving units must know what the first arriving unit is doing. The *Total Engine Company Concept* is an option, and mentioned here for individual officer consideration.

Fires should be fought from the unburned side. Attack from the burned side generally will drive the fire, smoke and heat into uninvolved portions of the building and the interior control forces out of the building.

Fires should be fought from the interior. The fastest place to put water on the fire is generally from the outside at the point where the fire is burning out of the building – most of the time this is the worst application point.

The Incident Commander must consider the most dangerous path of travel and avenue of fire extension, particularly as it affects rescue activities, confinement efforts, and exposure protection. Resources must then be allocated based upon this fire growth prediction.

Initial attack efforts must be directed toward supporting primary search. The first attack line must go between the victims and the fire and protect avenues of escape.

First arriving units must determine fire location and extent before starting fire operations (as far as possible). All such beginning operations must be communicated.

Put water on fire: The rescue, exposure protection, confinement, extinguishment, overhaul, ventilation & salvage problem is solved in the majority of cases by a fast, strong, well-placed attack.

The Incident Commander must consider seven (7) sides (or sectors) of the fire: front, back, sides, top, bottom and interior.

The Incident Commander must develop a conscious time decision with regard to both the size of the attack and the position of the attack. The bigger the attack, the longer it takes to get it going; the more the interior attack is repositioned, the longer it will take to complete the task. "*Where the fire is going to be?*" after set up is completed, is an important question that must be answered.

Lacking direction, when fire is showing, companies will many times lay hose and put water on the fire utilizing the fastest, shortest, most direct route. This process has been identified in some fire service texts as the "candle-moth syndrome"; everyone wants to go to the flames. It is the responsibility of the Incident Commander to insure that all operations are "directed" activities.

When the fire is coming out of a burning building and not affecting exposures, **let it vent**. Launch an interior attack from the unburned side. It is generally venting in the proper direction. Placing a hose stream in the ventilation opening is dangerous, careless and reckless. It requires discipline on the part of the fire fighters and fire officers not to do so, and not submit to "candle-moth" temptations.

The Incident Commander must develop critical decisions that relate to cut-off points and must approach fire spread determinations with pessimism. It takes a certain amount of time to "get water" and the fire continues to burn while the attack gets set up. The Incident Commander must consider where the fire will be when attack efforts are ready to actually go into operation; if the Incident Commander misjudges, the fire may burn past the planned attack/cut-off position.

Don't put water into burned-out property, particularly where there is unburned property elsewhere left to burn. It is generally improper to operate fire streams into property that is already lost, many times such activity is done at the expense of exposed unburned property, and wastes valuable extinguishment efforts. Write-Off property that is already lost and go on to protect exposed property based on the most dangerous direction of spread. Do not continue to operate in positions that are essentially lost.

3. PROPERTY CONSERVATION

It shall be standard Mecklenburg County Fire Services operating guideline to commit whatever fireground resource is required to reduce property loss to an absolute minimum. **It must be stressed that; the age old practice of taking chances with fire fighter lives for vacant and derelict buildings is no longer acceptable!** *The Incident Commander must weigh the risk versus the benefit, at all operations.* The activities that relate to effective property conservation require the same early and on-going command functions and

aggressive action as both rescue and fire control. All members are expected to perform in a manner that continually reduces loss during fire operations.

When the fire is out - shut down fire streams. Early recognition that the forward progress of the fire has been stopped is an important element in reducing loss. The earlier the salvage operations begin, the smaller the loss.

When basic fire control has been achieved, the Incident Commander must commit and direct companies into "stop loss" activities; such activities generally include:

Evaluating damage to overall fire area.

Evaluating the salvage value of various areas.

Evaluate resources that will be required.

Committing the necessary companies to salvage functions.

Reducing hose lines from fire control functions to salvage functions.

Additional rotation of personnel due to fatigue.

In cases where there is an overlapping need for both fire control and salvage to be performed simultaneously and where initial arriving companies are involved in fire fighting and salvage remains undone, it shall be considered reasonable to special call additional resources to perform salvage functions.

Be aware that personnel involved in rescue and fire control operations are generally fatigued and have reached a state of reduced efficiency by the time property conservation functions must be completed - this can result in a high potential for injury. The incident commander must evaluate personnel conditions and replace with fresh companies if needed.

4. ASSUMPTION OF COMMAND

First Arriving Unit: The first arriving unit or officer is responsible for initially assuming command. This individual (officer or member in charge of the unit) retains command responsibilities until command is transferred to a higher-ranking officer or until the incident is terminated. This assumption of command by the first unit is **mandatory**.

As the identity of the incident commander changes through the formal *command transfer process*, the responsibility for command functions also changes. (Note: The Incident Commander is responsible for all Command functions, all of the time during the incident) The term INCIDENT COMMANDER refers jointly to the person, the functions, and the location of who ever is in charge, and provides a standard identification tag for the **single**

person in charge. With this system, it should be all but impossible for more than one officer to act as an Incident Commander at any one time on any one incident scene.

Incident Commander Modes - When the first unit arrives, quick decisions must be made as to which of the following commitments the unit will make:

NOTHING SHOWING MODE - Generally requires investigation by the first arriving unit while others remain in a stand-by position. Usually, the officer on the first unit will go with the investigating company while **using the portable radio to continue the command function**. In effect, this creates a "mobile command"; a condition that is otherwise undesirable.

FAST ATTACK MODE - Requires immediate action to stabilize (e.g., a working, interior fire in a residence, apartment or small commercial occupancy). For an offensive fast attack, the choice may be to lead the attack while utilizing the portable radio to continue command. This fast attack mode should be concluded rapidly with one of the following outcomes:

Situation stabilized by the offensive attack.

Command transferred to the first arriving chief officer

Situation not stabilized; member in charge of the first arriving unit moves to an exterior (stationary) command position.

The Fast Attack Mode will most likely be the mode most officers will utilize in the beginning, at the majority of fires.

COMMAND MODE - Because of the size of the fire, complexity of the occupancy, or the possibility of extension, some situations will demand strong direct command from the outset. In these cases, the first arriving unit will maintain at an exterior command position and remain there until relieved of command.

Chief officers arriving upon the scene of an incident not yet declared under control may "take" Command by a formal process. The actual command transfer is regulated by a very simple, straightforward procedure that includes: Contacting the Incident Commander directly. (Face to face is always preferable), however, transfer of command by radio can be accomplished during fairly simple incidents when the responding officer has "copied' all Command activity made before arrival. Standard communications must be followed.

The officer being relieved will provide a briefing that includes:

- Initial Situation - "What was it like when you arrived?"
- Deployment & Assignment - "What you are doing?"

- Strategic and Tactical Plan - "What would you do if I wasn't here?"
- Safety Considerations- "Are there any unusual safety problems that you know of?

This briefing concludes with a confirmation of command transfer. It should be a short, straight to the point exchange!

The Dispatch Center shall be advised what unit identifies the Incident Commander. Transfer of Command takes place on the scene only. Only the Incident Commander shall do radio communications from the scene to the dispatch center.

APPENDIX 4

FIRE RESPONSE DATA ANALYSIS

ESECG
Emergency Services Education & Consulting Group
A Subsidiary of VFIS

FireStats

DATA ANALYSIS FOR THE FIRE SERVICE

Mecklenburg County Fire Department Consolidation Study

Summary Statistical Study of Fire Department Response-related Operations for 1-1-06 through 12-31-08

Prepared by
FireStats, LLC.
Nevada City, California

Introduction

FireStats, LLC., (FireStats) was engaged by VFIS to examine the data provided to VFIS by the Mecklenburg County fire agency proponents of the subject study. The data was in Microsoft Excel format and was manipulated within Excel and imported into MySQL format by FireStats onto a secure database environment for analysis with FireStats' proprietary fire service data analysis tools. Most of the analyses were performed in Excel, however.

The scope of this examination was limited to several basic objectives by virtue of the limited detail of the data provided. These include turnout times, travel times and response times by first at-scene unit, and call distributions by certain sub-categories of data, including call type, jurisdiction of call and first at-scene unit.

To accomplish the objectives described above, FireStats examined all run data provided for a 36-month period from Jan 2006 to Dec 2008. The results of that examination are listed below. While a more detailed examination will likely yield more meaningful observations, the scope of this investigation was designed to give an overview of the subject agencies' operations profiles rather than to provide a battery of detailed statistics.

Note that many of the observations use different numbers of calls because it is best practice to use the maximum number of records available for each separate analysis and not to rely only on the records that are complete in every way irrespective of whether or not the incomplete records may be otherwise useful. For example, while a response time was only available where a unit actually arrived at scene, the record of the call having occurred is available for all calls – including those cancelled enroute. This allows for the measurement of some things for some call records while all call records may not lend themselves to all metrics used in this report. With this approach we will therefore see more calls analyzed in the call counts analysis than in the response time analysis.

Additional analyses performed under a broader scope of work may yield significant observations about performance of certain engine companies under certain conditions (e.g. response times into certain geographic areas, by shift, latter-due units, et. al.)

General Conclusions and Recommendations for Further Investigation

The data appear valid. This means that the records in the records management system are not corrupted and there does not appear to be an inordinately high error rate in record input. There is indeed room for improvement insofar as many records were excluded from the analysis due to incompleteness or ambiguity of certain details.

Although no comparable data are offered here in support of this assertion, overall turnout times, travel times and response times appear to be well within the range of normal for comparable departments.

Mutual aid equity was not examined in the scope of work provided and the data will not support such an analysis to the extent that some unit response information is absent.

The number and duration of incidents that drew down resources to critical levels will be examined in greater detail pending some additional information and direction from the project proponents. The data set thus far provided FireStats will not yield relevant observations and analysis nor identify operational conditions under which critical drawdowns of resources may be anticipated.

Definitions

The four critical time segments in every call are defined below, as well as the method for determining mutual aid.

Turnout Time

The time elapsed from dispatch until the unit gets underway. This is measured by subtracting the time of the alarm from the time the engine goes enroute.

Travel Time

The elapsed time from the time the unit gets underway, or is enroute, to the time the unit arrives at scene. This is measured by subtracting the time the unit goes en route from the time the unit arrives at scene.

Response Time

The time elapsed from dispatch until the unit arrives at scene. Response time may be calculated as the sum of turnout time and time enroute but is best calculated as at-scene time minus dispatch time. Both calculations, if done properly, will yield the same result, but some calls that are cancelled en-route may have zero travel times and will show a response time, therefore, equal to the turnout time.

Committed Time

The time elapsed from dispatch until the unit reports "clear" from an incident and is ready for a new assignment. Typically, the clear time will be the available time. This is because most units become available once an incident is terminated. Due to the limitations of the given dataset remarked upon below, the committed time for the purposes of this analysis have not been included.

Mutual Aid Given / Received

There is a mutual aid call type identified. This call type, along with several others, including "station coverage" is counted as a Code 2 response and is therefore not included in any perfoemance measurements.

Notes on Data Manipulation

The data was provided in the form of three Excel files – one for each of the three years examined. While there is a large amount of data in the files that pertain to the calls and apparatus activity, every piece of apparatus that responded to each call is not accounted for. We therefore were unable to definitively determine response times for any unit other than the first unit recorded as at-scene. All other data was therefore coded in our analysis such that it was excluded from response-time analyses.

What we cannot know for each call is:

- The response times for latter-due units
- How many units from each jurisdiction responded other than the first unit to arrive at scene.

By extension, what we could not report on was:

- Concentration (how many units were committed and for how long)
- Availability (how often a unit and/or department was not available to respond to a call)
- Committed times of latter-due units
- Units cancelled in-route other than the first from each jurisdiction
- Travel times of latter-due units

What we could report on was:

- Call volume by city, hour of day, day of week, month, year and call type
- Committed times for first unit from each department at scene
- Turnout times or first unit from each department at scene
- Turnout times for first department unit at-scene by hour of day, day of week, call type
- Travel times for first department unit at-scene (with unit identified)
- Travel times for first department at-scene units by hour of day, day of week, call type
- Response times for first department unit at-scene (with unit identified)
- Response times for first department at-scene units by hour of day, day of week, call type
- Mutual aid provided (first unit only)

The final analyses within each grouping are cumulative frequencies for the response times of the first unit to arrive at an incident where the response is Code 3 and under 25 minutes.

Data Analysis

Call Volume by Year

Table 1 below identifies call volume by year for the entire system analyzed.

Table 1. Call Volume and Responses 2006 -- 2008

Incidents and Records	Count
Number of Unique Incidents*	14,851
Number of Latter-due Responses Provided**	8,823
Total	**23,674**

* The number of unique records indicates the number of calls and also the number of first-arriving units for each call – of which there is only one per call.

** The number of latter-due response provided is not the total number of non-first-in units that responded as the records for each call only tracked the first unit from each agency. Therefore any analysis of latter-due units is limited to the firs unit from each unique agency committing resources.

Table 2 below identifies call volume by type of call by year for the entire system analyzed.

Table 2. Calls by Type by Year 2006 – 2008.

Inc. Type	2006	2007	2008	Total
Alarm	1762	1755	1861	5378
CO	294	316	341	951
Fire	2097	2276	2029	6402
Other	11	22	38	71
Veg Fire	380	436	509	1325
Vehicle Fire	255	267	202	724
Total	**4799**	**5072**	**4980**	**14851**

Table 3 below identifies call volume by City in which the call occurred by year for the entire system analyzed.

Table 3. Calls by City by Year 2006 – 2008.

City	2006	2007	2008	Total
Charlotte	1383	1405	1347	4135
Concord	1	1	1	3
Cornelius	499	589	542	1630
Davidson	345	292	342	979
Fort Mill		1		1
Harrisburg	3	7	8	18
Huntersville	888	959	884	2731
Kannapolis		1		1
Lowell			1	1
Mathews	18	14	5	37
Matthews	552	610	656	1818
Mecklenburg	30	26	8	64
Mint Hill	316	380	400	1096
Mint Hill				
Mooresville			1	1
Pineville	391	384	385	1160
Stalling	1	2	4	7
Weddington	1		1	2
No City Identified	370	401	395	1166
Total	**4799**	**5071**	**4980**	**14850**

Table 4 below identifies call volume by type of call by city for all years aggregated for the entire system analyzed.

Table 4. Calls by Type by City All Years Aggregated 2006 – 2008.

City	Alarm	CO	Fire	Other	Veg. Fire	Veh. Fire	Total
Charlotte	1351	325	1698	22	481	258	4135
Concord	1	1	1				3
Cornelius	623	102	747	15	98	45	1630
Davidson	498	31	380	6	44	20	979
Fort Mill			1				1
Harrisburg	4		14				18
Huntersville	973	245	1205	12	198	98	2731
Kannapolis			1				1
Lowell			1				1
Mathews	23		12		1	1	37
Matthews	767	99	669	4	176	103	1818
Mecklenburg		3	19		7	35	64
Mint Hill	281	66	556	2	150	41	1096
Mint Hill Mooresville			1				1
Pineville	588	22	417	3	64	66	1160
Stalling	1		6				7
Weddington			2				2
No City Identified	268	57	671	7	106	57	1166
Total	**5378**	**951**	**6401**	**71**	**1325**	**724**	**14850**

Table 5 below identifies call volume by type of call by city for 2006 for the entire system analyzed.

Table 5. Calls by Type by City -- 2006.

City	Alarm	CO	Fire	Other	Veg. Fire	Veh. Fire	Total
Charlotte	458	101	592	7	143	82	1383
Concord			1				1
Cornelius	214	34	218	1	16	16	499
Davidson	165	8	147	1	15	9	345
Fort Mill							
Harrisburg	1		2				3
Huntersville	318	72	393		61	44	888
Kannapolis							
Lowell							
Mathews	13		5				18
Mathews	224	31	210	1	46	40	552
Mecklenburg		2	7		2	19	30
Mint Hill	76	21	171		41	7	316
Mint Hill							
Mooresville							
Pineville	208	7	136		21	19	391
Stallings			1				1
Weddington			1				1
(blank)	85	18	212	1	35	19	370
Total	**1762**	**294**	**2096**	**11**	**380**	**255**	**4798**

Table 6 below identifies call volume by type of call by city for 2007 for the entire system analyzed.

Table 6. Calls by Type by City -- 2007.

City	Alarm	CO	Fire	Other	Veg. Fire	Veh. Fire	Total
Charlotte	424	108	613	7	162	91	1405
Concord	1						1
Cornelius	224	30	287	6	28	14	589
Davidson	153	10	106	1	12	10	292
Fort Mill			1				1
Harrisburg	1		6				7
Huntersville	315	95	437	3	72	37	959
Kannapolis			1				1
Lowell							
Mathews	8		4		1	1	14
Mathews	264	29	230	1	55	31	610
Mecklenburg			9		3	14	26
Mint Hill	90	18	201		51	20	380
Mint Hill							
Mooresville							
Pineville	182	6	151	1	21	23	384
Stallings			2				2
Weddington							
(blank)	93	20	228	3	31	26	401
Total	**1755**	**316**	**2276**	**22**	**436**	**267**	**5072**

Table 7 below identifies call volume by type of call by city for 2008 for the entire system analyzed.

Table 7. Calls by Type by City -- 2008.

City	Alarm	CO	Fire	Other	Veg. Fire	Veh. Fire	Total
Charlotte	469	116	493	8	176	85	1347
Concord		1					1
Cornelius	185	38	242	8	54	15	542
Davidson	180	13	127	4	17	1	342
Fort Mill							
Harrisburg	2		6				8
Huntersville	340	78	375	9	65	17	884
Kannapolis							
Lowell			1				1
Mathews	2		3				5
Mathews	279	39	229	2	75	32	656
Mecklenburg		1	3		2	2	8
Mint Hill	115	27	184	2	58	14	400
Mint Hill							
Mooresville			1				1
Pineville	198	9	130	2	22	24	385
Stallings	1		3				4
Weddington			1				1
(blank)	90	19	231	3	40	12	395
Grand Total	**1861**	**341**	**2029**	**38**	**509**	**202**	**4980**

Table 8 below identifies call volume by type Radio Name Category for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The Radio Name Categories were determined from the records provided and are presumed to denote the jurisdiction that owns the unit that responded. In only a statistically-insignificant number of calls were there records of multiple units from the same Radio Name Category responding. This is presumed to be records management anomaly and not intended to suggest that only a de minimus number of units responded from the same jurisdiction. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 8. Count of First At-scene Units by Radio Name Category by Year – 2006 -- 2008.

Radio Name Category	2006	2007	2008	Total
CAR	10	2	9	21
COO	24	34	44	102
COR	173	234	236	643
DAV	76	66	72	214
GIL	90	93	98	281
HUN	229	280	205	714
IDL	79	85	83	247
LON	50	55	51	156
MAL	50	43	30	123
MAT	183	220	205	608
MIN	163	215	199	577
NEW	46	44	25	115
PIN	135	149	138	422
PRO	25	20	11	56
ROB	88	124	105	317
STE	72	105	78	255
WES	97	104	67	268
Total	**1,590**	**1,873**	**1,656**	**5,119**

Table 9 below identifies average response time by type Radio Name Category for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 9. Average of First At-scene Units' Response Times by Radio Name Category by Year – 2006 -- 2008

Radio Name Category	2006	2007	2008	Total
CAR	0:07:32	0:12:03	0:08:49	0:08:31
COO	0:08:34	0:08:59	0:08:28	0:08:40
COR	0:04:52	0:04:44	0:04:40	0:04:45
DAV	0:07:04	0:05:49	0:05:57	0:06:18
GIL	0:06:13	0:05:17	0:05:31	0:05:40
HUN	0:06:29	0:06:12	0:05:54	0:06:12
IDL	0:06:23	0:06:13	0:05:54	0:06:10
LON	0:06:39	0:07:18	0:07:14	0:07:04
MAL	0:06:34	0:08:32	0:07:48	0:07:33
MAT	0:06:23	0:06:11	0:06:46	0:06:26
MIN	0:06:58	0:07:00	0:06:54	0:06:57
NEW	0:09:09	0:08:52	0:08:22	0:08:53
PIN	0:07:30	0:07:24	0:07:25	0:07:26
PRO	0:08:19	0:07:39	0:07:16	0:07:52
ROB	0:09:40	0:08:04	0:08:05	0:08:31
STE	0:09:05	0:09:40	0:09:05	0:09:19
WES	0:07:55	0:07:27	0:07:46	0:07:42
Total	**0:06:58**	**0:06:45**	**0:06:38**	**0:06:47**

Table 10 below identifies maximum response time by type Radio Name Category for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 10. Maximum of First At-scene Units' Response Times by Radio Name Category by Year – 2006 -- 2008

Radio Name Category	2006	2007	2008	Total
CAR	0:11:09	0:12:37	0:13:16	0:13:16
COO	0:15:17	0:15:41	0:23:16	0:23:16
COR	0:15:44	0:14:31	0:20:08	0:20:08
DAV	0:18:58	0:17:02	0:24:53	0:24:53
GIL	0:13:21	0:16:04	0:14:44	0:16:04
HUN	0:22:21	0:17:26	0:15:00	0:22:21
IDL	0:19:08	0:13:43	0:13:36	0:19:08
LON	0:12:15	0:12:49	0:14:08	0:14:08
MAL	0:11:14	0:19:26	0:17:57	0:19:26
MAT	0:18:42	0:18:44	0:23:13	0:23:13
MIN	0:24:14	0:19:09	0:19:37	0:24:14
NEW	0:19:09	0:16:53	0:11:53	0:19:09
PIN	0:21:43	0:18:37	0:22:13	0:22:13
PRO	0:18:56	0:15:25	0:11:53	0:18:56
ROB	0:22:03	0:19:50	0:18:05	0:22:03
STE	0:24:24	0:22:53	0:24:00	0:24:24
WES	0:14:10	0:20:50	0:17:37	0:20:50
Total	**0:24:24**	**0:22:53**	**0:24:53**	**0:24:53**

Table 11 below identifies minimum response time by type Radio Name Category for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 11. Minimum of First At-scene Units' Response Times by Radio Name Category by Year – 2006 -- 2008

Radio Name Category	2006	2007	2008	Total
CAR	0:05:08	0:11:28	0:03:48	0:03:48
COO	0:00:06	0:03:26	0:00:15	0:00:06
COR	0:00:07	0:00:06	0:00:08	0:00:06
DAV	0:00:55	0:00:44	0:00:10	0:00:10
GIL	0:00:06	0:00:08	0:00:08	0:00:06
HUN	0:00:10	0:00:06	0:00:08	0:00:06
IDL	0:02:20	0:02:14	0:00:07	0:00:07
LON	0:01:15	0:00:07	0:00:05	0:00:05
MAL	0:00:07	0:00:10	0:00:11	0:00:07
MAT	0:00:05	0:00:07	0:00:08	0:00:05
MIN	0:00:08	0:00:08	0:00:09	0:00:08
NEW	0:01:27	0:00:06	0:04:13	0:00:06
PIN	0:00:08	0:00:14	0:00:07	0:00:07
PRO	0:00:07	0:00:07	0:00:09	0:00:07
ROB	0:00:06	0:00:10	0:00:36	0:00:06
STE	0:02:52	0:00:06	0:02:24	0:00:06
WES	0:00:07	0:00:08	0:00:10	0:00:07
Grand Total	**0:00:05**	**0:00:06**	**0:00:05**	**0:00:05**

Table 12 below identifies range of response times by type Radio Name Category for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 12. Range of First At-scene Units' Response Times by Radio Name Category by Year – 2006 -- 2008

Radio Name Category	2006	2007	2008	Total
CAR	0:06:01	0:01:09	0:09:28	0:09:28
COO	0:15:11	0:12:15	0:23:01	0:23:10
COR	0:15:37	0:14:25	0:20:00	0:20:02
DAV	0:18:03	0:16:18	0:24:43	0:24:43
GIL	0:13:15	0:15:56	0:14:36	0:15:58
HUN	0:22:11	0:17:20	0:14:52	0:22:15
IDL	0:16:48	0:11:29	0:13:29	0:19:01
LON	0:11:00	0:12:42	0:14:03	0:14:03
MAL	0:11:07	0:19:16	0:17:46	0:19:19
MAT	0:18:37	0:18:37	0:23:05	0:23:08
MIN	0:24:06	0:19:01	0:19:28	0:24:06
NEW	0:17:42	0:16:47	0:07:40	0:19:03
PIN	0:21:35	0:18:23	0:22:06	0:22:06
PRO	0:18:49	0:15:18	0:11:44	0:18:49
ROB	0:21:57	0:19:40	0:17:29	0:21:57
STE	0:21:32	0:22:47	0:21:36	0:24:18
WES	0:14:03	0:20:42	0:17:27	0:20:43
Grand Total	**0:24:19**	**0:22:47**	**0:24:48**	**0:24:48**

Table 13 below identifies standard deviation of response times by type Radio Name Category for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 13. Standard deviation of First At-scene Units' Response Times by Radio Name Category by Year – 2006 -- 2008

Radio Name Category	2006	2007	2008	Total
CAR	0:02:23	0:00:49	0:03:14	0:00:00
COO	0:03:25	0:03:18	0:03:55	0:03:35
COR	0:02:13	0:02:25	0:02:27	0:00:00
DAV	0:03:27	0:03:07	0:03:18	0:03:41
GIL	0:02:27	0:02:15	0:02:32	0:00:00
HUN	0:03:05	0:02:43	0:02:24	0:02:49
IDL	0:02:59	0:02:11	0:02:15	0:00:00
LON	0:02:31	0:02:24	0:03:06	0:02:50
MAL	0:02:49	0:03:43	0:03:25	0:03:23
MAT	0:02:58	0:02:57	0:02:51	0:00:00
MIN	0:03:19	0:03:03	0:02:45	0:03:04
NEW	0:03:24	0:03:26	0:01:58	0:00:00
PIN	0:03:25	0:03:27	0:03:24	0:03:42
PRO	0:04:24	0:04:04	0:03:17	0:04:02
ROB	0:03:57	0:03:27	0:03:21	0:03:38
STE	0:03:45	0:04:06	0:03:52	0:03:56
WES	0:02:39	0:03:55	0:03:47	0:03:28
Grand Total	**0:00:00**	**0:06:05**	**0:00:00**	**0:06:05**

Table 14 below identifies the range of descriptive statistics from the Radio Name table above for 2006 for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 14. Descriptive Statistics of First At-scene Units' Response Times by Radio Name Category – 2006

Radio Name Category	Count	Average	Max	Min	Range	Std. Dev.
CAR	10	0:07:32	0:11:09	0:05:08	0:06:01	0:02:23
COO	24	0:08:34	0:15:17	0:00:06	0:15:11	0:03:25
COR	173	0:04:52	0:15:44	0:00:07	0:15:37	0:02:13
DAV	76	0:07:04	0:18:58	0:00:55	0:18:03	0:03:27
GIL	90	0:06:13	0:13:21	0:00:06	0:13:15	0:02:27
HUN	229	0:06:29	0:22:21	0:00:10	0:22:11	0:03:05
IDL	79	0:06:23	0:19:08	0:02:20	0:16:48	0:02:59
LON	50	0:06:39	0:12:15	0:01:15	0:11:00	0:02:31
MAL	50	0:06:34	0:11:14	0:00:07	0:11:07	0:02:49
MAT	183	0:06:23	0:18:42	0:00:05	0:18:37	0:02:58
MIN	163	0:06:58	0:24:14	0:00:08	0:24:06	0:03:19
NEW	46	0:09:09	0:19:09	0:01:27	0:17:42	0:03:24
PIN	135	0:07:30	0:21:43	0:00:08	0:21:35	0:03:25
PRO	25	0:08:19	0:18:56	0:00:07	0:18:49	0:04:24
ROB	88	0:09:40	0:22:03	0:00:06	0:21:57	0:03:57
STE	72	0:09:05	0:24:24	0:02:52	0:21:32	0:03:45
WES	97	0:07:55	0:14:10	0:00:07	0:14:03	0:02:39
Total	**1,590**	**0:06:58**	**0:24:24**	**0:00:05**	**0:24:19**	**0:00:00**

Table 15 below identifies the range of descriptive statistics from the Radio Name table above for 2007 for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 15. Descriptive Statistics of First At-scene Units' Response Times by Radio Name Category – 2007

Radio Name Category	Count	Average	Max	Min	Range	Std. Dev.
CAR	2	0:12:03	0:12:37	0:11:28	0:01:09	0:00:49
COO	34	0:08:59	0:15:41	0:03:26	0:12:15	0:03:18
COR	234	0:04:44	0:14:31	0:00:06	0:14:25	0:02:25
DAV	66	0:05:49	0:17:02	0:00:44	0:16:18	0:03:07
GIL	93	0:05:17	0:16:04	0:00:08	0:15:56	0:02:15
HUN	280	0:06:12	0:17:26	0:00:06	0:17:20	0:02:43
IDL	85	0:06:13	0:13:43	0:02:14	0:11:29	0:02:11
LON	55	0:07:18	0:12:49	0:00:07	0:12:42	0:02:24
MAL	43	0:08:32	0:19:26	0:00:10	0:19:16	0:03:43
MAT	220	0:06:11	0:18:44	0:00:07	0:18:37	0:02:57
MIN	215	0:07:00	0:19:09	0:00:08	0:19:01	0:03:03
NEW	44	0:08:52	0:16:53	0:00:06	0:16:47	0:03:26
PIN	149	0:07:24	0:18:37	0:00:14	0:18:23	0:03:27
PRO	20	0:07:39	0:15:25	0:00:07	0:15:18	0:04:04
ROB	124	0:08:04	0:19:50	0:00:10	0:19:40	0:03:27
STE	105	0:09:40	0:22:53	0:00:06	0:22:47	0:04:06
WES	104	0:07:27	0:20:50	0:00:08	0:20:42	0:03:55
Total	**1,873**	**0:06:45**	**0:22:53**	**0:00:06**	**0:22:47**	**0:06:05**

Table 16 below identifies the range of descriptive statistics from the Radio Name table above for 2008 for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 16. Descriptive Statistics of First At-scene Units' Response Times by Radio Name Category – 2008

Radio Cat	Count	Average	Max	Min	Range	Std. Dev.
CAR	9	0:08:49	0:13:16	0:03:48	0:09:28	0:03:14
COO	44	0:08:28	0:23:16	0:00:15	0:23:01	0:03:55
COR	236	0:04:40	0:20:08	0:00:08	0:20:00	0:02:27
DAV	72	0:05:57	0:24:53	0:00:10	0:24:43	0:03:18
GIL	98	0:05:31	0:14:44	0:00:08	0:14:36	0:02:32
HUN	205	0:05:54	0:15:00	0:00:08	0:14:52	0:02:24
IDL	83	0:05:54	0:13:36	0:00:07	0:13:29	0:02:15
LON	51	0:07:14	0:14:08	0:00:05	0:14:03	0:03:06
MAL	30	0:07:48	0:17:57	0:00:11	0:17:46	0:03:25
MAT	205	0:06:46	0:23:13	0:00:08	0:23:05	0:02:51
MIN	199	0:06:54	0:19:37	0:00:09	0:19:28	0:02:45
NEW	25	0:08:22	0:11:53	0:04:13	0:07:40	0:01:58
PIN	138	0:07:25	0:22:13	0:00:07	0:22:06	0:03:24
PRO	11	0:07:16	0:11:53	0:00:09	0:11:44	0:03:17
ROB	105	0:08:05	0:18:05	0:00:36	0:17:29	0:03:21
STE	78	0:09:05	0:24:00	0:02:24	0:21:36	0:03:52
WES	67	0:07:46	0:17:37	0:00:10	0:17:27	0:03:47
Total	**1,656**	**0:06:38**	**0:24:53**	**0:00:05**	**0:24:48**	**0:00:00**

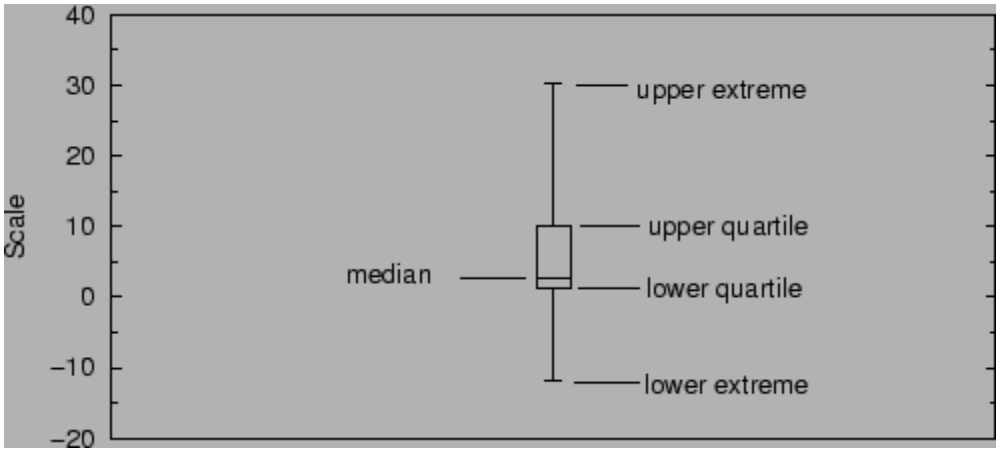
On Reading Box Plots

In order to adequately analyze certain data, it is helpful to look at the range of the data in multiple categories. For example, we could look at response times by hour of day as simple averages, but this does not give us any information about the range of values that makes up each average. In Figure 14 below, we examine the range of response times by hour of day using box and whisker plots,

There are two basic types of box plots: the quick and the full. An example of the quick box plot is shown below. The lines inside the rectangle indicate the median of the sample distribution. The upper and lower boundaries of the rectangle indicate the upper quartile and the lower quartile, respectively. Two lines (the ``whiskers'') are drawn from the rectangle to the extreme values.

For this particular example, the distribution of the data set is skewed toward high values. In other words, the data points in the third and forth quartiles are spread out and are further away from the median than are the data in the lower two quartiles. In the box plot below, the half of the values above the median are spread out from slightly above zero to approximately 30 whereas the half of the values below the median run from approximately zero to only negative 10.

Were these response times, we would expect to see the three lower quartiles (75% of the data points) below ten minutes, and only one quartile (25% of the data points) above ten minutes.



Note that in the box and whisker plots below, the white diamond indicates the average.

Figure 17 below identifies the range of response times in box and whisker plot format from the Radio Name tables above for all years for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 8, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Figure 17. Box and Whisker Plot for First At-scene Units' Response Times by Radio Name Category – 2006 -- 2008

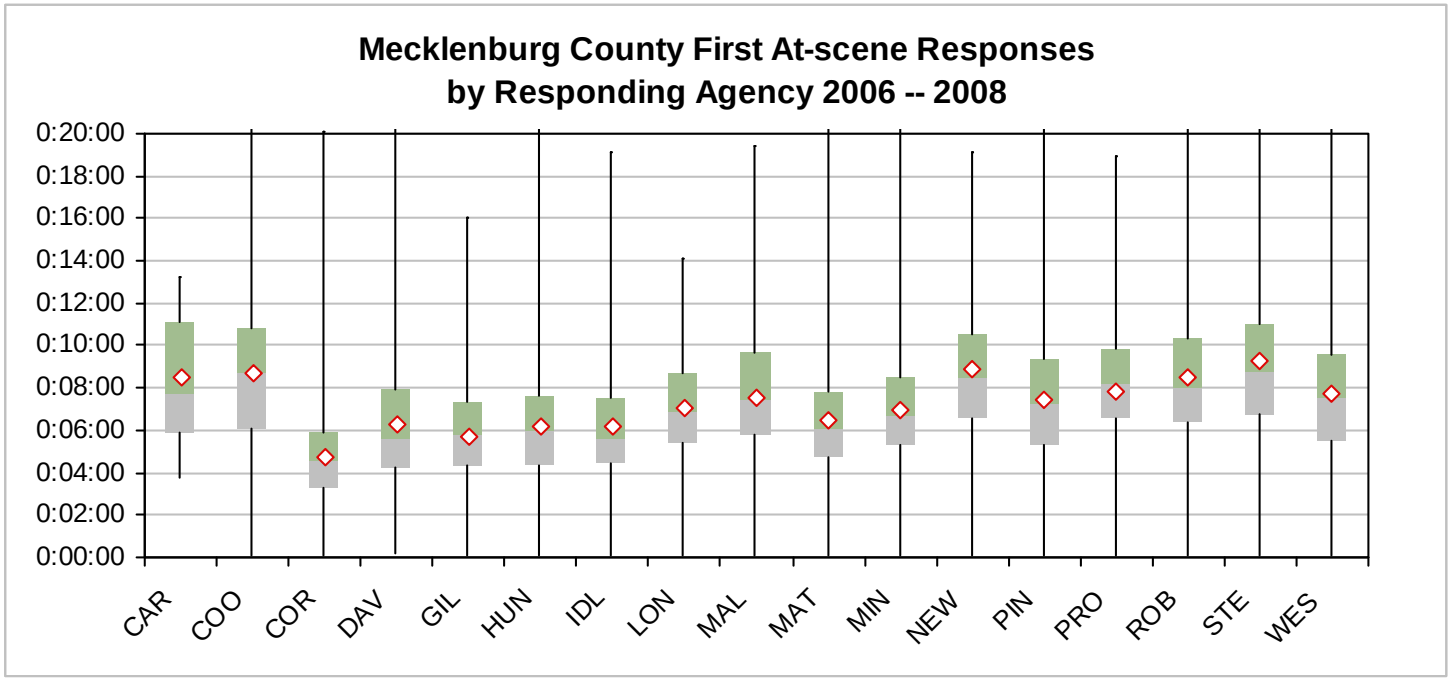


Table18 below identifies the range of response times that support the box and whisker in Figure 17. The description of the data for Table 8 and Figure 17, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 18. Box and Whisker Plot Supporting Data for First At-scene Units' Response Times by Radio Name Category – 2006 -- 2008

	Min	25th	Median	75th	Max	Mean	Std. Dev.
CAR	0:03:48	0:05:53	0:07:43	0:11:05	0:13:16	0:08:31	0:02:56
COO	0:00:06	0:06:05	0:08:39	0:10:51	0:23:16	0:08:40	0:03:35
COR	0:00:06	0:03:17	0:04:31	0:05:57	0:20:08	0:04:45	0:02:23
DAV	0:00:10	0:04:14	0:05:37	0:07:57	0:24:53	0:06:18	0:03:20
GIL	0:00:06	0:04:18	0:05:47	0:07:21	0:16:04	0:05:40	0:02:26
HUN	0:00:06	0:04:19	0:05:59	0:07:38	0:22:21	0:06:12	0:02:45
IDL	0:00:07	0:04:27	0:05:36	0:07:33	0:19:08	0:06:10	0:02:29
LON	0:00:05	0:05:24	0:06:54	0:08:43	0:14:08	0:07:04	0:02:41
MAL	0:00:07	0:05:46	0:07:24	0:09:38	0:19:26	0:07:33	0:03:23
MAT	0:00:05	0:04:42	0:06:06	0:07:52	0:23:13	0:06:26	0:02:56
MIN	0:00:08	0:05:16	0:06:41	0:08:28	0:24:14	0:06:57	0:03:01
NEW	0:00:06	0:06:37	0:08:28	0:10:32	0:19:09	0:08:53	0:03:09
PIN	0:00:07	0:05:18	0:07:18	0:09:21	0:22:13	0:07:26	0:03:25
PRO	0:00:07	0:06:32	0:08:11	0:09:54	0:18:56	0:07:52	0:04:02
ROB	0:00:06	0:06:20	0:08:02	0:10:22	0:22:03	0:08:31	0:03:38
STE	0:00:06	0:06:43	0:08:49	0:11:02	0:24:24	0:09:19	0:03:56
WES	0:00:07	0:05:33	0:07:29	0:09:33	0:20:50	0:07:42	0:03:28

Table 19 below identifies call volume by type the city in which the call occurred for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The Cities were determined from the records provided and are presumed to denote the jurisdiction to which the unit analyzed responded. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 19. Count of First At-scene Units by City by Year – 2006 -- 2008.

City	2006	2007	2008	Total
Charlotte	527	606	536	1,669
Concord				
Cornelius	156	222	219	597
Davidson	83	70	85	238
Fort Mill				
Harrisburg				
Huntersville	323	386	303	1,012
Kannapolis				
Lowell				
Mathews				
Mathews	214	243	226	683
Mecklenburg	16	22	5	43
Mint Hill	154	195	179	528
Mint Hill				
Mooresville				
None				
Pineville	117	129	103	349
Stallings				
Weddington				
Total	**1,590**	**1,873**	**1,656**	**5,119**

Table 20 below identifies average response time by City for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 20. Average of First At-scene Units' Response Times by City by Year – 2006 -- 2008

City	2006	2007	2008	Total
Charlotte	0:08:18	0:08:12	0:08:09	0:08:13
Concord				
Cornelius	0:04:35	0:04:38	0:04:34	0:04:36
Davidson	0:07:00	0:05:51	0:06:01	0:06:19
Fort Mill				
Harrisburg				
Huntersville	0:06:26	0:06:08	0:05:49	0:06:08
Kannapolis				
Lowell				
Mathews				
Mathews	0:06:25	0:06:17	0:06:33	0:06:25
Mecklenburg	0:08:04	0:07:28	0:08:14	0:07:47
Mint Hill	0:06:16	0:06:26	0:06:07	0:06:16
Mooresville				
None				
Pineville	0:07:28	0:07:12	0:06:58	0:07:13
Stallings				
Weddington				
Total	**0:06:58**	**0:06:45**	**0:06:38**	**0:06:47**

Table 21 below identifies maximum response time by City for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 21. Maximum of First At-scene Units' Response Times by City by Year – 2006 -- 2008

City	2006	2007	2008	Grand Total
Charlotte	0:24:24	0:22:53	0:24:00	0:24:24
Concord				
Cornelius	0:15:44	0:14:31	0:20:08	0:20:08
Davidson	0:18:58	0:17:02	0:24:53	0:24:53
Fort Mill				
Harrisburg				
Huntersville	0:15:28	0:17:38	0:14:44	0:17:38
Kannapolis				
Lowell				
Mathews				
Mathews	0:19:08	0:18:44	0:20:22	0:20:22
Mecklenburg	0:18:56	0:15:25	0:12:34	0:18:56
Mint Hill	0:19:54	0:19:09	0:14:09	0:19:54
Mooresville				
None				
Pineville	0:21:43	0:18:31	0:16:35	0:21:43
Stallings				
Weddington				
Total	**0:24:24**	**0:22:53**	**0:24:53**	**0:24:53**

Table 22 below identifies minimum response time by City for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 22. Minimum of First At-scene Units' Response Times by City by Year – 2006 -- 2008

City	2006	2007	2008	Grand Total
Charlotte	0:00:06	0:00:06	0:00:05	0:00:05
Concord				
Cornelius	0:00:07	0:00:06	0:00:08	0:00:06
Davidson	0:00:55	0:00:44	0:00:10	0:00:10
Fort Mill				
Harrisburg				
Huntersville	0:00:06	0:00:06	0:00:08	0:00:06
Kannapolis				
Lowell				
Mathews				
Mathews	0:00:05	0:00:07	0:00:08	0:00:05
Mecklenburg	0:04:03	0:02:04	0:03:47	0:02:04
Mint Hill	0:00:08	0:00:08	0:00:07	0:00:07
Mooresville				
None				
Pineville	0:00:09	0:00:14	0:00:07	0:00:07
Stallings				
Weddington				
Total	**0:00:05**	**0:00:06**	**0:00:05**	**0:00:05**

Table 23 below identifies range of response times by City for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 23. Range of First At-scene Units' Response Times by City by Year – 2006 -- 2008

City	2006	2007	2008	Grand Total
Charlotte	0:24:18	0:22:47	0:23:55	0:00:05
Concord	0:00:00	0:00:00	0:00:00	0:12:41
Cornelius	0:15:37	0:14:25	0:20:00	0:00:05
Davidson	0:18:03	0:16:18	0:24:43	0:00:06
Fort Mill	0:00:00	0:00:00	0:00:00	0:11:15
Harrisburg	0:00:00	0:00:00	0:00:00	0:08:01
Huntersville	0:15:22	0:17:32	0:14:36	0:00:05
Kannapolis	0:00:00	0:00:00	0:00:00	0:12:12
Lowell	0:00:00	0:00:00	0:00:00	0:03:07
Mathews	0:00:00	0:00:00	0:00:00	0:00:05
Mathews	0:19:03	0:18:37	0:20:14	0:00:14
Mecklenburg	0:14:53	0:13:21	0:08:47	0:00:05
Mint Hill	0:19:46	0:19:01	0:14:02	0:09:54
Mooresville	0:00:00	0:00:00	0:00:00	0:00:07
None	0:00:00	0:00:00	0:00:00	0:00:16
Pineville	0:21:34	0:18:17	0:16:28	0:04:24
Stallings	0:00:00	0:00:00	0:00:00	0:00:05
Weddington	0:00:00	0:00:00	0:00:00	0:00:05
Total	**0:24:19**	**0:22:47**	**0:24:48**	**1:00:05**

Table 24 below identifies standard deviation of response times by City for the first at-scene unit in all Code 3 responses by year for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 24. Standard Deviation of First At-scene Units' Response Times by City by Year – 2006 -- 2008

City	2006	2007	2008	Grand Total
Charlotte	0:03:37	0:03:36	0:03:28	0:03:33
Concord				
Cornelius	0:02:06	0:02:23	0:02:30	0:00:00
Davidson	0:03:25	0:03:04	0:03:16	0:03:42
Fort Mill				
Harrisburg				
Huntersville	0:02:43	0:02:48	0:02:24	0:00:00
Kannapolis				
Lowell				
Mathews				
Mathews	0:03:00	0:02:56	0:02:33	0:00:00
Mecklenburg	0:04:01	0:03:28	0:03:09	0:03:50
Mint Hill	0:02:46	0:02:54	0:02:37	0:00:00
Mooresville				
None				
Pineville	0:03:11	0:03:15	0:03:06	0:00:00
Stallings				
Weddington				
Total	**0:00:00**	**0:07:24**	**0:00:00**	**0:07:23**

Table 25 below identifies the range of descriptive statistics from the City table above for 2006 for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 25. Descriptive Statistics of First At-scene Units' Response Times by Radio Name Category – 2006

City	Count	Average	Max	Min	Range	Std Dev
Charlotte	527	0:08:18	0:24:24	0:00:06	0:24:18	0:03:37
Concord	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Cornelius	156	0:04:35	0:15:44	0:00:07	0:15:37	0:02:06
Davidson	83	0:07:00	0:18:58	0:00:55	0:18:03	0:03:25
Fort Mill	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Harrisburg	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Huntersville	323	0:06:26	0:15:28	0:00:06	0:15:22	0:02:43
Kannapolis	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Lowell	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Mathews	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Mathews	214	0:06:25	0:19:08	0:00:05	0:19:03	0:03:00
Mecklenburg	16	0:08:04	0:18:56	0:04:03	0:14:53	0:04:01
Mint Hill	154	0:06:16	0:19:54	0:00:08	0:19:46	0:02:46
Mooresville	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
None	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Pineville	117	0:07:28	0:21:43	0:00:09	0:21:34	0:03:11
Stallings	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Weddington	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Total	1,590	0:06:58	0:24:24	0:00:05	0:24:19	0:00:00

Table 26 below identifies the range of descriptive statistics from the City table above for 2007 for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 26. Descriptive Statistics of First At-scene Units' Response Times by Radio Name Category – 2007

City	Count	Average	Max	Min	Range	Std Dev
Charlotte	606	0:08:12	0:22:53	0:00:06	0:22:47	0:03:36
Concord	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Cornelius	222	0:04:38	0:14:31	0:00:06	0:14:25	0:02:23
Davidson	70	0:05:51	0:17:02	0:00:44	0:16:18	0:03:04
Fort Mill	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Harrisburg	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Huntersville	386	0:06:08	0:17:38	0:00:06	0:17:32	0:02:48
Kannapolis	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Lowell	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Mathews	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Mathews	243	0:06:17	0:18:44	0:00:07	0:18:37	0:02:56
Mecklenburg	22	0:07:28	0:15:25	0:02:04	0:13:21	0:03:28
Mint Hill	195	0:06:26	0:19:09	0:00:08	0:19:01	0:02:54
Mooresville	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
None	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Pineville	129	0:07:12	0:18:31	0:00:14	0:18:17	0:03:15
Stallings	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Weddington	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Total	1,873	0:06:45	0:22:53	0:00:06	0:22:47	0:07:24

Table 27 below identifies the range of descriptive statistics from the City table above for 2008 for the first at-scene units in all Code 3 responses for the entire system analyzed. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 27. Descriptive Statistics of First At-scene Units' Response Times by Radio Name Category – 2008

City	Count	Average	Max	Min	Range	Std Dev
Charlotte	536	0:08:09	0:24:00	0:00:05	0:23:55	0:03:28
Concord	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Cornelius	219	0:04:34	0:20:08	0:00:08	0:20:00	0:02:30
Davidson	85	0:06:01	0:24:53	0:00:10	0:24:43	0:03:16
Fort Mill	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Harrisburg	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Huntersville	303	0:05:49	0:14:44	0:00:08	0:14:36	0:02:24
Kannapolis	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Lowell	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Mathews	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Mathews	226	0:06:33	0:20:22	0:00:08	0:20:14	0:02:33
Mecklenburg	5	0:08:14	0:12:34	0:03:47	0:08:47	0:03:09
Mint Hill	179	0:06:07	0:14:09	0:00:07	0:14:02	0:02:37
Mooresville	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
None	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Pineville	103	0:06:58	0:16:35	0:00:07	0:16:28	0:03:06
Stallings	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Weddington	-	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Total	1,656	0:06:38	0:24:53	0:00:05	0:24:48	0:00:00

Figure 28 below identifies the range of response times in box and whisker plot format from the City tables above for all years for the first at-scene units in all Code 3 responses for the entire system analyzed. Cities with a statistically-insignificant number of calls have been omitted. The description of the data for Table 19, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Figure 28. Box and Whisker Plot for First At-scene Units' Response Times by City – 2006 -- 2008

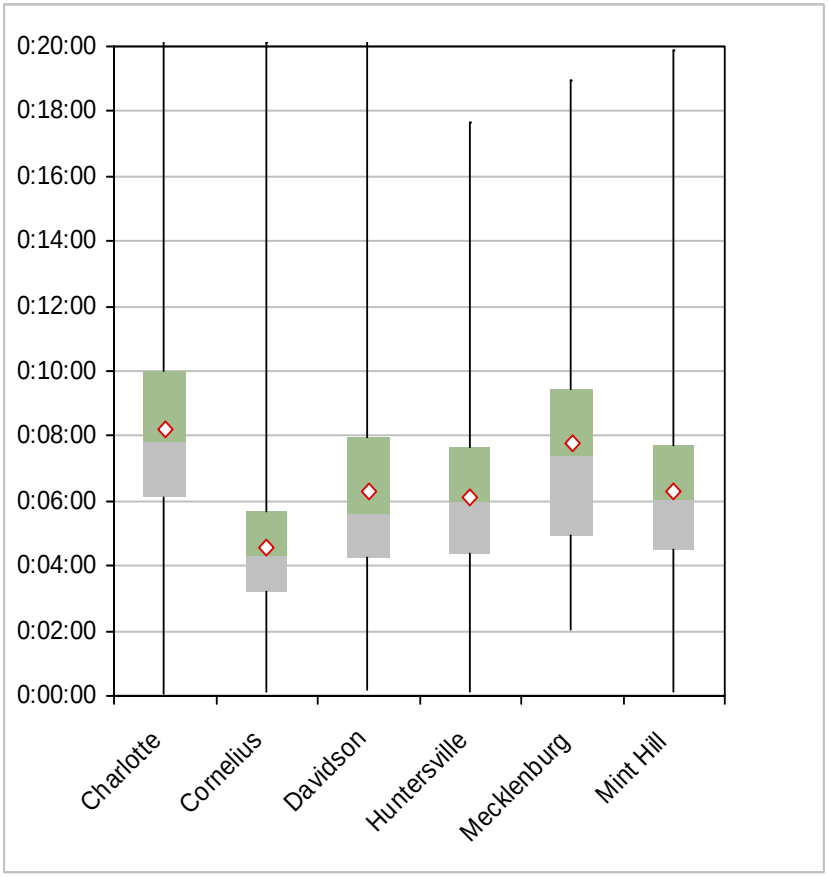


Table 29 below identifies the range of response times that support the box and whisker in Figure 27. The description of the data for Table 8 and Figure 17, above, also applies. Responses and response times are only for calls that are identified as code 3 responses. This specifically excludes all calls that are identified as Alarm due to the likelihood that these responses may have been downgraded to Code 2 and may therefore upwardly skew any observations of response times.

Table 29. Box and Whisker Plot Supporting Data for First At-scene Units' Response Times by City – 2006 -- 2008

	Charlotte	Cornelius	Davidson	Huntersville	Mecklenburg	Mint Hill
Min	0:00:05	0:00:06	0:00:10	0:00:06	0:02:04	0:00:07
25th	0:06:07	0:03:11	0:04:14	0:04:23	0:04:55	0:04:31
Median	0:07:50	0:04:21	0:05:38	0:05:59	0:07:25	0:06:05
75th	0:10:00	0:05:42	0:07:57	0:07:38	0:09:28	0:07:44
Max	0:24:24	0:20:08	0:24:53	0:17:38	0:18:56	0:19:54
Mean	0:08:13	0:04:36	0:06:19	0:06:08	0:07:47	0:06:16
Standard Deviation	0:03:33	0:02:21	0:03:17	0:02:40	0:03:35	0:02:46

APPENDIX 5

SAMPLE PRE-EMERGENCY PLAN FORMAT[12]

[12] Jenaway, W.F., Pre-Emergency Planning, ISFSI, Ashland, MA, 1984.

MECKLENBURG COUNTY FIRE SERVICES
FACILITY PRE-PLANNING REPORT

I. GENERAL INFORMATION

ADDRESS _____ DATE _____

TYPE OCCUPANCY _____

BUSINESS NAME _____

TELEPHONE: BUSINESS _____ EMERGENCY _____

NAME AND ADDRESS OF OCCUPANT _____

_____

NAME AND ADDRESS OF OWNER _____

_____

MATERIALS OF CONSTRUCTION _____

_____

BUILDING DIMENSIONS: LENGTH _____ WIDTH _____ # FLOORS_____

STRUCTURAL NOTES (FIRE WALLS, BREACHES, ETC.) _____

_____

_____

DOLLAR STOCK CONCENTRATION:

	SQ. FT.	**STOCK/BLDG. VALUE**
STOCK		
BUILDING _____		
TOTAL		

COMMENTS:

II. UTILITIES

HEAT: TYPE _____ SIZE _____ LOCATION (H) _____

COOL: TYPE _____ SIZE _____ LOCATION (C) _____

GAS SHUT-OFF (G) LOCATION _____

CO. NAME/PHONE NO. _____

ELECTRIC SHUT-OFF LOCATION (EL) _____

CO. NAME/PHONE NO. _____

STEAM/OTHER SHUT-OFF LOCATION (S) _____

CO. NAM/PHONE NO. _____

WATER SHUT-OFF LOCATION (W) _____

CO. NAME/PHONE NO. _____

COMMENTS: _____

_____

III. EXTERIOR

OBSTRUCTIONS:

FENCES	_	VEHICLES	_	WIRES	_
WALLS	_	EQUIPMENT	_	TREES	_
GATES	_	PRODUCTS	_	SIGNS	_

OTHER/COMMENT _____

_____

EXPOSURES:

N: CONSTRUCTION _____ HEIGHT _____ DISTANCE _____

OCCUPANCY _____

S: CONSTRUCTION _____ HEIGHT _____ DISTANCE _____

OCCUPANCY _____

E: CONSTRUCTION _____ HEIGHT _____ DISTANCE _____

OCCUPANCY _____

W: CONSTRUCTION _____ HEIGHT _____ DISTANCE _____

OCCUPANCY _____

IV. WATER SUPPLY

SOURCE _____ TYPE _____

HYDRANT LOCATION/GPM AVAILABLE _____

GPM NEEDED:

1. $\frac{\text{BUILDING LENGTH X WIDTH}}{10}$ + 1,000 = _____
2. (HT. IN STORIES – 1) X 500 = _____
3. EXPOSURES 0' – 30' = 2,000 31' – 60' = 1,500 = _____
   61' – 90' = 1,000 91' + = 500 = _____
4. IF NONHAZARDOUS OCCUPANCY, SUBTRACT ¼ OF (1 + 2 + 3) = _____
5. IF FIRE RESISTIVE OR SEMI-FIRE RESISTIVE BUILDING, SUBTRACT 1/3 OF (1 + 2 + 3) = (_____)
6. IF BUILDING IS AUTOMATICALLY SPRINKLERED, SUBTRACT 1/10 OF (1 + 2 + 3) = (_____)

GPM TOTAL REQUIRED _____

GPM AVAILABLE _____

GPM EXCESS OR (NEEDED) _____

COMMENTS _____

_____

V. OTHER PROTECTION

F.D. CONNECTION A.S. ☐ F.D. CONNECTION STDP. ☐

EXTINGUISHERS ☐ _____

OTHER ☐ _____

(NOTE ON DIAGRAM AS APPROPRIATE)

HOUSEKEEPING: GOOD ☐ FAIR ☐ POOR ☐

SPECIAL HAZARDS/LOCATION/CONTROLLED (YES/NO)

* _____/_____/_____
* _____/_____/_____
* _____/_____/_____
* _____/_____/_____

VI. TACTICAL CONCERNS

RESCUE:

HIGHLY POPULATED AREAS _____

NEED FOR _____

INVALIDS _____

HOW TO ACCOMPLISH _____

FORCIBLE ENTRY/VENTILATION:

ACCESS POINTS _____

_____

LOCKING METHODS _____

FORCING METHODS _____

BLIND OPENINGS _____

FALSE CEILINGS/COCKLOFTS _____

POSSIBLE FIRE TRAVEL ROUTES _____

_____

METHODS TO CONTROL FIRE TRAVEL _____

_____

POTENTIAL MAN-TRAPS/DROP-OFFS _____

_____

ROOF LEVEL: CONSTRUCTION CONCERNS _____

NOTE ON DRAWING: SCUTTLE HOLES _____ SKYLIGHTS _____ PENTHOUSE _____

HEAVY OBJECTS _____ PARAPETS _____ VENTS _____

OTHER _____

COMMENTS _____

ADJOINING STRUCTURE USE _____

_____

_____

LOCATION/TYPE OF: (INCLUDE ON DRAWINGS)

STAIRWAYS _____

ELEVATORS (E) _____

FIRE ESCAPES _____

EVACUATION CONCERNS _____

_____

SALVAGE NEEDS _____

_____

VII. POTENTIAL NONFIRE EMERGENCIES

HAZARDOUS MATERIALS ☐ FLOOD ☐ WINDSTORM/TORNADO ☐

EARTHQUAKE ☐ VEHICLE ☐ SNOW ☐

BOMB ☐ OTHER ☐ _____

_____

EMERGENCY MEDICAL NEEDS _____

_____

VII. GENERAL COMMENTS

IX. BUILDING PLANS

PLOT (SHOW RELATIONSHIPS OF BUILDING, STREET, EXPOSURES, WATER SUPPLY)
FLOOR (SHOW FOR EACH FLOOR: ROOMS, WALLS, DOORS, KEY ACCESS POINTS)
ROOF (SHOW LOCATION OF ALL OBJECTS)
TACTICAL (SHOW TACTICAL APPROACH TO INCIDENT)

MIX AND MATCH TO SHOW BEST DESCRIPTION

APPENDIX 6

RECRUITMENT AND RETENTION PLAN

RECRUITMENT AND RETENTION STRATEGIC PLAN FOR THE _____ FIRE DEPARTMENT

June, 2009

In today's world, whether an organization is totally volunteer, a combination services or paid/career; recruiting and retaining quality personnel is challenging, time consuming and critical to sustaining effective operations.

As part of this project, the following information was developed to assist the fire departments of Mecklenburg County in enhancing their recruitment and retention efforts. Recruiting members to meet the needs of the organization and then keeping those individuals involved in the service is critical to sustaining the value brought to the community through neighbors helping neighbors.

The following chart provides an approach for use by the departments to plan its recruitment and retention activities. A reference text with support details and other useful tools for implementation is provided under separate cover.

2009 – 2010 Recruitment and Retention Plan

Activity	Timing	Resource & Location	Responsibility	Status
1. Assign a Recruitment & Retention Committee, and develop benchmarks for success	1/10	Use program criteria from support documents		
2. Implement Everyone Get One Campaign	1/10 through 4/10	Use program criteria from support documents		
3. Conduct Junior Firefighter Recruiting Drive in High School	1/10	Use program criteria from support documents		
4. Determine other possible initiatives from Volunteer Recruitment & Retention Manual" provided	2/10	"USFA Recruitment and Retention Manual"		
5. Poll members of additional incentives of interest to members	3/10	Use program criteria from support documents		
6. Implement incentives of interest to members	6/10 through 12/09	Local Sources		
7. Develop budget for 2010 Recruitment & Retention Initiatives	9/10			
TBD – local issues				
TBD – local issues				
TBD – local issues				
Create 2011 Plan based on success and failure in 2010	12/10			

APPENDIX 7

VEHICLE ASSESSMENT FORM

VEHICLE ASSESSMENT
(conducted every 3 years)

Unit # _____ Date _____

Vehicle _____ VIN _____

Vehicle Component	Rating*	Adversely Affects State Inspection
Engine	_____	☐
Chassis	_____	☐
Transmission	_____	☐
Axles	_____	☐
Electrical	_____	☐
Pump	_____	☐
Tank	_____	☐
Steering	_____	☐
Body	_____	☐
Aerial Device	_____	☐
Ability to access parts & readily repair vehicle	_____	

Comments _____.

_____.

Projected Life _____ Years Signed _____ EVT

*Rating Definition:	1 = works well, no problems 2 = any problems resolved by routine maintenance 3 = problem is manageable 4 = major repair required in next 12 months, costing over $5,000 5 = not functional

APPENDIX 8

FACILITY CONCEPT & COST ESTIMATE

Facility Concept & Cost Estimates

Based on the review and analysis conducted, a facility concept and cost estimate is provided for consideration when stations need to be replaced, which can be used for planning purposes. This will include estimates for site preparation, and building construction based on prevailing costs within the local area. ESECG is not, however, an architectural or engineering firm. Prior to proceeding with acquisition of project funding, it is recommended that the services of a firm qualified in such costing be employed. Note, since you have indicated that land is already available, land acquisition costs will not be included in this estimate.

A basic set of needs for a new facility is provided based on current facility usage. A conceptual facility needs compilation was created by the project team and cost projections were developed for review. This information was taken into consideration.

With regard to the potential costs defined on the attached pages, there are two estimates developed for each type structure. It should be noted that a structure of less sturdy construction is feasible. That would reduce the costs by as much as 50%, but would necessitate a discussion as to the pros and cons of that type of construction.

Funding Options

Based on the cost estimates developed earlier in this report, there are seven funding options regularly used. These might include:

1. General obligation bond – while an option is not the primary method to be considered.
2. Special levy/tax – not considered an option at this time.
3. As a portion of the current funding from the Township over a long term period.
4. Fund raising by the company – not considered an option at this time for the structure, however all contents of the structure will be owned by the fire company, therefore some fundraising may be necessary.
5. Property sale by the Township – not considered an option at this time.
6. Possible contribution from the fire company(ies) and ambulance squad for special requests.
7. Public-Private Partnership and/or impact fees on development projects

The actual method used will depend on a financial analysis at the time construction begins. A typical fire station construction timetable is attached for reference.

Additional reference documents related to fire station construction are included for your information.

Concept consideration for
Construction of an Emergency Services (Fire & EMS) Building
5-bay Spec-Type Structure

Basic Structure Elements:

5 apparatus bays 14’ x 80’	=	5,500 sq. ft.
Duty/watch/radio area 12’ x 24’	=	268 sq. ft.
Utility Room (laundry, maintenance) 10’ x 12’	=	120 sq. ft.
Office/work space 9’ x 12’	=	108 sq. ft.
Utility closet 6’ x 8’	=	48 sq. ft.
Kitchen 9’ x 12’	=	108 sq. ft.
Shower/Locker/Rest Room – male 10’ x 12’	=	120 sq. ft.
Shower/Locker/Rest Room – female 10’ x 12’	=	120 sq. ft.
EMS Utility Room (laundry, maintenance) 10’x12’	=	120 sq. ft.
EMS Office/Work space 9’ x 12’	=	108 sq. ft.
EMS Kitchen 9’ x 12’	=	108 sq. ft.
EMS Shower/Locker/Rest Room – male 10’ x 12’	=	120 sq. ft.
EMS Shower/Locker/Rest Room – female 10’ x 12’	=	120 sq. ft.
Dead storage area 20’ x 30’	=	600 sq. ft.
Engineering area 9’ x 12’	=	108 sq. ft.
EMS area 9’ x 12’	=	108 sq. ft.
Common Day area lounge 20’ x 24’	=	480 sq. ft.
Meeting room 50’ x 60’	=	3,000 sq. ft.
Estimated 10% common area	=	612 sq. ft

TOTAL SQUARE FOOTAGE - MINIMUM 11,876 sq. ft.

Type 1 Construction
Face brick, stone, architectural concrete, good entrance, fully equipped includes classroom, kitchenette, drywall, acoustic tile, good lighting, good plumbing, forced air heat and bathrooms.
$234.91 /sq.ft. @ 11,876 sq.ft. = $2,782,665 + land, architectural and engineering costs

Type 2 Construction
Face brick or stone, good entrance, office, classroom, kitchenette, drywall and acoustical tile, good lighting, good plumbing and rest rooms and forced air heat or heat pump systems.
$193.43 /sq.ft. @ 11,876 sq.ft. = $2,297,175 + land, architectural and engineering costs

NOTE: This cost estimate is a projection of costs, based on data provided and readily available information on the design and construction of a fire station. It is a conceptual design, not approved by the client. This should not be considered the actual amount or design, but a projected minimum cost of such a project.

APPENDIX 9

CONSOLIDATION PROCESS ACTIVITIES

FIRE DEPARTMENT CONSOLIDATION

Consolidation should be in the best interest of the people receiving services. Key questions to be asked include:

Where do you stand today?

What is done?

What's on the drawing board?

What obstacles do you face?

Where do you need help?

Why consolidate or merge?

- less government is better
- potential to lower ISO rating
- economies of scale
- forces an examination of the program
- saves money
- eliminates redundancy
- maximizes personnel and equipment
- provides same service for less money
- provides more service for about the same money
- provides more service for more money
- facilitates coordinated planning

Benefits

- helps comply with mandates and specialty team needs
- strategic location for infrastructure
- no artificial boundaries
- changes can be made in the name of the merger
- reduces overhead
- standardizes services and programs
    - training
    - public relations
    - equipment
    - response
- political clout
- ability to absorb financial crisis
- forces strategic planning

1. Determine Feasibility

How does this relate to the potential for the organization being looked at?

PLANNING GROUP

IMPLEMENTATION GROUP
(administrative/finance officials)

Structure
Funding Mechanism
Taxpayer Impact
Jurisdictional Impact
Public Relations
Transition
Indebtedness

TECHNICAL STUDY GROUP
(fire officers)

Administration
Operations
Training
Maintenance
Communications
Support Services
Fire Prevention

WORKING GROUPS

ADMINISTRATION

Staffing
Structure
Policy
Organization
Budget
Employee/Volunteer Relations
Public Relations

OPERATIONS

Policies and Procedures
Suppression
Medical
Rescue
Hazardous Materials
Other

FIRE PREVENTION

Code Implementation
Building Inspection
Plan Reviews
Prevention Programs
Investigation

TRAINING

Standards
Facilities
Equipment
Funding
Instruction

COMMUNICATIONS

Dispatch
E-911
Protocols
Frequencies
Telephone
Radio Maintenance
Computers

SUPPORT SERVICES

Purchasing
Finance
Risk Management
Insurance
Human Resources
Mutual Aid Agreements

MAINTENANCE

Fleet
Equipment
Facilities

FIXED ASSETS

Inventory
Reimbursement
Ownership

2. Form and Activate an Advisory Group from a team of local government officials, fire and EMS agency(ies) and local groups.

3. Identify Key Needs, Issues, Requirements, and Constraints

Service Delivery Model/Standard of Response Cover

Elected Officials

Finances

Management

Merging Departments/Workers

People

Apparatus & Equipment

Facilities & Maintenance

4. Develop Goals and Objectives

Strategic Plan

- **Establish Criteria for Selecting Programs and Approaches**
- **Develop and Analyze Alternative Programs and Approaches**
- **Formulate an Action Plan**
- **Implement the Plan**
- **Monitor Implementation**

APPENDIX 10

CONSULTING TEAM

Consulting Team

William F. Jenaway, Ph.D., CFO, CFPS, Principal Consultant, Project Manager.

Dr. William F. Jenaway, CFO, CFPS will serve as Project Manager for this engagement. Dr. Jenaway is the CEO of ESECG responsible for training, education and consulting services provided to client of VFIS and ESECG. His organization provides training to over 20,000 fire/EMS personnel annually and provides technical guidance and consultation to over 200 agencies annually. He has served as Chief and Fire Marshal of the East Bethlehem Township, Pennsylvania Volunteer Fire Department; and as Chief and President of the King of Prussia, Pennsylvania; Volunteer Fire Company, as well as being Chairman of the municipality's Fire and Rescue Services Board. Under Chief Jenaway's leadership, the department became the first all volunteer Accredited Fire Service Agency in the US. Fire Chief Magazine named him the "Volunteer Fire Chief of the Year" in 2001. Bill's background includes 30-plus years of volunteer fire and EMS experience.

In 2004 he was named to Chair the Pennsylvania Senate Resolution 60 Commission to evaluate and provide recommendations to the Pennsylvania legislature and fire service on strategic approaches to the state's fire and EMS delivery system.

Over the years, Bill has authored over 200 articles, seven texts and provided over 100 speeches on fire and life safety issues. He holds Certified Fire Protection Specialist and Certified Fire Officer designations as well. In 1999 he was named to the Presidential/Congressional Commission known as the "Advisory Panel to Assess preparedness for Terroristic Acts Involving Weapons of Mass Destruction" (a/k/a Gilmore Commission). Dr. Jenaway also serves as President of the Congressional Fire Services Institute and is Past President of the Pennsylvania Fire Services Institute. He serves on the National Fire Protection Association Committees of Emergency Services Risk Management; Providing Emergency Services to the Public; Fire Department Apparatus, and Fire Service Training. Dr. Jenaway is in his second, three-year term as a Commissioner on the Commission on Fire Department Accreditation.

Robert Drennen, M.S. CFPS, Consultant.

Robert Drennen is the Director of the St. Joseph's University Public Safety and Environmental Protection Master's Degree Program. Within this program Mr. Drennen directs the students' development and the course program. Research papers of the students serve to broaden the perspective of Mr. Drennen and his team in the development of new techniques and procedures for fire service. Under the direction of Mr. Drennen, St. Joseph's worked with Dr. Jenaway in the development of an efficient and effective model for businesses to utilize in the preparation, prevention, response and recovery to emergencies as well as projects for the National Volunteer Fire Council involving volunteer recruitment, retention and cost savings. Mr. Drennen is responsible for student research projects, many of which involve specialized evaluations of their local emergency service organization. This provides him with a unique insight and understanding of current trends in volunteer and combination fire service operations in the Mid-Atlantic states. Mr. Drennen holds a Masters Degree, is a Certified Fire Protection Specialist and is a retired Chief Officer of the Philadelphia Fire Department, currently serving as Safety Officer of the Willow Grove, PA, Fire Company.

Daniel B.C. Gardiner, M.S., CFPS, Consultant.

Daniel B.C. Gardiner retired as the Chief of the Department of Fire-Rescue Services, in Fairfield, Connecticut, serving there for 31 years. Fairfield is a combination (career and volunteer) fire/EMS department. Prior to his appointment as Chief, he was the department's Budget Control Officer, in charge of a budget of over eight million dollars. Chief Gardiner holds a Bachelor's Degree in Fire Science and holds two Masters Degrees, one in Public Administration and one in Fire Science Technology, from the University of New Haven, Connecticut. He serves on the NFPA 1021 Committee (Fire Officer Standard). Chief Gardiner has been extensively involved in fire department consulting projects as well as managing and conducting assessment center activities for various positions throughout the Northeast. He has also provided testimony before numerous fire commissions, boards of inquiry and study panels, in addition to serving on a number of review boards as well. An author of a number of fire service texts and articles, Chief Gardiner edited the book, *Managing Fire Department Operations*, and co-authored the best selling text, *Fire Protection in the 21st Century*. Now serving his fifth term as a Director of the Certified Fire Protection Specialist Board, Chief Gardiner speaks nationally on fire protection, and fire service finance. He is a past president of the International Society of Fire Service Instructors and a past president of the Fire Department Safety Officers Association.

David A. Bradley, B.S., NREMT-P, Staff Consultant.

David is responsible for EMS related issues for VFIS/ESECG, a subsidiary of the Glatfelter Insurance Group. His responsibilities include: research of EMS issues, and related delivery of educational and training programs, curriculum development, and information analysis and representation on major organizations and committees. Prior to joining VFIS, Dave managed a large EMS agency.

Dave has over twenty-eight years of experience in Emergency Services. He has functioned in many roles during his career from volunteer EMT to Career EMS Chief. Dave's involvement includes IAFC, NFPA, NAEMT, and NAEMSE, along with several state-level organizations. He is a Nationally Registered Paramedic and holds a Bachelors Degree in Safety Engineering.

Dave has presented on various topics in the areas of emergency service, risk management, health, and safety. He remains active as a Paramedic at First Aid & Safety Patrol, Lebanon PA.

Thaddeus Lowden, M.S., CFO, Consultant.

Chief Thaddeus (Ted) Lowden currently serves as career fire chief for the Evesham Township (New Jersey) Fire District. Ted Lowden is a 29-year veteran of the fire service. Chief Lowden's fire service career began in 1975, when he joined the Marlton Fire Company (Evesham Township). Chief Lowden worked his way up through all of the ranks within the volunteer department. Chief Lowden also acted as the department training officer during his service with the Marlton Fire Company. In 1984 he was appointed as a career firefighter, then later, was appointed to the position of career Deputy Fire Marshall. In 1988, at the age of 34, he was promoted to the rank of career Fire Chief.

Chief Lowden is active in many fire service organizations which include: the New Jersey State Career Fire Chiefs Association, the National Society of Executive Fire Officers, Burlington County 200 Club, New Jersey Fire Chiefs Association, and the International Association of Fire Chiefs. Chief Lowden has served as a charter member of the Burlington County Fire Advisory Board, a past President of the Burlington County Fire Chiefs Association. In Burlington County,

he currently serves as a Deputy Fire Coordinator and a representative on the Emergency Services Academy New Building Committee, as well as Chairperson of the Burlington County Emergency Services Advisory Board. On a National level, Chief Lowden serves with the National Wildfire Coordinating Group as a subject matter expert, and is the NJ State Director of the International Association of Fire Chiefs. He is also a member of the Eastern Division's Board of Director's. Chief Lowden has designed curriculum for the National Fire Academy, is a graduate of their Executive Fire Officer Program, and serves as an adjunct instructor. He has published a number of articles in fire service trade journals and holds the national designation of Chief Fire Officer as issued by IAFC/ICMA. Chief Lowden has an Associate of Applied Science Degree in Fire Science, a Bachelor's Degree in Fire Science, and a Masters Degree in Public Safety Management from St. Joseph's University.

Richard Trexler, Consultant, Project Member.

Richard retired as fire chief of Colfax Fire Department in Guilford County, NC after twenty years of service. He has worked on many projects with ESECG as a consultant. Richard worked with Iredell County, New Hanover County NC and Brunswick County NC, on an evaluation of the fire departments in those counties. He was project manager in Davie County, NC on an evaluation of fire and rescue services. He assisted with projects in Carteret County, NC, Brenham, Texas; Port Washington , NY; Okeechobee, FL; Estero, Fl; and Johnstown, PA, among other. He was instrumental with the growth study in Winston Salem, NC and has worked with the cities of Greensboro and High Point in NC on consolidation/merger studies and the development of Strategic Planning efforts.

Richard has been a presenter at the Fire Department Instructors Conference and at regional and state conferences. He worked with Guilford County in NC in the development of a Strategic Plan involving twenty seven fire departments. Richard has extensive experience working with LEPC groups and in the delivery of training programs for industrial groups

In addition to his 20 years as Fire Chief of the Colfax Fire Department, he has a total of 39 years with volunteer and combination departments; is a member of the NPFA 1720 Committee “Standard on Fire Department Operations in Volunteer and Combination Fire Departments” (including EMS and rescue) and has served on boards of fire departments and rescue squads. Additional affiliations include Chairman, North Carolina Fire and Rescue Commission; President, North Carolina Fire Chiefs Association, and Chairman, Training Committee of Guilford County LEPC

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APPENDIX 11

REFERENCES

References

In addition to the documents provided by representatives of Mecklenburg County, the following documents were used in the analysis of information regarding Mecklenburg County Fire and Emergency Medical Services and in the preparation of this report.

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National Fire Protection Association, NFPA 1201 Standard for Providing Emergency Services to the Public, NFPA, Quincy, Massachusetts, 2004.

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National Volunteer Fire Council, "Cost Savings Calculator for Volunteer Emergency Service Organizations", www.nvfc.org, 2003.

The Sage Group, "Huntersville, North Carolina, A Study of and Ten-Year Plan For the Delivery of Fire & Rescue Service", Huntersville, NC, 2005-6.

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Additional NFPA Standards Referenced:

- ✓ NFPA 1500 Standard on Fire Department Occupational Health and Safety Program
- ✓ NFPA 472 Standard for Professional Competence of Responders to Hazardous Materials Incidents
- ✓ NFPA 1561 Standard on Emergency Services Incident Management Systems
- ✓ NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs
- ✓ NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Service Communications Systems
- ✓ NFPA 1620 Recommended Practice for Pre-Incident Planning