

County of Vance, North Carolina



Fire & Emergency Medical Services Study



April 2008

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Solutions for Local Government, Inc.**

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1. Introduction

1.1 Background & Concept

During October 2007, Vance County issued a Request for Proposals for the development of a “*Comprehensive Strategic Plan for Fire and Emergency Medical Services*”. As stated in the request; “. . . with the goal of providing an optimal level of Fire Services and EMS in the most efficient manner possible.”

In November, an agreement was signed with Solutions for Local Government, Inc. of Charlotte to conduct this study. The kick-off meeting took place in the County Office Building in Henderson on December 4th the County’s Public Safety Committee members and the consultant present.

1.2 Strategic Planning-The most common definition of strategic planning as it is applied to public and government organizations is;

A disciplined effort to produce fundamental decisions and actions that shape and guide what an organization is, what It does, and why it does it.

Subsequently, a true strategic plan requires the participation of many individuals and entities, considerable time, on-going and open discussion and concerted efforts to communicate with all possible stakeholders regarding the concerns to be addressed. Only then can documentation and implementation of a strategic plan begin.

What *this* study is intended to do is look at the conditions that exist, identify the significant (strategic) issues that exist, provide recommendations to address those issues and, as appropriate, provide recommendations and a plan for implementation.

1.3 Overview & Plan Objectives

As stated in its Request for Proposals, Vance County is generally a rural County of approximately 44,000 residents located on the Virginia border approximately 45 miles north of Raleigh, North Carolina. Since the late 1960s the County has provided Fire and Emergency Medical Services (EMS) through a paid department; the Henderson-Vance County Fire & Ambulance Service. And, while EMS is a County-wide service, the County Fire Department is assigned a “district”; i.e. the Golden Belt; which essentially surrounds the City of Henderson and the current jurisdiction boundaries of the City of Henderson Fire Department.

Since the implementation of the Fire & Ambulance Service, the County has contracted with the City of Henderson for overall supervision, training and various support services; i.e. the City’s Fire Chief and the training and support personnel he has designated.

Literally surrounding the Golden Belt fire district are eight (8) additional fire departments which, at the present time, are all volunteer. As this study was underway a ninth Volunteer Fire Department (Kerr Lake) had recently been incorporated and construction started on a Fire Station which will be located on Satterwhite Road at the southern end of Kerr Lake.

As presented by the consultant during the initial meeting with the Public Safety Committee, the objectives and purpose for the development of this study are to:

- Offer an objective assessment of the status of current operations, including recent response and performance history
- Identify the needs and challenges facing the County's fire and emergency medical services today as well as those anticipated over the next 10-20 years
- Recommend how best to provide these services to the citizens of Vance County
- Identify the associated resources (costs) necessary to meet the needs identified.

1.4 Report Organization

As with any strategic planning process, in order to determine where you need to go and how you will get there you must begin with an assessment of where you *are*. This plan document is organized accordingly. The major report sections include:

1. Introduction
2. Current Operations
3. County Population & Growth
4. The Issues
5. Recommendations
6. Costs & Revenue Options
7. Board of County Commissioners Presentation
8. Future Considerations

1.5 Methodology

The information gathered for this report came from many sources. These included personal interviews, site visits to each of the nine (9) established Fire Departments as well as the proposed location of the newly formed Kerr Lake Volunteer Fire Department, The Vance County Rescue Squad, Vance County Fire & Ambulance Service facilities, as well as ride-a-longs, attendance at Fire Association meetings, and numerous informal conversations with citizens encountered along the way.

Additional interviews, conversations and meetings were held with the City of Henderson Fire Chief and personnel of various County departments regarding budget, personnel, billing, GIS, emergency operations, and emergency communications issues relevant to Fire and EMS. As well, the County Medical Director was consulted with regards to EMS operations.

Information was solicited from various regulatory and state agencies including the Office of State Fire Marshal and the University of North Carolina College of Government, as well as senior representatives from at least a dozen jurisdictions outside the County including State and national professional association representatives regarding current issues faced by emergency service providers today.

Data was collected and studied from many sources. These included each of the individual Fire Departments, the County's Annual Budget Reports, GIS maps, County and individual Fire Department district boundary maps, call reports, situation analysis reports and, with the cooperation of the Emergency Operations Department's Communications Center, countless call volume, call type, and response time, records of the various service providers.

Also, two (2) open meetings were held March 11th and March 13th, publicized in advance and inviting the attendance, participation and input of the general public in a discussion of issues, concerns and expectations regarding the Fire and EMS services provided in Vance County both currently and in the years to come.

The development of this report document was not begun until these meetings were concluded.

A Final Draft of this document was presented to the County Manger the first week of April, for duplication and review by County Commissioners. On April 21st, the consultant provided the County Commissioners with a formal presentation summarizing the findings and recommendations discussed in the report document. The questions and issues raised following that presentation for which the consultant was asked to provide additional information are included in Section 7.

1.6 Historical & Statutory References

As a means of introduction to the major emergency services discussed in this report, the information and references that follow are provided for historical context. They are excerpted from several sources; primarily the North Carolina General Statutes and *Fire Protection Law in North Carolina*, 5th Edition, Ben F. Loeb; University of North Carolina at Chapel Hill. Specific references to Vance County's history in this regard were identified while researching various County documents, and department and agency records.

While Fire and EMS services were intended as the focus of this study, neither could be adequately studied nor addressed without reference at some point to those other entities/organizations associated with any jurisdiction's emergency services delivery "system". Subsequently, additional information is included in this section with regards to Rescue, Emergency/911 Communications, and Emergency Management.

1.6.1 Fire Districts

In accordance with G.S. 153A-233; Fire-Fighting and Prevention Services; "A county may establish, organize, equip, support and maintain a fire department; may prescribe duties of the fire department; may contract for fire-fighting or prevention services with one or more counties, cities, or other units of local government or with an agency of the State government, or with one or more incorporated volunteer fire departments; and may for these purposes appropriate funds not otherwise limited as to use by law. The county may also designate fire districts or parts of existing districts and prescribe the boundaries thereof for insurance grading purposes;" (1977, c. 158).

Upon review of the County records available it appears the majority of the volunteer fire departments servicing the unincorporated areas of Vance County were established at least by the early 1960's. A number of Fire Department members referenced volunteer operations as underway in the early 1950s. The date of the earliest agreement available between Vance County and the City of Henderson, wherein the City was to furnish supervisory and administrative services for the Vance County Fire Department and Vance County Ambulance Service was February 1, 1968; Indicating that the County's operation was probably started around that time as well.

G.S. 69, Article 3A; addresses the process for creating a rural fire district; i.e., petition of voters, election process, duties of County Board of Commissioners, etc.; together with a petition process calling for a tax "not exceeding 15 cents on the \$100 valuation".

G.S. 69-25.4 (originally) provided that the special (fire district) tax is to be used “only for furnishing fire protection within said district”. However, a 1981 amendment to that section defined fire protection to include emergency medical, rescue, and ambulance services, and it expressly authorized the expenditure of fire tax funds for those services. Further, it appears that no special election is required to authorize the expenditure of fire district taxes for these emergency services. The discretion to do so is up to the County Commissioners.¹

The taxes collected for fire prevention must go into a special fund administered by the County Commissioners or by a three member “fire protection district commission”

G.S. 69.25.7 Administration of special fund; fire protection district commission; reads as follows:

“The special fund provided by the tax herein authorized shall be administered to provide fire protection as provided in G.S. 69-25.5 by the Board of County Commissioners or the joint boards of county commissioners, if the area lies within more than one county or by a *fire protection district commission* of three qualified voters of the area . . .”

The statute goes on to say that the said fire protection district commission board members are to be appointed by the Board of County Commissioners for a term of two years, and that the members will serve at the discretion of and under the supervision of the Board of County Commissioners.

1.6.2 Rescue

Rescue squads traditionally have been nonprofit volunteer organizations “... that rescue persons at the sites of accidents and disasters, but (typically) do not transport sick patients or provide medical treatment beyond first aid.”²

In these instances, a service provider (Rescue Squad) that operates an ambulance is subject to the statutory licensing and permitting requirements described in G.S. 131E-155.1, 131E-156, and 151E-158. Traditional rescue squad vehicles; i.e., a rescue truck equipped with extrication equipment; do not engage in the transportation of patients and therefore are not subject to the same requirements.

Counties do not typically operate traditional rescue squads, but they may support them financially. G.S. 160A-487 authorizes counties to appropriate funds to rescue squads. Counties may also levy property taxes to support rescue squads [G.S. 153A-149 (c)]; lease, sell, or convey land to volunteer rescue squads to build or expand facilities (G.S. 153A-176 and 160A-277); and appropriate property to rescue squads providing services within the (G.S.153A-176 and 160-A-279).

Currently, G.S. 58-87-5(c) Defines “rescue” as: “The removal of individuals facing external, non-medical, and non-patient related peril to areas of relative safety”.

A "rescue unit" or "rescue squad" means “a group of individuals who are not necessarily trained in emergency medical services, fire fighting, or law enforcement, but who expose

¹ Loeb, Ben F., Jr.; Fire Protection Law in North Carolina, 5th edition; Institute of Government, UNC at Chapel Hill; 1993.

² A. Fleming Bell and Warren Jake Wicker; County Government in North Carolina; Inst. of Government, UNC at Chapel Hill; 1998.

themselves to an external, non-medical, and non-patient related peril to effect the removal of individuals facing the same type of peril to areas of relative safety”.

The statute article goes on to state that (in order to apply and receive consideration of matching grant funds to assist w/operations) the “unit or squad must comply with existing State statutes and with eligibility criteria established by the North Carolina Association of Rescue and Emergency Medical Services, Inc.

It is in fact the North Carolina Association of Rescue and Emergency Medical Services (NCAR&EMS) that has established statewide standards for Rescue Squads and Rescue Squad members. It should be emphasized that at this time these standards are just that; “standards”; i.e., *not* statutory requirements as yet.

In Vance County there is a single Rescue Squad that makes itself available County-wide; the Vance County Rescue Squad is a certified “Medium Rescue” department and operates from its station off Bickett Street in Henderson.

1.6.3 Emergency Medical Services (EMS)

In 1971 the General Assembly directed the Legislative Research Commission to study emergency medical care in North Carolina. The Commission’s study resulted in the Emergency Medical Services Act of 1973 (G.S. 143, Article 56). The Act established the State’s Emergency Medical Services (EMS) Program within the State Department of Human Resources (now the Department of Health and Human Services). The Office of Emergency Medical Services administers the State’s EMS program, which is placed in the Division of Facility Services of the Department of Health and Human Services (G.S. 143-508). Two state agencies regulate the program. The North Carolina Medical Care Commission adopts the rules and standards that govern ambulance licensure and basic life support services, and the North Carolina Medical Board adopts rules and standards governing advanced life support services.³

The Office of Emergency Medical Services (OEMS) is responsible for ensuring that emergency treatment centers are available throughout the state, inspecting and permitting ambulances, licensing ambulance service providers, certifying ambulance personnel, designating trauma centers and a state poison-control center, and assisting in the development of a statewide EMS communications system. Neither the state nor the regional EMS offices are engaged in the actual delivery of emergency medical services in North Carolina. That responsibility is taken on by agencies and organizations at the local level, the principal being County government.

G.S. 153A-250 identifies County responsibilities and authority in this regard. Counties may franchise ambulance services via adopted ordinance(s), or operate its ambulance services directly.

The following North Carolina Administrative Code subsections provide the most current definition and explanation of EMS *System* Requirements.

.2510 “*EMS System*-A coordinated arrangement of resources, including personnel, equipment, and facilities, organized to respond to medical emergencies and integrated with other health care providers...”

³ A. Fleming Bell and Warren Jake Wicker; County Government in North Carolina; Inst. of Government, UNC at Chapel Hill; 1998.

.2601 EMS Requirements; (a) County Government shall establish EMS Systems. Each EMS System shall have: A defined geographic service area or areas; . . . the highest level of care offered within any EMS provider service area must be available to (all) the citizens within the service area 24 hours per day

The actual operation of local services is financed entirely at the local level. If the County operates an ambulance service as a line department, it may establish rates, fees, and charges to be collected by the service and it may appropriate County funds to the service (G.S. 153A-250).

By statute, all ambulance service providers in North Carolina must be licensed by the State (G.S. 131E-151.1), each vehicle that is operated as an ambulance must be permitted by the State (G.S. 131E-156), and ambulance personnel must be certified by the State (G.S. 151E-158).

1.6.4 Medical Direction

Subchapter 32H of the North Carolina Administrative Code defines *Medical Control* as “...the management and accountability for the medical care aspects of an ALS (advanced life support) program. It entails physician direction and oversight of the initial education and continuing education of the ALS professional; developing and monitoring of both operational and treatment protocols; evaluation of the medical care rendered by ALS professionals; participation in system evaluation(s); and directing by radio or telephone, the medical care rendered by ALS professionals.”

Further, Section .0102(8) defines *Medical Director* as “...the physician responsible for the medical aspects of the management of an ALS program.”

Subsequently, the Medical Director in Vance County is a licensed, practicing physician whose responsibilities with regards to the County’s EMS operation ultimately include certification, medical control, and the continuing education of its employees.

1.6.5 Emergency Communications

Emergency communications in the mind of both citizens and public safety professionals is synonymous with “911”; the number dialed in an emergency. Since this concept deals essentially with telephone communications, the federal government, particularly the Federal Communications Commission (FCC) has played a significant role in its development.

In 1967 the President’s Commission on Law Enforcement and the Administration of Justice recommended that a “single number” be established for nationwide use to report emergency situations. On March 22, 1974, the Office of Telecommunications Policy issued National Policy Bulletin Number 73-1, the *National Policy for Emergency Telephone Number 911*”. This policy stated that:

1. It is the place of the Federal Government to Encourage Local authorities to adopt and establish 911 emergency telephone services in all metropolitan areas, and throughout the United States. [Paragraph 3(a)]
2. Responsibility for the establishment of 911 services should reside with the local government. [Paragraph 3(b)]
3. The cost for basic 911 service should not be a deterrent to its establishment [Paragraph 3(c)]

By 1996 cellular and commercial mobile telephone service had become so popular and widespread that the FCC issued a report (CC Docket No. 94-102; July 26, 1996) calling for the requirement that 911 service be available to wireless phone users in two phases; Phase I would provide calling party's number and cell tower location; Phase II would provide calling party's number and location of the mobile phone by latitude and longitude. The *Wireless Communications and Public Safety Act of 1999* was subsequently signed by the President on October 26th, of that year.

In North Carolina G.S. 62A-2 of the Public Safety Telephone Act states;

“The General Assembly declares it to be in the public interest to provide a toll free number through which an individual in this State can gain rapid, direct access to public safety aid. The number shall be provided with the objective of reducing response time to situations requiring law enforcement, fire, medical, rescue, or other public safety service.”

1.6.6 Emergency Management

According to G.S.166A-4, *Emergency Management* is defined as:

“Those measures taken by the populace and governments at federal, State, and local levels to minimize the adverse effect of any type disaster, which includes the never-ending preparedness cycle of prevention, mitigation, warning, movement, shelter, emergency assistance, and recovery.

Subsequently, an *Emergency Management Agency* is defined as:

“A State or local governmental agency charged with coordination of all emergency management activities for its jurisdiction.”

G.S.166A-7 describes *County and Municipal Emergency Management as follows:*

(a)The governing body of each county is responsible for emergency management, as defined in G.S. 166A-4, within the geographical limits of such county. All emergency management efforts within the county will be coordinated by the county, including activities of the municipalities within the county;

(1) The governing body of each county is hereby authorized to establish and maintain an emergency management agency for the purposes contained in G.S. 166A-2.

(2) The governing body of each county which establishes an emergency management agency pursuant to this authorization will appoint a coordinator who will have a direct responsibility for the organization, administration and operation of the county program and will be subject to the direction and guidance of such governing body.

(3) In the event any county fails to establish an emergency management agency, and the Governor, in his discretion, determines that a need exists for such an emergency management agency, then the Governor is hereby empowered to establish an emergency management agency within said county.

2. Current Operations

This section addresses the current conditions found to exist predominately within the Fire and EMS service delivery systems that currently operate in Vance County. Information regarding background information, vehicle inventories, membership rosters and Department operations generally was provided by the individual Departments. In addition, considerable information was provided by the County's Emergency Operations Department, specifically the Communications Center via their call data base and CAD files. In addition various County staff provided very helpful information with regards to annual budget allocations, revenues received, personnel and staffing numbers, and County and area GIS maps. All of the information obtained was reviewed, analyzed, and formatted for the referenced years by the consultant.

2.1 Fire Services

Outside the City of Henderson, which is served by the Henderson Fire Department, Vance County is served (currently) by nine (9) fire departments. As stated, the Vance County Fire Department is responsible for the Golden Belt District which surrounds the City of Henderson. In addition, the remaining eight (8) Fire Departments are currently all volunteer and include, Bearpond, Cokesbury, Drewry, Epsom, Hicksboro, Kittrell, Townsville, and Watkins.

2.1.1 Membership

Rosters provided by the eight Volunteer Departments indicate a total of 228 individual as members. Individual Department rosters range from 23 to 34 members each.

The Vance County Fire Department maintains a current staffing allocation of 24 full-time paid employees who are on duty 24 hours per day. An additional roster of 24 "available" part-time employees is also maintained in the event that Shift Captains find themselves "short" of staff and need additional certified personnel whom they can call to fill in when needed.

2.1.2 Districts

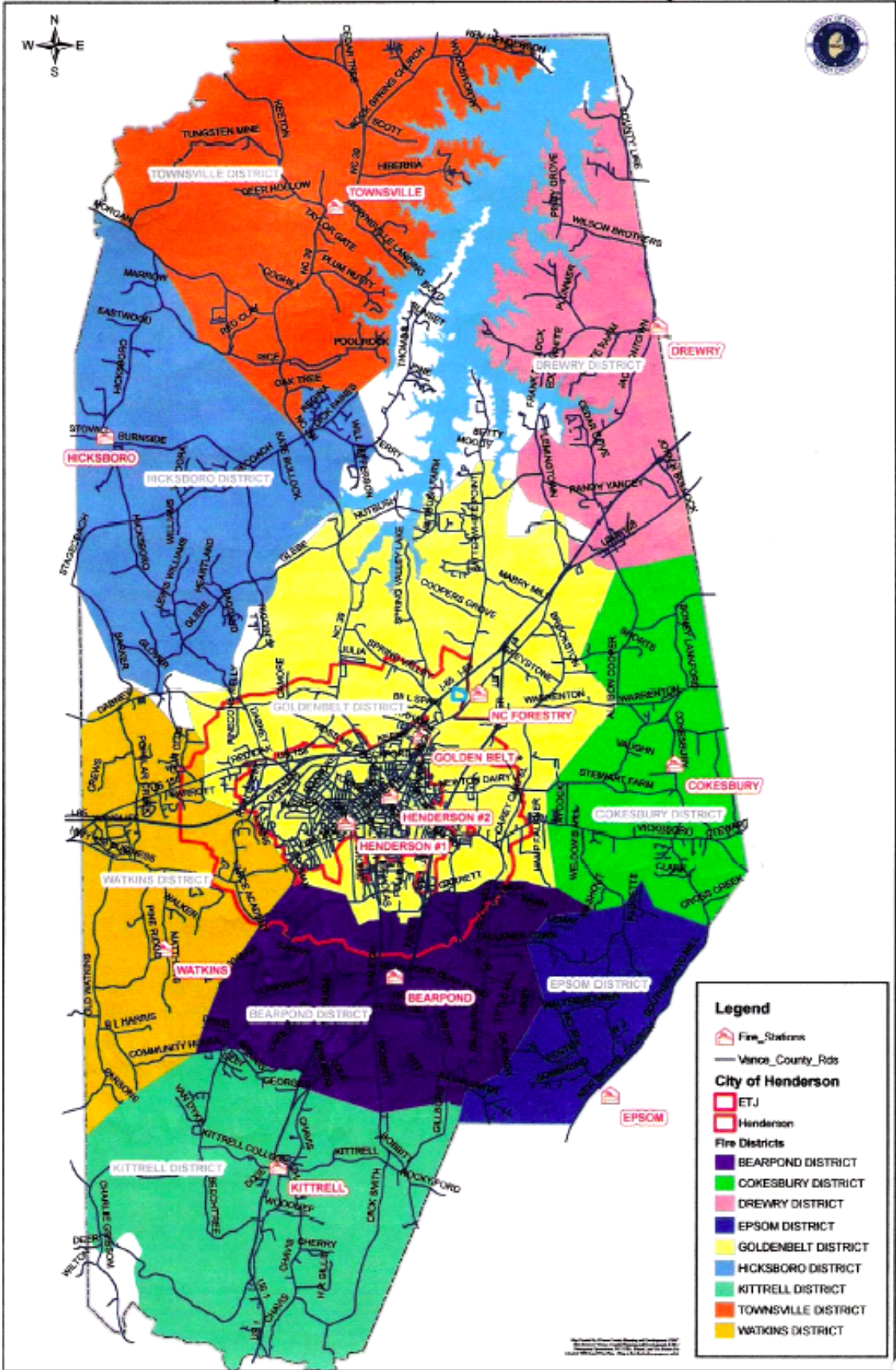
For the most part the Volunteer Fire Districts grew from and were named for the communities in which they were created. During February 2007 the Board of County Commissioners adopted resolutions extending each of the nine (9) Fire Departments' "Fire Insurance District" boundaries to 6 miles. Those boundaries are reflected on the County Map that follows.

While the Vance County Fire Department's district is defined (Golden Belt), it will frequently respond to calls outside its existing district boundaries, essentially to anywhere in the unincorporated areas of the County that it is called.

At present none of the active Volunteer Fire Departments have any paid personnel. Two departments provide fire service in two counties i.e., Vance County and an adjoining County. These include Drewry whose department boundaries extend into Warren County, and Epsom, whose department boundaries extend into Franklin County.

This practice is not uncommon and is addressed in statute G.S. 153A regarding district boundaries that lie within two or more counties. In these cases, fire district taxes or general revenue fund contributions are made to the Fire Department by **both** Counties served. A common misconception is that the County in which the fire station is located pays for fire service of the area covered in the adjoining County. *This is NOT the case.*

Figure 1
Vance County 6-Mile Fire Insurance Districts



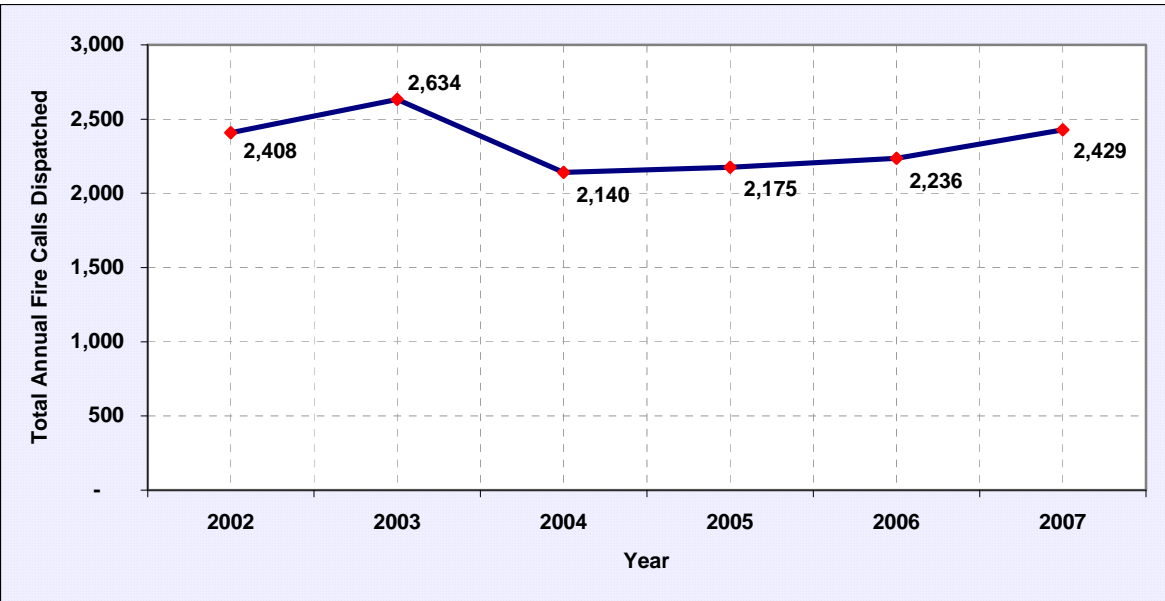
2.1.3 Performance

The tables that follow provide details, in most instances by year and activity type, of the documented performance of the County's Fire Departments. The significant circumstances that are addressed include call volume, situation activity or "complaint" reports, and response time.

Call Volume

Figure 2 illustrates the total number of fire calls dispatched within Vance County, outside the City of Henderson, to all departments combined, for the years 2002-2007.

**Figure 2
Vance County Total Annual Fire Calls
2002-2007**



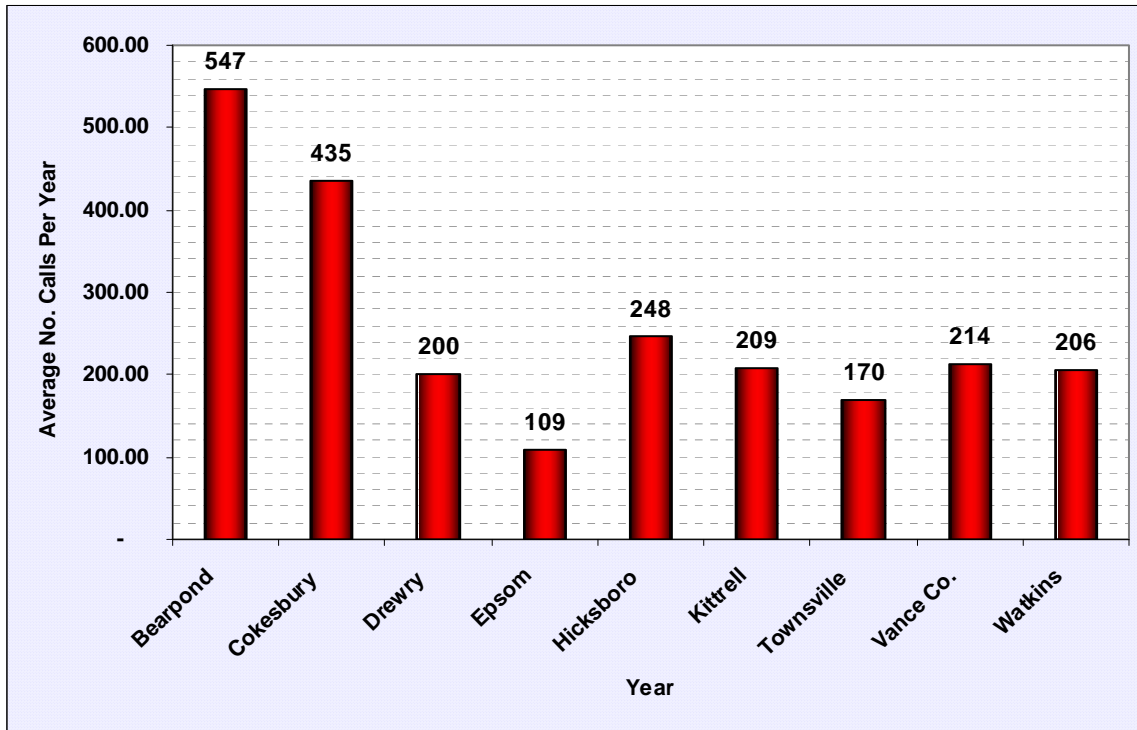
While 2002 shows almost as many calls as 2007, and 2003 is the highest of the past six years, it is perhaps more significant currently to note the gradual and continuing increase in call volume occurring since 2004. That average increase is a very steady 4.4% per year. Figure 3 identifies the annual call volume per department for the same period.

**Figure 3
Annual Fire Call Volume per Department**

| Department | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Bearpond VFD | 573 | 636 | 534 | 486 | 509 | 541 |
| Cokesbury VFD | 364 | 507 | 397 | 436 | 451 | 457 |
| Drewry VFD | 225 | 253 | 159 | 197 | 154 | 214 |
| Epsom VFD | 133 | 138 | 101 | 101 | 83 | 100 |
| Hicksboro VFD | 267 | 293 | 250 | 217 | 230 | 229 |
| Kittrell VFD | 234 | 204 | 183 | 186 | 207 | 237 |
| Townsville VFD | 210 | 185 | 158 | 163 | 152 | 152 |
| Vance County FD | 229 | 200 | 210 | 207 | 225 | 276 |
| Watkins VFD | 228 | 227 | 148 | 182 | 225 | 223 |
| Total Annual Call Volume: | 2,408 | 2,634 | 2,140 | 2,175 | 2,236 | 2,429 |

The average annual call volumes of each Department were calculated based the total calls dispatched for each of the years studied, and were taken from the County Communications Center “Number of Calls Report (All Units)” for calendar years 2002-2007.

Figure 4
Volunteer Fire Department Average Calls per Year
2002-2007



Bearpond, south of the City of Henderson which includes considerable development and industry, has averaged more than twice the number of calls of all other Departments except Cokesbury. Obviously, Cokesbury is a very busy district as well. And, while Epsom had the fewest calls per year, it is also the smallest district in area within the County.

Type of Calls

“Type of Call” refers to the situation reported by the caller to 911 as reflected on the individual Department’s *Department Activity Report* generated by the Communications Center. Vance County Fire Department reports reflect *almost no call types other than “fire”*; In fact of the 276 calls to which the Department was dispatched in 2007 all but 14, or 5.1%, were fires of one type or another

The Volunteer Department’s Activity Reports on the other hand all listed 20-25 different categories of calls to which they were dispatched.

40% of the call types to which Volunteer Departments were dispatched were “fire” calls. Within this specific grouping were typically subcategories that included “brush/grass fire”,

Figure 5

Volunteer Fire Department Major Call Types

“electrical fire”, “grease fire”, “structure fire”, “woods fire”, “smoke report”, etc. When taken together, the Volunteer Fire Departments’ next five (5) largest categories of call were in fact medical emergencies, as noted in Figure 5.

| Complaint Description | % of Calls |
|-----------------------------------|--------------|
| Fire | 40.1% |
| Accident w/Personal Injury | 10.8% |
| Breathing Problems | 10.7% |
| Chest Pain | 6.8% |
| Unconscious/Fainting | 4.1% |
| Sick Person | 3.2% |
| % of All Calls Dispatched: | 75.7% |

The basis for this being that all of the Volunteer Departments have personnel certified as medical and/or rescue first responders and the necessary equipment to do so.

Response Time

While numerous factors, not the least of which will include physical conditions and the natural geography of an area, will ultimately contribute to response time, in the Fire Service, the *availability of personnel* is paramount. In the case of a Department with *paid* personnel that would normally be viewed as “not a problem”. **Unless** the Department happens to be short staffed on a given day or shift due to allocation of personnel, illness, vacation, or training of its employees, **or** the assigned personnel are already out of the station on another call.

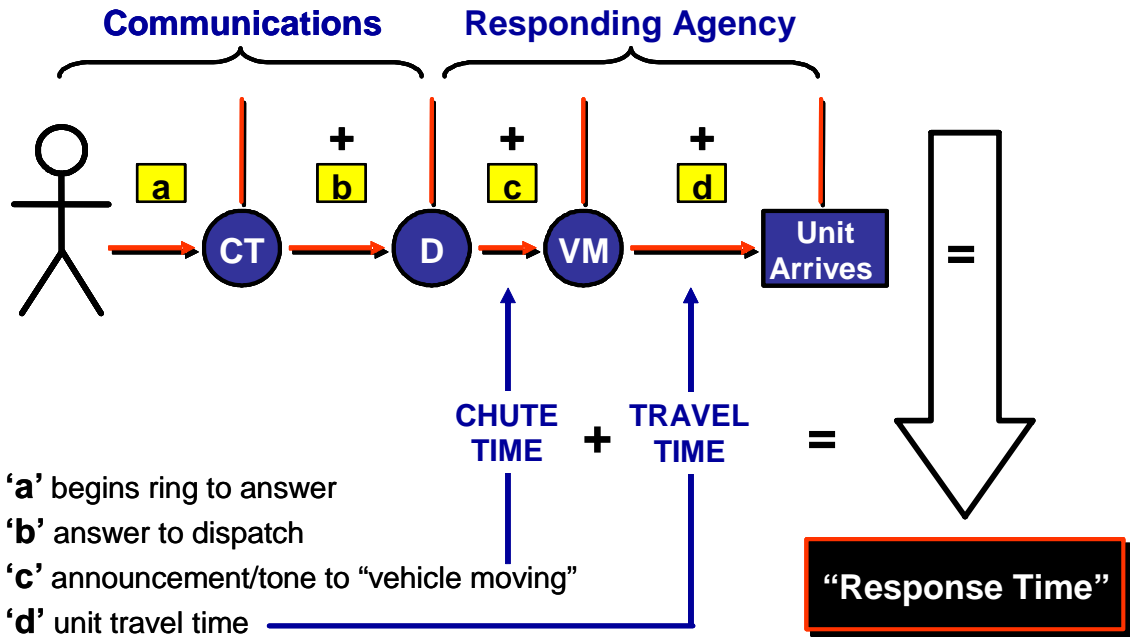
Volunteers by virtue of their status typically will not be “on duty” at the fire station when an alarm is dispatched. Subsequently getting from where they *are*, to the fire station to get and then move the large vehicles and apparatus necessary to combat a fire is going to take time.

Currently, none of the eight (8) Volunteer Departments have any paid personnel. And, while all have Department rosters of more than 20 members, in several instances more than 30 members, there is no guarantee that when the department is dispatched to an emergency call that those individuals will be available to respond.

“Response time” for Fire *and* Emergency Medical Service agencies is the sum of what is referred to as “chute time” and the “travel time”. The diagram that follows (Figure 6) illustrates the interval times that occur from the time someone calls 911 until the emergency responder arrives on the scene of the reported incident.

More specifically, chute time, is the time it takes to react to the “alarm”, “tone” or announcement of the emergency as transmitted from the Communications Center, to the time the emergency vehicle is occupied and “in motion” enroute to the reported location. The “travel time”, is the interval from when the vehicle is “in motion” until the wheels are stopped at the scene.

Figure 6
Emergency Call Response Time Intervals



Response time call data provided by the County's Communications Center was analyzed for each month of each of the calendar years 2005, 2006, and 2007 for each of the Volunteer Departments.

Figure 7
3-Year Average Response Times
Volunteer Fire Departments
2005-2007

| Department | Chute Time | Travel Time | Response Time |
|------------|------------|-------------|---------------|
| Bearpond | 3:21 | 4:35 | 7:56 |
| Cokesbury | 3:21 | 4:36 | 7:58 |
| Drewry | 5:15 | 5:45 | 11:00 |
| Epsom | 4:59 | 5:58 | 10:35 |
| Hicksboro | 3:43 | 5:44 | 9:27 |
| Kittrell | 2:56 | 4:28 | 7:45 |
| Townsville | 3:55 | 6:15 | 10:10 |
| Watkins | 4:03 | 5:38 | 9:58 |

Subsequently, the individual results produce a sum "average" for all Volunteer Departments of a 3:57 chute time, a 5:22 travel time, and a 9:21 total response time.

The data available for analysis of the Volunteer Department response times was formatted differently for the Vance County Fire Department. In this case the numbers available indicated that both Fire and EMS calls were grouped together, most likely because the services are located together and organized under the "same roof" so to speak; i.e. Vance County Fire & Ambulance Service.

Therefore the assumption made here *and* in the section pertaining to EMS, is that the interval and total response times identified for the more than 5,000 calls recorded for each of the years reviewed, is the combined summary/averages of all calls dispatched; i.e. Fire *and* EMS, versus simply one or the other.

The Vance County Fire & Ambulance Service average times were calculated as follows:

| Chute Time | Travel Time | Response Time |
|------------|-------------|---------------|
| 3:03 | 5:24 | 8:28 |

As a means of comparison, numbers for the City of Henderson Fire Department were also analyzed and produced the following information regarding its interval response times:

| Chute Time | Travel Time | Response Time |
|------------|-------------|---------------|
| 2:48 | 3:45 | 6:34 |

2.1.4 Mutual Aid

North Carolina General Statute 58-83-1 authorizes fire departments, both municipal and volunteer, to send personnel and equipment beyond the territorial limits normally served. The individual firefighters and the department, when responding to a call outside the area normally served, have the same authority and immunities as they enjoy inside their own territory.⁴

It is this statute that has long been interpreted as authorizing “mutual aid”, essentially anywhere in the state. Indeed in rural areas, or areas where water is not readily available, mutual aid agreements between departments become very important.

In Vance County of course mutual aide agreements exist among and between the operating Fire Departments regardless of whether they are volunteer or paid.

When mutual aid is provided by a department ***outside their normal district***, the recorded response time for that call is most often going to be *longer than* the average recorded response time *within their own district*.

At the present time, the “Department Activity Report” data available does not identify which calls dispatched were mutual aide to another Department’s district.

2.2 Emergency Medical Services (EMS)

Emergency medical services in Vance County are provided as a department level function of County government; i.e. Vance County Fire & Ambulance Service. Responding personnel are certified EMT’s; for the most part at either the “Basic” or “Paramedic” Level. The Department currently is certified at the “Paramedic” level which qualifies them as an advanced life support (ALS) provider.

⁴Loeb, Ben F., Jr.; Fire protection law in North Carolina, 5th edition; Institute of Government, University of north Carolina at Chapel Hill; 1993.

The Paramedic level is the highest of the five (5) identified levels of EMT certification and therefore that level able to provide the broadest range of treatments to emergency medical patients. This certification level requires that any time an ambulance responds to a medical emergency, it must have at least one (1) Paramedic certified EMT on board.

The EMT's are part of the Department's eight (8) person shifts that include both Fire Fighters and EMTs; most of whom hold dual certifications as both. Each shift is supervised by a Captain that, in turn answers to the Assistant Chief and Chief of the City of Henderson Fire Department.

The County is currently a single EMS district which, according to the NC Office of Budget & Management, comprises an area of 254 square miles. The County's current EMS Plan on file with the State OEMS, states that three (3) EMT-Paramedic ambulances will be staffed and available within the County 24 hours per day.

Currently, the highest concentration of residences and businesses, and subsequently the highest percentage of EMS calls occur within the City of Henderson and its immediate surrounding areas.

2.2.1 Performance

The tables that follow provide details by year of the documented performance for the County's EMS units. The principal circumstances addressed included call volume, call type, and response time. As a means of comparison, in 2007 EMS units were dispatched to medical emergencies 4,740 times. This is almost twice the number of calls dispatched to all nine (9) County Fire Departments combined.

In addition to these emergency calls, EMS also currently provides transportation, via the same EMS crews and County ambulances, to individuals in non-emergency situations.

These include transportation from nursing home to nursing home, nursing home to hospital or doctor offices, and nursing home or hospital to out of County medical facilities such as Duke Medical Center in Durham and Wake Medical Center in Raleigh.

Again, while the individuals being transported may be in ill health, and even in need of monitoring while in transit, their transportation is classified as "non-emergency".

The requests most frequently come from Doctors, the Hospital itself, the local Nursing Homes, or in some instances individuals. For reporting purposes, these non-emergency calls are classified as "convalescent" calls in the table that follows.

Figure 8

Vance County EMS Base Location

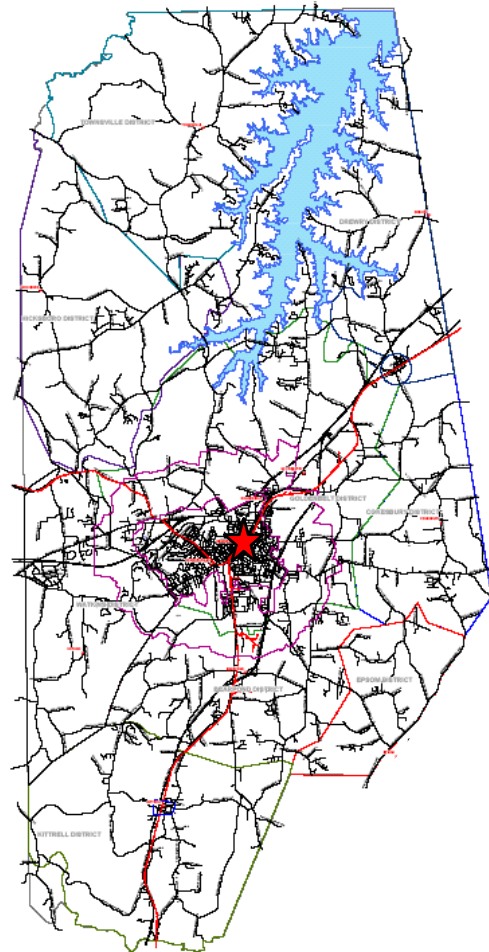


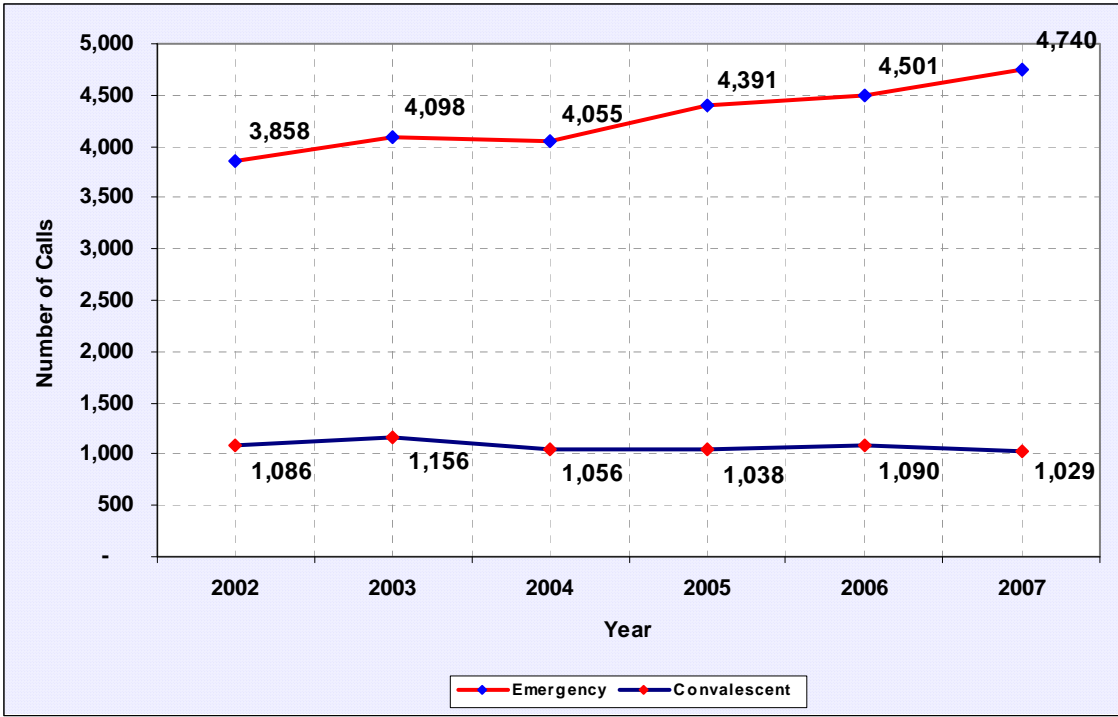
Figure 9
Annual EMS Emergency & Convalescent Calls
2002-2007

| Category | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Emergency | 3,858 | 4,098 | 4,055 | 4,391 | 4,501 | 4,740 |
| Convelescent | 1,086 | 1,156 | 1,056 | 1,038 | 1,090 | 1,029 |
| Total | 4,916 | 5,151 | 5,111 | 5,429 | 5,591 | 5,769 |

Note: The total annual emergency call numbers were taken from CAD reports produced by the Communication Center which generated the call request via 911 calls received. The convalescent call numbers for 2002-2007 were taken from Fire Department annual reports provided the County Manager by the Fire Chief each year.

The illustration of these call numbers represented graphically offers a significant indication of the changing dynamics of the requests for services received by EMS.

Figure 10
Annual EMS Emergency & Convalescent Calls
2002-2007



Here, while it is apparent the number of convalescent calls (transports) has remained relatively consistent over the six years studied, the emergency calls have continued to increase. In this case, at the average rate of 4.3% per year; a total increase of almost 23% since 2002.

2.2.2 Type of Call

Annual Department Activity Reports were reviewed in order to determine the type of EMS calls most commonly reported. The profile of calls by type, number and percentage were similar for each of the years reviewed. The adjacent figure, as an example, is taken from the 2007 report. In all, there were 22 different categories of call.

Of those, the eleven categories listed represent almost 80% of all calls received, representing eleven of the 22 categories.

2.2.3 Response Times

The same issues with regards to response time and relevant interval times as discussed and illustrated in the previous section with regards to the Vance County Fire Department of course apply here to EMS.

Again, from the previous section as well, is the following:

The data available for analysis of the Volunteer Department response times was formatted differently for the Vance County Fire Department. In this case the numbers available indicated that both Fire and EMS calls were grouped together, most likely because the services are located together and organized under the “same roof” so to speak; i.e. Henderson-Vance County Fire & Ambulance Service.

Therefore the assumption made here and in the section pertaining to County Fire, is that the interval and total response times identified for the more than 5,000 calls recorded for each of the years reviewed, is the combined summary/averages of all calls dispatched; i.e. Fire and EMS, versus simply one or the other.

In this case the Vance County Fire & Ambulance Service times were calculated as follows:

| Chute Time | Travel Time | Response Time |
|------------|-------------|---------------|
| 3:03 | 5:24 | 8:28 |

2.2.4 EMS Reporting

The state-wide reporting/record keeping system for EMS providers in North Carolina is “PreMIS”, the *Pre-Hospital Medical Information System*.

Under the North Carolina EMS Rules and Regulations, every EMS System *is required* to collect and submit (electronically) EMS data based on the North Carolina College of Emergency Physician’s Standards for Medical Oversight and Data Collection.⁵

Figure 11
EMS Calls by Type

| Type of Call | # Calls | % Total |
|--------------------------|--------------|--------------|
| Sick Person | 760 | 16.0% |
| Breathing Problems | 745 | 15.7% |
| Chest Pain | 401 | 8.5% |
| Falls | 334 | 7.0% |
| Unconscious/Fainting | 313 | 6.6% |
| Accident/Personal Injury | 310 | 6.5% |
| Convulsion/Seizure | 255 | 5.4% |
| Diabetic Problems | 205 | 4.3% |
| Abdominal Pain/Problems | 184 | 3.9% |
| Hemorrhage/Laceration | 155 | 3.3% |
| Stroke | 109 | 2.3% |
| Totals: | 3,771 | 79.6% |

⁵ Pratt, Drexdal; “Required EMS Patient Care Reporting”; NCOEMS Memorandum; 2004

According to the EMS Performance Improvement Center’s website, www.emspic.org, PreMIS “is much more than a database of EMS information. PreMIS was designed from its very foundation to be a critical link to the future of EMS. The project began with a grant from the Department of Transportation and the Governor's Highway Safety Initiative to the North Carolina Office of Emergency Medical Services. The project was subcontracted to the Department of Emergency Medicine at the University of North Carolina-Chapel Hill. PreMIS is currently funded through contracts with the North Carolina Department of Public Health and the North Carolina Office of Emergency Medical Services as a fundamental portion of the state's Bioterrorism Preparedness strategy”.⁶

2.2.5 Performance Assessment & Benchmarking

The EMS “Toolkit Project” is a three year grant project funded by The Duke Endowment through the North Carolina Office of EMS. “Toolkit” is the term used to describe the detailed analyses that are conducted based upon the EMS system’s data that has been entered into PreMIS.

For example, Vance County’s 2005 EMS *System Response* Toolkit, evaluated a sample of 2,274 EMS call records to determine the *Average* and *Fractile* Response time of Vance County EMS ambulances. The results were as follows:

Figure 12
EMS System Response Toolkit Results
2005 Sample

| Time Interval | Sample Size # of Calls | Average Time | 90% Fractile Time |
|---------------|------------------------|--------------|-------------------|
| Chute | 1,723 | 2:22 | 4:00 |
| Travel | 2,093 | 5:57 | 12:00 |
| Response | | 8:19 | 16:00 |

Note: The “90% Fractile Response Time” refers to the time frame within which 90% of all calls were responded to as opposed to simply the collective **average** response time of all calls.

Also, the “chute” and “travel” times referenced here are defined the same as those discussed in the Fire Services Section at pages 13-15.

The sample sizes are less than the total calls selected for evaluation in this case, (2,274). Among the reasons suggested by the PreMIS EMS Performance Improvement Center personnel who analyzed the data as to the difference in calls counted versus calls analyzed, were “documentation delays or errors”.

2.3 Rescue

The Vance County Rescue Squad was established in 1953. Like the Volunteer Fire Departments, the Rescue Squad is organized as a private, non-profit corporation and registered as such with the State.

⁶ North Carolina EMS Performance Improvement Center website; 2007

The Squad currently has 28 members who are certified at least at the basic Emergency Rescue Technician (ERT) level. The majority of the members are also certified as at least EMT-Basic or Medical Responder (MR) as well. Almost all of the members are either employed full time as Firefighters or EMTs with Vance County, the City of Henderson, or with neighboring counties or municipalities and in many instances are also members of the various Volunteer Fire Departments within the County.

In North Carolina there are currently three (3) levels of certification as a Rescue Squad; Light, Medium, and Heavy. Each level is progressively more demanding than the previous and each higher level of certification carries with it increased responsibilities and equipment requirements. The Vance County Rescue Squad has been evaluated and has received its certification as a **“Medium”** Rescue Squad by the North Carolina Association of Rescue & EMS.

Its certification permits it to not only respond to rescue calls (search & rescue, vehicular extrication) and as medical emergency first responders, but the squad also has the personnel, capabilities, and equipment to provide trench rescue, swift water rescue, high angle rescue, and confined space rescue response as well.

2.3.1 Performance

Between January 2002 and December 2007, Vance County Rescue was dispatched to 1,215 calls; an average of 203 calls per year

In 2007 the Rescue Squad was dispatched to 213 calls. While there were a total of 25 categories of calls in all, the significant majority was either “Accident w/Personal Injury” at 59.5% of all calls, or “Structure Fire” at 15.4% of all calls; the two categories alone amounted to approximately 75% of all calls.

Like EMS, the Rescue Squad is dispatched to calls throughout the County from its base location on Bickett Street in Henderson. Unlike EMS and as with the Volunteer Fire Departments, the Rescue Squad is an entirely volunteer organization. Subsequently, the 2007 interval and corresponding response time averages are as follows:

| Chute Time | Travel Time | Response Time |
|------------|-------------|---------------|
| 3:21 | 7:06 | 10:27 |

Of note as well is that Rescue currently responds to all structure fires in the County outside the Golden Belt district principally for the purpose of providing back-up and support to responding Fire Departments generally and specifically to individual Firefighters at the scene.

Their Heavy Rescue vehicle includes the only light tower outside the City of Henderson, a Cascade air system for refilling SCBA oxygen breathers, power generators, and an assortment of emergency and rescue tools and equipment.

In addition, at a major fire of any duration, Rescue will also deploy its Command Center trailer to the scene wherein Incident Commanders have access to additional communications capabilities and resources, and Firefighters are provided access to water, food, and a respite area if/as needed.

2.4 Funding & Revenue

The County currently funds Fire and Emergency Medical Services through contributions and general fund allocations as follows:

- Vance County Fire & Ambulance Service-as an operating department
- Volunteer Fire Departments-annual lump sum contributions to each Department via funds generated by a County-wide Fire Tax
- Vance County Rescue Squad-annual general fund lump sum allocation
- City of Henderson-general fund allocation for annual supervision & training contract

For the Vance County Fire & Ambulance Department, annual allocations have included the following:

Figure 13
Annual Fire & Ambulance Department Budget Allocations
FY 02-03 thru FY 07-08

| Fund Category | Fiscal Year | | | | | |
|---------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | FY 02-03 | FY 03-04 | FY 04-05 | FY 05-06 | Fy 06-07 | FY 07-08 |
| Personnel | \$ 870,801 | \$ 872,604 | \$ 921,507 | \$ 977,735 | \$ 999,431 | \$ 1,193,290 |
| Operations | \$ 787,089 | \$ 819,062 | \$ 757,509 | \$ 703,610 | \$ 629,478 | \$ 686,754 |
| Total | \$ 1,657,890 | \$ 1,691,666 | \$ 1,679,016 | \$ 1,681,345 | \$ 1,628,909 | \$ 1,880,044 |

For the individual Volunteer Fire Departments the funding formula currently in place has provided the following funds:

Figure 14
Annual Fund Allocations to Volunteer Fire Departments
FY 02-03 thru FY 07-08

| Department/Category | Fiscal Year | | | | | |
|--------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | FY 02-03 | FY 03-04 | FY 04-05 | FY 05-06 | Fy 06-07 | FY 07-08 |
| Tax Refund | \$ 100 | \$ 1,100 | \$ 1,000 | \$ 1,000 | \$ 500 | \$ 500 |
| Admin Fees | \$ 9,900 | \$ 9,000 | \$ 7,500 | \$ 4,000 | \$ 2,000 | \$ 2,000 |
| Bearpond | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Cokesbury | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Drewry | \$ 15,000 | \$ 17,500 | \$ 20,000 | \$ 22,500 | \$ 25,000 | \$ 25,000 |
| Epsom | \$ 15,000 | \$ 17,500 | \$ 20,000 | \$ 22,500 | \$ 25,000 | \$ 25,000 |
| Hicksboro | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Kittrell | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Townsville | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Watkins | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Golden Belt | \$ 30,000 | \$ 35,000 | \$ 40,000 | \$ 45,000 | \$ 50,000 | \$ 50,000 |
| Capital Payment | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 | \$ 30,000 |
| Total Annual Allocation | \$ 280,000 | \$ 320,100 | \$ 358,500 | \$ 395,000 | \$ 432,500 | \$ 432,500 |

Note that Golden Belt Fire District (County Fire & Ambulance Department also receives an annual allocation equal to the other in-County Volunteer Departments.

The Vance County Rescue Squad's annual allocation commencing with fiscal year 2003-2004 has been as follows:

Figure 15
Annual Allocations to Vance County Rescue Squad

| Fiscal Year | | | | |
|-------------|-----------|-----------|-----------|-----------|
| FY 03-04 | FY 04-05 | FY 05-06 | Fy 06-07 | FY 07-08 |
| \$ 20,500 | \$ 23,500 | \$ 26,000 | \$ 28,500 | \$ 29,500 |

Finally, the recent fiscal year general fund allocations to the City of Henderson for the supervision and training contract agreement have been as follows:

Figure 16
Annual Fund Allocations to the City of Henderson

| Fiscal Year | | |
|-------------|------------|------------|
| FY 05-06 | Fy 06-07 | FY 07-08 |
| \$ 101,260 | \$ 106,188 | \$ 103,164 |

The total funds allocated to support Fire, EMS, and Rescue services in Vance County during this fiscal year (2007-2008) is \$2,445,208.

2.4.1 Fire Tax

The current County-wide fire tax is .03 cents. Reportedly one cent will generate approximately \$122,500 based on the current County appraised valuation. The current resulting income from the Fire Tax assessment then is currently \$375,000 per year, which is used to fund the Volunteer Fire Departments.

2.4.2 Billing & Collections

As stated in the Introduction of this study report; "If the County operates an *ambulance* service as a line department, it may establish rates, fees, and charges to be collected by the service and it may appropriate County funds to the service." (G.S. 153A-250)

The County does bill for the emergency medical services it provides, specifically for all transports that occur with its ambulances.

The current billing rate is \$350 per transport, both emergency and non-emergency, and \$9.38 per mile. Billings are generated internally within the County by County staff specifically assigned to do so. The recent fiscal year billings and subsequent collections are illustrated in the table that follows.

Note that the "No. of Calls" referenced in the "Category" column may not necessarily correspond to the actual number of EMS transports for the same period.

Figure 17
Experienced EMS Billings & Collections
FY 02-03 thru FY 07-08

| Category | Fiscal Year | | | | |
|-----------------------|--------------|--------------|--------------|--------------|--------------|
| | FY02-03 | FY03-04 | FY04-05 | FY05-06 | FY06-07 |
| No. of Calls | 5,642 | 5,752 | 5,479 | 5,743 | 6,240 |
| Charges | \$ 2,058,153 | \$ 2,052,245 | \$ 1,977,075 | \$ 2,049,499 | \$ 2,229,126 |
| Collected | \$ 1,770,935 | \$ 1,726,049 | \$ 1,629,242 | \$ 1,595,659 | \$ 1,681,890 |
| YE Balance Due | \$ 287,218 | \$ 326,196 | \$ 347,832 | \$ 453,840 | \$ 547,236 |

Based on these figures the FY 06-07 amount collected, \$1,681,890, amounted to approximately 89% of the total FY 2007-2008 Fire and EMS general fund allocation of \$1,880,044; and 69% of the amount budgeted for Fire, Rescue, and EMS combined, which for FY 2007-2008 is \$2,445,208.

3. County Population & Growth

In order to anticipate Fire and EMS system requirements for the near and short term future the County must evaluate its recent year populations and the relationship to experienced Fire and EMS call volumes as well as its expected future growth and the impact that it may have on future year Fire and EMS system requirements.

The most significant factor impacting routine emergency service system requirements, particularly EMS, *will be* the County's population.

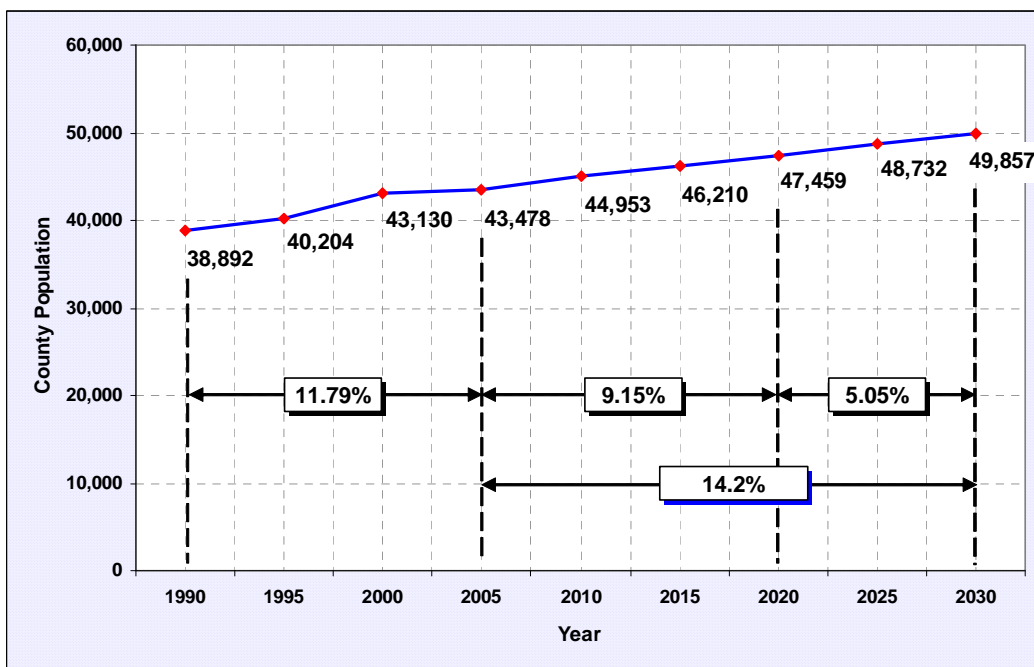
The baseline for glimpsing what a County in North Carolina can expect with regards to its anticipated growth are the projections developed by the North Carolina Office of Budget & Management (NCOBM).

Following the 2000 U.S. Census, County projections throughout the State were updated to reflect the findings of the census. Shortly thereafter Vance County's 2006 population was certified at 43,920 and it was projected that Vance County would have a resident population of 44,890 by 2010 and 47,395 by 2020.

Following completion of the U.S. Census for both 1990 and 2000, it was noted that the State's pre-census projections were commonly *lower* than the actual census results indicated. As a result County population projections, in many cases, were often adjusted *upwards* to correlate with the actual higher populations counted.

At this time the State has projected that Vance County will experience "low growth" through at least 2020 and perhaps 2030. The graphic that follows illustrates the experienced and projected growth in the County's population from 1990 through 2030.

Figure 18
County Experienced & Projected Populations



A common performance related benchmark used in previous studies and by the University Of North Carolina School Of Government in their *Performance Measurement Project*⁷ utilizes the ratio of calls per 1,000 of the County’s population.

The table that follows illustrates the results of the calculations to determine these ratios for the years 2002-2007.

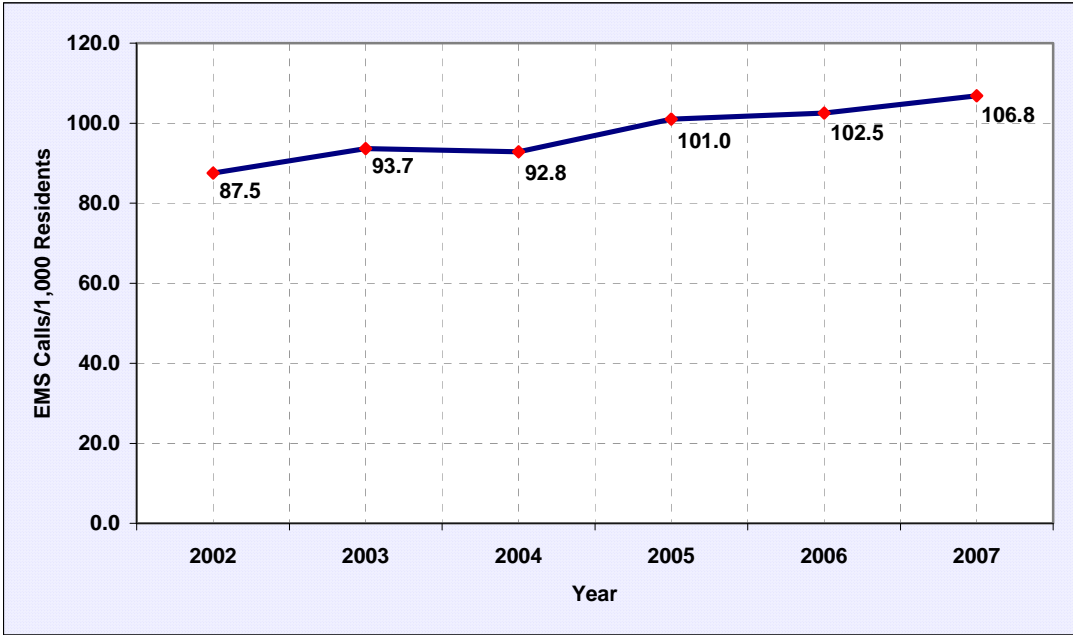
Figure 19
Annual Number of EMS Calls per 1,000 Population
2002-2007

| Year | County Population | Total EMS Calls | Calls per 1,000 |
|------|-------------------|-----------------|-----------------|
| 2002 | 44,082 | 3,858 | 87.5 |
| 2003 | 43,750 | 4,098 | 93.7 |
| 2004 | 43,683 | 4,055 | 92.8 |
| 2005 | 43,478 | 4,391 | 101.0 |
| 2006 | 43,920 | 4,501 | 102.5 |
| 2007 | 44,367 | 4,740 | 106.8 |

The number of EMS Calls/1,000 population increased steadily, for each of the years 2002-2007, from 87.5 to 106.8; an average increase *per year* of 4.1 percent.

Figure 19 illustrates graphically the actual pattern of the experienced increases in EMS Calls per 1,000 County residents for the same years.

Figure 20
EMS Calls/1,000 Resident Population



⁷ North Carolina Local Government Performance Measurement Project; UNC; February 2001

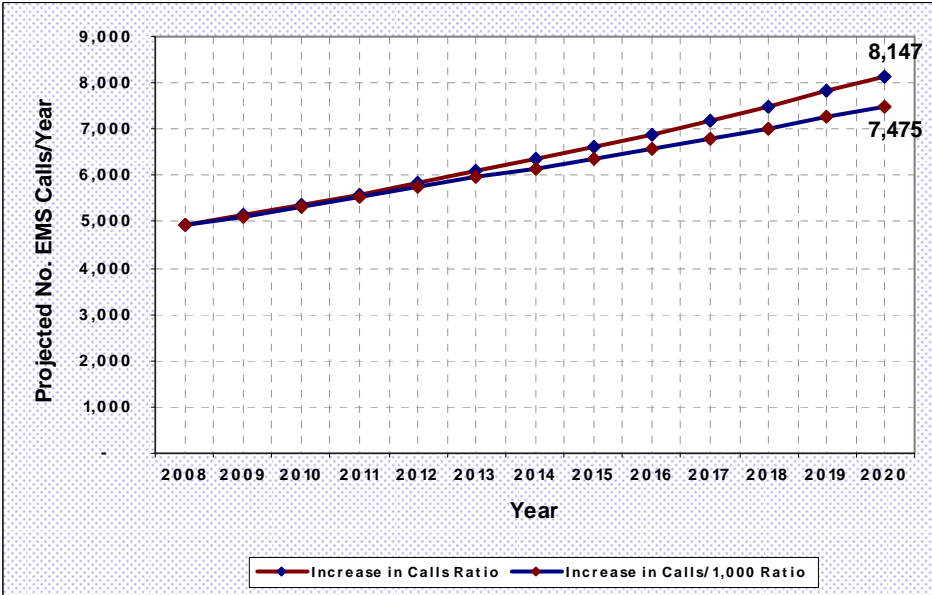
3.1 Projecting Service Needs

Overlaying the above findings with projected future County populations can offer a glimpse of what future year EMS call volumes might be. The projection scenarios offered in Figure 19 are:

- First, the ratio of increase in the number of calls per year applied to future County populations; and
- The second, (lower line), is based on the experienced annual rate of increase in the number of EMS calls per 1,000 County residents.

In either case, it appears that the EMS call volume could very well double by 2020.

Figure 21
 Projected Increase in EMS Annual Call Volume
 2008-2020



3.2 Call Location

At this time, with slow growth overall projected for Vance County over the next 10-20 years it is not anticipated the pattern of calls will change much. In other words, the City of Henderson and its surrounding areas will still generate the majority of the calls dispatched.

Of possible impact may be the evolution of “lake living”, wherein those developments that have been referred to as vacation or part-time residences may become permanently occupied once retirement approaches, thus shifting somewhat the dynamic of the County’s population clusters.

Last, should the County be able to develop completely a true “County-wide” water system, which also means public sewer, the “slow growth” classification with which the State has labeled Vance County today could begin to change in significant ways.

4. The Issues

This section discusses the significant issues of concern identified during the analyses of the various data collected, as well as the visual study of conditions found to exist, together with the conversations and formal interviews conducted over the course of this study.

The determination of whether or not an “issue” was identified as such was based on the assessment of current County Fire and EMS operations; *Section 2-Current Operations*; and, from a planning perspective, i.e. the impact of population growth on the County’s EMS system capabilities in the years to come; *Section 3-County Population & Growth*. Of course current operations and performance were assessed against prevailing standards, State statutes, and research findings gathered and studied.

Therefore, the issues identified as being of significant concern were either related to or had to do directly with the following topics.

- 4.1 Response Time**
- 4.2 Distribution of Funding**
- 4.3 Management & Organization**
- 4.4 EMS Deployment**
- 4.5 Fire & Ambulance Staffing**
- 4.6 Volunteers**

4.1 Response Time

The concerns regarding response times are applicable specifically to Fire and EMS. As discussed, and for purposes of this report, response time is the time from the initial alert or announcement by the Communications Center (also called “tone”, “page”, or dispatch) of the reported emergency, to the time that the service vehicle and appropriate personnel arrive on the scene.

Why is time so important? According to the National Emergency Number Association (NENA), “The most elementary explanation of why time is important in a police, fire, or medical emergency has to do with the obvious; *serious injury and/or the potential loss of life and property.*” Quite simply and literally, response time is important because it may mean the difference between life and death.

Factors impacting response time include of course the *distance* that must be covered, and the *speed* at which the emergency vehicle is able to travel, and under what conditions. For reference, the following formula can be used to calculate average travel time between two points; (NFPA 1720-A.4.3.2):

$$1.7 \times \text{Distance} + 0.65 = \text{Travel Time}$$

As an example, from the Watkins VFD station on Horseshoe Bend Road to the intersection of Poplar Creek and Dabney Roads in the north end of the Fire District, it is (approximately) 5.5 miles. Utilizing the above formula the travel time would be estimated as follows:

$$1.7 \times 5.5 \text{ miles} + 0.65 = 10 \text{ minutes travel time}$$

This travel time equates to an average speed of a little less than 34 miles per hour, which actually *is not* unusual for Fire, Rescue, or EMS vehicles for this distance considering acceleration, deceleration, road conditions, other traffic, etc.

Factors influencing the *quality* of the response have to do with not only the time it takes to get to the scene of the emergency but also the information communicated to the responding service unit, the skill of the personnel responding, and the availability of the proper equipment to adequately address the emergency at hand.

Of course, an emergency service agency *must* be prepared to address the most serious scenario *each time* they are dispatched.

Notably then, the most serious calls to which an agency charged with responding to emergencies is dispatched are most likely those involving a structure fire, hazardous material situation, a “non-breathing”, “man-down” or similar medical emergency, and motor vehicle accidents; in other words, those incidents that may involve loss of property, serious injury, or death.

The concern with regards to **fire service** response times is based upon research conducted by various national associations and agencies that study the critical nature of fire fighting and fire service response and have developed standards accordingly. Among them:

- ***The National Fire Protection Association (NFPA) states that “if a fire is not suppressed in 8 to 10 minutes from the time of ignition, it will flashover, spreading outside the initial area or room of origin”.***
- ***“As a rule of thumb, first responders should arrive on the scene in less than five minutes, 90% of the time.” (National Institutes of Health)***
- ***“The fire department shall establish a response time objective of four minutes or less for the arrival of the first arriving engine company at a fire suppression incident, for not less than 90% of all incidents”; [NFPA Standard 1710 for the Organization and Deployment of Fire Suppression Operations; Section 4.1.3].***

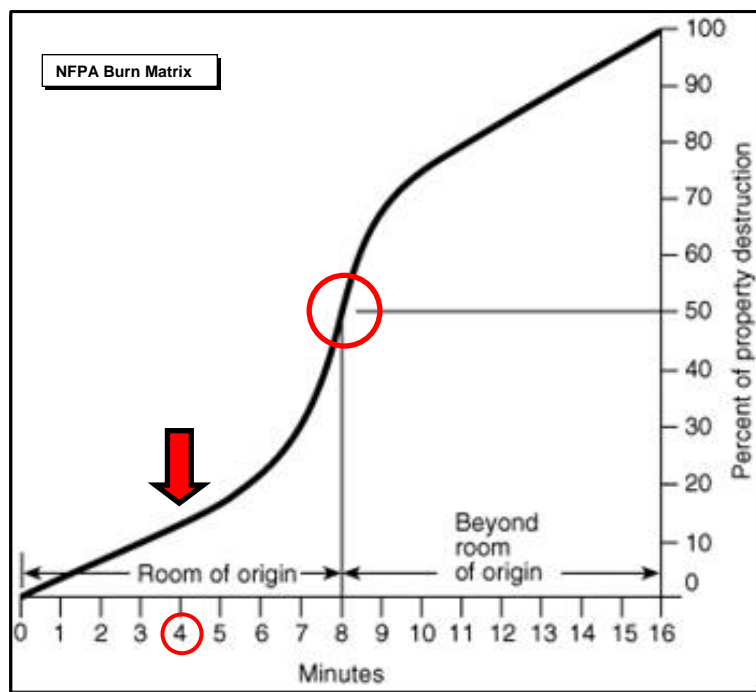
The average response time for the County’s non-municipal, Volunteer Fire Departments was **9 minutes-21 seconds**.

The average response time for Vance County Fire & Ambulance was **8 minutes-28 seconds**.

**Figure 22
Burn Time Matrix**

The adjacent diagram illustrates the basis for the NFPA standard regarding fire suppression response times.

At approximately eight (8) minutes from initial igni-



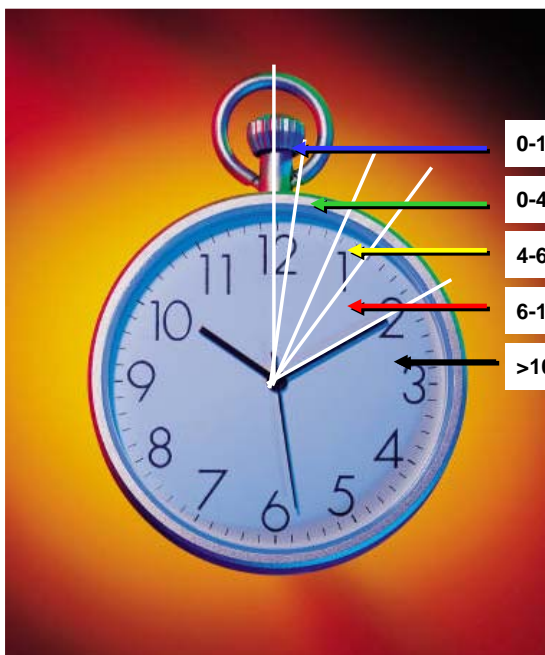
tion (flame), a fire will move from the room of origin into the remaining area or rooms of the structure. As this occurs the likelihood of substantial damage and structural loss increases dramatically. At 16 minutes it is conceivable that property damage could be total.

For example, were this graphic applied to a house fire, and the fire were to start (combust) in the kitchen of the house at 4:00 am; by 4:08 am the fire would begin to spread beyond the kitchen and shortly thereafter “flashover” into the next adjoining room; i.e. dining room, living room, etc.

Then, were the fire to go unabated for *another* eight (8) minutes, the likelihood that the home would be destroyed increases dramatically.

With regards to response times to **medical emergencies**, the basis upon which pre-hospital emergency medical response criteria has been established is medical case history data regarding the body’s need for oxygen. Simply, the human body needs oxygen to survive. While some cells may tolerate short periods without oxygen, most require a constant supply of oxygen to survive. The illustration and narrative that follow illustrate the significance of these findings.

Figure 22
“Time is Critical”



Concerns and subsequent standards regarding emergency medical response times are based on the findings of various

- 0-1 minute; cardiac irritability
- 0-4 minutes; brain damage not likely
- 4-6 minutes; brain damage possible
- 6-10 minutes; brain damage very likely
- >10 minutes; irreversible brain damage

significant organizations and professional associations. Among these, the American College of Emergency Physicians (ACEP) and the American Heart Association has each similarly stated:

“The most important factor in successfully resuscitating a patient in cardiac arrest is the speed of response. The survival rate from untreated ventricular fibrillation decreases up to 10% for every minute that passes and definitive care is not provided. The American Heart Association, ACEP, and other respected organizations recommend that EMS vehicles should respond to deliver BLS (basic life support) skills within 3 to 4 minutes, with ALS (advanced life support) skills available within 6 to 8 minutes. The ALS-within-8-minute concept developed from research that showed the survival rate of cardiac arrest victims decreases significantly

with each passing minute, and that optimal probabilities for survival increase when BLS has been provided within 4 minutes followed by ALS within 8 minutes.”⁸

Additionally, organizations that have published findings with regards to emergency medical response times have included:

- ***NFPA, which states in 1710, that “deployment for the first responder/AED level to arrive within four minutes for 90 % of all calls.”***
- ***“For cardiac arrest, the highest hospital discharge rate has been achieved in patients for whom CPR was initiated within 4 minutes of arrest and advanced cardiac life support within 8 minutes”. (American Heart Association)***
- ***“In an incident involving lack of oxygen, brain damage is very likely at 6 to 10 minutes; irreversible after 10 minutes”. (American Association of Orthopedic Surgeons)***

The average response time for EMS; i.e. the Vance County Fire & Ambulance Department/Golden Belt District **was 8 minutes-28 seconds.**

4.1.1 Additional Time Standards

National Fire Protection Association’s standards (NFPA 1710) address *performance* requirements in terms of time and, as already stated in part, require that:

A time objective of one (1) minute shall be established for turnout time; (referred to in this report as chute time).

“The fire department’s fire suppression resources shall be deployed to provide for the arrival of an engine company within a 4-minute response time and/or the initial full alarm assignment within an 8-minute response time to 90 percent of the incidents”.

In addition, for a Fire or EMS agency that responds to critical incidents involving medical emergencies, NFPA 1710 further states that:

“AED/Basic Life Support capabilities arrive within a 4-minute response time to 90 percent of the incidents. . . “

Of note, is that while these standards are held to steadfastly with regards to Career Fire Departments located in “built-upon” areas, ambiguity exists with regards to jurisdictions classified as either “rural” or “remote”. Both categories of which would be applicable to considerable portions of Vance County today.

Regardless of classification, however, it does not change the fact that the characteristics of lack of oxygen for an accident or stroke victim, or a fire in a structure will act or respond differently than the parameters cited.

⁸ American College of Emergency Physicians; “Principles of EMS Systems”; 2006

4.1.2 “Average” is no longer acceptable

As referenced in the previous discussion of the EMS reporting system PreMIS (page 19), current trends, including in some instances already published standards, suggest that *average* response time is no longer an adequate measure of performance in a life safety/emergency services environment. Average response time is just that; i.e. *average*. Which means that although any number of calls could have been responded to in *less than* (in Vance County’s case) the average time of 9 minutes-21 seconds for Volunteer Fire and 8 minutes-28 seconds for EMS, an almost equal number of calls were likely responded to in *greater or even much greater time* than the averages noted. Professional organizations as well as those associations who publish what are considered the prevailing standards for the industry have pushed for performance standards; i.e., response times; that are to be met *at least 90 percent of the time*.

4.2 Distribution of Funding

Consider the following examples:

- Bearpond VFD is among the smaller fire districts within the County, immediately south of the City of Henderson with considerable industry and a major transportation corridor. Its *All Units Number of Calls Report* for 2007 reflects that it responded to 541 calls for service. Its FY 2007-2008 funding allocation from the County was \$50,000.
- Townsville VFD is among if not the largest fire district in the County with regards to total area. It is a predominately rural area with much lower densities of all types than Bearpond. Its *All Units Number of Calls Report* for 2007 reflects that it responded to 152 calls for service. Its FY 2007-2008 funding allocation from the County was \$50,000.
- Drewry VFD is also among the largest fire districts in the County and is also very rural. Significantly, it has one of the most difficult districts to traverse with emergency vehicles due to existing geography and its network of roads influenced by the configuration of Kerr Lake. Its *All Units Number of Calls Report* for 2007 reflects that it responded to 214 calls for service. Its FY 2007-2008 funding allocation from the County was \$25,000.
- Watkins VFD is immediately west and southwest of the City of Henderson and visually appears to be proximate in area to Drewry VFD. Its *All Units Number of Calls Report* for 2007 reflects that it responded to 223 calls for service; 9 more than Drewry. Its FY 2007-2008 funding allocation from the County was \$50,000.

The flat rate, lump-sum allocation does little to address the actual needs of the Volunteer Departments. Again, as the examples illustrate, what is to say that the wear and tear on Bearpond’s vehicles in having to respond to so many more calls than Townsville does not end up being equal to the wear and tear on Townsville’s vehicles by virtue of having to travel so much further per call made?

Or, why, simply because they serve a portion of an adjacent County (Warren) should not Drewry, with essentially the same number of calls as Watkins, get the same funding as Watkins?

Also, since the County Fire & Ambulance Service is funded at almost \$1,900,000 dollars this fiscal year, why are they also on the same list as the Volunteer Departments to receive an additional \$ 50,000 of fire tax money?

The allocations need to be established on the basis of *need*. And, those needs must be based on the performance expectations placed on the Volunteer Departments *by the County* that is in fact funding them.

Rescue is another player in this scenario; a legitimate one. The Vance County Rescue Squad and the role it should play as a member of the County's emergency response "system" will be addressed further in the next section. While potentially a significant asset to Volunteer Fire Departments and the County's EMS operation, the Rescue Squad does not enjoy the essentially guaranteed revenue generated by the Fire Tax that Volunteer Fire Departments do; nor does it have any squad members who are paid by the County as EMS employees are.

4.1.3 Statutory Option

Contrary to popular belief G.S. 69-25.4, while in its original form specified that fire district taxes be used *only* for fire protection, **was amended** in 1981 to include emergency medical, rescue, and ambulance services "to protect persons within the district from injury or death". In its entirety the statute reads as follows:

69-25.4. Tax to be levied and used for furnishing fire protection.

(a) If a majority of the qualified voters voting at said election vote in favor of levying and collecting a tax in said district, then the board of county commissioners is authorized and directed to levy and collect a tax in said district in such amount as it may deem necessary, not exceeding ten cents (10¢) on the one hundred dollars (\$100.00) valuation of property in said district from year to year, and shall keep the same as a separate and special fund, to be used only for furnishing fire protection within said district, as provided in G.S. 69-25.5.

Provided, that if a majority of the qualified voters voting at such elections vote in favor of levying and collecting a tax in such district, or vote in favor of increasing the tax limit in said district, then the board of county commissioners is authorized and directed to levy and collect a tax in such districts in such amount as it may deem necessary, not exceeding fifteen cents (15¢) on the one hundred dollars (\$100.00) valuation of property in said district from year to year.

(b) For purposes of this Article, the term "fire protection" and the levy of a tax for that purpose may include the levy, appropriation, and expenditure of funds for furnishing emergency medical, rescue and ambulance services to protect persons within the district from injury or death; and the levy, appropriation, and expenditure of the tax to provide such services are proper, authorized and lawful. In providing these services the fire district shall be subject to G.S. 153A-250.

(c) For purposes of this Article, a fire protection district is a municipal corporation organized for a special purpose. Except in cases when a fire protection district commission is appointed to govern the district, the board of county commissioners, or joint boards of county commissioners when the area lies in more than one county, shall serve as the governing body. (1951, c. 820, s. 4; 1959, c. 805, s. 4; 1981, c. 217; 2001-414, s. 33.)

The responsibility for the establishment of tax rates and the allocation and distribution of revenue received is ultimately the County Commissioners. How the money is to be spent must be adequately justified. Decisions must be made as to what services are

necessary, what the expectations and requirements of the service organizations are, and how they are to provide those services and ultimately fund them.

4.3 Management & Organization

Vance County does not have a Fire Chief, a Fire Marshal, an EMS Operations Director, or training personnel dedicated to either Fire or Emergency Medical Services.

Since 1968, when the first agreement was struck, the County has contracted with the City of Henderson, specifically for the services of the City Fire Chief to “. . . furnish certain supervisory and administrative services for the Vance County Fire Department and the Vance County Ambulance Service.”

Forty years later, while populations have increased, demand for emergency services has increased, and the educational, technological, professional, and legal demands placed upon emergency service providers and on local governments have *dramatically* increased; the contract is still in force.

Today this contract essentially pays full-time employees of the City of Henderson to administer to the County’s full-time Fire and Ambulance Service, on a part-time basis.

As well, the relationships, below the surface, are not good; i.e. City Fire Department representatives do not attend County Fire Association meetings, County EMS personnel are not invited to participate in Medical Peer Review/Quality Assurance Committee meetings, and the fact that Volunteer Fire nor practicing EMS supervisors have participatory representation on the County’s Public Safety Committee, are but a few of the indications observed..

The current administrative configuration creates a plethora of mixed messages and infers, at times, that conflicting priorities could and will arise with regards to the allocation of time, funding, and attention to procedural issues and operational details.

- Firefighters who are paid by the County now answer to a City Fire Chief
- The County Fire & Ambulance Service needs full-time, professional leadership that is available on a day-to-day basis.
- Fire and EMS are two **very different** disciplines.
- EMS has become very sophisticated and carries with it very significant responsibilities
- EMS is not now adequately staffed nor administered to on a day-to-day basis.
- The County needs a full-time professional that will focus 100% of their attention solely on the issues of the County.
- The Volunteer Fire Departments and their combined memberships have tremendous potential, yet as volunteers, oftentimes need help in coordinating and focusing that potential.

4.4 Mission Focus

This issue parallels somewhat the two issues that follow it; *EMS Deployment* and *Fire & EMS Staffing*.

By identifying this issue as “mission focus” it is intended that the County take a hard look at why it is spending so much time “out-of-position” transporting non-emergency patients as far as an hour or more out of the County, in lieu of maintaining and utilizing County

resources and personnel within the County for the purpose of providing *emergency* medical services.

The Statutes are clear with regards to County responsibility for EMS;

“County Government shall establish EMS Systems” and further, “the highest level of care offered within any EMS provider service area must be available to (all) the citizens within the service area 24 hours per day”.

While the County is certainly not prohibited from operating a convalescent ambulance service, it must be aware that in expecting trained emergency service providers to be out of position for the time involved may very well compromise the degree to which (the County) is in compliance with the Statute.

If revenue is an issue, the decision does not have to be “either-or”; it (the County) could in fact do both if it should so choose. If that is the answer however, the necessary staffing and operational requirements must be addressed accordingly.

Figure 23

4.5 EMS Deployment

EMS ambulances responded to almost 4,800 emergency calls throughout the County in 2007. As near as can be determined, the average response time for those emergency calls was 8 minutes-28 seconds.

That average response time is but 28 seconds away from the recommended response time for ALS providers. However, keep in mind that this response time is an *average*. In all probability, almost half of the emergency calls dispatched will have taken longer than the 8:28 average to respond.

Secondly, ***that 8 minute ALS response time recommendation is incumbent upon a basic life support capable “first responder” arriving on the scene within four (4) minutes.*** Where are they going to come from? In many instances now, Volunteer Departments do respond however many times their response times are greater than 4 minutes.

While the majority of EMS calls will occur within the City of Henderson and its surrounding areas, there will still be many calls that occur throughout the remaining areas of the County.

Utilizing the distance-to-travel time formula illustrated previously ($1.7 \times \text{Distance} + 0.65 = \text{Travel Time}$), an Ambulance departing the Bickett Street station on an emergency call in Kittrell, roughly 9.6 miles away, will encounter a travel time of approximately 17 minutes; which anticipates an average speed of only 34 mph, and is more than twice the response time that recommended for ALS response.

What if a scenario were used that increases the average speed of the ambulance to 50 mph; a rate of just under 3.5 miles in 4 minutes and almost 7 miles in 8 minutes?

In this example, were the Ambulance crews able to keep chute times within the recommended time of on (1) minute, and maintain an average vehicle speed of 50 mph, their 4-minute (5-minute total) response/travel “perimeter” would be that illustrated by the blue area on the map that follows (Figure 23). In turn, their 7-minute (8-minute total)

response/travel perimeter would be that illustrated by the red area. The yellow star of course represents the Bickett Street location from where the ambulances are currently deployed.

Figure 23
Current EMS Deployment-Response Perimeter

A couple of points:

- An average speed of 50 mph is a **very aggressive** average speed for an ambulance.
- A 7-minute response/travel perimeter distance plus a 1-minute chute time will equal the eight (8) minute ALS response time recommended in the referenced performance standards;
- **Provided that** adequate First Responder capable personnel are available to respond and initiate treatment within 4-minutes

Even if the ambulances were able to achieve and maintain the suggested average speeds and response times, the gaps in coverage in the north and south ends of the County would still be quite significant.

While there are and will remain innumerable options for deployment and staging of the EMS ambulances within the County, leaving all three committed ambulances where they are now **should not** remain an option for consideration.

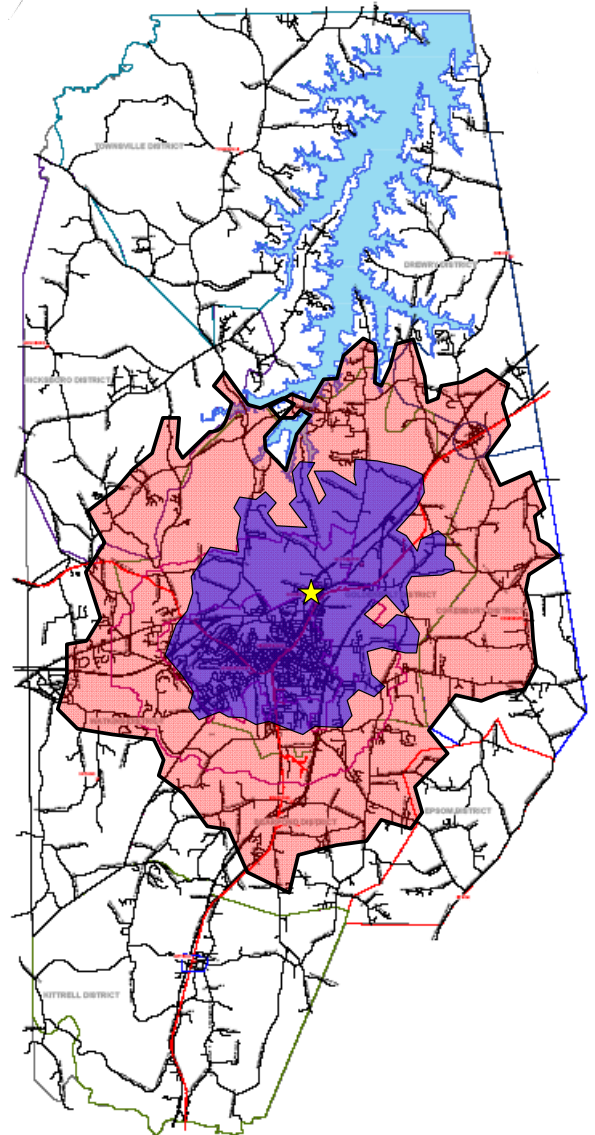
4.6 Fire & Ambulance Staffing

When evaluating the staffing requirements of a given operation, agency, or department the initial questions that must be addressed are “what will the staff be expected to do”, and “how long each day will they be expected to do it?” Of course here the answers are: “to respond to medical and fire emergencies-24 hours per day”.

The *Vance County EMS Plan* on file with the State at OEMS commits the County to three (3) 24-hour ambulances, each to be staffed with at least one (1) Paramedic Level EMT.

In addition, a Fire crew consisting of no less than four (4) Firefighters is to be available to respond to Fire emergencies 24 hours per day as well.

While numerous shift configurations may exist within Fire and EMS, and many agencies have tried to configure shift durations (8, 10, 12, 16, or 24 hours) to achieve one particular advantage or another, one thing remains constant. There are 8,760 hours in a 365 day year.



In the calculation that follows, the number of hours per year that a single employee will be available to work is determined to be 1,808 hours; applying common vacation, personal, training, and holiday scheduled time off. Again, this is for a person asked to work an 8-hour day, 5 days per week.

| | |
|----------------------------------|--------------|
| Days/Year | 365 |
| Weekends | 104 |
| Vacation | 10 |
| Sick/Personal | 10 |
| Holidays | 11 |
| Training | 4 |
| Days Worked/Employee | 226 |
| x 8 Hours/Day | 8 |
| Total Hrs. Available/Year | 1,808 |

What impact then does a 12 or 24 hour shift have on this number? Technically speaking 12 and 24 hour shift workers *will commonly end up putting in more total hours per year* than the “typical” 8-hour employee. Of course their vacation, personal leave and holiday schedules vary considerably from the “standard” as well.

Again however, there are but 8,760 hours in a year. Subsequently to fill a 24 hour position 365 days a year, it would require that 8,760 be divided by 1,808 to determine the staffing required; in this case, 4.85 or five (5) people. In fact “5” is the almost universal relief factor or multiplier used when calculating staffing requirements in Law Enforcement, Detention, Military, and Public Safety positions.

The County Fire *and* Ambulance Service is currently allocated eight (8) FTE positions per shift, with three different shifts rotating duty assignments, for a *total allocation of 24 personnel*.

The staffing requirements per State guidelines include:

- Three (3) 24-hour ambulances w/2 EMT positions @ 8,760 hours each
- One (1) Engine Company w/minimum of 4 FF positions @ 8,760 hours each

| | |
|---|--|
| 6 EMTs (3 Ambulances) @ 24/7= | 52,560 hours of coverage required/year |
| 4 FFs @ 24/7= | 35,040 hours of coverage required per year |
| Total hours required to be filled/year: | 87,600 |
| Divide by average availability/FTE employee | 1,808 |
| Total FTE allocation required to fill committed vehicles | 48.5 |

This is a “real” number. Attempting to cover the vehicles and calls with the current allocation of staff is not realistic. “Someone” is going to come up “short” in another way; unfortunately it may be an accident victim. “Priority One Callbacks” are occurring daily as a result of the inadequate staffing now provided.

In every day terms, a “priority one callback” is when a high priority (serious) emergency call is dispatched and no one is there to respond as existing personnel are out on active emergency calls, or out of the County involved with a non-emergency transport. Attempts are made to “call back” personnel who may be off-duty or otherwise out of position to come in to respond to the call.

This should not be happening in a professional organization.

4.7 Volunteers

The level of Fire, Rescue and Emergency Medical Services available in Vance County today would not exist were it not for the hundreds of volunteers who have given countless hours of their time over the years. There is little that could ever be done that would adequately thank or compensate so many for so much.

That having been said, the issue here *is* the volunteer. The truth of the matter is that neither individual communities nor incorporated municipalities, much less entire counties, can rely any longer solely on volunteers to provide necessary emergency services on a regular basis. And, at the same time, remain up to date with currently accepted yet ever changing medical practices, fire suppression technology, certification criteria, operational standards, and legal issues surrounding their service area of interest.

The reasons for the rapidly decreasing involvement of citizen volunteers vary but seem to essentially consist the following:

Employment Conditions The circumstances of employment and the requirements placed on volunteers by employers today make it much more difficult to respond to emergencies when they arise. The competitive business environments of today offer very few employment opportunities that will permit an employee to “drop everything” in order to respond to an emergency that may take him or her out of the workplace for two or three hours or more. Further, in those instances where individuals may be able to respond, many find that they are working further and further away from the area or community in which they volunteer and would not be able to respond in a manner that is in any way timely.

Training Requirements Certification as a basic emergency medical technician (EMT) or a Rescue Technician (RT) in the State of North Carolina requires 160-170 hours of training. Certification as a Firefighter I requires approximately 216 hours. Levels of certification beyond basic of course require even more hours. When one considers the commitment a volunteer must make, one must consider that these *basic* requirements **do not** include:

- In-service hours spent responding to calls
- Attendance at required monthly meetings
- Time spent completing paperwork and fundraising
- Time in continuing education classes required to maintain level of certification

Administrative Requirements While most often thought of simply as paperwork, administrative requirements include much more. Personnel and training records, vehicle and equipment maintenance, bookkeeping (generally), purchasing, inventory maintenance, budgeting, fundraising, correspondence and grant writing, and the general organization of related department functions are but a few of the activities involved.

Societal Change Societal change, as it has impacted volunteerism in the emergency service environment, can be summarized by the phrases;

“Pace of Life”, and “Evolving Standards”

The pace at which change is occurring in our everyday lives, impacted particularly by technology, population migration, dual working households, and the like leaves much

less time to devote “free” to the community; particularly if, in order to provide that service you must also complete a couple of hundred hours of training first . . . on your own time.

Citizen expectations, ever evolving legal requirements surrounding performance issues, and continuously changing standards means that volunteering in any of the emergency service discipline areas today has become at minimum, a very demanding hobby; and very likely, one that is destined to become even more complex and demanding in the years to come.

5. Recommendations

This Section identifies and briefly discusses a total of 16 recommendations regarding Fire and Emergency Medical Services in Vance County.

The first 11 recommendations specifically address the major Issues identified and discussed in Section 4.

These are followed by five additional recommendations (5.12-5.16) that may or may not refer to a specific, previously identified issue, however, if implemented could impact several or all of the recommendations previously discussed.

ISSUE: Management & Organization

RECOMMENDATIONS:

5.1 Dissolve, during an appropriate period of transition, the contractual agreement with the City of Henderson for administrative oversight of the County Fire & Ambulance Service

- Hire a full-time County EMS Director
- Hire a full-time County Fire-Rescue Chief
- Within one (1) year, hire a full-time EMS Quality Assurance/Training Coordinator
- Allow at least six (6) months for the transition to tack place; i.e. notice to City, hiring of personnel, transfer of records, etc.

5.2 Establish a standing Emergency Services Steering Committee

- The intension is that the Committee serve in a formal advisory capacity to the Board of County Commissioners
- Include at least the following as active members
 - County Commissioner (1)
 - County Fire Chief (1)
 - County EMS Director (1)
 - County Medical Director (1)
 - City Fire Chief (1)
 - Emergency Operations Director (1)
 - Rescue Squad Representative (1)
 - Volunteer Fire Department Representatives (4)
 - Citizen (2)
- The efforts of the committee should focus on policy issues, inter-agency and inter-discipline coordination of incident response, communications, and training activities, as well as the development of a coordinated all-agency commitment to an Emergency Incident Command policy and, when necessary, the assessment of need and formulation of funding priorities and recommendations

ISSUE: Mission Focus

RECOMMENDATION:

5.3 The current practice of transporting non-emergency patients should be discontinued.

- The County’s statutory responsibility is to provide **emergency** medical services
- If the County wishes to continue to provide the service consider;
 - a. Contracting the service out to a private provider or
 - b. Hire the necessary staff to provide the service on a scheduled basis.
- Employees hired as Emergency Medical Technicians (EMTs) should be assigned accordingly

ISSUE: EMS Deployment

RECOMMENDATIONS:

5.4 Identify more appropriate locations for the staging and deployment of EMS Ambulances

- Provide a site for the staging and deployment of an EMS Ambulance on the south-southwest side of the City, to enable continued coverage of the City as well as enable improved response into the Bearpond, Watkins, Kittrell and Epsom areas.
- Provide a site for the staging and deployment of an EMS Ambulance on the north-northwest side of the City, to also enable continued coverage of the City, however, to also provide quicker response to developing areas adjacent and north of I-85 as well as more convenient access into the Hicksboro and Townsville Fire districts.
- The most convenient locations to stage full-team Ambulances or QRV’s would be at existing Volunteer Fire Stations, providing their locations can accommodate the proposed response objectives and appropriate proximities suggested.

5.5 Implement a plan for the deployment of a QRV (or two) that will remain mobile and move throughout the County, focusing on known incident “hot spots” or areas which heretofore have had poor response times.

- Without having to transport non-emergency patients the (now) “third” Ambulance can be deployed from either of the new locations at any time or the existing base on Bickett Street and serve as a single EMT mobile quick response vehicle (QRV).
- Although focusing on areas previously not easy to get to, the EMT assigned, (frequently a Supervisor) can, via radio communications, also remain attentive to known high call volume times and locations, and to support the other two fully staffed ambulances as needed.

- As QRV's are typically occupied by only one person, it is conceivable that two (2) QRV's could be deployed simultaneously to provide maximum coverage along of the County with the other two fully staffed Ambulances.
- Also, at least initially, this vehicle may *not* need to be staffed on a 24 hour basis.

ISSUE: Fire & Ambulance Staffing

RECOMMENDATION:

5.6 Commit to hiring adequate Fire and EMS personnel to cover/staff the vehicles that have been "committed to" the State (and County residents) as being operational and available.

- Provide and assign adequate certified staff to assure that a dedicated two-person, Paramedic level team is available for *each* Ambulance 24 hours per day.
- Provide and assign adequate staff to assure that a dedicated team of no less than four (4) certified Firefighters are available 24 hours per day and *not* obligated to also ride an Ambulance during the same shift.
- ***Should the funding for the full contingent of personnel required not be available, the determination should be made to take the Ambulance or Engine Company that cannot be staffed out of service and notify the State of the decision to do so.***
- Once the decision is made that the vehicles will be fully staffed, implement hiring of additional employees immediately.

ISSUE: Response Time

RECCOMENDATION:

5.7 The County should establish and formally document EMS and Fire response time performance standards.

- Response Time performance standards should be developed and ultimately adopted *by the Board of County Commissioners* for the County (paid) Fire Department, for EMS, for the Volunteer Fire Departments and for the Vance County Rescue Squad.
- The development process should begin with Input and initial discussions at the individual Department level, and continue within the Emergency Services Steering Committee for formulation of appropriate policies and presentation to the Board of County Commissioners.
- The County Fire & Ambulance Services Department should initiate internal efforts immediately with regards to improvement plans with particular emphasis on reducing chute times.

- County Fire & Ambulance personnel working on the plan should coordinate with the County Communications Center to be sure “mark” times and reporting protocols are consistent and are consistently recorded the same at both ends.

ISSUE: Distribution of Funding

RECOMMENDATIONS:

5.8 The County should examine options for the (re)distribution of Fire Tax and General Fund dollars that are earmarked and/or dedicated to the support of Volunteer Fire and Rescue services, other than the equal lump sum distribution formula now in place.

- a. Foremost, the distribution should be made on the basis of identified need(s).**
 - b. Individual Department needs should be initiated and substantiated by the Department.**
 - c. Issues identified as major and/or having impact on several or all of the Volunteer Departments should be initiated and substantiated by the County Fire-Rescue Chief, with input from the individual Departments.**
- As referenced in Section 4, the needs identified must be based on the performance expectations placed on the Volunteer Departments *by the County*; i.e. the citizenry, that is in fact funding them. The process should consider at least the following components.
 - Identify and publish the performance objectives that are expected of the Volunteer Departments.
 - Establish, in advance, a priority of the needs identified; i. e. patient care, response time improvement, prevention education, staffing, equipment, training, etc.
 - Entertain proposals from individual Departments for funding of operations and performance initiatives, with a formal basis for and justification of the request.
 - Upon approval, assure the expeditious distribution of funds.
 - No less than annually, assess the activities undertaken with the funds provided and determine whether the established performance objectives have been met.

5.9 As a funding priority, address First Responder initiatives in an effort to improve response time performance in the case of reported medical emergencies.

- Various references have been made within the report to “first responders”, or a “first responder program”. While Fire, Rescue, EMS, and Law Enforcement personnel universally are considered “first responders” in any emergency, in the context of this report it is intended that the reference be specific to “Medical” First Responders; i.e. those with basic medical and rescue training and certification that are able to receive emergency communications and respond to the scene of a medical emergency FAST; and initiate appropriate treatment until EMS personnel arrive.
- Presently, all Volunteer Fire Departments and the Vance County Rescue Squad have at least basic EMT and Rescue capabilities. As referenced previously with

regards to response times, having a “first responder” on the scene of a serious medical emergency within *4 minutes* is very often critical to the victim’s survival.

- The previous recommendations regarding EMS Deployment suggest that initially at least two 24 hour Paramedic Ambulances and perhaps as many as two (2) QRV’s be deployed from between 2 and as many as 4 different locations. Add to that “First Responders” deployed from as many as ten (10) additional locations throughout the County; soon to be 9 Volunteer Fire Departments and the Vance County Rescue Squad; the potential for reducing first unit response time to medical emergencies could be *very significant*.
- The need exists. With EMS responding to almost 5,000 emergency calls per year and the cadre of Volunteer Fire Departments call volume being comprised of (approximately) 50-60% non-fire emergency calls, typically accidents with injuries and medical emergencies, the effort can be justified.
- Citizen comments received during both of the Community Meetings suggested that it is time that paid staff be provided in at least some of the Volunteer Fire Departments.
- **This initiative’s *first* priority is patient care by qualified individuals; the *second*, is the improvement of response time performance to medical emergencies; *third*, is the potential that to accomplish the objective some Departments may end up with paid personnel, at least on a part-time basis.**

5.10 Evaluate the “needs” first and *then* address the funding.

- The “Distribution of Funding” issue must also include, *once needs are first identified and prioritized*, an assessment of the **amount** of funding required and then the appropriateness of the Fire Tax rate and the distribution of General Fund dollars to support the above referenced initiatives as well as Fire and EMS overall.

ISSUE: Volunteers

RECOMMENDATIONS:

5.11 Develop a plan for the scheduled implementation, over time, of the placement of *at least part-time, weekday, business hour paid personnel* at the “Volunteer” Fire Department locations to respond to the emergencies to which their respective departments are dispatched.

a. Bearpond Volunteer Fire Department should have paid personnel now.

Sub-section 4.6 addressed the issue of “Volunteers”. The demands placed on volunteers today, especially within the areas of Fire, Rescue, and EMS, have changed considerably since many of the volunteer efforts in local communities were originally initiated.

Also, while the existing Volunteer Fire Departments and the Vance County Rescue Squad have almost 250 members between them, that *does not* mean that 250 individuals are available at any given time.

- A number of those approximately 250 “members” are in fact dual members of more than one volunteer organization.
- As well, at any given time, a number of those “members” are very likely going to be out of the area, out of the County, or just plain unavailable to respond to an emergency call.
- And, while the importance of response time in an emergency has been discussed, the availability of **someone to respond** is even more important.

Placement of paid personnel at Volunteer Departments *may in fact occur* as a result of the First-Responder initiative suggested in Recommendation #9 above.

By virtue of each Department’s call volume and specific circumstances staffing, even part-time, will not occur in every Department, at least for some time. In those in which paid personnel are determined to be necessary, the respective Department Chief and/or Board of Directors should make the hiring determination, providing of course that the candidate meets minimum age and certification requirements and undergoes the required screening before hand; i.e. criminal history, drug screening, etc.

Supplemental Recommendations

5.12 Emergency Radio Communications

Several of the Volunteer Fire Departments have expressed concerns about radio communications. That is, being able to receive and successfully transmit clear conversations primarily to and from the County Communications Center.

In fact, to remedy the concern Cokesbury and Hicksboro have bought and installed their own repeaters with which to boost their reception.

This has been a frustrating dilemma and one that should be taken seriously. It apparently is.

All indications are that the County is nearing completion of a fully functional 800 MHz communications system. Is it an expensive system? Yes. However, the major portion of the money to develop this system has come from the Federal and State government. The remaining portion of the system will require the completion of the last grant application which will also carry with it a healthy contribution by the County.

Upon its completion, the County will not only have gotten a considerable bargain, but also have for its use a state of the art emergency communications network.

Recommendation: In concert with this study’s recommendations, it would certainly benefit the County and its emergency service providers if the Board of County Commissioners can provide the “last piece” of this project and fund the grant’s matching costs.

5.13 Emergency Services Vehicle Access

In traveling miles of County roads, riding Fire Districts, visiting countless residential, rural, agricultural, and business sites, both old and new, conditions were observed to exist (or not exist) that could significantly impact the services the County’s firefighters, rescue workers and paramedics are called upon to provide.

Vance County has a considerable number of “private” roads (indicated with a yellow-orange tag on the green road sign). A number of these roads; some rural, some not so rural, some paved, some not, some leading to mobile homes, some leading to new “upscale” private residences, and some leading to small businesses, could not support the weight and/or would not accommodate access by an ambulance much less a 40,000 pound fire truck.

A number of roadways, both private as well as public, particularly those with multiple residences or businesses, did not provide turn-a-rounds or cul-de-sac radii that would adequately accommodate emergency vehicles.

In addition, a number of residential “clusters” of homes were set well back from the primary access roadway with but a single access drive to and from the entire “cluster”; i.e. with no secondary means of access or egress for emergency vehicles.

Recommendation: Incorporate Emergency Service planning/development activities as part of the County’s annual and long-term planning initiatives and involve stakeholders in the process; i.e., Fire Department personnel, residents of the County and the individual Fire Districts, EMS personnel, Emergency Operations, etc.

5.14 House Numbers

As well acquainted as the many Firefighters and EMT’s are with the roadways and notable landmarks that exist throughout the County, locating the specific residence, or incident location to which they are called is oftentimes difficult due to darkness, inclement weather, etc.

However, even those responders most familiar with the area to which they are dispatched can find locating the exact address difficult if the home does not have a prominently posted house number.

In addition to not having a number posted at all, problems also arise when, although the home may *have* a number, that number is too small, a difficult color, or poorly located to permit an easy identification from the street or access roadway.

Recommendation: The County should develop basic specifications with regards to House Number signage; size, color(s), and preferred location(s); and require that homeowners provide them in order to ensure prompt response by Fire and EMS personnel in the event of an emergency.

Funding considerations might include Fire Tax revenues, General Fund allocations, County-Resident sharing of costs, homeowner funded, or perhaps as a Fire Department or Fire Association fundraising activity.

5.15 County Fire Department Responsibilities

Among the fire, rescue and emergency medical services discussed, the County’s only statutory responsibility is that it provides emergency *medical* services. For that service to be effective EMTs, according to prevailing standards, must be on scene within eight minutes of dispatch to be effective in life-threatening situations; that is **IF** a medical “first responder” can get there within four (4) minutes.

Annual Fire Suppression and Emergency Medical Services Activity Reports of the Vance County Fire and Ambulance Department were reviewed for the past three years. As

indicated in those reports and as discussed with several supervisory personnel, The “Fire” Department *does not* respond to medical emergencies in a “first responder” role.

The question of course becomes;

“Why, unlike a significant number of the Volunteer and paid Fire Departments throughout the State, is not the Vance County Fire Department being dispatched as first responders to medical emergencies?”

The most evident reason may in fact be;

- It is a “combined” Department that includes Fire *and* EMS, and EMS teams respond to *every* dispatch having to do with a medical emergency.
- There is currently not enough staff available or assigned per shift to adequately staff an Engine Company and three (3) Ambulances.

Considering the number of “priority call-backs” that occur on a daily basis, and of course the current, limited eight (8) person shifts; IF all three Ambulances were out on calls, each occupied with two persons, (assumedly) there would be two (2) remaining Firefighters at the station. In that all Department members are currently dually certified as Firefighters and, at a minimum, as EMT-Basic, either or both could respond to a medical emergency as a first responder and initiate treatment until an EMS vehicle could get there.

EMS annual call volume exceeded 4,700 in 2007. Vance County Fire responded to 276 Fire calls and has averaged approximately 225 calls per year since 2002; an average less than three of the Volunteer Departments that are dispatched to medical emergencies.

Recommendation:

Providing that the level of staffing recommended will be provided the Fire & Ambulance Department, and that the Ambulances are repositioned and deployed from locations other than the Bickett Street station; Vance County Fire should be dispatched as medical First Responders to all medical emergencies within the Golden Belt District.

5.16 County Water System

Although perhaps presumptive and to some not particularly an element of this study’s scope; the availability of water is always an issue when examining fire fighting capabilities. Most standards setting and insurance rating organizations would agree that the most important factors in assessing the fire services provided in any jurisdiction are staff, equipment, and ***the availability of water.***

Without exception, every Fire Chief outside the City of Henderson has expressed concern for the availability of water. It is understood that the County is committed to the development of this system and in fact is underway in doing so.

Recommendation:

This recommendation is simply to reinforce, support and encourage the County in their continued, hopefully aggressive effort to develop a County-wide water distribution plan that will ultimately be available to all of the County’s Fire Districts.

6. Costs & Revenue Options

This Section identifies estimates of probable costs of the foregoing study recommendations, addresses two scenarios that could provide operational cost savings, and identifies possible sources of revenue for Fire and EMS.

6.1 Recommendation Costs

Figure 24 (following page) is in a spreadsheet format that illustrates the *Estimate of Probable Costs to Implement Major Study Recommendations*. The “major” study recommendations in this instance refer to Recommendations 5.1-5.11 in Section 5.

Estimated Unit Costs and/or the expenses that correspond to each of the major recommendations are listed, followed by each recommendation’s Subtotal Cost. The Comments category offers explanatory remarks as well in some instances the basis for the costs calculated.

Several of the recommendations have no costs identified. In these instances, it is assumed that the recommendation can be addressed with in-house (Vance County) staff and that additional funding will not be necessary.

As for the “Supplemental Recommendations” also identified in Section 5, the nature of the expense; i.e. (5.12) *Emergency Radio Communications System*, and (5.16) *County Water System*, while **very** important with regards to the long-term Fire and EMS system requirements County-wide, will require engineering and development well beyond the scope of this study.

On the other hand, (5.13) *Emergency Services Vehicle Access*, once relative policies are adopted by the County, can be addressed through the normal course of County staff implementing/overseeing those policies.

No doubt, (5.15) *County Fire Department Responsibilities*, will be an issue to be addressed by the County Fire-Rescue Chief upon appointment. Discussion with regards to staff for which additional costs may be incurred is included in 4.6 beginning on page 34, and briefly under Recommendation 5.6.

Finally, with regards to (5.14) House Numbers; as stated, there are likely many opportunities for funding the production of house number signage once the County determines the specifications it wants to impose. Once the sign requirements are identified and an approximation of the number of signs is determined, estimates can be obtained and subsequent funding options discussed in detail.

Figure 24
(Estimated Costs Spreadsheet Here)

6.2 The Fire Service Option

The question was specifically asked of the consultant;

“What if the County no longer funded their paid Fire Department?”

- The Vance County Fire & Ambulance Department Budget for FY 2007-2008 is \$1,880,044.
- The County is mandated by statute to provide emergency medical services to its citizens. The County’s *EMS Plan* on file with the State calls for three (3) Ambulances to be in service 24 hours per day.
- Conceivably, if the Fire Department was to be dissolved and six staff members were retained out of each shift of eight to serve on the three Ambulances, it would (conceivably) eliminate two personnel per shift; a total of six (6) positions of the 24 currently allocated.
- Assuming that upper level personnel retain their positions the cost savings might approach \$180,000-\$200,000 per year.
- And, of course this does not include the value of the Fire apparatus (vehicles) and equipment currently in inventory, estimated at perhaps \$800,000-\$1,000,000.
- Upon resale of the vehicles and the estimated annual savings in personnel costs, the first year “revenue” could amount to \$1,000,000 to \$1,200,000; with an annual recurring cost savings, not including escalation, of \$180,000-\$200,000 per year.

Certainly before this option was implemented the County would consider the impact on its residents residing within the current Golden Belt Fire District. Dissolving the County Fire Department completely would leave the residents and businesses within the district literally “unprotected” in the eyes of the homeowner and business owner insurance carriers. The result could very well cost those home and business owners as much as several hundred dollars per year in increased insurance premiums.

- A subsequent option would be to turn the equipment over to a (to be named/formed) Volunteer Fire Department that would assume Fire Service coverage of at least the major portions of the current Golden Belt District north and northeast of the City of Henderson, with the remaining portions to be assumed by existing Volunteer Departments; i.e. Bearpond, Cokesbury, Kittrell, Watkins, and perhaps Hicksboro.
- Were this to be the case, the vehicles would most likely, in some form or manner, go to the Volunteer Department assuming major responsibility for the district, and the savings to the County would be the \$180,000-\$200,000 in personnel costs less the amount contributed by the County to the Volunteer Department as is the current practice; say, for example the current contribution of \$50,000 per year.
- The resulting savings to the County would then amount to an estimated \$130,000-\$150,000 per year; providing of course that the in-place Volunteer

Departments assuming portions of the existing Golden Belt District would not need additional revenue to help fund service to their expanded areas.

However, the preceding discussion is based upon the **existing** staffing scenario in place; i.e. eight persons per shift and three shifts; 24 people.

IF the current force commitment is to be maintained at one (1) Fire crew and three (3) EMS Ambulance crews on a 24/7 basis, considerable staff will need to be added; (Subsection 4.6, pages 34-35). The numbers have been suggested. Subsequently, would there not be a savings if the Fire Department were dissolved, there would be a *net increase* of six (6) *additional* EMT positions over and above the current total of 24, to staff all three Ambulances on a continuous basis.

6.3 The EMS Option

Section 4, Subsection 4.4 addressed the issue of “mission focus”; i.e. the County providing both emergency medical services as well as non-emergency, convalescent transportation both within the County and to out of County facilities.

Recommendation 5.3 suggests that the County discontinue the provision of non-emergency transportation. According to County Fire & Ambulance Department annual summary reports that would reduce the total number of calls required of the three existing crews by approximately 1,100-1,200 per year.

Initially there may be an opportunity for savings providing a reduction in force can be justified based upon the reduced number of calls; perhaps from the current three 24/7 Ambulances, to two. Then, assuming that Recommendation 5.4 regarding redeployment of two of the existing EMS Ambulances to locations (generally) north-northwest and south of the City can be accomplished, and the QRV program is implemented utilizing existing vehicles with one-person per vehicle staffing, limited to 12 hour “prime-time” shifts on a 7 day per week basis, the recurring annual savings in personnel costs would approximate that of as many as six (6) or even seven (7) EMTs; or approximately \$200,000-\$220,000 per year.

This savings would of course be less if it was determined that two QRV’s would be necessary to adequately cover the County versus one.

Determination of coverage requirements should be the decision of the (to-be-named) EMS Director in direct consultation with the County’s Medical Director. And, be based upon an assessment of the call volume, types, and locations of recently occurring EMS call patterns.

6.4 Sources of Revenue for Fire & EMS

Of course the principal source of funding for EMS operations in North Carolina is to come from the County within which the operation is established.

Then too the County is permitted to bill for any patient that is transported in an EMS Ambulance. During FY 2006-2007, \$1,681,890 was collected. (Of course this amount will be reduced if the County stops providing non-emergency transportation altogether).

Currently the County bills at the flat rate of \$350 per transport, not including mileage for both ALS and BLS calls. A higher limit is allowed for ALS transports under State and

Medicare guidelines. ***The County needs to assess the opportunity for added revenues based upon an increased rate for the transport of ALS patients.***

The County ***should also assess annually, and raise accordingly***, the mileage rate charged for the transports made. This should NOT be something that occurs after several years of no increases, that then gets implemented as a significant “lump sum” increase all at once, but occurs as the costs increase and are in-turn incurred by the County.

With regards to Fire services, as the statutes referenced in the Introduction of this report suggest, Counties in North Carolina “may” fund Fire and Rescue services. Typically they do. The most common funding method is either taxing established Fire Districts based upon the total assessed value of the property within those districts or, as Vance County does, assessing a County-wide Fire Service Tax Rate which is uniform throughout the County regardless of Fire District area, population, or assessed valuation.

The most popular means of obtaining supplemental revenue for Fire Departments, other than tax rate increases, whether volunteer or paid/career, is government grants.

6.4.1 North Carolina Opportunities

In North Carolina, the *Fire/Rescue Grants & Relief Fund* programs via the State Fire Marshal’s Office, collect and disburse over 12 million dollars annually.

The *Volunteer Fire Department Fund* and *Volunteer Rescue/EMS Fund* were created to financially assist the State’s volunteer emergency personnel. The NC General Statutes have been amended to allow for limited paid personnel. Through dollar-for-dollar matching fund programs, the Department of Insurance assists local North Carolina fire departments and rescue/EMS organizations to purchase related equipment and to make capital expenditures. The relevant statute references include:

- Volunteer Fire Department Fund: NCGS 58-87-1
- Volunteer Rescue/EMS Fund: NCGS 58-87-5

The *Firefighters’ Relief Fund* and *Rescue Relief Fund* programs are designed to financially assist firefighter and rescue personnel in the event of Line-of-Duty injury or death. *It may also be used for* supplemental retirements, educational benefits and to purchase other insurance/pension plans. The relevant statute references include:

- Firefighters’ Relief Fund: NCGS 58-84-1/55
- Rescue Squad Workers’ Relief Fund: NCGS 58-88-1/30

6.4.2 Federal Opportunities

The most prominent source of grant funds at the national level is the Federal Emergency Management Agency (FEMA). And, although the grant program titles emphasize “Fire Services”, perusal will find frequent references to Rescue, EMS, and related emergency response activities as well.

The major grant programs offered by FEMA include:

- The **Assistance to Firefighters Grants (AFG)** addresses the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical services organizations. Since 2001, AFG has helped firefighters and

other first responders to obtain critically needed equipment, protective gear, emergency vehicles, training, and other resources needed to protect the public and emergency personnel from fire and related hazards. The Grant Programs Directorate of FEMA administers the grants in cooperation with the U.S. Fire Administration. For fiscal year 2005, Congress reauthorized the Assistance to Firefighters Grants for an additional 5 years through 2010.

- The **SAFER (Staffing for Adequate Fire and Emergency Response) Grant** was created to provide funding directly to fire departments and volunteer firefighter interest organizations in order to help them increase the number of trained, front-line firefighters available in their communities.
- The goal of SAFER is to enhance the local fire departments' abilities to comply with staffing, response and operational standards established by NFPA and OSHA. Specifically, SAFER funds are intended to assist local fire departments to increase their staffing and deployment capabilities in order to respond to emergencies whenever they may occur. As a result of the enhanced staffing, response times should be sufficiently reduced with an appropriate number of personnel assembled at the incident scene. Also, the enhanced staffing should provide that all front-line/first-due apparatus of SAFER grantees have a minimum of four trained personnel to meet the OSHA standards referenced above. Ultimately, a faster, safer and more efficient incident scene will be established and communities will have more adequate protection from fire and fire-related hazards.
- The **Fire Prevention and Safety Grants (FP&S)** are part of the overall Assistance to Firefighters Grants (AFG) and are also under the purview of the Grant Programs Directorate in the Federal Emergency Management Agency. FP&S grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire prevention and public safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include Firefighter Safety Research and Development.

Specific information, including grant applications can be obtained from:

DHS/FEMA/Grant Programs Directorate
Assistance to Firefighters Grant Program
Tech World Bldg - South Tower 5th Floor
500 C Street, SW
Washington, DC 20472
Phone: 1-866-274-0960 (Help Desk)
E-mail: firegrants@dhs.gov

7. Board of County Commissioner's Presentation

A final draft of the first six sections of this report was provided the County Commissioners for their review, during the first week in April. On April 21, 2008 a work session of the Board was called wherein a summary presentation of the completed study's key findings and recommendations was made by the consultant. Following the presentation, discussions regarding numerous included topics and various specific aspects of the report and its recommendations followed.

In four (4) instances, the consultant was asked to provide additional information and include his responses formally in the final document; i.e. this report. The wording of 7.1 through 7.4 is the consultant's and hopefully has captured the original intent of each of the respective County Commissioners.

7.1 Is it possible to calculate the costs and approximate revenue associated with the transportation of convalescent, non-emergency EMS transportation?

Per the 2007 cost report which the County's Ambulance Services Billing Office must file with Medicaid, the **average cost per transport** for Vance County EMS for FY 2006-2007 was **\$331.00**. The calculations were to have included everything; i.e. personnel, fuel, equipment, annual maintenance, materials, supplies, depreciation, etc.

The documented revenue from EMS billings for the same fiscal year was \$1,681,890.

Since the total of EMS emergency calls dispatched were recorded by calendar year for the purposes of this report, an approximation of *fiscal* year 2006-2007 emergency calls were estimated by taking ½ of the calls received during 2006 and ½ of the calls received during 2007 for a total of 4,621 EMS calls.

Vance County does not currently report separately the number of emergency EMS transports as a percentage of total emergency calls dispatched; (which they should). However, similar studies of North Carolina Counties have shown transport rates at typically 80%-85% of the total calls dispatched.

This being the case, 85% of 4,621 estimated fiscal year (FY) total calls would have resulted in 3,928 emergency transports during FY 2006-2007. The Billing Office counted 532 convalescent transports for the same period.

The estimated total of emergency and non-emergency (convalescent transports for FY 2006-2007 then was 4,460.

532 convalescent transports equal 11.9% of this total.

At a cost of \$331.00 per call, the County's **cost** for convalescent transportation for FY 2006-2007 was \$176,092.

The total revenue collected for FY 2006-2007 was \$1,681,890.

If the same percentage is applied to collections (11.9%), the revenue realized as a result of the convalescent transports billed would have been \$200,145; a net "gain" of approximately \$24,053.

However, observations of the Billing Office suggest that the estimated percentage may be “high” with regards to the actual revenue collected. This is primarily due to the fact that non-emergency /convalescent calls are more difficult to collect on because of so many more regulations and criteria that have to be applied, ultimately limiting or precluding eventual or full collection of the amounts billed.

As well, Medicare will often deny payment outright due to the classification of the transport as “not being a medical necessity”.

7.2 Is the Fire-Rescue Chief (Recommendation 5.1) the same as a Fire Marshal?

The comment was made any number of times during the study that “the County needs a Fire Marshal”. Indeed, it does. The recommendation that the County hire a “Fire-Rescue Chief” is based upon the County’s need for full-time, professional services in this regard as well as the need for a professional staff member to serve in a liaison role as well as an advocate, coordinator, arbitrator, and if need be disciplinarian on behalf of and for the Volunteer Fire Departments and the Vance County (volunteer) Rescue Squad. There is tremendous potential among this group of organizations that with help can not only continue to provide a valuable service to the County but can become a very good system of emergency response capabilities. The support and assistance of a full-time professional can provide support in coordinating the planning, budgeting, manning, revenue generation and of course emergency response performance assessments needed.

Of course the County may in fact choose the title “Fire Marshal”, which is fine. In which case the appointee’s duties should include those addressed above. For purposes of this report, the title assigned the position is secondary to the position itself and the responsibilities the person is to assume.

The County’s authority to appoint a Fire Marshal is granted in G.S. 153A-234, which states:

“A county may appoint a fire marshal and employ persons as his assistants. A county may also impose any duty that might be imposed on a fire marshal on any other officer or employee of the county. The board of commissioners shall set the duties of the fire marshal, which may include but are not limited to:

1. Advising the board on improvements in the fire-fighting or fire prevention activities.
2. Coordinating fire-fighting and training activities.
3. Coordinating fire prevention activities.
4. Assisting incorporated volunteer fire departments in developing and improving their fire-fighting or fire prevention capabilities.
5. Making fire prevention inspections, including school buildings and child care facilities”.

7.3 Expand on the recommended Steering Committee’s structure, policies, procedures, etc. as perhaps you have seen them operate successfully in other locations.

A key to this Committee’s effectiveness will be the professional input provided from the County EMS Director, the County Fire-Rescue Chief, and the County Emergency Operations Director. In an all out County emergency, while ultimately the Emergency Operations Director’s responsibility to manage; it would be these additional positions

(individuals) who will have to deploy, work with, and manage the people, equipment, and procedures that they should have helped to create.

Subsequently, as to the membership, and responsibilities of the Committee, assuming the County's priority will be to place qualified people in these positions as soon as possible; i.e. EMS, Fire-Rescue; the following additional comments are offered.

Additional author's note in this regard: over the course of the many interviews conducted for this study it was stated repeatedly that "the County's "MO" is to always pursue the least expensive solution". Inevitably then it is likely to be asked, "Why can't we hire one person to do both jobs" (like we've done these past many years)? The bottom line is they are two different jobs, requiring two different sets of qualifications and experience. Can you get both in one person and in turn get one person to divide and direct their time equally to both disciplines. It is apparent that attempting to do that over the past several years has resulted in a number of the issues of concern addressed in this report.

Membership: In view of the comments offered during the BCC Meeting the original recommendation regarding Steering Committee membership has been adjusted, both here and in Recommendation 5.2 on page 38, to reflect more so the comments and expressed interests of the Board members, as follows:

- County Commissioner (1)
- County Fire-Rescue Chief (1)
- County EMS Director (1)
- County Medical Director (1)
- City Fire Chief (1)
- Emergency Operations Director (1)
- Vance County Rescue Squad Representative (1)
- Volunteer Fire Department Representatives (4)
- Citizen (2)

The manner of selection of these Committee representatives would be by appointment of the Board in the case of the suggested County employees; and in others, as follows:

- Rescue to identify their Representative
- Volunteer Fire Chiefs/Association to jointly identify their four (4) representatives
- BCC to appoint one (1) Citizen Representative
- Volunteer Fire Chiefs/Fire Association together with Rescue Squad to name one (1) Citizen Representative

In essence this committee's make up must include individuals that are performance and results oriented; even perhaps with the prerequisite of participation being that "team players only need apply".

Basis of Committee's Authority

Minimum; as a BCC Resolution

Optimally; as a County Ordinance

Committee Responsibilities

Once appointed, at least the initial meeting(s) of the Committee should be facilitated and members charged with addressing and documenting its mission, purpose, and a proposed agenda of task and oversight responsibilities for approval by the Board of County Commissioners.

Initial specific responsibilities of the Committee should include at least:
(Assumes that the EMS Director and County Fire-Rescue Chief have been hired)

1. Establish a timeline for the implementation, including funding requirements, of the recommendations provided in this report
2. Prepare materials and additional details, information, etc, to coincide with implementation schedule suggested in No. 1 above. For example;
 - Draft position paper re: EMS & Fire Response Time Performance Standards for approval by the BCC (Rec. 5.7)
 - Receive proposals from VFD's and Rescue (and County FD) for improving First Responder response time performance in medical emergencies (Rec.5.9)
 - Identify VFD call volume/location "hot spots" to identify and establish initial schedule for phase in of paid support staff at VFD stations (Rec. 5.11)
 - Examine options for the allocation and distribution of emergency services funding among Volunteer Fire and Rescue Departments (Rec. 5.8)
3. Monitor and maintain on-going oversight, including receiving reports as to progress being made with regards to the implementation of this study's recommendations

Committee Support

Committee will require administrative support to prepare, circulate, and maintain regular meeting minutes; Committee files and reports, etc. (Although responsibility may be shared among members and/or member administrative staff members, consistency will be important; i.e. a staff member of one representative or another may be asked to serve in the designated support role for a year, then change)

Scheduling and Frequency of Meetings

Initially, to accommodate organization and start-up activities, it could be expected that meetings occur as frequently as twice per month for the first 2-3 months or until the Committee is comfortable with its progress.

On a routine basis, for at least the first 2 years, particularly considering the changes likely to occur with regards to Fire and EMS, Committee meetings held on a monthly basis will probably suffice.

Scheduling of meetings should accommodate volunteer and citizen member's individual schedules to the extent possible to permit maximum participation.

7.4 What more can we do in the way of fire protection/fire prevention for our citizens?

The question begets numerous responses; all relevant and important; to both the citizen and the Volunteer. For example, within the context of "public awareness" might be programs that:

Educate the public (County residents) of the importance of having a Fire Department in their community and make them aware of the basic issues related to the services available and the actual experience and performance of those departments and their members.

- Fire protection for the vast majority of the land area in Vance County is provided by Fire Departments that are (currently) made up *entirely* of volunteers.
- The individual men and women that respond to these emergencies *do not* get paid.
- Volunteer Fire Department members in Vance County are dispatched to not only fire emergencies but also medical, accident, and first-aid emergencies.
- That there are no “paid” (on-duty) members immediately available (currently) to respond to an emergency dispatch, the actual response may take longer than some would expect because volunteers often must first go to the fire station and “pick-up” the appropriate equipment or vehicle(s) necessary to respond to the incident dispatched.
- That current funding provided by the County, while very much appreciated, is but *a portion* of the total annual costs incurred by the individual Departments to operate throughout the year.
- That these Departments and their many volunteers contribute significantly to the quality of life in their respective communities;
 - Public safety generally
 - Availability of trained EMT’s and Firefighters
 - Life-saving and property-saving capabilities
 - Availability of sophisticated equipment
 - Home and business owner benefits as re: insurance rates

Likewise, within the context of “fire prevention education” might be programs that

Provide capable, experienced Firefighters from the Volunteer Departments to speak and/or provide training or education programs to schools, neighborhoods, community groups, civic organizations, etc. relative fire prevention *and* basic first aid, along with familiarization with various emergency and accident response scenarios.

- Fire prevention generally
- Family “Fire Escape Planning”
- Use of fire extinguishers
- Safety in the home
- Basic first-aid classes such as CPR, etc.
- Response scenario training/education in the event of encountering an accident victim, active fire, etc.

Of course the question then becomes, “how” is this done with volunteers who are already busy? First, it does not always *have* to be a volunteer Firefighter or EMT. It could be a community group, an individual, or a civic organization that chooses to “take on” the effort (whatever it may be) as a donation or for the benefit of the community and

the Volunteer Fire Department; i.e. developing, printing, and distributing written information; or selling raffle tickets, or holding an auction with proceeds to go towards the Volunteer Department; or towards the purchase House Number signs.

Of course then too, capable and experienced Volunteers can be their own best “cheerleaders”; speaking at neighborhood meetings, providing vehicles and vehicle demonstrations at schools, holding “Open House” at the Fire Station and offering to give out free information or smoke detectors for example, (previously donated from a civic organization), speaking to high school and community college classes and encouraging involvement in the Volunteer Fire Department as a member or junior member and/or general supporter.

Ultimately, the more information that can be shared with the residents of a given community and the more aware they become of the circumstances around them, the more likely they will be to practice fire-safe and accident free behaviors; i.e. “prevention”. Inevitably, the more aware of the fire protection and emergency response services available to them, and the role of the volunteer, the more likely the individual resident will be to become involved and/or help in any way they can.

8. Future Considerations

According to the State Data Center (NC Office of Budget & Management/NCOMB) the population of Vance County today is approximately 44,000 people. The Center has projected that the County's population will grow to approximately 47,500 by 2020; an increase of almost 8 percent.

The degree of success the County has in developing its County-wide water system could have a significant impact "upward" on the currently projected "slow" growth rate. Looking objectively at a map of the County and having observed its dynamics and existing population "pockets", it *could* be suggested that with a County-wide water system future growth *will* occur in the southwest corner of the County with access to US 1 and Raleigh; around the City of Henderson between existing City limits and its current ETJ area boundaries; along the I-85 corridor, and around Kerr Lake.

There are 16 formal recommendations addressed in Section 5. Eleven correspond to the major issues of concern discussed in Section 4. Of the first 11 recommendations ALL are important. Recommendations 5.7, having to do with the County establishing performance standards for Fire and EMS, and 5.1, the hiring of a County Fire-Rescue Chief and a County EMS Director, will together enable the County to begin to "turn the corner" and move towards providing its residents with the professional caliber Fire and EMS services they deserve. Implementation of the remaining Recommendations will create the foundation for that development.

Much is made of emergency service *response times* in this report. Although response time alone should not be the sole criterion upon which an EMS or Fire Services system's performance is evaluated, an established standard in this regard would in fact identify publicly the priority of policy makers and Fire and EMS personnel alike their emphasis and concern for the delivery of *prompt* pre-hospital emergency medical care and fire protection. Once established, the response time standards themselves will provide a basis for determining the timely addition of Fire and EMS personnel and the base and vehicle locations from which to deploy these personnel as the demand for system response and resources grows.

If the respective dynamics of the Fire and EMS services currently provided continue as they are, all of the aforementioned recommendations should be *implemented and in place and operational* by Fiscal Year 2012-2013.

To address these needs effectively will require *significant* cooperation and patience between and among the various service providers *and* the County; both Volunteer and paid/career personnel and agencies. *All* have a role to play.

Subsequently, before seriously contemplating future needs beyond those identified here, the County in conjunction with its Fire and EMS system leaders, both paid *and* Volunteer should step back and evaluate what of those steps taken have worked, which have not, and *why*, before proceeding too aggressively with change simply for change sake.

A Glimpse Ahead

- BY 2025 it can be expected that the City of Henderson will have extended its corporate limits relatively close to its current ETJ Boundaries.

- That expansion will somewhat reduce the size of the Bearpond, Kittrell, and current Golden Belt Fire Districts as they are known today. That will not necessarily reduce the number of calls to which these Departments will be asked to respond to however.
- The configuration of many Fire Districts will have changed in order to better position fire apparatus and personnel to provide the comprehensive Fire/First Responder services required of them.
- There will be at least part-time paid personnel in each of the now all Volunteer Fire Departments.
- Additional Fire Stations will be in place that are either new buildings or the relocation of former Fire Department stations; again to better service the land area and population pockets that will exist.
- There will be four (4) Paramedic level EMS Ambulances active on a 24 hour per day basis.
- Active 24/7 Ambulances will be supported by as many as three (3) QRV's during anticipated heavy call periods.
- EMS ambulances will be staged at four (4) separate locations, strategically placed throughout the County.
- Data with which to track both Fire and EMS performance, call times, call types, and call locations will be available almost instantly, via available technology, enabling agency/service managers and field personnel to better plan, stage and implement more effective emergency service response.

S4LG/sja