Long Range Fire Rescue & Emergency Services Plan

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I. Department Background

A. Mission Statement

Fauquier County Fire, Rescue, and Emergency Services is dedicated to exceeding customer expectations for fire protection, emergency medical services and related life safety functions with fiscal integrity, while maintaining both a balanced volunteer and career service.

Goals As Established by the Board of Supervisors in the Fauquier County Balanced Scorecard

1. Meet or exceed Fauquier County's response time standards of 2 EMS personnel for EMS incidents or 4 firefighters for fire/hazardous materials incidents on scene within 10 minutes 80% of the time.

2. Strengthen efforts to recruit and retain qualified volunteer and career personnel to provide appropriate responses.

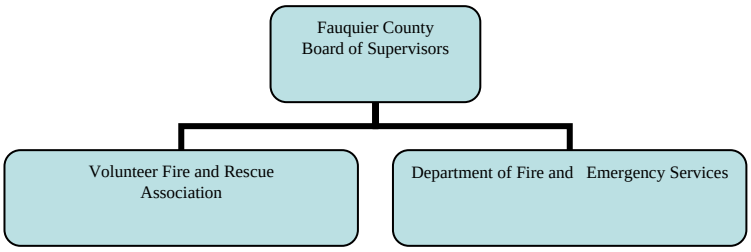
3. Equitably distribute public safety resources to include but not limited to a public safety station in Bealeton.

4. Provide appropriate personal living quarters in all fire/rescue stations such as bunking, eating and personal hygiene, in order to improve response times as well as recruitment and retention.

5. Identify alternative revenue sources for services to include, but not be limited to, fire prevention and life safety code enforcement.

Insert Goals Adopted by Volunteer/Department Team

B. Department Description



Fauquier County Fire, Rescue and Emergency Services, while having a common mission, is organized into two groups. The Fauquier County Fire and Rescue Services Agreement defines the functions of these two groups. The first group is the Fauquier County Fire Rescue Association "the Association", governed by its own constitution and bylaws. The Association consist of 13 individual companies.

The second group is the Department of Fire and Emergency Services. This department is commonly referred to as the "career" component, or DFES. The department provides administrative support to the Volunteer Fire and Rescue Association provides emergency planning and disaster management

and employs career firefighter/paramedic personnel to support the volunteer companies. In addition, the DFES is responsible for code-related fire inspections and investigates the cause and origin of fires, explosions and hazardous materials incidents.

DFES currently has four divisions consisting of:

1. Emergency Planning and Coordination
2. Emergency Response, or "Operations"
3. Fire Marshal's Office, or "Prevention"
4. Training: Currently there are NO full time personnel devoted solely to training for Fire and Emergency Medical Services personnel.

C. Department Structure

The Board of Supervisors "BOS" is devoted to providing the citizens of Fauquier County competent, effective and efficient fire protection, emergency medical services and related life safety functions. Responsibility for the provision of these public safety services rests with the Volunteer Fire and Rescue Association and the Department of Fire and Emergency Services.

The Board of Supervisors believes that Fire, Rescue and Emergency Services should:

1. Be cost-effective
2. Recognize and promote general public welfare
3. Be accountable for service levels and resource consumption.
4. Fairly represent and communicate all views regarding fire, rescue and emergency services
5. Adequately respond to growth within the County

These services must be provided on a countywide basis and must be characterized by uniformity in emergency response performance and in the application of operational regulations and procedures. The Board recognizes and respects the contributions of the fire and rescue volunteers, which have resulted in the long-standing protection of life and property in Fauquier County.

The County will vigorously support the continuation and expansion of volunteer participation as a means of providing fire, rescue and emergency medical services in a cost-effective manner while encouraging qualified volunteer participation.

D. Organizational History

In 1973 the Volunteer Fire Rescue Association was formed. This allowed the Board of Supervisors to provide support to all fire and rescue companies through one agency or group of representatives. The Association has also provided to its member agencies, a source of fire rescue training, technical support, personnel services and budgeting processes.

In 1995, a separate "Fire Tax Levy" was established. In 2002, the tax levy was divided with 65% dedicated to the Volunteer Fire Rescue Association and 35% dedicated to the Department of Fire and Emergency Services. This division of funds generated by tax levy was precipitated by the demand to expand the career component.

E. Volunteer Demographics

The volunteer fire and rescue system includes approximately 400 volunteers, of whom 260 are considered operationally active. Over the past five years the number of operationally active volunteers has remained relatively constant while the demand for service has increased. Time pressures including jobs and family, substantially increased training requirements, fund-raising demands and increased call volume have had a measurable impact on retention, making retention and recruitment a major issue for the system. The lack of appropriate fire rescue station facilities is also a major factor in recruitment, retention and training.

D. Changing demographics in Fauquier County has greatly reduced the number of available volunteers. The rate of population growth has increased as illustrated below with a greater percent of the population commuting out of the County for work than in previous years. The increase in the percentage of the population commuting reduces the number of people available to volunteer. As of FY 03, the County provides daytime support in six of 13 fire and rescue stations. The FY 04 budget provided for no additional career staff.

F. Changing County Demographics/New Service Demands

The increasing population of Fauquier County has been a factor in new service demands in the county. In the 1990's Fauquier County grew on average at approximately 1.5% annually. The Comprehensive Plan plans for the county to grow from approximately 0.5% to 1.5% annually with 85% of all growth to occur in the nine service districts. The remaining 15% would allow for minimal growth in the villages and rural areas. This table shows growth rates by decade in Fauquier County since 1950:

Percent of Population Growth 1950-2000

Year	Population	Growth Over Previous Decade
1950	21,248	0.99%
1960	24,066	13.3%
1970	26,375	9.6%
1980	35,889	36.1%
1990	48,741	35.8%
2000	55,139	13.1%

Source: U.S. Department of Commerce, Bureau of Census, *Census* 1940-2000

However, since 2000 Fauquier County has been growing at 2.89% annually. While the county's desire is to grow at a slower pace, the Emergency Services Plan must take into account the higher growth rate in order to ensure the public safety.

Recent Population Growth and Future Projections

Year	Average Annual Growth Rate 1.5%	Average Annual Growth Rate 2.89%
2005	62,114	64,085
2010	66,914	73,896
2015	72,086	85,209
2020	77,657	98,254
2025	83,659	113,297
2030	90,124	130,642

Source: Fauquier County Community Development 2003 Memo

The following table illustrates that the percentage of housing units in Fauquier County as increased at a rate even greater than the rate of population growth in the county.

Total Housing Units

Year	Housing Units	Growth Over Previous Decade
1950	5,964	12.7%
1960	7,305	22.5%
1970	8,437	15.5%
1980	12,565	48.9%
1990	17,716	41.0%
2000	21,046	18.8%

Source: U.S. Department of Commerce, Bureau of Census, *Census* 1940-2000

This table shows growth rates for Fauquier County, neighboring counties and comparable equivalents for the 1990's:

Population for Fauquier County and Neighboring Counties between 1990 and 2002

County	1990 Population	2002 Population	Change (Number)
Loudoun	86,129	204,054	117,925
Stafford	61,236	104,823	43,587
Prince William	215,686	311,892	96,206
Fauquier	**48,741**	**59,245**	**10,504**
Albemarle	68,373	81,888	13,515
Frederick	46,211	62,971	16,760
Rockingham	57,911	68,648	10,737

Source: U.S. Department of Commerce, Bureau of Census

Compared to its neighbors to the east or other comparable equivalents, Fauquier County may not have the same levels of population and growth, but in terms of land area Fauquier County is one of the largest counties in Virginia.

County	Population	Sq. Mi.	Population Per Sq. Mi.
Loudoun	204,054	519.9	392.5
Stafford	104,823	270.0	388.2
Prince William	311,892	338.4	921.7
Fauquier	**59,245**	**650.3**	**91.1**
Albemarle	81,888	722.8	113.3
Frederick	62,971	414.6	151.9
Rockingham	68,648	851.2	80.6

Since FY 99, the growth patterns have changed from individual single-family units to garden apartments, town homes and group developments typically ranging from 50 to 150 homes. The Brookside development is adding more than 1200 homes. The increase in housing density has and will continue to increase emergency call volume, which has increased from 6000 incidents in FY99 to over 10,000 incidents in FY 2003. Additionally, the population increase, as well as the overall county growth in general, continues to increase demands for life safety and support functions from the DFES Prevention (Fire Marshal) Division.

G. Funding and Support for Volunteer Companies

Historically, volunteer companies have obtained an annual stream of revenue through community support, donations, fund raising events and grants. As the county demographics have changed, so have the service demands from the communities. Resident's lifestyles reflect longer commutes and dual-income households. Fewer residents have time to volunteer and fewer businesses provide direct support to the companies. As residents move into the county from urban areas, which had higher service delivery standards, they expect similar services here. As population increases, the needs increase proportionally.

Comparison of County Fire, Rescue and Emergency Services Budgets
(Based on jurisdictions with adopted response standards.)

County	Active Volunteer Staff	Full-Time Personnel	Budget	Full-Time Personnel Per One Thousand Residents	Budget Per Capita
Loudoun	1,313	255 full-time staff	24,208,000	1.24	118.64
PWC	1,109	305 full-time staff	26,104,443	0.98	83.70
Stafford	300	34 full-time staff	5,400,000	0.32	51.52
Rockingham	400	40 full-time staff	*1,900,00* *2,840,475*	0.58	27.70* 41.38
Albemarle		35 full-time staff	*2,270,264*	0.43	$27.72*
Frederick	300	47 full-time staff	*2,358,776* *3,400,000*	0.74	$37.46* $53.99
Fauquier	260	24 full-time staff	1,415,270 4,100,000	0.38	$22.64* $69.20

*Denotes career personnel cost: Fauquier's combined FY 04 career and volunteer budget is: $4,044,265

- DFES $1,415,270
- VFRA$2,221,265
- CIP $407,000

H. Growth of the Career Fire Rescue Support

The Department of Fire and Emergency Services has grown considerably in recent years to address service demand issues, from 12 full-time employees (FTE's) in FY99 to 24 FTE's in FY03. As demands for emergency response and life safety support continue to increase, additional career personnel will be needed to meet these demands. Proactive steps are being taken to meet these new challenges, however, Fauquier County Fire, Rescue, and Emergency Services are strained on a daily basis to meet these challenges. As with the volunteer fire rescue personnel, recruitment, training and retention of career firefighters and EMT's will also continue to be a challenge. The current employment market of this field remains very competitive with an upward sliding salary scale by jurisdiction to the North and the East.

II. Personnel Support for the Volunteer Fire and Rescue Association

As stated previously, the Board of Supervisors is committed to maintaining an effective volunteer fire and rescue system. As the human and fiscal resource demands increase along with training and equipment standards, the need for administrative, personnel, and technical management continues to increase. Volunteer Fire and Rescue personnel need increased support in several areas such as Human Resources, Training and Technical Support. This support should include an administrative/managerial position titled "Volunteer Coordinator", a Training Division Captain and a "Technical Equipment Specialist".

A. Technical Support Needs *(Effective December 5, 2005, a Fire Rescue Safety Officer was hired to address the following needs)*

1. Background

Technical equipment is utilized for firefighting, emergency medical services, and hazardous material responses. This equipment is necessary for the personal safety of response personnel and the well being of the service recipients. To maintain functionality of this equipment, service standards as defined by OSHA, NFPA (National Fire Protection Association), and manufacturer specifications must be met. This equipment is currently serviced and maintained by a part-time temporary employee.

2. Technical Support: Self Contained Breathing Apparatus

The self-contained breathing apparatus (S.C.B.A.) is an intrinsic part of the overall technical equipment that is used by firefighters. S.C.B.A. allows firefighters to perform the difficult task of search and rescue operations. Firefighters can enter IDLH (Immediate Danger to Life and Health) atmospheres, deficient in oxygen and containing hazardous gases, to perform their tasks. Without properly maintained S.C.B.A., this would be impossible as this equipment reduces the immediate danger to life and health of the firefighter.

Self-contained breathing apparatus consists of several components, each of which must be properly maintained and tested to ensure proper operation. Maintenance, repair, training and use are mandated and governed by several federal agencies including:

1. (O.S.H.A.) Occupational Safety and Health Administration.
2. (N.I.O.S.H.) National Institute for Occupational Safety and Health.
3. (N.F.P.A.) National Fire Protection Association.
4. (D.O.T.) Department of Transportation.

These agencies provide standards that are required to be met throughout the United States. The following chart lists the equipment Fauquier County Department of Fire and Emergency Services and Fauquier County Fire and Rescue Association use to ensure compliance with mandates for S.C.B.A. use. It is broken down into equipment type, maintenance and replacement costs and man-hours needed to perform repairs. Footnotes will be attached to explain the details of each.

Fire and Rescue Breathing Apparatus

Equipment	Quantity	Original Cost	Replacement Cost
Scott Ap-50 Air Pac's[1]	240 Units	1997 price $2,264.67	$4,123.00 x 240 = $989,520.00
Air Cylinders 30 minute[2]	377 Units		$1,198.00 x 377 = $451,646.00
Air Cylinders 45 minute	6 Units		$1,485.00 x 6 = $8,910.00
Air Cylinders 1 Hour	7 Units		$1,836.00 x 7 = $12,852.00
A.V. 2000 Face Masks[3]	260 Units		$223.00 x 260 = $57,980.00
Test Bench[4]	1 Unit		$ 5,000.00
Computer	1 Unit		$ 2,500.00
Vehicle	1	1988 C30 Chevy	$30,000
Vehicle Body	1	NA	$10,000
Tools	NA		$3500
Fit-Test Machine[5]			$7000
Gas Detector Meters[6]	26		26 x $1000 = $26,000
Firefighting Personal Protective Gear[7]	260 sets		260 x $1819 per set = $472,990
Totals			$ 2,068,898

[1] Annual flow test per NFPA.. After any repair, a complete flow test must be performed before placing the unit in service. Life expectancy is unlimited with proper care and maintenance. Unit components can be replaced. Individual unit components life expectancy is determined by use.

[2] Department of Transportation (DOT) requires composite air cylinders to be hydrostatically tested every 3 years. Under DOT guidelines, all cylinders are pressure tested for expansion in order to ensure quality control and safety during filling procedures. Pressure testing minimizes the risk of possible cylinder explosion and personnel injury during filling procedures. 377 units are due for total replacement in 2012. This footnote also applies to numbers 3 and 4.

[3] Face pieces require maintenance only when damaged. Under guidelines set forth by NFPA, fire fighters shall be fit tested for specific sized face pieces. Annual testing of face pieces is required. Testing equipment and procedures are explained in detail later in this report.

[4] The department currently uses the Posi-Chek 3 test bench. The Scott software and the test bench were purchased in 2002.

[5] All Fire Rescue personnel need fit testing. The convenience of immediate testing for new personnel, and the flexibility of working with volunteer schedules dictates the purchase of this machine and the necessary technician to run it.

[6] This number does not reflect the cost of the current ten Scott Bodyguard 4 Gas Detectors.

[7] This price includes a $270 cost for wild land fire protective equipment that is issued only to career staff.

Air Compressors and Related Equipment

Warrenton Co.1	Bauer Compressor and 10 bottle Cascade Fill Panel
Marshall Co.3	Bauer Compressor and 8 bottle Cascade Fill Panel
Plains Co.4	Bauer Compressor and 4 bottle Cascade Fill Panel
Upperville Co.5	Bauer Compressor and 4 bottle Cascade Fill Panel
Catlett Co.7	Bauer Compressor and 4 bottle Cascade Fill Panel
Lois Co.13	Bauer Compressor and 8 bottle Cascade Fill Panel

Note: Company 8 Goldvein is in the process of installing a Bauer Compressor and Cascade Fill Panel. Fauquier County High School Fire Fighter Program is installing the same.

Breathing Air Compressors and Cascade Fill Panels

Equipment	Quantity	Replacement Cost
Bauer Air Compressors[8]	8	8 x $24,000.00 = $192,000.00
Fill Panels[9]	16	16 x $ 3995.00 = $ 63,900.00
Dot Cylinders[10]	78	78 x $ 1075.00 = $ 83,850.00
Totals		= $339,750.00

All fire department breathing compressors are maintained under NFPA's strict guidelines. Maintenance schedules and filter changes are determined by hours of use. The county units are currently maintained on a semi-annual basis or by 50 hours or more use whichever comes first. Maintenance includes air purification filter changes, oil change, and an hour run time to confirm working status of all components of the compressor. It is recommended that a compressor log be established at each station that houses a compressor. This log will be filled out by the user to show the time and date, as well as what units have been filled. The log will allow the technician to track the units filled by the compressor. If a problem shows up during the air quality testing, the units can be located and tested. This is critical when filling other department units.

Cascade fill panels require maintenance as needed. Cascade air bottles are maintained under DOT guidelines, which require hydrostatic testing every 5 years. Currently all county cascade bottles are past due for hydrostatic testing. These bottles are located in fire stations on heavy-duty squad trucks located throughout the county.

Heavy Duty Squad Trucks: Companies 2,4,6,9 and Catlett Rescue Engine 7 and Dive Unit 7 all have 2 to 4 bottle cascade systems. Lois Company 13 uses a 4-bottle cascade system in Utility 13. Fire Station Three houses a Hazardous Material Unit, which contain a 4-bottle cascade system and fill panel. Warrenton Fire Department's ladder truck also has a 2- bottle cascade system.

[8] This price is taken from a middle range between $ 18,000.00 and $30,000.00. Size of the compressor and its costs depends on its CFM output.

[9] Price of this fill panel is for a non-compliant panel. Under NFPA 1901 guidelines, fragmentation control tanks are required to ensure protection of personnel during filling operations. Any explosion can be contained in the fragmentation tank, thus protecting personnel. Only one fill panel meets the requirements set forth in NFPA 1901. The price for a Class 2 fill station would be higher.

[10] This price does not include replacement of hoses and other equipment needed.

AIR QUALITY TESTING

Fauquier County Department of Fire and Emergency Services currently test all breathing air following guidelines under Occupational Safety and Health Administration (OSHA) and National Fire Protection Association (NFPA). The current level of testing is NFPA 1500, Grade E for all breathing air. This level of testing establishes O2 content, oil mist, contaminants and total gaseous hydrocarbons, to include methane, carbon dioxide, carbon monoxide and water dew point. The level of water due point is critical, because water can freeze and stop the flow of air in the breathing apparatus, and cause rust in the cylinders. This rust will contaminate breathing apparatus as well as personnel using the apparatus. This level of testing is an absolute, for any department using breathing air and should be done quarterly to ensure this level of breathing air allows the breathing apparatus to function in adverse conditions and protects the firefighter during use.

The department currently has its air tested by TRI/Environmental, Inc. However, with the one time purchase of testing apparatus for $345.00, the department could save $336.00 dollars per test over the year. This savings allows the department to test all breathing air on a quarterly basis thus following the NFPA standard, without the need for an outside testing service. See attached display for testing results.

The Breathing Apparatus Technician travels to all stations that provide air to the department and tests the compressor to ensure its proper operation. The test is then mailed to TRI for analyses. When the results are returned the technician places them in a file and posts one near the source as mandated by NFPA. This process will take about 2.5 hours per unit, and includes travel and paperwork time.

NFPA recommends that all cascades and storage systems be tested to set a base line for air quality. This test was done throughout the county. Several units were found to have air that did not pass the standard. The units were taken out of service and sent to repair facilities. After repairs the units were tested and placed back in service. This proactive approach saves money as well as lives. TRI/Environmental provides this service for $1920.00 per year. This price does not include the time to do the testing by the technician. This cost will increase when the two additional compressors come on line.

TIME AND COST ANALYSIS

Work Performed	Frequency	Time Needed
Breathing Apparatus Flow Test[11]	Annually or after Repairs	240x2= 480 hrs.
Air Compressor Service [12]	Semi-Annual or 50 hrs.	16x4=64 hrs.
Air Quality Testing	Quarterly 8 compressors	32x2.5=80 hrs
Gas Detection Meters[13]	Annual Test	26 units x 2.5=65 hrs
Face Piece Fit Testing[14]	Annual Test	260 x 2 = 520 hrs.
Safety Surveys and Company Inspections of Fire Gear [15]	Annually/2 hrs. per person	260 firefighters x 2 = 520 hrs.
Respiratory Protection Manual[16]	Establish and Maintain	
Cylinder Hydro-Static Testing[17]	Every Three Years for Composite Cylinders/Every 5 years for Steel Cylinders	5 hours x 13 stations= 65 hours
Paperwork and Record Keeping[18]	Constant	

[11] Flow tests themselves take roughly 2 hours to perform. The time needed for each repair can be hard to estimate. The repairs can be simple or could take several hours to diagnose and repair. This time does not take into account repairs that are needed above the annual flow test.

[12] This service is for 8 compressors twice a year. Each service will take about 4hrs to perform. This time does not include any repair that may be needed during its operation.

[13] This test does not include any repairs that may be needed during the year. These units require constant maintenance on the batteries. There is a need to test and calibrate these detectors on a monthly basis also, which is not included in the above time estimate. An additional 52 hours is required in addition to the 60 hour annual flow test.

[14] At this time only the career personnel are fit tested. Under OSHA requirements all fire fighters should be tested. We do have the proper test machine to perform this test. We currently have to depend on an outside source for the service. The cost of this service as well as working under their time constraints places the department behind in this. The current Breathing Apparatus Technician is qualified to perform this test. Buy purchasing the proper equipment the department can meet its needs and the OSHA requirements.

[15]These safety inspections will help keep breakdowns to a minimum and find any safety defects before they become a hazard. Under guidelines set forth by OSHA and NFPA, all personal fire fighting gear to include coat, helmet, gloves, boots and bunker pants, shall be inspected monthly for defects, proper fitting and cleanliness. This protective ensemble is the first line of defense in protecting firefighter personnel. The numbers above reflect 260 firefighters inspected monthly with an average time of two hours per firefighter.

[16] Under the guidelines set forth by OSHA, the document explains and controls all aspects of the department breathing apparatus air quality, training, cleaning, maintenance and use. This living document changes as the department grows, and the standards are changed. Some aspects of this document are currently being placed into service but are far from completion. This document in its completed form should be handed to each employee and/or volunteer firefighter as part of his standard operating procedure program.

[17] See footnote #2. The time needed for this task is broken down into the following sections: 1. 2 hr. drive time 2. 1 hr. to locate and replace cylinders in the station 3. 1 hr. to refill each cylinder with air 4. 1 hr. to replace each cylinder back to station. (Total of 5 hrs.) Removal of five-year steel cylinders from heavy duty squads and stations is time consuming due to weight and complexity of each heavy duty rescue squad. Additional hours will be required to remove those units for hydro.

[18] Comprehensive and continuous record keeping is required under the Respiratory Protection Program and must be available to federal agencies upon request. These documents protect the interest of the department and its personnel.

SUMMARY

The Fauquier County Department of Fire and Emergency Services and the Fauquier County Fire and Rescue Association have a complex task, with regard to necessary equipment testing and maintenance. The federal regulations have become more complex along with the increased complexity of the equipment itself. Fauquier County has made quite an investment in equipment.

To replace this equipment at its current level would place a significant burden on the budget. In being a proactive department and setting up an in house repair and maintenance center, the County would save money with regards to equipment maintenance and testing by no longer needing to rely on outside vendors. The department has a repair truck that it currently uses to travel to each station for repairs. As the department grows the need for a repair center that can be secured will be needed.

The current time to send and repair our equipment to an outside vendor is approximately two weeks. This system department has not the number of breathing apparatus needed to allow this down time. An in-house repair center will allow the department to tailor its breathing apparatus, breathing air compressors and the air quality testing to meet its needs as we grow into the 21centry.

Cardiac Monitors/Defibrillators- Cardiac Monitors and Defibrillators are owned by each individual Fire Rescue company, but are maintained through a countywide contract through the manufacturer Medtronics, at a cost of ~$30,000/year. This is the sole source contract vendor required to maintain warranties and liabilities.

3. Hazardous Materials Equipment

Gas Meters- As of 2003, the Association owns 22 gas meters, used to measure levels of oxygen, carbon monoxide, hydrogen sulfide and methane based flammable gases.

Based on the above data as reflected by the tables, the hiring of a Technical Equipment Specialist is warranted.

B. Fire and Rescue Training *(Since the writing of this document, two full time positions have been created to re-establish a full service Fire Rescue Training Division)*

1. Background

One of the most difficult challenges in the Volunteer Fire and EMS Service is providing entry-level training, as well as re-certification training for volunteers. During the years 1995-1998, training was a managed by a Career Training Captain and Sergeant. This included all training for Advanced Life Support/Paramedical program, the daytime high school and regular Firefighter and EMT programs, public education, and acted as a liaison to state committees pertinent to the interests of the county fire and rescue system. In 1999, the paramedic program was assumed by the expansion of Lord Fairfax Community College. As operational response service demands increased, the Training Management positions were absorbed into the personnel numbers to staff fire rescue stations. Currently, all training is managed and provided by part-time temporary employees. There is a

specific need to recover these full time positions to manage and support a Training Division as the following chart shows.

The following chart shows the various training demands that the Fire and Rescue Services must meet:

Training Demands of Fire and Rescue Services

Program	Frequency	Course Hours	# of Instructors	Management Hours
EMT	3	120	10	720
High School EMT	4	150	6	540
Firefighter I/II	2	152	23	336
Hazmat	6	8 & 48	1 & 4	40
High School F/F	2	180	6	336
ALS Re-cert.	2	72	8	104
Total Hours				2070

*The above chart lists only the basic courses and does not include the coordination of other necessary courses to include but not limited to:
EVOC (Emergency Vehicle Operators Course) & Pump Operator
Incident Command System and Strategy & Tactics
Fire Officer
Fire Instructor
Vehicle Extrication
Specialized Advanced Life Support Classes such as Pediatrics
Required Continuing Education

This plan recommends the current part time temporary position, which has logged approximately 2000 hours per year, consecutively for the past six years, teaching EMT be converted to full time status. The plan further recommends that a full time Training Coordinator be re-established. Funding for this position can be obtained by reducing the number of part time fire instructors resulting in better consistency.

Comparison of Full-Time Training Personnel

County	Number of Full-Time Training Personnel
Loudoun	11
PWC	21
Stafford	3
Rockingham	2
Albermarle	2
Frederick	1
Fauquier	0

C. Volunteer Coordinator

The steady increase of administrative demands placed on the Fire and Rescue Association by an average of more than 260 personnel cannot be met by a volunteer representative's available time away from work or family. The various Human Resource needs of the VFRA include insurances, physicals, workers compensation claims and follow up, infection control, physical exams and vaccinations. Budget and meeting requirements have escalated to require representation during daytime business hours and night meetings of the VFRA.

III. Physical Facilities

A. Fire Stations

1. Facilities Overview

There are currently 13 individual volunteer fire and rescues companies serving Fauquier County. Of the 13 companies, seven are combined fire/rescue companies located in Remington, The Plains, Upperville, Catlett, Goldvein, New Baltimore, and Orlean. Warrenton, Marshall and Catlett Fire Companies have a separate rescue station located within one-quarter of a mile of them. The remaining one fire company, Lois, has applied for its EMS Transport License, but has no immediate plans for acquiring an ambulance. The last fire station to be constructed was the Lois Fire Station, built in 1978; however, the Lois Volunteer Fire Company does not own the property or building. The last stations to be renovated were the Marshall Fire and Rescue Stations in the 1990's.

The administrative offices of the Fire Rescue Association and the Department of Fire and Emergency Services is located on the first floor of the "Sheriff's Office Building" located at 78 W. Lee Street, Warrenton. The Warrenton Fauquier Communications (911) Center is located on the same floor. Space has become an issue for all agencies. If the Fire, Rescue & Emergency Services Office is moved, it will provide much needed space for expansion of the 911 Center. As mentioned in an earlier section, the primary training center located in the Fauquier High School should also be relocated along with the administrative offices.

2. Operational Capabilities

Fire Rescue Station Capabilities By Location

Station #	Generator and/or Aux. Power	Meeting Hall	Ladder Truck	Heavy Rescue	Haz Mat	Amb	Boat
1- Warrenton VFC	X	X	X				
2- Remington VFC & Rescue	X	X		X		X	
3- Marshall VFC		X			X		
4- The Plains VF&RC		X		X		X	
5- Upperville VF&RC	X					X	
6- Warrenton Vol. Rescue Squad		X		X		X	
7- Catlett VF&RC		X				X	X
8- Goldvein VF&RC						X	
9- Marshall Vol. Rescue Squad	X	X		X		X	
10- New Baltimore VF&RC		X				X	
11- Orlean VF&RC	X	X				X	
12- Cedar Run. Vol. Rescue Squad	X	X				X	
13- Lois VFC							

3. Living Conditions

Fire and rescue stations should be built in strategic locations and are typically designed to last for 30 or more years. Station locations should be based on response times and distances as well as the most efficient utilization of human and apparatus resources. When stations were built in previous times, Fauquier County was primarily a rural county that depended totally on volunteers for fire and rescue services. For the most part, Volunteers did not spend shifts of time at their stations waiting for calls, but normally came to their stations for emergency responses and for organization functions such as meetings or fund-raising activities.

In 2003 it is almost mandatory for suburban departments to have personnel on stand-by in the stations. This improves the responsiveness to emergency incidents and reduces the response times to acceptable levels. This level of service requires facilities, which have the necessary amenities to support continuous occupancy such as office space, kitchen, lounge, single sex locker/shower rooms, bathrooms and sleeping areas. Infectious waste decontamination areas and laundry facilities are OSHA and NFPA requirements to prevent the spread of communicable diseases and hazardous chemical substance transmission. There are many other health and safety standards such as vehicle exhaust ventilation. The table below depicts the inadequacy of Fauquier County fire rescue stations. As mentioned earlier, one of the Board of Supervisors' goals is recruitment and retention of volunteer fire rescue personnel. This has become increasingly difficult, as Fauquier County cannot provide safe and suitable living conditions in most of the fire rescue stations.

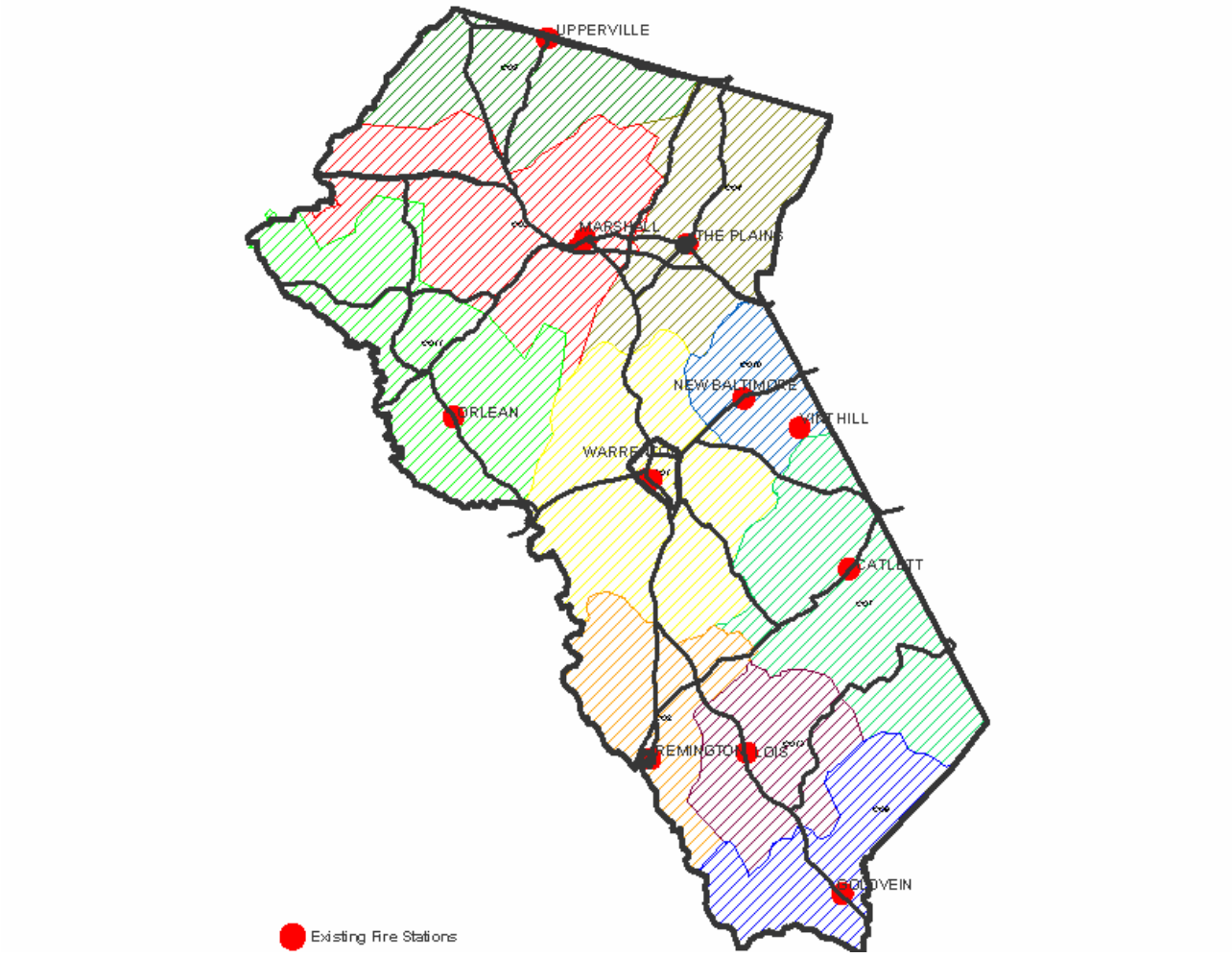
Fire Rescue Station Facilities Survey By Location

Station #	Laundry Facilities	Male and Female Heated Bathrooms	Male and Female Showers / Locker Rooms	Infectious Waste Decon Area	Male and Female Sleeping Areas	Office Space Two Rooms	Daily Kitchen & Dining Area	Lounge
1- Warrenton VFire	X*	X*				X*	X*	X*
2- Remington VF&Rescue					X*			X*
3- Marshall V Fire	X	X	X			X	X	X
4- The Plains V Fire & Rescue	X*						X*	X*
5- Upperville V Fire								X
6- Warrenton Vol. Rescue Squad	X				X		X	X
7- Catlett V Fire	X							X
8- Goldvein V Fire & Rescue					X*	X*	X	X
9- Marshall Vol. Rescue Squad	X	X	X	X	X	X	X	X
10- New Baltimore V Fire & Rescue	X							X
11- Orlean VFC		X*				X		
12- Cedar Run. Vol. Rescue Squad		X						X
13- Lois VFC **		X	X				X	X

* Inadequate for size, demand, and maintenance of the facility.

** Building not owned by volunteer fire company.

4. Facilities Locations



The following tables will be filled in upon the receipt of all budgets from Fire Rescue Companies. The intent is to identify the total operational budget of the system as a whole.

Company 1: Warrenton VFC

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 2- Remington VFC & Rescue

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 3: Marshall VFC

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 4- The Plains VFC & Rescue

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 5- Upperville VFC

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 6- Warrenton Vol. Rescue Squad

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 7- Catlett VFC

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 8- Goldvein VFC & Rescue

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 9- Marshall Vol. Rescue Squad

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 10- New Baltimore VFC & Rescue

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 11- Orlean VFC

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 12- Cedar Run Vol. Rescue Squad

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Expenditures	
Net Surplus (Deficit)	

Company 13: Lois VFC

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Fire Levy Expenditures	
Net Surplus (Deficit)	

Fire Levy	FY ____ Actual
Total Fire Levy Revenue	
Total Fire Levy Expenditures	
Net Surplus (Deficit)	

5. Proposed Renovations

Renovations to fire and rescue stations are necessary to maintain the buildings in an operable condition and to meet new standards, which were not in place at the time of original construction, such as single sex bath/shower/locker rooms and decontamination rooms. Currently, all fire and rescue stations are owned and maintained by the volunteer organizations, with the exception of Company 13, Lois. Company 13 maintains the station but does not own it. Because of the increased difficulty in raising funds, it is recommended that the County assume a capital improvement program for existing stations to be improved or in the case where the stations have been improved, assist in the debt load. The following stations are placed at effective and efficient locations, but need immediate renovation:

- The Plains Fire and Rescue – *Status: In process of planning*
- Warrenton Fire – *Status: In process of initiating construction*
- Upperville
- Remington

6. Proposed New Construction

Station construction, location and projected construction dates should be based on several factors. The demand for service and response times should be the driving force for determining the order of construction. It is logical that areas experiencing rapid growth, or are projected to experience rapid growth, should have a higher priority than stations in areas that have a lower service demand. Other factors should include consolidation of stations and relocations.

In order to have the maximum positive impact, County wide, and to reduce response times to areas with a higher service demand, a Fire Rescue CIP Advisory Committee should be established to make recommendations as follows:

- No new volunteer companies shall be organized. All new stations shall be substations of existing companies.
- No new Stations shall be built unless they will be a **"dual function station housing both ambulances and fire apparatus".** In addition, there should be consideration for a law enforcement component.
- An architect who is experienced in fire rescue station design and construction management must design all new stations. The Fire Rescue CIP Advisory Committee shall approve the

architect. Contributing architects may be utilized for specialized esthetics and to meet BOCA, ADA, OSHA, EPA and NFPA standards.

- Each new station should be designed to meet disaster management standards, i.e. construction of brick/block and steel to withstand severe weather, and meet Homeland Security requirements to include back up generators. Land requirements should be three to five acres.

- While the Fire Rescue CIP may fund the new operational portions of fire rescue stations, any request for funds to build any portion of fire company social/bingo halls or related appliances should be reviewed by the CIP committee.

7. The following new station construction should be considered, as first priority needs:

- Initiate construction, as soon as possible, of one new Fire Rescue station in Catlett to house the Catlett and Cedar Run Companies.

- Move New Baltimore Station to Riley Rd at Route 29 proffered land from the Bishop Run project.

Build a new Public Safety Station in Bealeton as described in the conceptual plan provided by Community Development. This facility should include Fire Rescue, Sheriff and a backup 911 centers *At the December 8, 2005 BOS Work Session, the priority of station construction was amended to include a significant renovation of the Remington Fire Rescue Station.*

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8. The following new station construction should be considered, as second priority needs:

- Once the Bealeton Fire Rescue Station is complete, the Association will review and consider relocation/consolidation of stations as needs change and demands for service increase.

- Build a new Fire Rescue Substation in the Warrenton area in a location deemed strategically advantageous.

- Consider fire rescue protection at the Warrenton Fauquier Airport

Disclaimer: This document is intended as a "living document" and therefore should be reviewed, evaluated and revised as needed. As time progresses and service demands change, it is expected that additional requests may be submitted.

B. Training Center

1. Training Responsibilities

Training responsibilities include the coordination and delivery of EMS, Firefighting, Technical Rescue, Hazardous Materials and safety related training to all system personnel. Training responsibilities also include professional development educational programs in areas such as leadership and instructional theory, and practices and facilitation of departmental quality assurance and quality improvement.

Public education activities include coordination of all fire and life safety public education initiatives, coordination of community-based training delivery, collaboration with other public and private sector partners in community safety education and support of activities such as station tours, citizen CPR & Defibrillation classes and child safety seat inspections. This program provides liaisons to various local, regional, state and national work groups and committees and coordinates special service-related programs.

2. Current Location/Inadequacies

The current primary location for all fire and emergency medical training is in the vocational wing at Fauquier High School, which consists of two classrooms, two small offices and a practical training area. This site has been used since 1984. In 1996, it was renovated from one large workshop area to its existing state under a lease with the High School, to expire in 2006. While this area has never been adequate to facilitate all basic training needs, the ten-year lease was drafted in the hopes of establishing a more suitable facility.

3. Current & Future Needs

Delivering training will continue to be a challenge for the fire & rescue services. The combination system requires that training be available weekdays, weeknights, and weekends. In order to have an effective volunteer system, all members must have training opportunities readily available. This requires that the same level of instruction be assigned to all members of the department.

This places a tremendous demand on the training staff and will require staffing almost 16 hours per day, six days per week in order to provide necessary training. The delivery of leadership and management training will continue to be a challenge, as well as motivating personnel to attend this type of training.

The delivery of new and updated EMS training programs will place a new demand on the training division, and new and innovative methods must be explored to meet state standards. New EMS training standards place a tremendous responsibility on this division in order to meet minimum training hours.

4. Location

A training facility should be centrally located so as not to extend driving time for the volunteer personnel attending late evening classes. It will require numerous classrooms to facilitate concurrent programs being taught at the same time. One large room would need to provide up to 50 seats. The EMS classrooms need “break out” rooms to conduct as many as 7 separate “practical” or “hands on” training areas. One possible location is to proffer land at the proposed development next to the Warrenton Wal-Mart. See the next section for an alternative location.

5. Financial Impact

It is recommended that this facility be combined with an administration facility and be included in the overall “Facility CIP” plan.

C. Administrative Facilities

1. Current Location/Inadequacies

The current administration offices are located on the ground floor, at 78 W. Lee St., Suite 101, also known as the Sheriff's Office Building. The Warrenton Fauquier Joint Communications Center is also located on the ground floor next to the Fire and Rescue Offices. This location contains of two offices, one for the Chief of the DFES, and one for the Captain of the DFES. There is workspace for three full time clerical staff and a conference room shared by the Fire Rescue Services and WFJCC. Whenever Fire Rescue vacates this space, it should be reserved for the Communications Center's needed expansion.

2. Current & Future Needs

Currently we have needs for Fire Marshal's to work on reports, investigations, site plans reviews. We also need dedicated space for Volunteer Fire Rescue Offices for Administration and Coordination, Training Coordinator, Technical Equipment Support, Records etc. Another great need is simple storage and a reception area separate from the business area to receive our many internal and external customers.

3. Location Requirements

As mentioned in the training section, these offices should be located centrally, preferably near Warrenton and combined with a training facility to achieve a more efficient administration of all services. One possible location is to proffer land at the proposed development area next to the Warrenton Wal-Mart. Another possibility is if a substation is built in the Warrenton area, consolidate Warrenton Fire and Warrenton Rescue into one station at the proposed development area next to Wal-Mart, and utilize one of the existing Warrenton Fire Rescue stations for administrative and training space.

4. Financial Impact/Consolidation Possibilities

It is recommended that this facility be combined with a training facility and be included in the overall "Facility CIP" plan. This should be evaluated in the overall fire rescue station placement plan. The timeline of this project should be in between the first and second priority fire rescue station lists.

IV. Department of Fire and Emergency Services

A. Background (*Since the writing of this document, additional firefighter paramedics have been hired to achieve a full 12 hour shift schedule at 6 locations M-F 6am to 6pm)*

The Department of Fire and Emergency Services, hereafter referred to as DFES, is charged with managing several divisions dedicated to public safety. The administration staff consists of the Chief, and one Operations Captain. The clerical staff consists of an Executive Assistant I, Office Associate III, and one Fire Rescue Support Specialist. The Operations Division consists of four Lieutenants and fifteen Fire Rescue Technicians.

1. Emergency Planning and Coordination-

The DFES Chief is the County's representative for emergency situations and any functions related to emergency planning and preparedness. This function involves elements such as disaster planning and acting as a liaison to various state and federal agencies such as the Virginia Department of Emergency Management, the Federal Bureau of Investigation and the Federal Emergency Management Agency. In this capacity, he is the designated Emergency Management Coordinator. In the past, this area of responsibility was focused primarily on natural disasters, transportation and hazardous materials. However, since September 11th, 2001, the time demands related to emergency planning and coordination have increased substantially. In the absence of the Chief, these tasks are handled by the operations Captain. The DFES Chief is also the County's representative for coordination with the Volunteer Fire and Rescue Association. His clerical staff supports the Fire Rescue Association by maintaining insurance services and claims such as property, vehicle, worker's comp, accident and health, etc. The clerical staff also supports the budgeting and finances of the Association as well as all training programs, and personnel records such as the LOSAP and physical examination programs.

2. Emergency Response-

In 1992, three full-time firefighter paramedics were hired as part of DFES to support the volunteer response capabilities Monday through Friday 6am to 4 pm. In 1995, five additional firefighter paramedics were hired to work this same schedule, and two personnel were assigned to a Training Division. Each of these five were assigned to an individual station. In 1998, an additional five personnel were hired to allow for a two-person crew in five designated stations. The work schedule for these full-time firefighter paramedics continued to be a fifty-hour workweek, thwarting recruitment and retention efforts competing against other schedules.

In 2002, an additional five full-time personnel were hired, however in September, the work-schedule was changed to expand coverage from 6 am to 6 pm, Monday through Friday, and help recruitment retention. The work shift for the full-time employees was changed from a fifty-hour workweek to a forty-two hour workweek. Initially, this greatly improved recruitment and retention of the career personnel. The number of personnel currently staffed is as follows:

Each of the following stations is staffed with two personnel, 12 hours/day (6 a.m. – 6 p.m.) Monday – Friday and on at least six of the "observed" holidays such as Columbus Day.

- The Plains Fire and Rescue
- Warrenton Rescue Squad

- Remington Fire and Rescue

Assigning three personnel to each of these stations facilitates this staffing schedule. Each employee works four days one week and three days the second week to average 84 hours each two week pay period.

Three supervisor/response units are staffed 10 ½ hours per day, five days per week by Lieutenants. The shift times are staggered so there is always a supervisor on duty between 6 a.m. and 6 p.m. This is accomplished by assigning four personnel (Lieutenants) to this rotation.

Each of the following stations are staffed with 2 personnel 10 ½ hours per day, four days per week:

- Marshall FD/Marshall RS
- New Baltimore FR
- Catlett FD/Cedar Run

Each of these stations has 2 personnel assigned. One day per week, on a rotating basis, one of these three stations is un-staffed. This schedule placed all employees on the same pay schedule, improved recruitment/retention and provided an improved coverage plan when this was initiated September 3, 2002. Regarding holidays, these stations' personnel follow the normal county holiday schedule; resulting in these three stations being un-staffed by DFES personnel on all holidays. It has been predetermined that as the budget revenue grows in the future, one additional employee will be added to these stations to facilitate a 12-hour shift rotation as described above.

Aside from the obvious shortcomings of having any station un-staffed, there are no additional positions (overstaffing) to fill vacancies resulting from sick or annual leave. Currently part-time personnel are utilized to the extent possible, followed by the supervisors staffing the station when a vacancy occurs.

B. Response Standards

As was mentioned earlier**,** the County's response standard (target) is to have two EMS personnel arrive on the scene of an EMS incident, or four firefighter personnel on the scene of a fire/hazmat incident within ten minutes 80% of the time. This standard has been derived by two primary entities:

1. *The EMS standard is derived by the American Heart Association, which states that a cardiac arrest must receive advanced life support or defibrillation in less than ten minutes.*

2. *The fire standard is derived by National Fire Protection Association (NFPA), which states a fire in a structure will reach flashover stage between four and eleven minutes.*

Furthermore, the county has adopted the "two-in, two-out" standard, which was derived by NFPA and OSHA 1910.120q. This OSHA standard has to do with emergency personnel entering an IDLH (Immediate Danger to Life or Health) atmosphere, such as an area containing fire, smoke, uncontrolled hazardous materials, etc. The minimum number of personnel entering an IDLH atmosphere is two, with an additional minimum of two personnel on scene, prepared to affect a rescue should the other two become trapped, or encounter other dangers. System wide, target-

staffing levels are currently based on three-person staffing for pumpers, ladder trucks and heavy rescue companies. Ambulances have minimum staffing of two people. First response vehicles and tankers have a minimum staffing level of one person.

Therefore, the current minimum-staffing objective for the DFES is to have four firefighter personnel and one supervisor in each battalion area* during all staffing times. This is unachievable on holidays and days that the 10 ½ hour stations are un-staffed.

** The battalion areas are derived or also known as North (consisting of Orlean, Upperville, Marshall and The Plains), Central (consisting of Warrenton and New Baltimore) and South (consisting of Remington, Lois, Goldvein and Catlett).*

C. Operating Needs

Based on 2003 projections, the population of the County will exceed 62,000 in 2003. By the end of the five-year period (FY 08) that is covered by the detailed part of the plan, the population is expected be 69,300, an increase of 14% based on a 3% annual increase. Based on the population projects outlined earlier in this plan, the population may have a projected total of 113, 297 by 2025. This will place a tremendous burden on the fire and rescue system, and good planning and execution is critical in order to maintain quality emergency services protection.

The following chart depicts projected fire rescue service demand increases over the next five years. Based on a historical increase of approximately five (5) percent per year, the projected incident load in the year 2022 will be more than _____ emergency incidents.

Incident Projections through 2010

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
EMS			5,508	5,744	6,071	6,374	6,693	7,027	7,379	7,748	8,135	8,542	8,969
FIRE			3,695	4,001	4,225	4,436	4,658	4,890	5,135	5,391	5,660	5,943	6,240
Grand Total	5,470	8,061	9,203	9,745	10,296	10,810	11,351	11,917	12,314	13,139	13,795	14,485	15,209

(# = projections)

1. Service Level Development

Determining service levels gives Fauquier County the ability to measure its performance of the delivery of service to its citizens based on the ability to place adequate numbers of personnel on emergency scenes within prescribed time frames. Every community is different in that ability; however, there are accepted standards such as EMS survival rates from the American Heart Association and Flashover Curves as indicated by the National Fire Protection Association (NFPA).

These standards outline activities that must be performed within time frames in order to have a better outcome for the person or the building.

The following standards are currently in place: (turnout time is defined as the time from dispatch until the vehicle leaves the station). Upon initial dispatch, the CAD timer alerts at 4 minutes and if the unit has not responded, it is "retoned" and dispatched again. If at 7 minutes, the unit has not responded, the next due company is dispatched. In many cases, primarily EMS calls; this can roll over several times in multiples of 7 minutes before a unit is responding. Obviously, stations that are staffed with personnel can have units responding within 1 to 2 minutes.

Fire Companies:

Fire Incidents- 7 minute turnout
EMS Incidents- 7 minute turnout

Rescue (EMS) Companies:

ALS Incidents- 7 minute turnout
BLS Incidents- 7 minute turnout
Fire Incidents- 7 minute turnout

Though these turnout times may fit the capabilities of the system, the hallmarks of fire response (control of flashover) and emergency medical services (initiating CPR, early defibrillation and advanced life support care) cannot be consistently and reliably met by some stations that are currently in compliance with existing County standards. Some of the stations have facilities to house personnel duty crews and therefore exceed the standard. When stations are staffed with career personnel, the turnout time is immediate for EMS incidents and no more than four minutes, if they crew is waiting for additional volunteer staff. There is currently no differentiation in turnout time standards for Advanced Life Support needs vs. Basic Life Support needs.

The turnout time measurement is only one component of total response time and does not give and indication of how long it takes to have appropriate personnel arriving on the scene of an emergency. The current goals are exceptionally long and can impact timely delivery of on-scene arrival of an emergency vehicle within accepted time periods.

A total response time can be defined as the time it takes from when a dispatcher answers a 9-1-1 call until a trained emergency responder is at the patient's side or in a building. Response time is comprised of the following components:

Call Processing time- Time from 9-1-1 receipts until units are dispatched (standard is one minute).
Turnout Time- Time from dispatch until units are leaving the station (standard is one minute for staffed stations).
Travel Time- Time from leaving the station until units arrive at the scene (varies according to station placement).
Set-up Time- Time to gather equipment and proceed to the actual site of the emergency (varies depending on the type of incident, but normally 1-3 minutes).

Dispatch Requirements

The time for a dispatcher to answer a 9-1-1 call, solicit information from the caller, enter the information into the CAD system and dispatch the appropriate unit adds time to the response continuum that impacts the outcome of the incident. It is imperative that this number be counted in order to get a true picture of the length of time from an emergency occurring to a fire-rescue vehicle arriving at the scene of the emergency. The national standard for call processing is normally calculated at 60 seconds, and this should be the maximum target level of service provided in Fauquier County.

Fire Requirements

In order to have an aggressive fire suppression program, units must be able to apply water to a fire prior to the point of a flashover. Flashover occurs anytime from four (4) to eleven (11) minutes after the fire begins. This is dependent on the intensity of the fire and the materials that are burning within the structure. When the room bursts into flame, flashover has occurred. The scientific definition of flashover states that it is caused by the radiation feedback of heat. Heat from the glowing fire is absorbed into the upper walls and contents of the room, heating up the combustible gases and furnishings to their auto-ignition temperature. This build up of heat in the room triggers flashover.

Flashover is the point at which the contents of a room or structure are heated to a point at which the contents of the room will become consumed with flames. It is the end point of an effective search and rescue in a room; it means the death of any person trapped in the blazing room- either civilians or firefighters. It signals the end of using a portable extinguisher to extinguish the fire; an attack hose-line is required after flashover occurs. It signals the end of the growth stage and that the fire is in the second stage of combustion- the fully developed stage. Finally, flashover signals the change from involving the contents within a structure to a consuming the structure components with fire. This is the beginning of the collapse danger. Structural collapse potential starts in the fully developed stage and becomes the greatest in the decay stage of a fire (after the fire has been extinguished).

Having a rapid response time to meet these demands requires a rapid turnout time. A standard one-minute turnout time is generally accepted and can be met with personnel on stand-by in stations. This is not feasible or realistic in all cases, but every minute of turnout time reduces the acceptable response time by an equal amount. The essential requirement is to get personnel on the scene with prescribed time frames, so each station can determine how to best meet the full response time objectives.

In order to intervene effectively in the fire scenario, fire suppression must begin prior to flashover, normally within approximately eight minutes after being dispatched. Once flashover occurs, fires expand exponentially, which means the fire will double every second after flashover has occurred. This fire expansion causes more property damage, and creates less chance of civilian survival and increases the potential for firefighter injuries. Therefore, the goal is to intervene prior to flashover occurring (NFPA 1710 and 1720).

Thus the goal for fire suppression is to have units on the scene and fighting a fire within established time frames as outlined below. This gives units time to assemble on the scene and to advance to the

seat of the fire. In high-risk occupancies, the time to locate the fire is longer, and thus a quicker response time is needed to set-up and to advance to the seat of the fire.

This response time is not realistic countywide, but a risk assessment may point to the fact that areas with lower risk (rural areas) can have a longer response time, but the tradeoff is that fires may cause more property damage to the property that is consumed in fire. These properties do not adjoin other properties and therefore there is a low probability of fire extending to other properties and creating property damage beyond the building that is initially on fire. Thus, there is a lower risk to the community as a whole and a longer response time does not have much of a community impact. In comparison, a fire in an apartment unit can extend to other units and have an impact on multiple residences and citizens. This results in a large impact on the community as a whole and thus a faster response time is required to lessen the impact on the community. A risk analysis will also reveal that the changing type and style of construction being used in the homes built since the mid 1980's, (particularly the larger homes with elaborate roof and floor systems) present a greater risk. This type of construction, consisting of lightweight truss floor and roof members, presents a much greater risk for collapse without warning signs during a fire. All lives and property are equally important, the differences are in the impact an event has on the community as a whole.

Fire Risk Levels

The service levels outlined below are based on a risk analysis of areas and buildings in the County. A risk assessment is an analysis of the threat to a community from any type of natural or man-made disaster. It can be fairly simple to look at buildings or areas based on size and function, or it can be a very complex process that evaluates size, building construction, economic impact on the community, fire suppression systems, water supply, occupancy, etc.

The County Fire and Rescue Services along with the community must determine what types of structures and areas fit into the categories below; however, the following general categories may be used as a guideline to evaluate response times based on their response to levels of risk. In essence, response to a higher risk (suburban areas) is more critical to the citizens and the community than is a low risk. In addition, higher risk areas and buildings are typically in more populated areas and are located closer to a fire and rescue station, thus a quicker response time should be easier to achieve. For the purposes of this study, three classifications will be used: *Rural, Suburban and Special Risk Areas.*

> **Rural Areas** – Areas zoned as Forestry, Rural Agricultural, and areas of low-density single-family homes located on large acreage.
>
> **Suburban Areas**- Service districts, towns, areas zoned above R-1, commercial, multi family residential units and high-density single-family homes
>
> **Special Risk Areas**- Special Risk Areas have potential for large loss of life. Such areas include un-sprinkled nursing homes, and any other area or property that would have a significant impact on services or the tax base should the property be destroyed or severely damaged.

D. Staffing Levels

1. Number of Personnel on Pumpers and Specialty Trucks (Ladder Trucks, Heavy Rescue Squads, Haz-Mat Unit)

Staffing levels are currently based on 3 person staffing for pumpers and specialty units. Ambulances have a minimum staffing of 2 people. First response vehicles and tankers have a minimum staffing level of 1 person.

Increasing target staffing on pumpers and specialty units to four people can increase service levels for fire responses by more than 100 percent. According to the Virginia Department of Labor, personnel must operate in teams of two, so three-person staffing on vehicles allows for one team of three to be deployed. A four-person minimum staffing level on mission critical pieces allows for two teams of two to be deployed, thus a 100 percent increase in capacity. The Virginia Department of Labor also requires that a rescue team (Rapid Intervention Team) be in place prior to firefighters entering a dangerous fire situation. This rescue team must be comprised of two people. This means that in order for a team (two people) to enter a burning building, another team (two people) must be on standby to perform firefighter rescue should the team in the building become incapacitated. Thus, four people are required on scene prior to initiating a fire attack.

In addition NFPA 1710 requires that four people be assembled on the fire ground prior to undertaking fire suppression activities. Four-person staffing allows for immediate action at all fire scenes. The Northern Virginia Regional Response Agreement also has a goal of all responding companies to have a minimum of four-person staffing. Four-person staffing on all Fauquier County fire apparatus will allow Fauquier County to be in compliance with other Northern Virginia jurisdictions, and facilitate mutual aid and mutual response agreements.

This service plan moves to develop a four-person staffing scenario by increasing the number of available volunteers in each company and to increase career staffing so that four-person staffing can be incorporated into policy by 2008. Note that units staffed together in stations may achieve this goal. Example: Where all personnel are firefighter trained, a station staffed with one Ambulance (2 personnel) and one Engine (3 personnel) will provide 2 teams of two and one person to operate the pump supplying water. A supervisor on scene will also be able to account for personnel in an IDLH (Immediate Danger to Life and Health) atmosphere.

2. Ladder Truck Staffing

Staffing ladder trucks must be addressed. The Warrenton Volunteer Fire Company currently provides the only ladder truck service. While a pumper can begin fire suppression activities without a ladder truck, the functions of a ladder truck- search and rescue, ventilation, utility control, etc.- must be accomplished by the personnel on a pumper, preventing them from concentrating efforts directly on establishing a water supply, extinguishing the fire and preventing fire spread. As a matter of safety, when fire personnel are operating inside of a large burning structure, ladders should be available for emergency egress if the fire situation dictates. In a time of limited personnel resources, the ladder truck provides this safety backup. Another mission critical service of the ladder truck is to lift personnel safely onto the roof a burning structure to cut open the roof and ventilate the hot gases, further preventing flashover and reducing the heat stress placed on the fire personnel inside the burning structure. Most importantly, the life safety of civilian personnel

trapped in a burning structure, such as town homes, garden apartments, etc. require numerous personnel using ground ladders. This type of rescue is obviously much safer with a ladder truck. Considerations to support ladder truck operations should be addressed. This study recommends that upon completion of the new Bealeton station, a combination pumper/ladder truck unit, also know as a "Quint" be placed there. Further consideration should be given to the north area, such as Marshall, in placing a Quint unit there as well. This is primarily due to the high number of large estate homes with difficult roof systems.

3. Staffing Thresholds

Nationally or generally accepted standards that would assist with determining when volunteer stations would need assistance from career staffing are not available. While some localities address the issue similarly, most addresses the issue differently based on the characteristics of their community, service demands, risk assessment and volunteer participation in their own community.

This service plan recommends that two items be considered when determining appropriate staffing. The service levels are based on determining what level of risk is acceptable to the citizens of Fauquier County.

The first factor to consider is the number of responses that a station or company makes per month. A factor of 30 calls per month is equivalent to one incident per day in that response area. The second factor to consider in staffing is turn out time. Turn out time is defined as the amount of time from when a call is dispatched to when a unit is responding with a crew. Response time is defined as the amount of time from when a call is dispatched to when a unit arrives on scene. If a company falls below a 70 percent compliance (for more than three months) with the goals established in this plan, and the company responds to more than 30 calls per month, a "Service Improvement Plan" will be developed and implemented. "Service Improvement Plan" can range from reorganizing volunteer resources, placing the company on dual dispatch, to adding career personnel to the applicable area, but not necessarily that station. This level of compliance is more than 10 percent below the accepted standard of 80 percent. Should a company fall below 50 percent compliance with the established response goals, immediate action should be implemented.

Even though there are no nationally accepted standards for response performance, it is imperative that reliable and consistent service be delivered to the citizens. Falling below 70 percent response time goal compliance means that 30 out of every 100 citizens that call for service are not getting appropriate response. This is almost a third of the citizen calls for service not meeting the adopted standards. When a company falls below 50 percent compliance, then the majority of the citizens in that service area are not getting consistent or reliable service and immediate actions should be taken to assure an adequate response.

The following table depicts the number of full time fire rescue personnel by county (Based on jurisdictions with adopted response standards.)

County	Active Volunteer Staff	Full-Time Personnel	Budget	Full-Time Personnel Per One Thousand Residents	Budget Per Capita
Loudoun	1,313	255 full-time staff	24,208,000	1.24	118.64
PWC	1,109	305 full-time staff	26,104,443	0.98	83.70
Stafford	300	34 full-time staff	5,400,000	0.32	51.52
Rockingham	400	40 full-time staff	*2,840,475*	0.58	41.38*
Albemarle		35 full-time staff	*2,270,264*	0.43	$27.72*
Frederick	300	47 full-time staff	*2,358,776* *3,400,000*	0.74	$37.46* $53.99
Fauquier	260	24 full-time staff	1,415,270 4,100,000	0.38	$22.64* $69.20

* Denotes career personnel cost only

- Fauquier's combined FY 04 career and volunteer budget is $4,044,265.
- DFES $1,415,270
- VFRA$2,221,265
- CIP $407,000

E. Fire Standards of Response Coverage Service Plan Goal Statements

The standards of response coverage are based on what can be reasonably expected based on Fauquier County Fire, Rescue and Emergency Services historical information. The resource deployment recommendations are based upon the critical tasks and typical activities that must be performed by the effective initial response force.

1. Fire Risks

Goal*: For all calls for service, the first-due unit will maintain an average response time of less than 10 minutes from the time of dispatch to time of arrival 80 percent of the time. Within that 10-minute time frame, there shall be at least four personnel on scene capable of advancing a hose line for fire control and/or rescue activities (auto accidents) or for providing basic life support procedures for medical incidents (CPR). All efficiency measurements used by Fauquier County are 80 percent.*

Note: For all structural fires, rural or suburban, 3 engine companies are dispatched along with a heavy rescue squad truck and an ambulance. In the rural areas without fire hydrants, 3 tankers are also dispatched. In suburban areas with hydrants and commercial areas, a ladder truck is also dispatched. Therefore, roughly the same number of personnel is needed for both service type calls. In the rural setting more personnel are needed for water supply, where the suburban setting requires more personnel to be actively involved in fire suppression.

As the county is demographically diverse, it is generally deemed rural in areas to the north and west, and suburban in the areas of Warrenton, New Baltimore, Bealeton and Remington. Based on the geography, rural areas cannot be accessed as quickly as suburban areas. Therefore, the standards of coverage give two different fire response goal time frames based on the classification of the areas served. Even though a fire grows at the same intensity and level, the threat to adjoining structures is lower and thus less of a threat for fire spread beyond the property of origin.

***Goal**: For the respective risk classes, Fauquier County will employ the following response time objectives:*

Suburban Response Time Objectives

While we have established the goal of the first on scene unit, the additional units should be on scene to allow full-scale operation within 15 minutes 80 percent of the time

Rural Response Time Objectives
The additional units and personnel should be on scene within 20 minutes 80 percent of the time

Technical Rescue Situations

***Goal:** For incidents within the County in which technical rescue services are needed, a first responder trained in technical rescue shall arrive within 20 minutes, 80 percent of the time. Mutual aid teams will arrive within 45 minutes of time of dispatch*

Hazardous Materials Situations

***Goal**: For Level II hazardous materials incidents within Fauquier County requiring a Haz-Mat Unit, there shall be an initial response of 8 personnel trained at the Haz-Mat Operations level assembled on the scene within 30 minutes of being activated.*

***Goal**: For Level III incidents inside Fauquier County, there shall be Level III personnel on the scene with 60 minutes, 80 percent of the time. State teams are located on four sides of the County as follows: Arlington, Fredericksburg, Harrisonburg and Winchester. Depending on location in Fauquier County, state team may take up to two hours to arrive. Note: This is a long-term goal of Fire Rescue. Further evaluation is necessary.*

EMS Requirements

EMS response times are more critical in many respects than fire response times. The American Heart Association Chain of Survival outlines actions that must be taken in order to successfully resuscitate victims in out-of-hospital cardiac arrest. The measure for EMS must be considered in two different ways. The first consideration is how fast basic life support can be provided to citizens who suffer a cardiac arrest in Fauquier County. American Heart Association studies have shown the cardio-pulmonary resuscitation (CPR) must begin immediately, and in all cases no later that four to six minutes of a cardiac arrest. Early defibrillation must then follow early CPR. These actions must be followed up by advanced life support in order to provide advanced coronary care. The combination of late CPR (more than four minutes) and late advanced life support (more than 12 minutes) is particularly lethal. Several researchers have called these time dimensions the resuscitation “failure zone.”

The second consideration is early advanced life support intervention for patients that are not yet in cardiac arrest but have a cardiac rhythm that will become lethal if not treated rapidly. Unfortunately, it is difficult to quantify the number of people that are saved each year by early intervention prior to suffering a cardiac arrest.

Based upon a formula developed by physicians, patient survival rates can be enhanced through training more citizens in CPR, reducing call-processing time, reducing turnout time or reducing travel time. Fauquier County can concentrate on each of the components, but the primary place to gain time is in the turnout time. This can be accomplished by having crews on duty ready to respond.

F. Emergency Medical Services Standards Recommendations

Goals for Suburban areas*:*

1. *An ALS equipped unit (first responder engine, medic unit, or EMS first response unit) and at least one ALS provider will be on scene of any ALS-protocol EMS incident within 10 minutes of being dispatched, 80 percent of the time.*

2. *A BLS ambulance staffed with a minimum of two BLS providers will arrive on any BLS-protocol EMS incident within 10 minutes of being dispatched, 80 percent of the time.*

Goals for Rural areas:

3. *An ALS equipped unit (first responder engine, medic unit, or EMS first response unit) and at least one ALS provider will be on scene of any ALS-protocol EMS incident within 15 minutes of being dispatched, 80 percent of the time.*

4. *A BLS ambulance staffed with a minimum of two BLS providers will arrive on any BLS-protocol EMS incident within 15 minutes of being dispatched, 80 percent of the time.*

Recommendation:

In an effort to meet these service standards, there are two areas for improvement. Tracking which units are staffed, and dispatching nearest “staffed units”.

During the career hours, there are either five or six stations out of 13 staffed with firefighter paramedics between the hours of 6:00 am and 6:00 pm. When calls are received, they are dispatched according to the normal assignment dispatching protocol, however, if the station that is due, is not staffed with career personnel, the next closest station with career staff is added to the call. This results in an immediate “turn out time” and reduces the “response time”. After career hours, staffed units are not consistently tracked by dispatch and the first due companies are dispatched singly. There is no procedure to dispatch the closest unit staffed by volunteers or to directly dispatch ALS personnel. Therefore, outside of the career hours, any staffed units and ALS personnel on duty should be added to the regular dispatch. *While the Fire Rescue Association agrees with there recommendations, the Association has determined that implementing these recommendations will require improvements in dispatch consisting of dedicated Fir/Rescue dispatchers. See Section I.5*

G. Overall Service Plan Delivery Issue

The goals as outlined must be evaluated in order to determine current compliance. The department currently tracks response times by averages and the percent compliance with established turnout time goals. Even though averaging gives a measurement, it simply indicates that half the time the station does better, and half the time the station does worse. The percentage of compliance gives the system a much better indicator of how the system is performing; however, the measure to determine compliance must include total response time and not just the time to get a vehicle enroute to an emergency.

Utilizing compliance rates also addresses the areas that have a very long response time, as they would be in the 20 percent non-compliant zone. Eighty percent was chosen as a realistic number to meet. The NFPA utilizes 90 percent as the compliance rate in NFPA 1710. Fire and EMS systems in the accreditation model utilize a compliance rate that varies from 80 to 90 percent. The 80 percent compliance rate is at the bottom of the normally accepted practices and provides a realistic number for Fauquier County to attain.

I. Personnel Requirements

The combination of rapid population growth, coupled with a resulting increase in emergency incidents, will require additional resources to provide fire and rescue services to Fauquier County. Many of these resource requests will require personnel. This chart depicts the total number of full time equivalent (FTE) positions that will need to be assigned to the Department of Fire and Emergency Services in order to meet the indicated levels of service. The total numbers indicate the number of personnel that will be required, including staffing for new stations. The intent is to hire personnel at a gradual pace to avoid logistical personnel and operational management overloads and to maintain our current excellent "career-volunteer relationship". Our neighboring County of Loudoun was placed in a position where they hired approximately 50 personnel each year for several years, creating problems both for operational and personnel development.

Full-Time Equivalent Projections

Fiscal Year	Field Ops	New Personnel Destinations	Volunteer Coordinator Tech Support	Training	Fire Marshal's Office	Planning/ Admin/ Clerical	Total FTE
2003	20	N/A	N/A	2 P/T/T	3 P/T/T	4	24
2004	20	N/A	N/A	2 P/T/T	5 P/T/T	4	24
2005	25	Catlett/New Balt/Marshall	1	2	2	5	35
2006	30	New Baltimore	2	2	2	5	41
2007	38	Bealeton	2	2	2	5	45
2008	43	Marshall/The Plains	2	4	2	6	56
2009	48	Catlett	2	4	2	6	61

The budgetary needs of the recommended levels are shown in the next section.

To establish a baseline, operating needs are based on the following assumptions and projections. For ease of use, the following assumptions will be used throughout this section, unless otherwise specified.

1. Financial Information is based on the adopted FY 04 budget

2. Inflation factor of three (4) percent is used for future projections in the operating budget. The first year of any new program is based on 2004 dollars; thereafter, there is a four percent inflation factor used.

3. New programs or program expansions are indicated in separate budget charts to allow for easy identification. However, the total cost per year is based on the base budget, plus the additional funds needed for the program expansion.

4. Career staffing levels are based on providing a one-fire response unit with a minimum staff of three, and EMS units with a minimum staff of two. However, a to facilitate a 12 hour shift five days per week, each unit must be assigned additional personnel to cover a rotating shift. For example, and EMS unit requires three personnel assigned to maintain a two personnel staff. This is based on a 42-hour workweek schedule where the employees work three 12-hour days one week and four 12-hour days the second week. This still does not factor in personnel to cover for sick and annual leave.

5. The operational cost for one volunteer is $1,521 per year. This includes all direct costs to the county including: Length of Awards Service Program, Personal Property Tax Program, Accident and Health Insurance, Worker's Compensation and Life Insurance. This is based on 260 active volunteers. Medical physicals cost $257 each, but few volunteers take advantage of these services, and are not included in this cost.

6. The cost for one career firefighter/EMT is $46,000 per year for the first year and then $50,000 for future years. If the employee is ALS (Paramedic) certified, an "ALS Incentive" of $1500 to $2000 is added. Each of these figures is adjusted for inflation commencing FY05.
7. The cost to staff a fire/rescue station five days per week, 12 hours per day with two career personnel is $163,500. Based on funding 3 firefighter/ALS (Paramedic) certified personnel, or 3 FTE's. This does not include additional personnel to cover sick/annual leave.

8. The cost to staff a fire station 5 days per week, 12 hours per day with five career daytime personnel staffing an engine and ambulance is $490,000 which funds 4 firefighters, 4 ALS (Paramedic) certified personnel and one station commander, or 9 FTEs.

9. The cost to further staff a fire station 7 days per week, 12 hours per day with five career daytime personnel staffing an engine and ambulance is $761,754, or 14 FTE's.

9. Personal protective equipment is based on a five-year replacement program. One full set of protective clothing is based on $1680 firefighter. This includes forestry fire gear.

10. Station placement is predicated on a 10-minute travel time in suburban areas, and ten-minute travel times in rural.

11. The yearly cost to maintain one primary emergency vehicle is based on $15,000 and the cost to maintain one car or utility vehicle is based on $5000 per year. This includes fuel, oil and maintenance.

12. Volunteers may continue to purchase all of their emergency vehicles at no cost to the County. However, cost figures should be examined for replacing equipment as it ages. For example, there are 23 ambulances in the fire and rescue system, which greatly exceeds any standards based on our current call volume. In comparison, Fairfax County has 36 ambulances.

H. Fire Marshal's Office

1. Background

The Code of Virginia provides the means for each locality to adopt, by ordinance, the Statewide Fire Prevention Code and the enforcement of its contents. This local enforcement reflects our primary mission statement elements such as life safety, property and environmental conservation as related to the following categories:

1. Fire and life safety through enforcement of building code systems' maintenance and occupancy requirements such as fire alarm and suppression systems, exit maintenance requirements, hazardous material usage and storage and clean-up of hazardous materials spills.

2. Site plan reviews of new developments for emergency vehicle ingress, egress and fire hydrant/fire flow requirements.

3. Regulatory enforcement of explosives such as dynamite and environmental crimes such as illegal dumping or burning of hazardous materials.

4. Investigation into the cause and origin of fires and enforcement against arson fires, which have been and continue to be a significant problem for our county. Arson incidents range from juvenile fire setters to insurance fraud by burning vehicles and homes, to vandalism by burning multiple barns, cars and even homes.

2. Program Description

On July 1, 2001, the Fauquier County Board of Supervisors approved an ordinance that established the Fire Marshal's Office within the DFES. Currently the Chief of the DFES is appointed the Chief Fire Marshal for investigations and the Fire Official of record for inspections and Fire Code enforcement. The Operations Captain doubles as the Deputy Fire Marshal and three other part-time temporary employees serve as Assistant Fire Marshals. These Assistant Fire Marshals, however, are full-time employees at other fire departments.

While the code enforcement ordinance was adopted for inspections to be based on "complaint and discovery," almost all structural fires and many vehicle fires warrant the Volunteer Fire Chiefs or their Officers to request a Fire Marshal for investigations. The time requirement for these investigations ranges from several hours, to days, to hundreds of hours.

Currently, the Fire Marshal's Offices provides daycare inspections as requested, open burning permits, blasting permits, fumigation permits and fireworks permits at not cost. The plans reviewed are also done at no cost.

3. Service Provision

Investigations

Since the inception of the Fire Marshal's Office (FMO) in July, 2001, a total of 43 significant fires were investigated through June 30, 2003, primarily by the DFES Chief and Captain. Numerous other insignificant fires were looked at as well, but once easily determined as accidental, no official Fire Marshal reports were generated. As stated above the DFES Chief, Captain and three P/T/T Fire Marshals, all of whom are fully certified with Police Powers provide 24 hour response coverage. With the increase in time demands resulting from disaster and anti-terrorism emergency operations planning, the time demands have become overwhelming for the Chief to appropriately follow up on many of the arson cases. Similarly, the Operations Captain's time is limited by an ever increasing demand for daily fire and EMS responses. While the three Assistant Fire Marshals share in the response capabilities, their full time employment limits their ability to follow up on cases, which is a significant part of the investigation process. As a result, the Sheriff's Office assists by providing Investigators to assist in the follow up, however, by the nature of their business and increasing service demands, they have many other important cases and unexpected obligations of personnel in other divisions. This results in an inconsistent case follow up, particularly when we have multiple arson events. In cases of environmental crimes such as burning tires or other debris, charges pending usually gain compliance not only to prevent further acts, but to clean up the remnants the burned material.

Another role of the Fire Marshals Office during investigations is to assist citizens displaced by fires. The first priority upon the arrival at a residential house/apartment fire is to ensure that any displaced citizens have been offered assistance and /or shelter by support organizations such as the Red Cross. The FMO further works with media and local government to coordinate donations in cases where citizens have lost their belongings, especially when they have no insurance.

Inspections

Inspections are completed by request, and on a complaint and discovery basis for other violations. The State Fire Marshal's Office continues to provide inspection services in the schools and adult health care facilities. However, as the county growth continues, the service demands for inspections and other life safety code assistance continues to rise. This includes complaints from illegal burning and dumping to false alarms, alarm system malfunctions and of course, permits. The number of permit requests continue to climb particularly in the areas of blasting, fireworks and burning. As stated earlier, the FMO is not charging any permit fees. As the demands increase, permit fees would provide a source of revenue to offset the cost of additional personnel. The new Statewide Fire Prevention Code gives a standard list of permits with recommended charges.

Juveniles

Another benefit of the Fire Marshal's Office is a Juvenile Fire Intervention program. Upon determination that a juvenile started a fire, a child should be counseled and educated along with the

parents or guardian. During this process, determination is made as to whether the child continues in the program or is referred to other authorities for further counseling.

Explosives

While dynamite and fireworks permits are currently issued at no cost, other explosives, bombs and hoax devise investigations are handled by the FMO. Bombs disposals are handled through the Sheriff's Office, State Police and US ATF. However, if other hazardous materials are involved such as chemical or biological elements, the FMO partners with the Sheriff's Office, State and Federal Agencies.

3. Demographics of Client Base

The primary client bases for the prevention (inspections and plans reviews) program are the citizens of the county, with special emphasis on the business community and new development. The enforcement program entails hazardous materials transportation, fire investigations to include arson and environmental crimes.

4. Service Delivery Issues

The continued growth of the County will impact the Fire Marshal's Office in numerous ways. Increased businesses in the County creates a service demand for additional inspection services. This requires the Fire Marshal's Office to have adequately trained staff to meet the requirements of the County adopted Statewide Fire Prevention Code and to complete proactive inspections for all County businesses. Additionally, the increase in population and resulting increase in emergency responses by volunteers and field services creates additional service demands for fire investigations. The Fire Marshal's Office cannot currently meet the workload demands.

As the school population of the County increases, the incidence of juvenile fire setters is anticipated to increase, based on national trends and historical data. It is critical that adequate resources be directed to this program.

5. Policies and Mandates

Policies for field services come from multiple entities. General departmental policies are set within the department itself. As employees, the Fauquier County Department of Human Resources has policies that must be adhered to by employees and supervisors.

The Virginia Department of Labor, which administers the Occupational Safety and Health Administration (OSHA), has a litany of mandates and policies that all employees and employers must adhere to.

The Virginia Department of Fire Programs, the Virginia Department of Housing and Community Development and the Office of Justice Programs further cover Fire Inspectors and Investigations under rules and regulations as established. Each of these entities has minimum requirements that Fire Marshals, Fire Inspectors and Fire Investigators must meet in order to operate in the commonwealth of Virginia. In addition, Fire Investigators must conform to state and local requirements to maintain their Police Powers.

6. Comparison of Full-Time Fire Marshals per County

Number of Full-Time Fire Marshals per County

County	Number of Full-Time Fire Marshals	Fire Marshals per One Thousand Residents
Loudoun	13	.06
PWC	21	.07
Stafford	2	.02
Rockingham	5	.07
Albermarle	3	.04
Frederick	3	.05
Fauquier*	0	0

*Fire Marshal services are provided by the Chief and Operations Captain, and three part-time temporary personnel who are full time employees of other Fire Departments.

7. Revenue

Revenue may be generated to help fund the Fire Marshal's Office through regular services and some fines as follows:

- Plans reviews fees could have netted upwards of $15,000 over the past 12 months. Currently, a part time temporary employee of the DFES reviews site plans.
- Inspections permits such as daycare facilities and other businesses, Fireworks permits, Blasting permits, Commercial Burning permits etc, are services being provided at no charge. This permits should follow the same fee schedule recommended by the Statewide Fire Prevention Code.
- Enforcement of illegal burning and dumping can net reimbursement of hours spent on these incidents

I. 911 Emergency Communications Center

1. Program Description *Since the writing of this document, a new Communicaitons Director has been hired and numerous problems resolved.*

The 911 Emergency Communications Center, officially named the Warrenton Fauquier Joint Communications Center, operates 24 hours per day, 365 days per year and is located on the ground floor next to the offices of Fire Rescue & Emergency Services in the public safety building, 78 W. Lee St. While there are a total of 21 FTE positions assigned to this agency, four are listed as management level. Each of four shifts includes dispatchers who are cross-trained to handle "911 call taking", law enforcement dispatching to include VCIN (Virginia Criminal Information Network) and Fire Rescue dispatching. Each 12-hour shift is designed to provide one dispatcher each to Fire Rescue, Sheriff and Warrenton Police with the fourth position serving as a Shift Supervisor. However, on an all too regular basis, there are only three personnel working. This leaves no one to assist with overflow call volume, such as multiple incident dispatching. One example is for dispatchers to be called upon to provide medical instructions prior to emergency

personnel arriving at the scene. While doing so, another dispatcher must be available to handle the next 911 call.

2. Demographics of Client Base

The demographics for this service are the general population of the County, visitors, business and travelers though the County. Any person that accesses 9-1-1 in the County does so through this center. As the County grows and as cellular service continues to increase, the client base of this program will grow tremendously.

3. Service Delivery Issues

Continuing service will require constant monitoring of the number of calls that come into the communications center. As cellular phone technology changes, additional demands will be placed on 9-1-1 centers to deal with the myriad of location determination technologies.

Additionally, as emergency communications systems become more complex, i.e. the 800 MHz radio system and mobile data transmission, the job requirements for communications center employees will also increase.

4. Policies and Mandates

Policies for communications and emergency management come from multiple entities. General departmental policies are set within the department itself. As employees, the Fauquier County Department of Human Resources has policies that must be adhered to by employees and supervisors.

Minimum dispatcher qualifications are dictated by the Virginia State Police. Further, there are minimum standards for dispatchers that provide emergency directions via the telephone prior to the arrival of emergency personnel (EMD). Certification programs are available that will standardize the communications officer training. The Association of Public Communications Officers has standards that should be evaluated and implemented.

5. Recommendations

Upon researching past performance levels and examining future demands, especially with the new 800 mhz radio system coming online, the following is a list of recommendations to improve the Emergency Communications Services to Fire Rescue:

Immediate needs:

- All dispatchers answering 911 calls for Fire Rescue need to be certified in EMD (Emergency Medical Dispatching) which is a basic service standard
- Any and all measures need to be taken to ensure that a minimum of four dispatchers is on duty at all times. When a personnel shortage is identified through scheduling, the management personnel should fill-in the gaps.
- While it is important to have all dispatchers cross-trained, specific dispatchers should be identified and assigned only to the Fire Rescue positions, and assist the law enforcement dispatchers as necessary. This will help to achieve a desired level of competence on a

consistent basis, which is the goal of Fire Rescue. Furthermore, this group could become more specialized working directly with the Fire Rescue management, and subsequently, should improve recruitment and retention of dispatchers.

- The management needs to implement a program of "Quality Assurance" and as identified provide "Quality Improvement". Both of these areas are severely lacking.

Future needs:

- As recommended earlier in the facilities section, upon the Fire Rescue & Emergency Services office space being vacated, the Joint Communications Center should acquire that space to facilitate needed expansion for more personnel. Upon this expansion, design an area and console specifically for training. Another area should be designated away from the radio consoles for running VCIN reports for law enforcement personnel, specifically investigators.
- Initiate a long-range plan to provide personnel specifically for "call taking". This will allow the "dispatchers" to concentrate on monitoring ongoing incidents and communicating with emergency personnel, rather than constantly being distracted by incoming calls while they are working with multiple radio "talk groups".
- Set a "benchmark" by call volume as to when we should have two dispatchers assigned specifically to Fire Rescue on each shift.

J. Overall Service Plan Recommendations:

1. Fire Rescue Support Immediate Needs (FY05)

    a. Convert a P/T/T Equipment Technician position to a FTE to maintain and service all technical equipment such as SCBA, air compressors and gas meters. This position will also establish and maintain a respiratory compliance program to include air quality and facemask fit testing as well as monitors our monitor/defibrillator maintenance contract. Reference section II-A for specific needs. The budget impact is $???
    b. Convert two P/T/T Training Division positions to two FTE's. One position should be a Training Coordinator to manage the overall operations for training needs for all fire and rescue personnel. The second position is currently funded to teach both EMT high school and adult programs. The budget impact would be minimal due to the expenditures currently budgeted for numerous P/T/T positions.
    c. Hire a Volunteer Fire Rescue Coordinator to assist all volunteer personnel with and their companies with the many administrative functions required or mandated.

2. Operations Immediate Needs (FY05)

    a. Add five firefighter/paramedic positions. One position each would be added to the three stations, which are staffed 10.5 hours four days per week. This would bring them to a 12 hour staffing level five days per week. Two positions would be dedicated to filling in sick and annual leave vacancies.

b. Add one Assistant Chief position to the administrative staff of the DFES to assist the Chief in the overall operations of all Fire Rescue and Emergency Services. The current Captain position would move to strictly supporting field operations and complement the current four DFES Lieutenants to provide 12-hour coverage of the DFES supervisors, which are currently on 10.5-hour schedules.
c. Add two full time fire marshal positions. Two positions will allow for a combination of personnel to provide 24-hour response coverage to the fire rescue personnel. It will also provide personnel to conduct appropriate inspections and permitting as well as follow up on all investigations.

3. Future Staffing Needs

This study recommends the staffing plan migrate toward providing daytime staffed engines and medic units (ambulances with paramedics) in the stations based on service demand and available resources. The Fire Rescue Association Chiefs along with the Fauquier Hospital Emergency Department Physicians, Drs. Sitta and Barker, have raised the issues as to when to implement 24 hour/seven day per week career paramedics.

The first station should be New Baltimore (FY06). As the Warrenton Rescue Squad call volume has significantly increased, the New Baltimore staff will continue to take "second" calls in that area. When this happens, there is no coverage for the New Baltimore/Vint Hill area. This plan proposes staffing the New Baltimore Engine with three personnel, on a 12-hour shift. At least one of these personnel will be ALS certified (also known as a Paramedic Engine Company). This will allow either crew to provide ALS care.

The second station should be Remington or Lois (medic unit in Remington and engine at Lois). Once the Bealeton station is built, staff both medic unit and engine at that location. (FY07)

The third area to increase this staffing should be the "northern area". Continued volunteer support and lower service demands dictate a recommendation to staff a medic unit in Marshall and a Paramedic Engine crew in The Plains. A supervisor would bring minimum staffing to a total of six personnel. (FY08) Based on anticipated growth and improvement to the water system, these recommendations should be reviewed annually and increased as necessary.

The fourth station should be Catlett. Here the service demand should not increase substantially, but this station will be the primary unit to the airport, on the initial dispatch to for Vint Hill and second due into the Bealeton area. (FY09).

Per the request of The Association Chiefs, 24-hour career paramedics should be in place no later than FY2010. This request is based on current (FY03) service demands and career staffing levels. While this request should be in place no later than FY2010, the demands for service and career staffing levels should be reviewed every two years to determine if it would be appropriate to implement this recommendation sooner.

4. Facilities.

   In an effort to meet the service demands and maintain good recruitment and retention for career and volunteer personnel, facilities must be vastly improved.

For the purposes of this document,, refer to the end of section III, Facilities.

5. Fire Marshal' Office

   In FY05, hire two full time Fire Marshals to provide full service to Fire Rescue and the citizens. The current Chief and Captain will continue to assist with investigations on large incidents and fill in for leave.

6. Communications

For the purposes of this document, refer to the end of section I,, Communications.

Possible Alternative Revenue Streams

Fee for Service Billing

In order to deal with increasing service demands, many counties and municipalities have initiated programs to bring in alternative revenue streams, separate from the traditional means such as tax levies, donations and government general funds. The most common form of this is charging insurance carriers for Emergency Medical Services (EMS). This process has proven to be most popular in rural counties similar to Fauquier, who are primarily dependent upon a volunteer force to provide service, and receive a substantial portion of their revenue from public donations and real estate taxes. Billing insurance companies for EMS services can insure a consistent revenue stream that is proportional to the level of service demand.

Current forms of EMS insurance billing allow for counties to raise revenue without raising taxes and fees in their respective service areas. According to the Office of the Inspector General of the Department of Health and Human Services, residents in their respective counties and municipalities are not responsible for any co-pays and deductibles not covered by their respective third party payers, HMO's or government medical programs. One's residency and the taxes and fees that come with it are sufficient to wave various co-pays and deductibles. It also important to note that EMS reimbursement currently typically accounts for one fourth of 1 percent of all health care costs.

Any county or municipality that chooses to set-up an alternative revenue stream, specifically an EMS reimbursement program, must have the ability to provide comprehensive record-keeping, collections and management of the program. Currently there are numerous third-party options to outsource these tasks to private companies. The industry average is a 10 to 12 percent cut of all accounts received by the third-party in order to provide all the aforementioned record keeping, collections and service management. This would be in addition to a 70% average collection rate from other counties and municipalities that have tried similar programs.

The following chart shows the details of a possible EMS reimbursement program for Fauquier County.

	Service Rendered	Charge
AO 429	BLS (Basic Life Support) Emergency	$263.90
AO 432	Paramedic Intercept	$288.64
AO 433	ALS (Advanced Life Support) Emergency	$453.58

Early research indicates that revenue based on current service levels could generate between $600,000 and $1,000,000 for EMS and between $116,000 and $209,000 for motor vehicle accident services provided by engine/squad companies.

911 Calls for Service Volume

Year	Calls (Fire)	Calls (Rescue)	Total Calls	Numerical Increase	Percent Increase
1995					
1996			3,949	N/A	
1997			5,241	1,292	
1998	1,269	4,201	5,470	229	
1999			8,061	2,591	
2000	3,695	5,508	9,203	1,142	
2001	4,001	5,744	9,745	542	
2002	4,225	6,071	10,296	551	
2003 (projected)	4,436	6,374	10,810	514	5%
2004 (projected)	4,658	6,693	11,351	541	5%
2005 (projected)	4,890	7,027	11,917	566	5%
2006 (projected)	5,135	7,379	12,314	397	5%
2007 (projected)	5,391	7,748	13,139	825	5%
2008 (projected)	5,660	8,135	13,795	656	5%
2009 (projected)	5,943	8,542	14,485	690	5%
2010 (projected)	6,240	8,969	15,209	724	5%