

## Response to Questions on the FY 2008 Advertised Budget Plan

**Request By:** Chairman Connolly

**Question:** Provide information concerning the Fire and Rescue Department's request for consideration to add a fourth person to each ladder truck per shift. In addition, provide information on grant funding available for services provided by the Fire and Rescue Department.

**Response:**

Background: Increased minimum staffing requirements for various types of Fire and Rescue apparatus equipment and other programmatic expansions were identified in the Fairfax County Fire and Rescue (FRD) *Needs Analysis – 2002* report. The purpose of the report was to convey and plan for service demand requirements anticipated by FRD. Since the publication of the report, many initiatives outlined in the document have been evaluated on a case-by-case basis and funded based on service demands necessitated by the County's physical features, building/structure make-up and demographic trends, as well as, funding availability and long-term cost implications. Below is a table of initiatives presented in the *Needs Analysis – 2002* report that have been funded since FY 2003.

**Funded Initiatives Outlined in the *Needs Analysis – 2002* Report**

<b>Initiative</b>	<b>Fiscal Year</b>	<b>Initial Amount Budgeted</b>	<b>New Positions</b>
Hazardous Materials Response Unit	2003	\$1,394,779	23/23.0 SYE
Emergency Medical Services Infrastructure Development and Advance Life Support Provider enhancements	2005 & 2006	\$7,396,672	67/67.0 SYE
Four Person Minimum Staffing for Rescue Companies	2007	\$2,518,440	32/32.0 SYE
7 <sup>th</sup> Battalion	2007	\$1,358,949	8/8.0 SYE

Other initiatives outlined in the *Needs Analysis – 2002* report have not been funded. One of these initiatives is the request to increase the minimum staffing of all ladder trucks to four persons per shift.

Four Person Minimum Staffing on Ladder Trucks: The County currently has 14 ladder trucks assigned to fire stations throughout the County. Ladder trucks are used to access the upper floors of a structure during fire incidents; to rescue trapped occupants over ladders; and to ventilate smoke and superheated gases from occupied areas. FRD is seeking to add 52/52.0 SYE Firefighters for this initiative. The cost to add 52/52.0 SYE Firefighter positions, including fringe benefits and operating expenses, would be \$5.2 million in FY 2008. Funding to increase the minimum staffing on ladder trucks was not recommended in the FY 2008 Advertised Budget Plan.

### Fire and Rescue Department Provided Information

Attached are an October 2, 2006 memo to the County Executive and a slide show presentation detailing the FRD's request to add a fourth person to each ladder truck per shift.

#### Fire Incident Data as Provided by ICMA

In order to provide a comparison of the number of suppression incidents occurring in the County with that of similar jurisdictions, ICMA benchmarking data for all of the participating jurisdictions with populations at, or in excess, of 1 million persons and participating jurisdictions (including Fairfax County) across Virginia with populations greater than 100,000 persons was analyzed. The data indicate that Fairfax County has significantly fewer structure fire incidents than similarly sized jurisdictions. In addition, on a per capita basis, the County had one of the lowest structure fire rates of the jurisdictions reviewed. FRD, however, has expressed concerns with comparability of the data submitted by the department with that of other participating jurisdictions.

#### Grant Funding Availability

FRD continually seeks opportunities to apply for grant funding to support County programs and has identified the federal Staffing for Adequate Fire and Emergency Response (SAFER) Grant as a possibly source of partial, short-term funding for increasing the minimum requirement to four persons per ladder company. The stated purpose of the SAFER Grant is to help fire departments enhance the number of frontline firefighters to increase their staffing and deployment capabilities and ultimately attain 24-hour staffing. Currently, the County fully staffs all fire stations on a 24/7 basis. The SAFER Grant would provide partial funding for the salaries of newly hired firefighters over the 5-year term of the grant. If awarded in full for 52/52.0 SYE Firefighter positions, the County's obligation for the five-year period of the grant would be approximately \$21.0 million while the SAFER Grant would fund approximately \$5.4 million or less than 21 percent of the total cost. In addition, costs associated with overtime, operating expenses and support personnel are not eligible through the grant. It should also be noted that the County applied in 2005 for SAFER Grant monies to assist in defraying the cost of adding 29/29.0 SYE positions required to staff a fourth person on each rescue company; however, no funding was awarded.



# County of Fairfax, Virginia

## MEMORANDUM

DATE: October 2, 2006

TO: Anthony H. Griffin  
County Executive

FROM: Chief Michael P. Neuhard  
Fire and Rescue Department

SUBJECT: Safe Staffing for Ladder Truck Companies

In July 2000, the Fire and Rescue Department implemented a task force to analyze and report upon the resources necessary to provide effective, efficient, and essential fire and rescue services to our citizens and visitors. Paramount in the delivery of public safety services is the responsibility to maintain the health, safety, and well-being of our providers. During every incident, the demands on uniformed firefighters can push against the boundaries of mental and physical capability, impacting effectiveness and challenging life safety. The recommendations developed by the task force were presented in the document entitled, Needs Analysis – 2002, which was submitted in January 2002. Embedded in the analysis is the principle of safe staffing – staffing required to provide optimal service to the public while ensuring to the greatest extent possible the safe deployment of Fairfax County firefighters.

The purpose of the 2002 report was to forecast and plan for service demand requirements. Annual department budget submissions since that time have been designed to identify these staff requirements in a systematic manner, recognizing the need to balance firefighter and related staff increases with budgetary and training requirements and, to the extent possible, in concert with the opening of new fire stations. The need for four-person staffing on rescues has been identified since the FY 2001 budget submission and the need for four-person staffing on trucks has been identified since FY 2003. Fundamental political and social changes have directed the priority of our strategic planning efforts in many ways, and resources have been acquired to address an environment newly charged by the potential for terrorist incidents, catastrophic hurricanes and flooding, changes in population structure, and in the face of increasing congestion.

Substantial progress has been made over the past five years –

- The Board of Supervisors has approved full staffing for hazardous materials responses in FY 2003;

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Fire and Rescue Department  
4100 Chain Bridge Road  
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- Enhanced staffing for the provision of emergency medical services and staffing to open two stations in FY 2005 and FY 2006;
- Full four-person staffing for rescue companies;
- Staffing for the 7<sup>th</sup> Battalion in FY 2007.

The Board also adopted the mission-critical support staff ratio identified in the report: one support person per ten uniform positions. This ratio has been instrumental in allowing the department to manage its growth in compliance with county financial, personnel, and other regulations. As the growth of the county's population and infrastructure increases, so do the challenges of our public safety and service delivery mechanisms, staff, and other resources. The following are the remaining priority staffing requirements for the next three fiscal years:

1. Four-person staffing on 14 truck companies – 52 uniform positions (3.7 uniform positions per riding position), and 4 support positions. Estimated cost - \$ 5 million.
2. Safety officers – 4 uniform positions to provide 2 safety officers per day. Estimated cost - \$582,000.
3. Staffing for Wolf Trap Fire Station 42 – 26 uniform positions and 3 support positions. Estimated cost - \$3.3 million.
4. Field command team officers for each of the 7 field Battalion Chiefs – 27 uniform positions (3.7 uniform positions per riding position), and 3 support positions. Estimated cost - \$4.9 million.
5. Enhanced staffing for the Fire and Rescue Academy -- 6 uniform positions. Estimated cost \$548,000.

The FRD FY 2008 priority is to add a fourth person to each truck company. The goal of these safe staffing requests is to ensure that Fairfax County citizens and visitors are availed of the highest possible protection of life and property, while also ensuring that Fairfax County firefighters are properly equipped with every physical and human resource needed to ensure their effectiveness and safety.

The attached report details the specific factors and regulations that support this agency priority.

#### Attachment

cc: Robert A. Stalzer, Deputy County Executive  
Susan Datta, Director, Office of Management and Budget  
Assistant Chief David L. Rohr, Operations  
Acting Assistant Chief, David M. McKernan, Administrative Services  
Patricia Devlin, Senior Fiscal Officer

Attachment

FIRE AND RESCUE DEPARTMENT

SAFE STAFFING INITIATIVE

**Four Person Minimum Truck Company Staffing Request**

**Purpose:** The goal of adding a fourth person as minimum on truck companies in Fairfax County is to improve civilian survival potential, reduce property losses, reduce firefighter injuries, avoid firefighter deaths, reduce firefighter workloads, and enhance emergency scene operations.

**Introduction:** Fairfax County, Virginia, is a diverse and thriving urban county encompassing 395 square miles. As the most populous jurisdiction in both Virginia and the Washington metropolitan area (metro area), the county's population estimated at 1,041,242 in 2005, exceeds that of seven states and is forecasted to nearly double within the next twenty years. The Fairfax County Fire and Rescue Department (FCFRD) protects over 378,000 residential dwellings in the county along with 103.5 million square feet of commercial office space - the largest office space market in Virginia, and 30,000 acres of public parkland. Dense business centers are located in the Tysons Corner, Baileys Crossroads, Chantilly, Reston, and Herndon areas. These business centers are home to six Fortune 500 company headquarters, seventeen of the largest locally based federal contractors, twenty-three of the top thirty-five largest technology employers and eight of the area's twenty largest foreign owned companies. Fairfax County Public Schools serve over 165,000 students at 238 different education centers, and the County's Public Library system is the largest in the Commonwealth of Virginia. Campuses of three major universities and the largest community college in the state as well as eight hospitals are located within the county. Fairfax County is also home to numerous federal agencies, including several key agencies involved in Homeland Security such as the Central Intelligence Agency and the National Reconnaissance Office as well as having a visible presence by key defense contractors such as Northrop Grumman, Lockheed Martin, and SAIC.

FCFRD is a full-time, career organization, supplemented by qualified volunteer personnel, mitigating threats to life, property, and the environment through education, prevention, and effective response to fire, medical, environmental, and technical rescue emergencies. FCFRD is staffed by 1,343 uniformed members and 128 civilian employees delivering services throughout its major service areas. The Operations Division includes 36 fire and rescue stations housing 36 engine companies, 14 truck companies, 8 heavy rescue companies, 1 hazardous materials response team, and 41 EMS transport units. During FY 2006, FCFRD responded to more than 90,000 emergency service incidents.

**Background:** Each fire and rescue response unit (Engine, Truck, Rescue, and EMS Unit) is staffed with firefighters who have mission-critical, unit specific responsibilities to initiate upon arrival at emergency incidents. FCFRD truck companies are currently staffed with three firefighters who are solely responsible for:

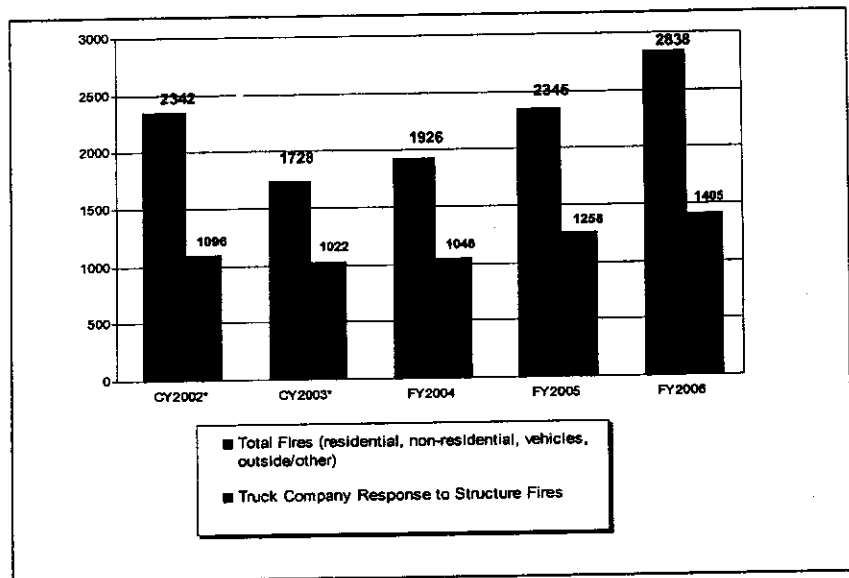
- ♦ Deploying ladders to upper floors in residential and commercial buildings for conducting searches above the fire (an area of extreme danger since heat and smoke rise)
- ♦ Forcing entry into secured areas
- ♦ Rescuing trapped occupants over ladders
- ♦ Ventilating smoke and superheated gases from occupied areas
- ♦ Controlling utility services
- ♦ Facilitating fire attack and firefighter escape
- ♦ Preventing fire spread using high-caliber elevated water streams

Truck companies also respond to a range of non-fire incidents including:

- ♦ high-level rescues requiring an aerial ladder/tower;
- ♦ elevator rescues;
- ♦ natural gas and water leaks;
- ♦ carbon monoxide alarms;
- ♦ incidents along elevated Metro lines or highway ramps;
- ♦ emergency medical calls;
- ♦ children and pets locked in vehicles;
- ♦ water/ice rescues; and
- ♦ any other type of call where aerial ladder access or specialized entry/cutting tools might be needed.

Truck companies are most often assigned the search and rescue function on any fire, but especially so on high-rise fires. Large open floor areas lacking traditional fire barriers (e.g., walls and doors) contribute to rapid spread of fire and the products of combustion. Fairfax County has several "clusters" of high-rise districts in Baileys Crossroads, Tysons Corner, Reston, and Herndon. These structures pose unique challenges including large numbers of rescues and evacuees, lengthy delay in the ability of firefighting forces to reach a fire incident on an upper floor, and heavy fire loading due to the nature of the business and the lack of control over tenants' choice in interior finishings. Modern construction materials such as lightweight wooden "I" beams, trusses, and other lightweight components collapse sooner, while building materials containing glues and plastics increase the heat and toxic smoke. Responses to high-rise fires require uniquely adapted tactics and strategies. More importantly, however, they require additional resources in terms of apparatus, equipment, and sheer numbers of personnel. It is a commonly-accepted principle in firefighting that a high-rise fire emergency requires *six times* the number of personnel that would be otherwise required to combat a straightforward fire in a residence or small commercial occupancy.

FCFRD truck company responses to structure fires in Fairfax County have increased 28% since FY 2002, while the total number of fires has increased 21%. The complexities of fire types as well as the increase in population and building construction have contributed to these increases. Fire activity in Fairfax County over the past two years has included multiple large-loss fires with several significant firefighter burn injuries, including an incident at a small, cabin-style motel on the Richmond Highway corridor in which a veteran suppression captain and a firefighter on a truck company were caught in a flashover while conducting a search of the cabin. Had there been a fourth member of the crew to assist the truck driver with outside ventilation and safety efforts, perhaps the flashover could have been better-predicted and/or completely avoided.



**Industry Assessments:** Over the last 20 years, numerous studies have been conducted throughout the fire service to evaluate the performance of 3, 4, and in some instances a 5-person truck company during fire ground operations. A Dallas, Texas Fire Department study revealed 5-person crews demonstrated the most coordinated, efficient, and effective attack on fire and search and rescue operations. Four person crews demonstrated satisfactory performance in controlling fire and effecting citizen rescue. However, 3-person crews had little, if any, margin for error, and the delay in that crew's ability to perform their assigned task was determined to be a factor that may place control of the fire beyond the crew's capability.

In the Dallas study, a 3-person crew took an average 18.8 minutes to conduct interior firefighting operations. All personnel were physically exhausted at the conclusion of the test, and were unfit for further firefighting actions. The four-person crews, performing the same actions under the same conditions, completed the tasks in an average 10.29 minutes, and upon completion were near exhaustion. The 5-person crew, not surprisingly, completed the tasks in much less time (average 6.15 minutes) and showed little evidence of fatigue. As is apparent, each additional member to the crew decreases the time required to complete the required tasks by nearly 30% over the crew with less staffing. Although the Dallas test involved engine companies, it is not unreasonable to assume that the same or remarkably similar results would be obtained if truck companies were being tested in the required tasks of forcible entry, search, rescue of victims, ventilation, laddering, overhaul, salvage, and utility control.

In September 2006, the FCFRD conducted a series of truck staffing evolutions involving ladder placement, entry/egress, and building searches to examine the efficacy of

a 3-person truck crew versus a 4-person truck crew. The table below summarizes the time savings of one additional firefighter on a truck.

<b>Crew of 3</b>	<b>Crew of 4</b>	<b>Summary Evolution Description</b>	<b>Time Saved with Added FF</b>
<b>EVOLUTION 01</b>  5:05	<b>EVOLUTION 02</b>  1:55	Placed two 28-foot ground ladders for entry/egress. One ladder was placed on Side "A" and the other was on Side "C".	3:05
<b>EVOLUTION 03</b>  5:49	<b>EVOLUTION 04</b>  3:15	Placed two 28-foot ground ladders for entry/egress. One ladder was placed on Side "A" and the other was on Side "C". The second floor, quadrant "D" of the burn building was searched.	2:34
<b>EVOLUTION 05</b>  1:56	<b>EVOLUTION 06</b>  1:13	Conducted primary search of entire third floor (4 rooms).	:43

**Fairfax County Fire and Rescue Department Truck Staffing Evolutions, September, 2006**

Another study, from the Westerville, Ohio, Fire Department on staffing for survival revealed that the performance of standard firefighting tactics by a 4-person crew *decreased by 80%* the amount of time it took 3-person crews to perform similar rescue activities of potential fire victims.

In December 2002, the Federal Emergency Management Agency (FEMA), through the United States Fire Administration, published *A Needs Assessment of the U.S. Fire Service*. Out of 12,240 survey results, 8,416 were coded and keyed. Most notably, of all the responding jurisdictions serving a populace of 1 million-plus, as does the FCFRD, not a single agency other than FCFRD stated that they staffed truck companies with less than 4 full-time personnel. This objective study reveals the baseline for best business practices among comparable jurisdictions for safe staffing, especially when coupled and viewed in concert with the mandate of NFPA 1710.

The Arlington County Fire Department's After Action Report for the 9/11 attack on the Pentagon specifically states, "Some ACFD companies carried only three-person crews. This hampered the speed of initial operations, since companies not engaged in pumping or aerial operations could not be split into 2 two-person teams. Four-person crews would have virtually doubled their capabilities" (Annex A, Page A-16, paragraph 4).

Furthermore, a fourth firefighter on a truck company will allow the FCFRD to be compliant with OSHA's "Two In/Two Out" Rule {Standard Number 1910.134 (g) (4) (i) and (ii)}, which will allow the immediate initiation of lifesaving and firefighting operations should a truck company arrive at a fire emergency ahead of an engine or heavy rescue company (each staffed



with four personnel). In short, the citizens will not have to wait for the arrival of additional resources before FCFRD personnel can legally perform their job functions.

**Risk Factors to the Community and Firefighters:** As evidenced above, various studies demonstrate that at the same time it takes longer for a 3-person crew to perform basic firefighting activities; it also requires that short-staffed crew to work longer and harder to meet their objectives. This intense physical activity, under the stresses (psychological and physiological) imposed on the human body by firefighting, can result in physical injury to the firefighter and potentially worse outcome for the citizen who is trapped in a fire emergency. The US Fire Administration documented 106 firefighter fatalities in 2005. Forty-eight, or 45.3%, of those fatalities were the result of heart attacks. An additional seven fatalities were attributed to cerebrovascular accident (CVA) or stroke. The average age of a deceased firefighter in 2005 was 45 years old. This calendar year, as of May 1, 2006, there have been 32 firefighter fatalities. Heart attacks are the number one killer of firefighters, and most firefighter fatalities occur on the fire ground, or responding to/returning from emergency calls.

The FCFRD has, to date, been very fortunate in not having a member of a firefighting crew experience a cardiac emergency while working at a fire. However, statistically, we are "beating the odds" right now, and statistically, there will come a day when the odds will prove correct. By adding a 4<sup>th</sup> firefighter to a functional unit that is expected to perform a wide variety of physically demanding tasks in a short period of time, it is only logical to infer that the decreased physical demands on each member of that crew as an individual will, in turn, enhance their performance as a team, thus directly benefiting those we serve. In addition, working in teams of two, truck company members are better equipped and prepared to assist one another should one of them experience some form of personal emergency.

Lastly, adding a 4<sup>th</sup> member to truck companies will enhance the level of management and supervision. Crews of three require the officer to perform more task-oriented functions, resulting in less time to focus on strategic and tactical decision-making; the officer's intended role. Allowing truck company officers to allot additional time in an emergency to managerial skills will prove highly beneficial to incident safety, and outcome.

**Summary:** Protecting the residents, visitors, and property of Fairfax County is the principal reason for the existence of the fire and rescue department. In order to maintain departmental readiness, compliance with federal regulatory standards, safe staffing of our workforce, all the while improving our response and timely delivery of services, one additional firefighter is required on a truck company.

#### **Budgetary Implications of the Fourth on the Truck Companies:**

- Truck full year staffing: 52 uniform positions (includes staffing factor) and 4 support staff -- \$4.9 million.



# Ladder Truck Staffing

Fairfax County Fire and Rescue Department  
Chief Michael P. Neuhard



# 10801 Windcloud Court

Providence District

- This fire required an enormous amount of truck work (ground laddering, aerial stream devices and rescue) to assist in extinguishing the fire.
- A “Mayday call” was initiated while interior operations were underway.
- Ground ladders assisted the escape of trapped firefighters after a collapse.
- Ground ladders are a primary means of escape in the event a firefighter becomes trapped.
- Truck companies are relied on for their aerial ladders and master streams in structures this size.
- Truck companies (three people) are required to perform all of these functions as soon as they arrive on scene of a working fire.





## 7602 Southern Oak Drive

Mount Vernon District

**Multi-family dwelling requiring the first due truck (three firefighters) to immediately:**

- Perform rescues from front and rear.
- Ground ladder the front and rear of the building.
- Prepare for aerial hose stream device deployment.
- Ladder and search attached exposures.



Front of structure



Rear of structure

## S. Florida Street

### Mason District



- Two firefighters from T410 deployed a ground ladder to attempt rescue of a woman who was hanging in the window with her child in her arms.
- The 3rd firefighter was inside (by himself) conducting a search for the other reported person trapped while also trying to close the door leading to the apartment where the mother was awaiting rescue from the ground.
- The woman jumped as soon as the ladder hit the building, landing on the FF causing a injury to his back and leg.

## North Rosser Street

### Mason District

- The driver of Truck 410 dropped off 2 firefighters to access the front of the structure and then drove the vehicle around the entire building to access the fire side of the structure.
- Active fire was reported with a total of 2 confirmed trapped in the fire apartment. Two firefighters from T410 removed the 2 trapped occupants from the fire apartment while the driver, operating alone, was required to ladder the building (aerial and ground ladders) and remove a third trapped occupant from the balcony above the involved unit.





## Patrick Street Hunter Mill District



- Laddering is a primary responsibility of the first due truck company
- Laddering takes a significant amount of personnel resources to accomplish
- Laddering must be accomplished on all side of the structure to ensure secondary escape routes for firefighters working inside the fire structure
- Due to limited personnel on the trucks rescues can quickly overwhelm the first truck crew and prevent ladders from being placed around the structure

## **Crest Lane**

### **Dranesville District**

Establishing aerial master streams in large structure fires requires two personnel from the truck to accomplish the task. The remaining member of the truck company is then responsible for laddering all side of the fire structure. This is very difficult and time consuming for one member to accomplish in a safe and timely manner.





## Mary Caroline Circle Lee District



### **Multifamily dwellings fires require enormous amounts of truck support**

- Rescues and evacuation of large amounts of occupants can quickly overwhelm the first truck crews
- Quick deployment of aerial devices and ground ladders is required to safely remove occupants as well as provide ingress and egress of firefighting crews
- Truck crews staffed with three are quickly outnumbered by the responsibility of placing aerial and ground ladders in large structure fires. Set backs and building size are major factors contributing to potential delays in adequate ladder placement for rescue and secondary egress.