SECTION 4

FIRE-RESCUE SERVICE FUNCTIONAL ELEMENTS

This section of the *Fire, Rescue, Emergency Medical Services, and Community Risk Reduction Master Plan* addresses MCFRS functional elements -- emergency functions, non-emergency functions, facilities, apparatus and equipment, and communications. Each functional area under these five main categories includes a discussion of the existing status, associated issues and needs, and future efforts to address these issues and needs and to improve services.

EMERGENCY FUNCTIONS

INCIDENT COMMAND

Description

Incident command is a system established at the beginning of an emergency incident that places one qualified individual in charge of all on-scene personnel, equipment, and other resources to achieve the desired outcome (i.e., minimize the number of casualties and property damage, while practicing safety and cost-efficiency and abiding by applicable laws). Incident command is the most important function at the scene of a fire, rescue or EMS incident. MCFRS uses the nationally-recognized **Incident Command System (ICS)** to manage incidents. The ICS is an **Incident Management System (IMS)** derived by the Federal Government under its **National Incident Management System (NIMS)**.

At the top of the ICS is the **Incident Commander (IC)** who is responsible for directing all actions in response to the unique set of circumstances presented by each incident. For fire-rescue incidents, the IC is typically, but not always, the highest-ranking firefighter-rescuer on the scene. This individual establishes command upon arrival and also establishes a command post – usually the vehicle in which they are riding, although a different command post vehicle and/or location may be established as incident operations progress. The IC may change over the course of the incident as higher ranking personnel arrive. For example, the initial IC may be the Lieutenant or Captain of the first arriving unit, followed by a Battalion Chief or LFRD Duty Officer, followed by an Assistant Chief, Deputy Chief, LFRD Chief or the County Fire Chief. A chief-level officer serves as the IC of any large-scale fire, rescue, or EMS incident.

The ICS command structure can be as simple as an IC commanding a few units at a collision scene, or as complex as an IC commanding a large command staff involving several sector officers at large-scale incidents such as structure fires, hazmat incidents, and mass casualty incidents. On large-scale incidents, the ICS could include the establishment of **ICS Sections**, **Branches, and possibly Divisions,** and corresponding **Section**, **Branch, and Division officers** in charge of command and control, planning, operations, logistics, safety, and other functions. For a major structure fire, the MCFRS IC will typically establish a command structure and staff including a fire suppression sector officer, safety sector officer, water supply officer, staging officer, EMS/triage sector officer, rehabilitation ("rehab") sector officer, and possibly others depending on the scope of the incident. When hazardous materials are involved, a hazmat sector will also be established, led by a hazmat sector officer. The ICS is designed to be **flexible**, so that it can expand, contract, or otherwise change, as needed, during the course of an incident.

Related to the ICS is another type of IMS– the Disaster Command System (DCS), which provides for a unified command structure for major incidents involving the response of multiple agencies. Like the ICS, the DCS features a single IC and has four sections: Planning, Operations, Logistics, and Administrative /Finance. Montgomery County uses the DCS during major incidents or disasters impacting all, or a significant portion of, the County population. The agency responsible for commanding a major incident and appointing the IC is pre-determined in the County's Emergency Operations Plan. MCFRS is in charge of all fire-rescue related incidents (e.g., major fires, mass casualty incidents such as train wrecks, hazardous materials releases, building collapses, etc.). MCP runs law enforcement-related incidents (e.g., sniper incidents, civil disturbances, terrorism, etc.). The County Department of Health & Human Services is in-charge of health epidemics (e.g., flu, West Nile Virus, "SARS," e-coli outbreaks, etc.). Other County departments (e.g., DPWT, DEP) would be in charge of incidents where public safety is not a major issue (e.g., pollution incident, fuel shortage). Incident command may also be passed from one agency to another at an appropriate point during the incident. For example, MCFRS has command during the emergency phase of a major hazardous materials spill; then command is passed to DEP for the cleanup/recovery phase. The key fundamentals of the DCS are that a **unified command** (with a single IC) is in place throughout the incident, and **all departments, agencies, and volunteer disaster services organization work together toward a common set of response and recovery goals**.

Although field personnel implement the ICS at an incident scene, the DCS is implemented by the **Emergency Management Group (EMG)** from an off-scene facility -- the **Emergency Operations Center (EOC)** or Alternate EOC if the EOC is unusable. If both the EOC and Alternate EOC[1] are unusable, another facility or several facilities having direct communications connectivity would serve the EMG. The DCS and ICS systems, although implemented at different sites, are linked by communications systems and work in tandem to address all on-scene and off-scene issues and needs related to the incident. On-scene incident command personnel may use commonplace vehicles such as SUVs or vans, or they may use MCFRS and/or MCP mobile command post buses at long-term incidents. The two buses are outfitted with several types of communications equipment, telescoping video cameras, lighting systems, furniture and various creature comforts to support the IC and the command staff. The MCFRS Mobile Command Post unit will have the capabilities to transmit live feed to the cable TV network and to transmit video.

---

[1] As of January 1, 2005, management and oversight of the EOC and Alternate EOC became the responsibility of the County's newly established Homeland Security Department. Prior to that date, MCFRS had this responsibility.

Another component of IMS is the **Incident Management Team (IMT).** An IMT is comprised of qualified, ICS-trained command and general staff personnel who are assembled in response to an unusually large, complex, and/or long-term incident (e.g., tropical storm, hurricane, winter storm, etc.). The MCFRS IMT consists of personnel trained to perform the functions of the command and general staff of the ICS. These functions include command, operations, planning, logistics, and administration/finance, as well as safety, information, and liaison. The IMT provides incident management assistance to complement and support the existing ICS organization. The anticipated size, scope, and duration of an incident, as well as the anticipated demand on MCFRS resources, will be used when determining the need for an IMT. The MCFRS IMT can operate in place of, or in conjunction with, the County's Emergency Management Group (EMG) during a full EOC activation or partial EMG during a partial EOC activation. Unlike the EOC, which supports a large-scale event from a "global" perspective, the scope of the MCFRS IMT is specific to MCFRS and its ability to effectively deliver services during large-scale events. The IMT can also serve in between the field ICS and the EMG, supporting both groups. The IMT functions from a building or temporary structure that can accommodate/support a group of 6-10 personnel for continuous 24-hour operations for up to several days.

Future Incident Command Issues, Needs and Strategies [»Cross-reference: Recommendations 73-76, Section 6]

Looking to the future of incident command, the MCFRS must take steps to ensure that incident command meets the demands of **incidents of increasing scope and complexity**. In addition to commonly occurring incidents involving fires, various types of rescue, hazmats and destructive devices, future incidents could very well involve many forms of terrorism and mass casualties. As explained in Section 3 of this Master Plan, acts of terrorism occurring in or near Montgomery County could involve a wide array of weapons of mass destruction (WMD) including conventional explosives and firearms, incendiary devices, "dirty bombs," chemical warfare agents, biological agents, radiological materials and/or nuclear devices. Mass casualty incidents occurring in or near the County could involve crashes of commercial airlines, trains (i.e., passenger trains -- including METRO -- or freight trains), buses, and other highway vehicles; building collapse; natural, technological or societal disasters; and/or acts of terrorism. Most terrorism incidents also will be mass casualty incidents. **The MCFRS, as well as other County departments and agencies, must be ready to establish and maintain effective incident command for these complex incidents**.

Mandates from OSHA and MOSH, as well as the provisions of NFPA Standard 1500, have increased the scope of responsibilities (e.g., scene safety, accountability of personnel and resources, etc.) placed upon fire-rescue incident commanders. Between 2005 and 2015, new technologies will become available that will further enhance the capabilities of incident commanders to manage incidents. **The MCFRS will need to continuously explore ways in which new technology can be applied to incident command as well as other incident scene functions.** Command staff will have to become proficient in the use of this technology, in addition to being able to maintain the vigilance and skills necessary to manage an incident.

One facet of incident command that will need to be improved over the ten-year period of 2005 to 2015 is incident command for regional incidents. Major incidents involving terrorism and/or mass casualties can no longer be viewed as single-jurisdictional incidents; rather, they must be viewed in a regional perspective. Whether a catastrophic incident occurs within Montgomery County or a nearby jurisdiction, MCFRS resources will very likely be involved in the response -- conventional forces, specialty teams, Metropolitan Medical Response Team, and/or individuals serving on regional or national Incident Management Teams (IMTs). Regional incident command will be the only effective manner in which to manage the vast array of multi-jurisdictional resources. The 2002 sniper incident was perhaps the first time that a regional-type ICS had been used in the Washington Metropolitan Area, with the Montgomery County Police Chief serving as the IC of the multi-jurisdictional incident involving law enforcement, EMS, public schools, and mental health officials from several counties and municipalities, the District of Columbia, two states, and the Federal Government. While incident command proved to be effective, many lessons were learned[2], nonetheless, focusing largely on communications and interoperability. This incident should serve as the basis on which future regional incident command procedures can be developed and improved. While the 2002 sniper incident was commanded by the MCP Chief, future incidents of a regional nature will have a fire chief as the IC when the incident is primarily of a fire-rescue nature.

As with any single-jurisdictional incident, the incident command structure for a regional incident incorporates the IMS. There is a federal initiative to create a "**Metropolitan Incident Management System**" **(MIMS)** that would be used by large metropolitan areas throughout the nation, including the National Capital Region (NCR), during regional incidents. The MIMS is based upon the IMS concept developed and used for decades by the U.S. Forest Service (for forest fires) and FEMA's Incident Support Team (IST) associated with the National Urban Search and Rescue Response System. The nation's first MIMS was established in New York City in the aftermath of the September 11, 2001 terrorist attacks.

The regional IMS for the NCR, whether a MIMS or a similar system, must incorporate several key concepts: **unified command, expandability, seamless communications, common terminology, and interoperability**. **Unified command**, as explained above, means that one individual is the IC, and all other personnel and resources coordinate their actions in support of the IC. Depending upon the location of the regional incident, MCFRS personnel may be operating under an IC from MCFRS or MCP, or an IC from another jurisdiction's fire-rescue department or police department. **Expandability** refers to the IMS being flexible, so that it can expand from a single-jurisdictional IMS to a multi-jurisdictional IMS to accommodate resources coming from nearby jurisdictions and possibly from one or more states and the Federal Government. **Common terminology** refers to terms that have the same meaning across all jurisdictions involved in a regional response. For example, similar units having the same name (e.g., an engine being called an "engine" by all responders in the region, rather than some calling it a "pumper" or "wagon") and the sides of a building identified in the same terms (e.g., "Side A-front, Side B-left, Side C-rear, Side D-right" versus "Sides 1, 2, 3 and 4"). Common terminology avoids confusion and mistakes among responders from different jurisdictions working together. **Seamless communication** is achieved through compatible communications systems/equipment, common communications procedures, and common terminology that allow all emergency personnel to converse effectively.

---

[2] Reference: SAFECOM Report titled "Washington, DC Area Sniper Investigation – Communications After-Action Report, September 2003

Interoperability is the ability of public safety personnel to share information via voice and data systems on demand, in real time, when needed and as authorized. Interoperability allows resources, regardless of their affiliation, to function effectively and seamlessly together. Greater interoperability is one of the anticipated benefits of the FCC-approved plan to "re-band" the 800 MHz spectrum by migrating public safety frequencies to a lower portion of the 800 MHz band (i.e., 851-860 MHz) while commercial users will move to a higher portion of the band (e.g., 869 MHz and higher). The primary reason for re-banding is to reduce the amount of interference from frequencies used by commercial carriers such as Nextel onto frequencies used by public safety agencies throughout the nation. Interoperability between fire departments within the NCR may also be improved through use of CapWIN[3], or another interoperability program, should it be implemented by MCFRS and other fire departments within the metropolitan area and/or NCR following further development. Implementation of recommendations found in the report[4] titled "Public Safety Communications Interoperability in Maryland" will also improve interoperability between counties in Maryland (see page 4-89 for details).

For regional incident command to function successfully, mutual aid agreements will have to be maintained and updated (as needed) and on-going coordination and regional training must occur. The Public Safety Committee (PSC) of the Washington, D.C. Metro Area Council of Governments (COG) is the organization that facilitates regional planning, preparedness, coordination, and training for regional incidents. All of the fire departments participating in COG now use the NIMS/ICS, including the "Field Operations Guides" that are carried on all MCFRS apparatus. Regional incident command will be an important topic for that committee to continue addressing over the next ten years and beyond. Related to this topic, COG has established the "Regional Information, Communication, and Coordination System" (RICCS) to facilitate notification of COG jurisdictions of major incidents occurring in any one jurisdiction. Early notification should allow all COG jurisdictions to better prepare for the possibility of needing to send resources to the impacted jurisdiction and to monitor the situation to determine whether the incident could grow in scope and impact their own jurisdiction.

EMERGENCY COMMUNICATIONS [»Cross-reference: Recommendation 67, Section 6]

The Public Safety Communications Center (PSCC) provides communication and technical support to the County's public safety departments. PSCC components include MCFRS Communications (commonly referred to as the "Emergency Communication Center" or "ECC" within MCFRS), MCP Communications, DPWT's Traffic Management Center, County's Emergency Operations Center, and satellite offices of the County's Homeland Security Department. It is the goal of the ECC to identify and address the needs, desires, requirements, and expectations of both external customers (e.g., citizenry at-large, mutual aid jurisdictions, etc.) and the public safety departments themselves. Via a complex information technology

---

[3] The Capital Wireless Integrated Network ("CapWIN") is a partnership between Maryland, Virginia, and the District of Columbia to develop an interoperable first-responder data/information sharing network.

[4] Report of the Interoperability Project Team to the Public Safety Communications Interoperability Governance Work Group, dated February 28, 2005, developed through the Maryland Association of Counties and Governor's Office of Homeland Security

infrastructure, the ECC fulfills these mandates through a business process focused on rapid and effective customer service.

MCFRS communicators located at the PSCC are responsible for coordinating the responses of all fire-rescue services in the County. In addition, the MCFRS communicators serve as the focal point for initiating and/or coordinating all fire-rescue services provided by mutual aid jurisdictions responding to and operating in Montgomery County. It is also the MCFRS communicators' responsibility to initiate and/or recommend changes to business processes which might enhance the level of fire, rescue, and emergency medical services delivered to our customers. Furthermore, the MCFRS section of the PSCC serves as the data collection point for operational and medical-related activities involving or impacting MCFRS.

Calls for service are received on an **enhanced 911 (E-911)** emergency telephone line (a.k.a. "*VESTA*"). Fire-rescue calls are processed and assigned to an event using advanced technologies including Emergency Medical Dispatch (EMD), Proactive Quality Assurance (Pro-QA), Automatic Vehicle Locator (AVL), Automated Vehicle Response Recommendation (AVRR), and a state-of-the-art Computer Aided Dispatch (CAD) system. Once calls are processed, emergency alerts are provided for fire and rescue stations. Career and volunteer personnel are alerted by alphanumeric and conventional wireless paging and by the **800 MHz radio system**. This system has 288 "talk groups" in 18 zones, broadcasted over 22 radio channels. Field units receive incident-related information over the 800 MHz radio system and through mobile data computers (MDCs) and telephones (i.e., cellular and landline). Personnel in the field manage these incidents using both mobile and hand held communication devices.

Emergency Medical Dispatching (EMD) is a State-mandated EMS call processing requirement. EMD is a system designed to provide the customer uninterrupted medical attention from the initiation of the 911 call, up to and including the arrival of, and subsequent treatment by, emergency medical providers. EMD provides questions designed to assist certified Emergency Medical Dispatchers with determining what the patient is experiencing from a medical perspective. EMD then gives the dispatcher information pertinent to what (if any) resources must be dispatched, and it "prescribes" applicable medical instructions to be given to the caller to aid the patient until MCFRS units arrive. When appropriate for the situation, the Emergency Medical Dispatcher provides these instructions to the caller. Through EMD, dispatchers are able to provide consistent and accurate medical information, and all callers receive the same information, in the same manner, every time.

One outcome of this technological advance is a situation where Emergency Medical Dispatchers are now spending up to 300% more time with every customer in need of emergency medical intervention in the process of following EMD protocols. While Emergency Medical Dispatchers remain on the line providing medical instructions to the caller, other MCFRS communicators can dispatch resources as soon as the nature of the emergency and location of the patient are confirmed. A second outcome of using EMD is an increase in the percentage of incidents requiring the dispatch of ALS resources instead of BLS resources, which has resulted in a ripple effect within the MCFRS impacting the availability and deployment of ALS resources (i.e., medic units and ALS first responder apparatus).

Computer-Aided Dispatch (CAD) systems, such as that used at the PSCC, can be defined as work-order processing systems. Call takers enter the details of 911 calls for service into the CAD system. The system

then determines, based on the call type and the location of the emergency, what resources should be sent to the incident scene. When used in conjunction with EMD, the CAD can substantially improve resource utilization and management, thus reducing operational costs and improving both operational and fiscal performance. More importantly, however, is the ability of these systems to facilitate optimal distribution or coverage of available fire suppression and emergency medical resources. The desire to foster higher levels of coordination among ambulance transport crews and first responders requires the use of the CAD system. Furthermore, given the unique characteristics of the allocation of apparatus throughout the County, and emergency medical resource management, the CAD must have the ability to support fire suppression, EMS, hazardous materials, fire prevention, specialty team, and all other facets of MCFRS deployment strategies.

Automated Vehicle Route Recommendation (AVRR) and Automated Vehicle Location (AVL) are mapping system functions that incorporate real time data to locate AVL-equipped vehicles and subsequently generate response recommendations for the dispatcher[5]. This data enables the dispatcher to select the closest emergency vehicle to the scene of an emergency event. The system considers traffic patterns, geographical proximity, posted speed limits, road conditions, and other pre-programmed factors. The Graphical Map Maintenance capability of this system allows dispatchers to see all emergency vehicles on a map-configured monitor, and follow their movement as they respond to, and return from, an event. This functionality affords the dispatcher a real time analysis of the locations and availability of each MCFRS vehicle without the previously required voice contact.

Trunked radio systems are used whenever a relatively large number of radios need to share radio frequencies. They are used by local government as wide-area private radio networks, and are the radio equivalent of the public switched telephone system. Trunked radios offer much greater airtime efficiency than traditional systems. Compared with conventional single-channel networks, a trunked system is more efficient, simpler to use, and less likely to have all channels in use simultaneously. Radio trunking features computer technology that allows a number of users to share a common pool of frequencies that are dynamically allocated. The advantages of radio trunking when compared to conventional duplex radio repeater systems include:

- More efficient use of the radio frequency spectrum
- Availability of 288 "talk groups"
- Availability of 18 zones and 22 radio channels
- Wide-area coverage is possible
- Greater privacy is possible, via encryption
- Higher grade of service
- Enhanced features
- Automatic selection of a clear channel

Through cellular carriers, the PSCC has the ability to determine the approximate location of callers reporting emergencies via cell phones. **FCC's Phase II cell service rules** require cell phone carriers to provide more **specific latitude and longitude location information** (i.e., Automatic Location Identification

---

[5] The AVRR and AVL features of the CAD were not fully functional at the time this Plan was written. Efforts were underway to address the problem with the system vendor.

or "ALI") regarding its wireless customers to 911 centers. Since 2002, all new digital handsets are ALI-capable. Accurate latitude/longitude coordinates are important because they pinpoint the location of emergencies when the caller is incapable of doing so. One method for meeting Phase II rules is for cell phone handsets to be equipped with a satellite-based global positioning system (GPS) that allow carriers to hone in on their customers' location, which allows PSCC dispatchers to send emergency apparatus to the correct location when the caller cannot provide an accurate location. FCC rules call for carriers using this technology to achieve 50-meter accuracy for two-thirds of mobile emergency calls and 150-meter accuracy for 95% of these calls. A second method, which is not as widely employed as the first, utilizes a network that combines time difference of cell signal arrival ("TDOA") with a signal's angle of arrival ("AOA"). TDOA calculates a cell phone's position based upon the speed the cell signal reaches multiple nearby antennas. With AOA, cellular towers identify the direction from which a signal is coming and then plot the direction of the incoming call based upon readings from at least two cell towers. A third method for meeting Phase II rules is through a system called enhanced observed time difference ("EOTD") which requires the use of GSM terminals. FCC rules call for carriers using TDOA/AOA or EOTD technologies to achieve 100-meter accuracy for two-thirds of mobile emergency calls and 300-meter accuracy for 95% of these calls.

"Internet Voice" (a.k.a., "Voice over Internet Protocol") is a relatively new technology that is likely to become an increasingly popular mode for the reporting of emergencies to the Montgomery County PSCC. The Voice over IP (VoIP) network is a set of protocols and services that allow the voice to be carried over the same digital networks used by computers to access the Internet. VoIP allows calls to be made directly from a computer having a broadband (i.e., high speed) internet connection, or from a standard phone with an adapter connected to a computer having a broadband internet connection. Since VoIP service is less expensive than traditional telephone service, it could someday become the primary telephone service for many consumers looking to save money. Unfortunately, not all VoIP services connect directly to Primary PSAPs when the subscriber dials 9-1-1, and some VoIP services do not function during power outages and may not offer backup power. In addition, there may be difficulty for some VoIP services to identify the location of VoIP callers. The FCC, however, has taken steps to improve VoIP subscribers' capabilities to reach PSAPs when dialing 9-1-1. On June 3, 2005, the FCC released the "VoIP E911 Order" requiring interconnected VoIP service providers to provide E911 capabilities to their subscribers within 120 days of the Order's effective date (July 29, 2005), i.e., by November 28, 2005. Specifically, the Order requires interconnected VoIP providers to: 1) deliver all 911 calls to the customer's local emergency operator (i.e., PSAP); 2) provide to PSAPs the call back number and location information of their customers where the PSAP is capable of receiving it; and 3) inform their customers of their service's E911 capabilities and limitations.

EMERGENCY MEDICAL SERVICES (EMS)

The MCFRS EMS function provides BLS and ALS services to the residents, businesses, and visitors of Montgomery County. While any MCFRS primary unit can provide first responder-level service, a higher level of care and transport service is provided by a fleet of ambulances providing BLS care and medic units providing ALS/paramedic care. ALS First Responder Apparatus - "AFRA" (i.e., engine, aerial unit or

rescue squad with a firefighter-paramedic on-board), if available, is dispatched on ALS incidents if closer than a medic unit, along with the closest ambulance and/or closest medic unit. One or more ambulances are present in all but five of the MCFRS stations, and medic units are present in 14 stations. Rescue Station 1 (BCCRS) and Rescue Station 2 (WVRS) each has a fleet of EMS and rescue units consisting of medic units, ambulances that can be upgraded to medic units when the proper equipment and personnel (at least one paramedic) are aboard, and heavy rescue squads.

Typically, ambulances transport BLS patients, and medic units transport ALS patients to hospitals; however, medic units are, at times, called upon to assess, treat, and transport BLS patients when ambulances are not readily available. In unusual circumstances, an ambulance may transport an ALS patient when a medic unit is not readily available and the patient must be transported without delay ("load and go" scenario) to a hospital. Under this scenario, a paramedic on-board an AFRA, if dispatched, will upgrade the ambulance to a medic unit by accompanying the ALS patient to the hospital. Occasionally, an ambulance transporting an ALS patient may rendezvous with a medic unit at a strategic meeting point to transfer the patient for the remainder of the trip to the hospital in the medic unit.

Medevac helicopters are requested by MCFRS personnel under specific protocols to assist in transporting seriously injured patients to specialized medical facilities such as Regional or State trauma centers, burn centers, Children's Hospital, other hospitals with pediatric trauma centers, or facilities specializing in certain injuries (e.g., spinal, eye, extremities, etc.). Helicopters may be requested from the Maryland State Police or U.S. Park Police; however these aircraft are not always available due to ongoing medevac or law enforcement missions, or due to unsafe weather conditions for flying. MSP helicopters are based throughout the State, with the closest aircraft located at the MSP Hangar on Norwood Road near Sandy Spring and at the MSP Hangar in Frederick. Another nearby MSP aircraft is based in Prince Georges County. U.S. Park Police helicopters are based in the Anacostia section of S.E. Washington, D.C. Helicopter transport is requested when land-based transport will be unable to deliver the patient to the proper medical facility in a timely manner. Medical conditions that qualify for medevac transport include traumatic injuries (e.g., sustained during vehicle collisions, assaults, falls, recreational accidents, etc.), spinal injuries, pediatric trauma, and certain emergency transports from one hospital to another). The Level-II Trauma Center at Suburban Hospital in Bethesda is the destination for most medevac transports originating in Montgomery County. Most medevac missions are requested from MCFRS units operating at incidents in the northern, western, and eastern portions of the County, most distant from Suburban Hospital.

EMS units, like suppression units, may be staffed by career personnel, volunteer personnel, or a combination of both. All personnel comprising minimum staffing for an EMS unit must, at a minimum, be State-certified EMT-Bs, including the driver. In addition to EMS providers assigned to stations, there are EMS supervisory/quality assurance personnel (i.e., EMS Duty Officer) assigned to the EMS Section within the Operations Division who respond to certain EMS incidents to provide operational assistance and/or to assess the quality of service rendered.

The County's EMS system has a part-time Medical Director responsible for overseeing the delivery of EMS in the County to ensure that it is being accomplished in accordance with State protocols. This individual also authorizes all EMS providers in the County to operate under his/her medical license to comply with State laws and regulations addressing EMS delivery. Considering the large and increasing volume of EMS

incidents and related oversight needs, the upgrading of the part-time Medical Director position to a fulltime position is greatly needed.

EMS Response Time Goals [»Cross-reference: Recommendation 68, Section 6]

Goal: To improve response times for ALS, BLS and AFRA responses, and to collect data on time of dispatch, to time at patient's side, for all types of EMS incidents. [Response time goals for EMS services are presented in Figure 5.6 in Section 5.]

Response Threshold [»Cross-reference: Recommendation 38, Section 6]

An EMS unit that has surpassed the 2500 call load per year threshold has reached a point where the unit's effectiveness is adversely impacted. This maximum threshold level takes into consideration: time spent on each incident (including trips to/from hospitals, and cleaning and preparing units for the next patients), time for training, and time for performing routine activities, such as entering incident reports into the *Firehouse* records management system, station and equipment maintenance, community outreach, and physical fitness. **As of 2002, nineteen MCFRS EMS units had each surpassed 2500 calls per year**. This situation will only worsen over time as the County-wide EMS call volume increases, unless more EMS units are deployed.

Goal: To establish a policy whereby **additional EMS units are placed in service when existing units exceed 2500 calls per year**:
- Develop and initiate a review process to assess each EMS unit's future call volume when that unit reaches the 2000-call level. This process should prevent a unit from greatly exceeding 2500 calls before an additional unit is placed in service.
- Use population data and the GIS to anticipate future growth that will identify where additional EMS units should be placed in service so that existing units do not exceed the 2500 mark.
- Additional units must be staffed and equipped

EMS Deployment [»Cross-reference: Recommendation 37, Section 6]

Gaithersburg-Washington Grove Station 8: 2002 response data indicates that Medic-89 (M-89), Ambulance-88 (A-88) and Ambulance-87 (A-87) each responded to over 2775 calls; thus all three units are exceeding the 2500-call threshold. M-89, alone ran almost 3300 calls during 2002 and is the single busiest medic unit[6] in the County. In addition to having the most populated first-due area in the County, Station 8's area has two skilled nursing facilities, two assisted living facilities, and three elder group homes that generate hundreds of calls. Station 8's three EMS units missed 27% of the ALS calls within Station 8's first-due area during 2002 because they were committed on other incidents. **By placing a second medic unit in service at Station 8 (i.e., Medic-86) and providing guaranteed 12-hour/day staffing for it, M-86 will help address daytime and evening ALS service demands within Station 8's area and absorb a**

---

[6] Multiple medic units located at Rescue Company 2 in Wheaton ran 4256 calls, combined, in 2002.

portion of the excess ALS call load from Medics 298 and 299 in Germantown. **The second medic unit will also allow A-88 and A-87 to respond to more BLS calls and will lead to increased medic unit availability from Station 8 for ALS calls in nearby station areas lacking medic units** (e.g., Station Areas 17 and 28).

Conclusion #1: **An additional medic unit is needed at Gaithersburg-Washington Grove Station 8 to serve as a "flex" unit, with guaranteed 12-hour/day staffing to handle the peak call volume period within the Gaithersburg area.**

Kensington Station 25: 2002 response data indicates that A-258 and M-259 each responded to over 2880 calls; thus both units are exceeding the 2500-call threshold. M-259 ran 2889 calls during 2002 (8th busiest medic unit in County) and A-258 ran 3018 calls (4th busiest ambulance in the County). In addition to having one of the most heavily populated first-due areas in the County, Station 25's area has 11 elder group homes, two skilled nursing facilities, one assisted living facility and several retail areas that generate numerous EMS calls. Medic 259 missed 19% of the ALS calls within its first-due area during 2002 because it was committed on other incidents. **By placing Medic-257 in service and providing guaranteed 12-hour/day staffing for it, M-259 and M-257, together, will be better able to address ALS service demands within their first-due area. When A-258 is committed on incidents, M-257 would, under certain conditions, be dispatched to concurrent BLS incidents in Station 25's first-due area, thus providing improved response times for BLS service, as well as improved response times for ALS service in the area.**

Conclusion #2: **A second medic unit ("M-257") needs to be placed in service at Kensington Station 25, to serve as a "flex" unit, with guaranteed 12-hour/day staffing to handle the peak call volume period within the Aspen Hill area.**

Rockville Station 3: 2002 response data indicates that A-38 and M-39 each responded to greater than 3130 calls; thus both units greatly exceed the 2500-call threshold. M-39 ran 3170 calls[7] during 2002 (third busiest medic unit in County), and A-38 is the single busiest ambulance[8] in the County. In addition to having one of the most heavily populated first-due areas in the County, Station 3's area has four skilled nursing facilities, two elder group homes, and several industrial areas that generate numerous EMS calls. Station 3's two EMS units missed 34% of the ALS calls within Station 3's first-due area during 2002 because they were committed on other incidents, or occasionally due to lack of staffing (i.e., A-38 lacks guaranteed 24/7 staffing). **By placing A-37 in service with guaranteed 12-hour/day staffing, M-39 will be better able to address ALS service demands within Station 3's area. A-37 would also absorb a portion of the excess BLS call load from Ambulances 38, 238** (2686 calls during 2002) **and 319** (2120 calls in 2002) **in the greater Rockville area**.

---

[7] Medic 39's run total includes 822 BLS calls, which the unit must run when an ambulance is not readily available.

[8] Multiple ambulances at Rescue Company 1 ran 4907 calls, combined, in 2002, and those at Rescue Company 2 ran 3412 calls combined.

Conclusion #3: A **second ambulance ("A-37") needs to be placed in service at Station 3 to serve as a "flex" unit, with guaranteed 12-hour/day staffing to handle the peak call volume period within the Rockville area**.

Silver Spring Station 19: **As of 2005, Station 19 did not have an EMS unit**. Station 19's first-due area is typically served by EMS units from Stations 1, 5, 16, and Rescue Stations 1 and 2. These EMS units are some of the busiest in the County, and are, therefore, sometimes unavailable for response into Station 19's area, and EMS units from distant stations usually cannot meet response time goals into Station 19's area. In addition, the area around Station 1 consistently experiences the highest number of BLS calls in the County and almost as many ALS incidents, so **A-199 would respond into Station 1's area when needed to alleviate a portion of the BLS demand for both Ambulance-18 and Medic-19. Freeing Medic-19 from BLS incidents would make it available more often for ALS incidents for which the unit was intended.**

Conclusion #4: **Ambulance-199 needs to be placed in service at Silver Spring Station 19 and must have guaranteed 24/7 staffing.**

Burtonsville Station 15: Station 15's first-due area is expected to have an above-average BLS call volume between 2005 and 2015 when compared to other MCFRS stations. In 2002, M-159 ran 2914 ALS and BLS calls, thus exceeding the 2500-call threshold. This combined EMS call load will increase in the future. Station 15's area has a combination of urban, suburban, and rural density, and the density in the urban and suburban portions will continue to increase. **The residential demand for EMS services, combined with the daytime demand from the industrial, commercial, and technology businesses in Station 15's area, point to the need for adding an ambulance with guaranteed staffing at Station 15**. Several skilled nursing facilities and elder group homes in Station 15's first-due area will continue contributing to both the BLS and ALS call load, thus highlighting the need for both M-159 and A-158 to serve this area.

Conclusion #5: **An ambulance ("A-158") needs to be placed in service at Burtonsville Station 15 and must have guaranteed 24/7 staffing. Medic-159 should remain a dedicated medic unit**.

Kensington Station 21: In 2005, Station 21 had an ambulance but lacked ALS service and relies on ALS service provided by medic units from surrounding stations. Call load data indicate that Stations 3, 23 and 25, each of which operates a medic unit and ambulance, each has a high ALS call volume, thus indicating that these medic units are often unavailable to respond into Station 21's area for ALS calls. Furthermore, M-39, M-239 and M-259 missed 34%, 29% and 33% of the ALS calls within their station first-due areas during 2002, respectively, due to heavy call loads. **By upgrading Ambulance-219 to Medic-219 and providing guaranteed staffing for it, Medic-219 will be able to address both ALS and BLS service demands within Station 21's area** (including ALS calls at a skilled nursing facility and two elder group homes), and **relieve excess ALS call load from Medics 39, 239, and 259**.

Conclusion #6: **Ambulance 219 at Kensington Station 21 needs to be upgraded to a Medic Unit, with guaranteed 24/7 staffing**.

EMS Expansion [»Cross-reference: Recommendations 24, 42, 43, & 47, Section 6]

<u>Goal</u>: Provide **EMS support for specialty teams**:
- Dedicate at least one ALS unit to each specialty team.
- Identify specific EMS needs of specialty teams and support those needs.
- Create a liaison between the individual specialty teams and the EMS Section, Operations Division.
- Specifically for the Hazardous Incident Response Team (HIRT), train HIRT technicians, who are also MCFRS paramedics, in toxicology so that they may more effectively treat HIRT members or other firefighter-rescuers exposed to toxic substances. [See Section 5 for further details.]

<u>Goal</u>: Employ a **full-time Medical Director and an appropriate staff** to support the roles and responsibilities of the Office of Medical Oversight. The staff should have an education and background in Emergency Medicine and Emergency Medical Services.

<u>Goal</u>: Develop **comprehensive plans for mass gatherings and special events**.
- Coordinate specialized EMS needs through the Special Operations Section.
- Appoint a single point-of-contact within MCFRS for all special events and mass gatherings.
- Determine "triggers" (i.e., number of event participants, age group of event participants, anticipated weather conditions -- temperature, humidity, precipitation -- impacting the event) that will signal the need for certain levels and types of support.
- Create partnerships with local hospitals for providing medical care for mass gatherings. Coordinate County services, and stage departments' resources in relation to mass gatherings.

EMS Standardization [»Cross-reference: Recommendation 54, Section 6]

<u>Goal</u>: **Standardize EMS response** across career and volunteer components:
- Standardize crew configuration and structure, such as placing EMS-only members on EMS units versus Firefighter-EMTs.
- Standardize inventories as much as possible

Community Outreach/Injury Prevention [»Cross-reference: Recommendations 50-52, Section 6]

<u>Goal</u>: Interact with the community on a non-emergency basis **to educate the public on injury prevention and risk reduction**. Interaction will also lead to **greater understanding, trust, and reasonable expectations** during emergencies:
- Educate the public on EMS and what it provides to the citizen.
- Provide community CPR, AED, and first aid training through the PSTA on an ongoing schedule.
- Expand the Public Access Defibrillator (PAD) program to place AEDs in public places, and teach staffs of shopping malls, restaurants, theaters, etc., to use them effectively.
- Promote community services such as car safety seat inspection and home safety inspections.

Goal: **Reduce EMS call volume** through public education concerning risk reduction, injury prevention, and the appropriate medical situations in which to call 911.

Goal: Create **outstanding working relationships with all hospitals, nursing homes, and assisted living facilities** in Montgomery County.
- Establish working relationships with hospital administrators, ER physicians, and charge nurses.
- Educate nursing, assisted living and rehab facilities on when it is appropriate to call 911
- Educate Primary Care Physicians on appropriate use of 911, as well as what EMS can provide to them and their patients.
- Create a partnership with hospice to develop "do not resuscitate" (DNR) education for nursing facilities and families of DNR patients.
- Encourage joint training and continuing education with hospitals and MCFRS personnel.

Future EMS Models and Strategies [»Cross-reference: Recommendation 41, Section 6]

Goal: Examine the current **EMS model/system** to see how it can be improved. MCFRS should consider:
- Use of the "1 and 1" ALS delivery model where staffing on each medic unit would be changed from two paramedics to one paramedic and one firefighter-rescuer. The 2nd paramedic would then be assigned as a fourth position on an engine, aerial unit, or rescue squad at the same station as the medic unit, thus creating an ALS first responder apparatus (AFRA).
- Use of BLS transport units and ALS chase cars, with and without AFRA, versus using ALS transport units exclusively, with and without AFRA
- Part-time BLS and ALS units - additional units used during peak periods only
- EMS-only career positions versus all career positions having both fire suppression and EMS responsibilities, similar to those in place in many LFRDs
- Authorization to transport patients to the most appropriate patient care facility (e.g., crisis center, public health facility, etc.), not always transporting to hospitals

EMS Human Resources [»Cross-reference: Recommendations 48 & 49, Section 6]

Goal: **Increase the number of EMS providers**:
- Work with the LFRDs to improve their volunteer retention.
- Strive to prevent burnout of EMS providers, particularly long-term employees or volunteers, by increased utilization of the MCFRS Critical Incident Stress Management (CISM) Program, Fire-Rescue Occupational Medical Section (FROMS) programs, County's Employee Assistance Program (EAP), and related County programs to sustain the health of EMS providers.

Goal: Strive to **provide a safe work environment** in an inherently dangerous profession:
- Involve the MCFRS Safety Office and FROMS in reducing injuries sustained on EMS calls such as strains, sprains, and more serious injuries to backs, knees, and ankles.
- Provide the best possible safety equipment and apparel to personnel for EMS incidents.

Goal: **Improve communications between the career and volunteer personnel** by defining specific lines of communications between the EMS Section, the FRTA, and the LFRDs for the purpose of disseminating, learning and implementing new EMS protocols.

EMS Training [»Cross-reference: Recommendation 92, Section 6]

Goal: Maintain **EMT-P, EMT-I(CRT), and EMT-B curricula** at the national level standards.
- Work with the FRTA and other MCFRS training partners to identify needed training improvements.
- Offer combined continuing education for EMT-B, EMT-I, and EMT-P providers, as it would promote a greater understanding of the capabilities of each level.
- Offer "blended learning"[9] opportunities concerning EMS (as well as fire suppression).
- Ensure that regular case review is open to all EMS providers.
- Encourage participation in continuing education programs provided by local hospitals.
- Consider increasing the flexibility of continuing education for EMT-B providers. [Currently, BLS providers re-certify every 3 years and their continuing education is condensed into one class that lasts for several days. For volunteer EMT-B providers, it can be difficult to devote the time for the class. Breaking the class into multiple shorter sessions, offered several times over the three-year period, would make it easier for volunteer EMT-B providers to attend.]
- Increase the number of EMS providers who are proficient in a non-English language to better serve Hispanic, Asian, and other minority populations in the County.

Service Quality Improvements [»Cross-reference: Recommendations 44-46, Section 6]

Goal: **Maximize the success rate of certain skilled services** provided to patients (e.g., increase the percentage of successful IV starts on the first attempt):
- Improve training involving ALS skills
- Require regular in-field evaluation/assessment/testing of paramedic skills

Goal: **Minimize on-scene contact/treatment time** between EMS providers and patients experiencing high-priority medical problems (e.g., trauma, MI,), so the patient is transported more quickly to an appropriate medical facility:
- Improve training involving ALS skills
- Evaluate and revise on-scene patient care procedures, as needed
- Ensure rapid, complete, and concise communications with the appropriate medical facility

Goal: **Minimize EMS unit down time** at the receiving facility to increase the time that each unit is available for calls:
- Work with hospitals to provide actual bed and staff availability upon notification that a patient is en route via EMS unit
- Work with hospitals to improve restocking procedures

---

[9] A combination of training, including that offered at the FRTA and distance learning opportunities at MCFRS work sites, including web-based, video-based and Cable TV-based training programs.

- Ensure coordination between MCFRS and Hospital IT experts to allow for rapid downloading and printing of patient care records.

EMS Quality Assurance [»Cross-reference: Recommendations 47, Section 6]

Goal: Establish specific individual **guidelines for BLS and ALS quality assurance**:
- Create a standardized process of **quality review/assurance** for all career and volunteer EMS providers, including the addition of an EMS Captain per battalion to ensure adequate quality control within each battalion
- Provide a mechanism for patient follow up and case review.

Goal: Establish **documentation guidelines for BLS and ALS incidents** to ensure consistency of reporting:
- Collect data to indicate areas needing improvement.
- Work in conjunction with the FRTA and the Office of Medical Oversight to develop curricula to address those areas of weakness.

EMS Information Technology [»Cross-reference: Recommendation 53, Section 6]

Goal**:** Establish and maintain a **state-of-the-art record management system**.
- Track patients who enter the EMS system multiple times to determine whether follow up is needed by other County agencies (e.g., Health Department, social services).
- Continue using patient care data and the GIS to predict future service needs and incident locations.
- Obtain patient outcome data.
- Continue collecting data that will satisfy MIEMSS and NFIRS data.
- Use "patient side" reporting (e.g., using rugged tablet PCs loaded with "Safety Pad" software) or best available technology to collect data. [Note: Tablet PCs and Safety Pad are addressed in greater detail in Section 5 of this Plan, under the "Equipment Purchase, Replacement and Maintenance" sub-heading, under the "Apparatus and Equipment" heading.]

Coordination with MIEMSS [»Cross-reference: Recommendation 52, Section 6]

Goal: Maintain an **excellent working relationship with MIEMSS** (Maryland Institute of Emergency Medical Service Systems):
- Meet regularly with MIEMSS to ensure a reliable and open communication between both agencies.
- Present information and data to MIEMSS.

Goal: Work in conjunction with MIEMSS to **expand the scope of Montgomery County's EMS providers:**
- Examine standards and skill sets for patient care used around the County by various EMS providers and departments.
- Conduct studies to determine if desired standards and skill sets would be beneficial
- Participate in EMS pilot programs developed by MIEMSS.

FIRE SUPPRESSION

The MCFRS fire suppression function provides fire protection services to the property owners in Montgomery County and to the operators and passengers of vehicles, trains, and aircraft using the County's transportation networks and airspace. Thirty-one of thirty-three existing MCFRS stations operate water-equipped fire suppression units. Only the two existing rescue stations (BCCRS and WRS) lack water-equipped suppression units, although both have heavy rescue squads considered to be both suppression and rescue units.

Suppression Apparatus [Note: Apparatus types and their functions are explained for the benefit of non-MCFRS readers of this Plan]

The basic fire suppression unit is the **engine**, which responds on all fire incidents involving structures, vehicles, trains, aircraft, brush, woods, grasslands, croplands, trash receptacles, debris, poles, power equipment, and to incidents involving activated smoke detectors, fire alarms, sprinkler system water flow alarms, etc. As of 2005, 31 fire-rescue stations in the County operate a front-line engine and many have at least one reserve engine. The standard Class A engine in the County is equipped with a pump of at least 1000 gpm capacity, water tank of at least 500 gallon capacity, supply hose to supply water from a hydrant or alternative source of water to the engine, attack lines for fire fighting, fire extinguishers, ground ladders up to 35 feet long, an EMS kit including an automated external defibrillator (AED), and an array of hose appliances, tools, detection monitors, ventilation equipment, portable lights, and other equipment. The engine is the most versatile unit in the fleet, as it is the only unit (other than the County's two engine-tankers and lone quint[10]) that carries water and suppresses fires, provides basic-level life support services, <u>and</u> provides basic-level rescue services. On a standard structure fire, four engines are dispatched, as well as other types of fire-rescue units. For high-rise fires, a fifth engine is also dispatched (as well as a third aerial unit), as the needs for personnel, water supply, and attack lines are greater. Minimum staffing on engines, per FRC policy, is three qualified personnel; however, four-person staffing is highly desired and is recommended in NFPA Standard 1710.

The second suppression unit is an **aerial unit**, often referenced simply as a "truck" or "truck company" within the MCFRS. An aerial unit may be a traditional ladder truck or an aerial platform truck. The platform truck may be either a tower ladder ("tower") or an articulating boom with a platform at the end from which the firefighters operate. Ladder trucks may be of the tractor-drawn type or a straight body type, with the 100-ft (or longer) aerial ladder mounted at the mid-ship position or at the rear of the vehicle. Many tower ladders are "pre-piped" for water, which allows elevated master streams to be placed into operation as soon as the aerial device is extended and a charged supply line is connected. The MCFRS has a combination of tractor-drawn ladder trucks, straight body ladder trucks, and tower ladders, each offering distinct advantages for maneuverability, positioning, and use. A typical MCFRS aerial unit is equipped with a 100-foot (or higher) ladder or platform device, an assortment of ground ladders up to 50 feet long, pike poles for opening ceilings and walls, forcible entry tools, axes, power saws, ventilation equipment, generators, fire

---

[10] A quint is a combination of an engine and aerial unit. It is equipped with a pump, water tank, hoses, aerial device, and ladders.

extinguishers, an EMS kit including an AED, and an array of tools, detection monitors, portable lights, salvage covers, and other equipment. Minimum staffing on aerial units, per FRC policy, is three qualified personnel; however four-person staffing is highly desired and is recommended in NFPA Standard 1710.

An aerial unit is designed to work in tandem with an engine to suppress structure fires, by providing ladder support, forcible entry, rescue, ventilation, salvage and overhaul. On a standard structure fire in an area served by fire hydrants, two aerial units are dispatched to support four engines. The desired scenario, from efficiency and tactical perspectives, is for the initial arriving aerial unit to arrive simultaneously with the initial two engines and for the second aerial unit to arrive simultaneously with the third and fourth engines. For high-rise fires, a third aerial unit is also dispatched (along with a fifth engine), as the need for truck services is greater than for low-rise structures. MCFRS operates 13 aerial units[11], with a 14th (i.e., Tower 51) providing automatic mutual aid to the county from the NIH Fire Department. MCFRS does not consider Quint-40 as the county's 15th aerial unit; although it can, and does, serve that function on an infrequent basis. The 2001 Aerial Unit Study recommends that aerial units be placed in service at Damascus Station 13 and Sandy Spring Station 40, for a total of 16 front-line aerial units in service County-wide on a 24/7 basis. If "Truck 40" were to be placed in service, Quint 40 would either be moved to Sandy Spring Station 4 or operated solely as an engine from Station 40.

The third unit that is considered both a suppression and rescue unit is the **heavy rescue squad**, although it is primarily considered a rescue unit (see discussion below under "Rescue"). At structure fires, the rescue squad's primary functions include rescuing occupants, shutting off utilities, and providing lighting. Other duties may include forcible entry, filling of SCBA cylinders (if equipped with an air cascade system), and salvage and overhaul. Rescue squads also carry tools that can be used to assist truck companies (aerial units) with their duties. A typical MCFRS rescue squad is equipped with an assortment of hydraulic and pneumatic rescue tools, air bags, winch, forcible entry tools, gas shut-off tools, cribbing, jacks, power saws, small ladders, ventilation equipment, generators, electrical cords, air cascade systems, an EMS kit including an AED, Stokes basket, detection monitors, portable lights, hand tools, and other equipment. On a standard structure fire, one rescue squad is dispatched to support the engines and aerial units. Minimum staffing on rescue squads, per FRC policy, is three qualified personnel; however four-person staffing is highly desired and is recommended in NFPA Standard 1710 and in the 2003 *Report of the Rescue Squad Work Group* adopted by the FRC.

The fourth and fifth types of suppression units are **tankers and engine-tankers**. Tankers and engine-tankers provide large quantities of water to support fire suppression operations in areas lacking hydrants. MCFRS tankers carry between 3000-3500 gallons of water and are equipped with quick-dump valves for fast off-loading into portable "fold-a-tanks" from which engines draft. Tankers of this size were found to provide the greatest efficiency when a water shuttle operation is established. An engine-tanker is essentially a standard engine except that its water tank holds 1500-2000 gallons, as opposed to 500-750 gallons; thus an engine-tanker supports a few extra minutes of fire suppression, assuming that attack lines are flowing the desired 500 gpm. Engine-tankers can be deployed as pumpers at a fire scene or deployed in water shuttle operations. In 2005, MCFRS had six tankers in service (located at Stations 4, 9, 14, 17, 30 and 31) and two engine-tankers (located at Stations 9 and 17). A tanker will likely be housed at the future Clarksburg fire-

---

[11] Located at Stations 2, 3, 6, 8, 12, 15, 18, 19, 26, 23, 25, 29, and 31.

rescue station, as well. Minimum staffing on tankers, per FRC policy, is one qualified person; however a second person is desirable to assist the driver with making and breaking hose connections.

The sixth type of suppression unit is a **brush unit** designed primarily for fires involving brush, woods, grassland, and cropland. In 2005, MCFRS had 13 front-line brush units in service at Stations 8, 9, 10, 14 (two units), 13, 15, 17, 18, 24, 30, 31, and 33. This number corresponds with that recommended in the *Brush Unit Study* completed in 1997. MCFRS operates different types and sizes of brush units – mostly pickup trucks and jeeps – with four wheel drive. The pickup style units typically carry 200 gallons of water and are equipped with a 300 gpm pump, ¾-inch booster line, 1-inch forestry line, and 1¾-inch line. These units also carry backpack-style 5-gallon water tanks ("Indian tanks") with spray nozzles, brush rakes, saws, shovels, axes, and a generator. Jeep-style brush units carry about 100 gallons of water, a 50 gpm pump, booster line, 1-inch forestry line, winch, generator, and a small assortment of tools. All brush units are designed to travel off-road; however, jeeps are able to maneuver better through tight brush, but they carry less water and hose. Brush units are normally accompanied to brush/woods fires by an engine, with the engine usually remaining on a nearby roadway and the brush unit traveling off-road when required. Minimum staffing on brush units, per FRC policy, is one qualified person; however two-person staffing is desired for reasons of safety and operational effectiveness. While brush units are used primarily for suppression of brush/woods fires, some may also be deployed in a water supply capacity for structure fires to access and draft from alternate sources of water (e.g., pond, stream) in rural areas where the terrain prevents access by engines and tankers.

Future Suppression Issues, Needs and Strategies

- **Light Weight Construction and Lack of Sprinklers**

One of the primary issues concerning future fire risk and fire suppression in Montgomery County is the proliferation of buildings featuring **light weight construction**. This includes both residential and commercial properties built with **light weight, combustible components that burn quickly and intensely and fail easily under high temperatures** (e.g., failure of light weight roof trusses). Adding to this issue is the narrow spacing between many new residences and commercial structures, creating the scenario whereby a fast burning fire in one structure impacts several surrounding structures. These nearby structures may receive radiant heat damage, direct flame impingement, and/or damage from airborne brands/embers. Unless MCFRS is able to apply an effective volume of water to these exposures very quickly, they may also catch fire; thus threatening other nearby structures. Under a worst case scenario, the fire keeps spreading from structure to structure, resulting in a **conflagration**[12]. This scenario of fire spreading beyond the structure of origin becomes even more likely when there is a delay in reporting the initial fire, which allows the fire an extended head start on firefighters. Other contributing factors to this scenario are traffic congestion and/or adverse weather conditions, which slow the response of MCFRS units, allowing the fire to spread unchecked.

---

[12] Rapid and uncontrolled spread of fire from structure to structure due to closeness of buildings and combustible components.

An example of this type of fire occurred in October 2002 in the new Fallsgrove community in Rockville when a nearly completed unsprinklered house caught fire from a worker's discarded smoking material, burned quickly and intensely, and the radiant heat melted siding on six nearby houses. The house under construction was destroyed, and total damage to all seven houses was almost $700,000. Witnesses reported that the fire grew quickly in the house of origin, and the house was completely engulfed by the time MCFRS units had arrived about five minutes after the first call to 911. The rapid spread of fire was attributed to multiple factors:

- Light weight construction materials, with lower grade composite weight-bearing structural members.
- Neighboring homes on the same street were only about 20 feet apart and those to the rear were only about 50 feet away.
- Strong winds

The likelihood of the fire described above is minimized considerably when **sprinkler systems** are present in these types of structures. When sprinklers are present, the fire would be controlled quickly prior to arrival of MCFRS units, and the fire would typically be confined to the room of origin. The exception, however, are fires that start in garages and above ceilings, which are not required to be sprinklered. In these cases, the fire can spread without coming in contact with sprinkler heads and cause significant damage. A fire of this nature occurred in a sprinklered townhouse in Germantown in January 2004, when a fire began in the attic and burned off most of the roof before firefighters were able to stop its spread.

Starting in 2003, new single-family homes in the municipalities of Rockville and Gaithersburg were required to have sprinkler systems. Beginning in 2004, new single-family homes throughout the remainder of the County were also required to be sprinklered[13] due to the new County residential sprinkler ordinance applying to new construction, including new houses in the remainder of the municipalities (e.g., Takoma Park, Poolesville, Kensington, etc.). While these sprinkler ordinances will lead to more sprinklered homes over time, the vast majority of single-family houses in Montgomery County built prior to 2003/2004 do not have sprinkler systems and will always remain at high risk of serious fires, threatening life safety and property.

Sprinkler systems have proven to dramatically reduce fire deaths and injuries and also to significantly reduce property loss. Ninety percent of fires in sprinklered residences are contained by the operation of just one sprinkler head, therefore minimizing water damage and confining the fire to the room of origin. Sprinklers provide a high level of safety to all occupants, particularly to vulnerable and at-risk populations such as the elderly, young children, and the disabled.

Other types of residential occupancies that pose a serious fire risk are **unsprinklered high-rises, garden apartments, and townhouses**. These unsprinklered residences present a considerable life safety risk to residents and firefighters as well as a serious property damage risk. While County laws have required sprinkler systems in newly constructed residential high-rises since 1974 and in townhouses and garden

---

[13] Effective January 1, 2004, Montgomery County became the largest jurisdiction in the U.S. to mandate the installation of sprinkler systems in single-family detached homes. Existing State and County laws already require fire sprinkler systems in <u>new</u> multi-family dwellings, townhouses, and commercial structures.

apartments since 1986, many of these occupancies lack sprinklers to this day because they were built prior to the effective dates of these laws. As of 2005, about 85 residential high-rises in the County lacked sprinkler systems (about 19% of all in-county high-rises), mostly in Silver Spring, Takoma Park, Bethesda, Rockville, and Wheaton, although unsprinklered high-rises existed elsewhere in the County as well. Unsprinklered high-rises present the highest risk due to the large number of occupants in a single building and the need to ensure their safety during a fire or other emergency (e.g., natural gas leak). The risk increases when a portion of the occupants has special needs such as the elderly, handicapped or children. In terms of rescue, the highest MCFRS aerial devices may reach only the 8th floor (or lower). Rescues above that height must be attempted from inside the high-rise using stairs, which may be filled with smoke. Some of the oldest unsprinklered residential high-rises also have poor access to the rear and sides, making it difficult for fire apparatus to be positioned optimally for external rescue and fire suppression operations.

While unsprinklered residential high-rises present the greatest risk and challenge to firefighters, **unsprinklered garden apartments and townhouses** present significant risks, as well. Although these buildings are lower in height and are less populated than high-rises, they still have their own unique set of risks and issues. Unsprinklered garden apartments present an evacuation challenge of their own, as stairways can easily become inaccessible due to fire conditions, thus leaving rescue from balconies as the only option for those attempting to flee. In addition, fires in garden apartments often spread quickly from the apartment of origin to surrounding units and sometimes into the common attic above all upper level units. Unsprinklered townhouses, in many respects, present fire risks similar to those associated with single-family homes, except that escape from the upper floors of townhouses may be more difficult and risky due to higher elevation than the upper floor of houses. Fires in unsprinklered townhouses, particularly those of light weight construction, also have the potential of growing quickly and spreading quickly to adjacent units through common walls, attics and roofs, although properly constructed fire walls should limit fire spread.

The best way to minimize the risk presented by unsprinklered townhouses, garden apartments, and residential high-rises is to enact laws requiring these structures to be retrofitted with sprinkler systems. The MCFRS should continue to draft and encourage the enactment of laws requiring these retrofits. The first priority should be retrofitting residential high-rises, followed by garden apartments and then townhouses. **Other measures to address these risks should focus on faster response by firefighters (i.e., adding more fire stations and apparatus, implementing technologies and procedures that reduce response time), additional staffing on fire-rescue units, and increased capabilities to supply and apply water and to effect rescues**.

Several times each year, fires begin on the outside of dwellings and then spread upward along outer combustible walls and, often, into rooms, attics and/or onto roofs. The source of these fires is typically mulch that has been ignited by carelessly-discarded smoking materials. Thick mulch and dead vegetation in close proximity to walls often provide sufficient combustible material to spread flames along the outside of the structure. This same scenario is also responsible for a number of wooden decks catching fire each year. **A two-fold solution to this recurring problem is to increase fire safety educational efforts to encourage smokers to dispose of smoking materials safely, and to enact an ordinance making it illegal to place wood mulch within "x" feet (distance to be determined) of multiple-family dwellings**. Use of non-combustible material, such as landscaping stones, should be recommended as an acceptable alternative near

structures. Owners of single-family homes could be encouraged, but not necessarily mandated, to use non-combustible materials in flower beds that come in contact with outside walls, porches, and under decks.

The MCFRS must also continue its longstanding efforts to **prevent fires**. This is accomplished through enforcement of fire codes, conducting building inspections, and educating the public to practice fire safety, injury reduction and risk reduction in their daily routines at home, work and school. Fire prevention and risk reduction functions are discussed below under "Non-Emergency Functions."

In addition to residential fires, the MCFRS must continue to be prepared to suppress fires occurring in the **target hazards** described in Section 3 of this Master Plan. Many of the non-residential target hazards include large commercial, institutional, and public assembly occupancies that require a large deployment of MCFRS resources and the capability to apply water at flow rates up to, and in some cases beyond, 3000 gpm. The MCFRS must also be prepared to suppress multiple large fires that occur simultaneously, and possibly during adverse weather, that will place an extraordinary demand on MCFRS resources and may involve mutual aid resources. This scenario typically presents itself approximately 10-15 times during any given year. These situations challenge the MCFRS to deploy and test its full complement of personnel, apparatus, and equipment to not only suppress these fires but also to provide an acceptable level of response to other fire, rescue, and EMS incidents occurring simultaneously. Mutual aid assistance is also vital during these simultaneous major fires.

- **Brush/Woodland Fires**

Under normal climatic conditions, Montgomery County does not have a serious risk of large-scale brush and woodland fires. In fact, as more open space becomes developed, there is less brush and wooded land available to burn. As such, **the risk associated with fires in brush, woods, grassland, and cropland is decreasing**. Extended periods of dry weather and drought conditions, however, increase the likelihood and consequences of these fires significantly. While rural areas pose the greatest risk of brush/woodland fires, suburban and urban areas experience a fair number of these fires, although they tend to be of a small-scale (e.g., less than an acre in size). Brush/woodland fires, no matter how small, must be controlled quickly to limit their spread and to keep them from extending into structures and across roadways.

While the County has experienced several large-scale, fast-moving brush fires in the past, the MCFRS complement of engines and brush units have always met the challenge. The *1997 Brush Unit Study*, adopted by the FRC, recommended that the MCFRS maintain a County-wide brush unit fleet of 13 strategically-deployed front-line units. While most of these units are located in rural areas and adjacent to parkland bordering the Potomac River, there are a few brush units housed at stations serving suburban and urban areas. Most brush/woodland fires are handled by a single engine and a brush unit. Occasionally, several brush units may be required if the fire is located in areas inaccessible to engines. Larger brush /woodland fires may also require the response of several engines and one or more tankers. Minimum staffing for a brush unit is one person, however, the accompanying engine crew brings the total staffing of the two units to at least four, which is usually sufficient for most of these fires.

- **Transportation-Related Fires**

Transportation-related target hazards are of particular concern from a fire suppression and life safety perspective. **Train fires, especially subway trains, present a formidable risk for both passengers and firefighters**. Firefighters may encounter **accessibility issues, limited means of escape, and limited water and air supply,** whether the burning train cars are above ground or below ground. The February 16, 1996 train wreck and ensuing fire in Silver Spring is a vivid reminder of the hazards that can occur and the challenge that these fires pose to firefighters. In that incident, 11 passengers and crew members were killed when two passenger trains collided behind an apartment building during a snow storm. Three of the fatalities were the result of trauma from the crash itself, and eight others died in the fast spreading fire before firefighters could gain access to the incident scene with charged hose lines and rescue tools. **Freight trains also pose a formidable fire risk and challenge for firefighters,** as they transport bulk shipments of combustibles as well as a vast array of hazardous materials in many forms. Freight train fires are usually of sufficient scope to threaten nearby buildings and vegetation, as well. **If hazardous materials are involved, the need for small- to large-scale evacuation is likely** in populated areas near the incident scene.

The METRO Rail System poses perhaps the **greatest fire-related risk in the County** due to the number of passengers[14], limited means of escape, and the difficulty that firefighters face in accessing burning train cars in tunnels as well as above ground portions of the rail system. While the METRO Rail System is served by standpipes[15] located in all subway stations, tunnels, and air/vent shafts, responding firefighters still face the difficult challenge of reaching the burning train cars, with charged lines and rescue tools, in sufficient time to rescue passengers. Fortunately, the subway cars are unlikely to catch fire during normal operation and are equipped with fire extinguishers for use by riders or train operators. The greatest risk of fire comes from arsonists and terrorists having the intent to kill passengers, destroy property, disrupt transportation, and create fear. The risk of long-term disruption of the METRO Rail System following a major fire presents both economic and transportation issues for the entire Washington Metropolitan Area. An important component in saving lives and limiting fire damage in the subway system is properly functioning standpipe systems.

Other modes of transportation pose a significant fire risk, as well. The leading risk is posed by trucks traveling along limited-access highways where water supply for fire suppression is non-existent or difficult, at best, to access and use. Similar to freight train cars, trucks carry large quantities of combustible materials and a wide variety of hazardous materials, mostly fuels. Montgomery County has experienced two major gasoline tanker fires and one kerosene tanker fire over the past 20 years, causing two fatalities, several serious injuries, and fire damage to an Interstate-495 overpass. A spectacular and tragic incident occurred on Interstate 95 in Howard County in January 2004 that illustrates the fire risk on highways. The incident involved a gasoline tanker that crashed through a roadside barrier on an overpass, landed below onto Interstate 95 and ignited. Three other vehicles traveling on I-95 could not stop in time and were engulfed in the fireball. The drivers of all four vehicles were killed before firefighters arrived. Upon

---

[14] The Red Line (serving Montgomery County) transports up to 40,000 passengers during morning and evening rush hours. Each rush hour train can carry up to 1600 passengers.

[15] Separate standpipe systems serve tunnels and stations. All are engineered to flow at least 500 gpm at 100 psi. Fire department hose valve connections are located every 200 feet along the standpipe system in tunnels.

arrival, fire apparatus had to establish a water supply from the adjoining neighborhood -- a time-consuming operation that allowed the fire to incinerate the vehicles and burn several acres of grass. Foam units from BWI Airport Fire-Rescue were needed to extinguish the gasoline-fueled fire. Incidents of similar scope are possible at anytime in Montgomery County, although single-vehicle fires are much more likely to occur. Any fire (e.g., vehicle or brush) along a limited-access highway will pose difficulties for firefighters, if a long-term water supply operation is required.

The 2000 *Water Supply Study* described **the multitude of issues concerning water supply along limited-access highways** such as I-495, I-270, U.S. Route 29, and others running through Montgomery County. Presently, some of the sound barrier walls along portions of I-495 are equipped with doors that firefighters can pass through to access hydrants in adjacent neighborhoods. Many issues face firefighters, however, such as locating and accessing these doors, possessing keys to open them, and dragging hose lines through brush and yards to reach hydrants. In addition, none of the overpasses in the County are equipped with dry vertical standpipes which would assist firefighters in establishing a quick and reliable water supply onto the highway. Fortunately, MCFRS has worked with the State Highway Administration to coordinate the design and deployment of dry vertical standpipes for future interchanges along Route 29 and the interstates. Considerably more effort will be needed to address the remaining issues concerning water supply along the County's limited-access highways. The 2000 *Water Supply Study* offers several recommendations for addressing these issues (see summary in Appendix F).

- **Water Supply** [»Cross-reference: Recommendations 25, 26, 29, & 55, Section 6]

While water supply is typically not an issue within portions of Montgomery County served by fire hydrants (except when individual hydrants are occasionally unusable or water pressure is low), **water supply remains a serious issue within areas lacking hydrants**. In areas where hydrants are not available[16], large quantities of water must be brought to the fire scene by apparatus capable of carrying water (i.e., tankers, engine-tankers, and engines). For MCFRS to meet its goal of establishing and maintaining a flow rate of at least 500 gpm for the initial 30 minutes of suppression operations involving a house fire, many units and personnel are required. While first-arriving engines, engine-tankers, and tankers each bring 500 to 3500 gallons of water to the incident, depending upon the particular unit, that amount of water is applied to the fire within the first 8-10 minutes. Unless additional water is brought continuously to the scene, the suppression operation either comes to a halt or the application rate subsides considerably to a level of ineffectiveness.

As stated in the *2000 Water Supply Report*, **the water supply that supports suppression operations at structure fire incidents must be "rapidly available, efficient, expandable, and uninterrupted."** If only one of these criteria is not met, the water supply operation will be unsatisfactory, or it may fail outright. If hydrants are not available, then alternate sources of water must be used. These alternate sources include static bodies of water (e.g., ponds, lakes, reservoirs), flowing bodies of water (e.g., streams, rivers), cisterns,

---

[16] Approximately 40-45% of the County's land area lacks fire hydrants, primarily in rural, low-density areas. Extending water mains, with hydrants, into these areas is cost-prohibitive and, therefore, is an unlikely future solution to fire suppression water supply issues in rural areas.

or other large water tanks. A distant fire hydrant can even serve as the tanker fill site if no other accessible and reliable source is closer. Often, these alternate water sources are not close by and may not be reliable themselves during drought conditions or when covered by ice. To meet MCFRS' needs, these water sources must be reasonably close to the fire scene, readily accessible by large, heavy apparatus, and sufficiently deep and unobstructed to allow for continuous drafting throughout the incident. An ideal static water fill site is also equipped with a "dry hydrant," which allows the fill site pumper to quickly draw water from a deep portion of the body of water.

Once a suitable fill site is identified, a tanker shuttle must be established and maintained throughout the incident. The water supply operation involves a process whereby a full tanker off-loads its water into a portable folding tank[17] at the fire scene, travels to the fill site, is refilled by a pumper at the fill site, returns to the fire scene to off-load water, and then repeats the process many times. Several tankers and engine-tankers are required to maintain the 500 gpm flow rate at the fire scene. The *Water Supply Study* states that the optimal tanker for shuttle operations is a 3000-3500 gallon, elliptical-shaped tanker. This unit carries a large quantity of water, travels quickly to and from the fill site, and loads and off-loads quickly. Based on this recommendation, the MCFRS purchased four additional 3500-gallon tankers (Tankers 4, 9, 30, and 31) between 2001 and 2003 to more than double the capacity of the MCFRS tanker fleet.

While the *Water Supply Report* has already led to many rural water supply improvements, much remains to be done. In addition to procedural and resource enhancements by MCFRS (addressed in Section 5 of this Plan), **property owners in non-hydranted areas should also be encouraged to implement measures to minimize the likelihood and consequences of fires**. These measures are listed in Section 5 of this Plan under the "Risk Reduction" heading.

- **Class B Foam Strategy** [»Cross-reference: Recommendation 16, Section 6]

Presently, the MCFRS lacks adequate foam inventories and equipment to suppress a flammable liquid fire or to seal vapors emanating from a large flammable liquid spill. Presently, MCFRS lacks dedicated foam units, and the engine fleet has an assortment of mechanical foam proportioning systems ranging from a 95 gpm by-pass foam system, to around-the-pump foam proportioning systems made by three different manufacturers. While each frontline engine in the County carries 35 gallons of Class B foam concentrate, Engines 81 and 281 (a hazmat engine) each carries 100 gallons of Class B foam, and Engine 71 (a hazmat engine) carries 250 gallons, the total amount is insufficient to meet anticipated needs for Class B foam. Considerable time is required to amass the needed quantity of foam at an incident scene, as well, considering that mutual aid apparatus is often needed. During past incidents involving large flammable liquid spills or fires, MCFRS has requested large-capacity foam units from area airport fire departments, but response time is an issue.

---

[17] A folding tank is a portable plastic basin that is quickly erected at the fire scene that holds about 3000-4000 gallons of water. Tankers off-load to this basin, and a pumper drafts water from it and pumps the water into attack hose lines.

NFPA 11- Foam Extinguishing Systems – requires that a minimum Class B foam supply equivalent to 15 minutes of foam application be provided for flammable liquid spills/fires of one inch depth or less. If MCFRS was to meet the NFPA requirement, additional foam resources would be required.

- **Staffing Issues Impacting Fire Suppression** [»Cross-reference: Recommendation 32, Section 6]

Staffing is a significant issue impacting the MCFRS' ability to suppress fires and to perform rescues. As mentioned earlier in this Master Plan, the FRC-adopted policy on minimum staffing requires that three IECS-qualified[18] personnel staff all engines, aerial units, and rescue squads. Minimum staffing can be comprised of career personnel, volunteers, or a combination of both. While three personnel is considered minimum staffing, the FRC policy further states that four-person staffing is desired. Occasionally, MCFRS suppression units respond with more than three IECS-qualified firefighters when a sufficient number of volunteers are present at stations. NFPA Standard 1710 also calls for four-person staffing of engines and aerial units in areas having moderate fire hazards. NFPA 1710 extends this minimum level to five personnel in areas having high fire hazards. Furthermore, FEMA Publication 508-4 defines a Type I pumper[19], in part, as one staffed by 4 personnel. The publication is a component of the National Mutual Aid and Resource Management Initiative which supports the National Incident Management System (NIMS). Most MCFRS pumpers meet the Type I guideline except for the 4-person minimum staffing requirement.

A staffing-related issue impacting the MCFRS' ability to suppress fires and rescue persons from burning structures is the Occupational Safety and Health Act (OSHA) regulation known as "Two-In/Two-Out.[20] While this regulation impacts fire-rescue operations County-wide, it has a particularly significant impact on operations in the up-County area where most fire-rescue stations are separated by long distances, resulting in longer response times. With Two-In/Two-Out in effect, the response time of the second-due unit takes on added importance if an IDLH environment is encountered. For example, if there is a structure fire in the southern portion of Station 14's area, and the minimum-staffed three-person crew on Engine 141 is awaiting the arrival of the crew from second-due Engine 311 (when another Station 14 unit is not available to respond) in order to enter an IDLH atmosphere[21], the fire may spread substantially by the time Engine 311 arrives from its North Potomac location. Similar scenarios are possible throughout much of the up-County area, thus placing greater emphasis on the urgency of adding new stations (and associated apparatus) and addressing staffing shortfalls.

---

[18] IECS – Integrated Emergency Command Structure

[19] FEMA 508-4 - *Typed Resource Definitions – Fire and Hazardous Materials Resources,* published July 2005, identifies a Type I pumper as that having the following minimum capabilities: 1000 gpm pump, 400 gallon water tank, 1200 ft 2½ inch hose, 400 ft 1½ inch hose, 200 ft 1 inch hose, and 4 personnel.

[20] OSHA 1910.134, adopted by the Maryland Occupational Safety and Health Administration in 1999, requires that whenever two firefighters enter an environment that meets the Immediately Dangerous to Life and Health (IDLH) criteria, there must be two additional properly equipped and qualified fire fighters standing by in the adjacent area to effect rescue of those within the IDLH atmosphere. The only exception to this requirement is a confirmed report of persons trapped, or down, within the IDLH environment, in which case the two first-arriving fire fighters can immediately make entry to attempt rescue.

[21] The scenario assumes that another unit from Station 14 staffed by personnel meeting the 2-out requirement has not arrived prior to E-311.

The standard dispatch assignment for a structure fire in a hydranted area includes 4 engines, 2 aerial units, a rescue squad, an ambulance, and command officers. The minimum number of firefighters in this type of scenario is only 21 (i.e., 12 aboard the engines, 6 aboard the aerial units, and 3 aboard the rescue squad). For high-rise fires, an additional engine and aerial unit are dispatched to handle additional duties associated with a larger building and hundreds of occupants. The minimum number of firefighters in the high-rise scenario is only 27 (i.e., 15 aboard the engines, 9 aboard the aerial units, and 3 aboard the rescue squad).

An engine crew of only three personnel results in a fire ground deployment where the driver of the first-due engine operates the pump, and the officer and the third person advance the attack hose line. In this scenario, the engine crew's ability to connect a supply line to a hydrant and charge the line is, for the most part, impracticable. Without a supply line, the crew must rely solely on the water in the engine's (or engine-tanker's or quint's) tank until an adequate and reliable water supply is established by the next-arriving engine, tanker, or engine-tanker, which may take several minutes to occur. Entry into the burning structure by the two-person initial entry team must be done in accordance with FRC Policy 24-07AM[22] and the OSHA Two-In/Two-Out Rule. Fire suppression tactics of the initial 3-person engine crew are, therefore, very limited until other units arrive that can provide a two-person standby team (for the safety of the initial entry team) and an adequate and reliable water supply to the first-due engine. An engine crew of four would greatly improve both the safety and effectiveness of the first-arriving engine and crew. **The fourth person on the engine would offer the following advantages**:

- The fourth person can assist the unit officer and third person with:
    - connecting a supply line to a hydrant and charging the line
    - forcible entry, if required
    - immediate rescues, if required
    - advancing the initial attack line into the structure
    - positioning a charged backup line, and/or
    - placement of the engine's ground ladders to assist with rescues and emergency escape

- The fourth person improves the effectiveness, efficiency, and safety of the engine crew operating at the fire scene

- Because the fourth firefighter allows for faster advancement of the initial attack line, fire growth is slowed, therefore minimizing property damage

- Because the fourth person can form the initial entry team with the third person to perform rescues and/or advance an attack line, the officer is able to perform his/her supervisory function, rather than participating in rescues and advancing the initial attack line.

An Aerial Unit crew of only three personnel typically results in a fire ground deployment where the driver[23] of the first-due aerial unit operates the aerial device (if required) and makes equipment and tools readily

---

[22] "Standard Operating Procedures for Safe Structure Firefighting Operations, as amended" dated January 1, 2001
[23] Occasionally, raising of the aerial device is not required; thus allowing the driver to participate in other aerial unit operations

available to firefighters, leaving only the unit officer and the third person, working as a team, to perform required tasks one at a time, rather than concurrently. Aerial unit tasks include ventilation, forcible entry (if required), positioning the aerial device and ground ladders, search and rescue, salvage of the property owner's possessions, and overhaul. Ideally, several of these tasks (e.g., ventilation, forcible entry, search and rescue) should be done concurrently by multiple two-person teams to perform rescues, minimize property damage, and improve firefighter safety. Fire suppression tactics of the initial 3-person aerial unit crew are, therefore, very limited until the second-due aerial unit or first-due rescue squad arrives, providing an additional two- or three-person team. An aerial unit crew of four would significantly improve both the safety and effectiveness of both the first-arriving aerial unit and engine, working together as intended by the FRC's Safe Structure Firefighting policy. **The fourth person would increase the effectiveness, efficiency, and level of safety of aerial unit operations, and also the likelihood of <u>concurrent</u> aerial unit tasks, by assisting the unit officer and third person with the following**:

- ventilation
- forcible entry, if required
- serving as the "Two-Out" (standby team), if so assigned by the Incident Commander
- positioning ground ladders for use during rescues or as quick means of escape for firefighters
- search and rescue, if required
- pulling ceilings and walls to expose hidden fire for those operating hose lines
- performing any other task(s) that will assist engine crews in suppressing the fire
- salvage – performed during latter stages of the fire incident
- overhaul - performed during latter stages of the fire incident

A Rescue Squad crew of only three personnel typically results in a fire ground deployment where the driver operates the on-board systems and makes equipment and tools readily available to firefighters, leaving only the unit officer and the third person, working as a team, to perform required tasks one at a time, rather than concurrently. Rescue squad tasks include search, utility control (i.e., shutting off electricity and gas), and assisting aerial units with many of their tasks. Ideally, several of these tasks (e.g., search, utility control) should be done concurrently by multiple two-person teams in order to improve fire suppression, rescue operations, and firefighter safety. Fire suppression tactics of the initial 3-person rescue squad crew are, therefore, limited. A rescue squad crew of four would improve both the safety and effectiveness of all other units working at the incident scene. **The fourth person on rescue squads would increase the effectiveness, efficiency, and level of safety of rescue squad operations, and also the likelihood of <u>concurrent</u> rescue squad tasks, by assisting the unit officer and third person with the following**:

- a systematic, thorough search of the structure
- control of all utilities serving the structure (e.g., electric, gas)
- assisting aerial units with ventilation, salvage, and overhaul
- serving as the "Two-Out" (standby team), if so assigned by the Incident Commander

Since any front-line MCFRS engine, aerial unit, or rescue squad can be dispatched as the first-due unit of its kind on any given day, it is accepted "industry" practice for **<u>all PSCC-controlled suppression units to have four-person minimum staffing at all times</u>**. Furthermore, it is equally important that all of these suppression units have at least four-person staffing because that level of staffing is also needed, regardless

of the order of arrival (i.e., 2nd, 3rd, 4th, or 5th due), to maximize the effectiveness of that particular unit on the fire ground. **Another advantage of four-person staffing on all engines, aerial units, and rescue squads is that it would place seven additional firefighters on the fire ground on the initial assignment for standard structure fires[24], which may, at times, reduce the need for the Incident Commander to request more units to achieve adequate staffing on the scene.** This would result in more suppression and rescue units being available for other fire-rescue incidents throughout the County.

The MCFRS must do everything possible to staff suppression units with at least four personnel. This means continuous efforts to recruit and retain volunteers, establish and enforce volunteer standbys, and influence elected officials to fund increased career staffing levels in accordance with FRC desired staffing levels and provisions established in NFPA Standard 1710 and in FEMA Publication 508-4. **Without 4-person staffing on engines, aerial units, and rescue squads, the safety of firefighter-rescuers is compromised, and their effectiveness in suppressing fires and rescuing building occupants is likewise compromised.**

- **Response Threshold** [»Cross-reference: Recommendation 38, Section 6]

Using the same rationale as applied to EMS units, **a suppression unit that has exceeded the 2500 call load per year threshold has reached a point where the unit's effectiveness is adversely impacted**. This maximum threshold level takes into consideration: time spent on each incident (including cleaning and preparing units for the next incident), time for training, and time for performing routine activities such as entering incident reports into the Firehouse® record management system, station and equipment maintenance, public relations, and physical fitness. By 2002, two engines had surpassed the 2500 call load per year threshold, and a third engine had almost reached that threshold. This situation will only worsen over time as the County-wide fire-related call volume increases, until more suppression units are deployed. **The MCFRS needs to establish a policy whereby additional suppression units are placed in service prior to existing units exceeding 2500 calls per year.**

- **Future Fire Suppression Tactics** [»Cross-reference: Recommendations 29 & 30, Section 6]

From a tactical viewpoint, the MCFRS must continue to evaluate and, to the greatest extent possible, implement **new fire suppression tactics, technologies, and innovations**. This includes everything from alternative suppression agents (e.g., compressed air foam) and delivery systems (e.g., compressed air foam systems-CAFS), to water supply enhancements (e.g., certified drafting sites, access to water supply along limited-access highways), to improved fire ground procedures (e.g., sustaining a minimum water flow of 500 gpm for house fires for the initial 30 minutes or longer). The 2000 *Water Supply Study* comprehensively addressed many of these topics and offered 32 recommendations for enhancing the MCFRS' ability to supply and apply water at the fire ground. As of 2005, many of the Water Supply Study recommendations had been implemented or implementation was in progress. The remainder of the recommendations should be implemented by 2015, or sooner, depending upon sufficient funding and

---

[24] Nine additional firefighters for high-rise fires

MCFRS priorities. Appendix F presents a summary of the status of the water supply recommendations as of 2004.

RESCUE

The MCFRS rescue function provides rescue services to the residents, motorists and visitors of Montgomery County. Basic rescue refers to the actions taken by MCFRS personnel to stabilize and remove trapped or pinned persons from wrecked vehicles, trains, and aircraft; or from machinery or recreational equipment. A separate category of rescue is called specialized rescue and includes water rescue, collapse rescue, confined space rescue, technical rescue, trench rescue, and high-angle rescue. This portion of the Master Plan addresses basic rescue, or simply "rescue." Specialized rescue is covered later in this section.

Rescue Apparatus [Note: Rescue apparatus and their functions are explained for the benefit of non-MCFRS plan users.]

While any engine or aerial unit crew is capable of performing simple rescues (e.g., rescuing people from a stuck elevator) using on-board tools, only the crews of extrication-capable units and heavy rescue squads have the equipment to perform more complex rescues. As of 2003, there were ten heavy rescue squads in the County, two rescue-engines, and one FRC-sanctioned extrication-equipped ladder truck. Rescue squads were located at Rescue Companies 1 and 2 and at Stations 3, 4, 9, 15, 17, 21[25], 29, and 30. The rescue engines were located at Stations 9 and 14, and the extrication-capable truck was located at Station 12.

In January 2004, the FRC adopted the recommendations of the 2003 *Report of the Rescue Squad Work Group*. A major change recommended in the report is to operate six "core" rescue squads (i.e., Rescue Squads 3, 15, 19, 29, 40[26], 291) and eight extrication-capable units (i.e., Trucks 2, 10, 12, 31, and rescue-engines located at Stations 9, 13, 14, and 17), each with guaranteed minimum staffing. Remaining rescue squads would serve in a supplemental role only when a specified level of staff is available at those stations. Extrication-capable units carry hydraulic rescue tools that allow their crews to perform simpler rescues, such as prying open damaged car doors to access injured motorists. A core rescue squad, however, is equipped with an assortment of hydraulic and pneumatic rescue tools, air bags, a winch, an air chisel, cribbing, jacks, power saws, generators, cords, air cascade systems, an EMS kit including an AED, Stokes basket, portable lights, hand tools, and other equipment to perform complex rescues.

Minimum staffing on rescue squads, per FRC policy, is three qualified personnel, however, four-person staffing is recommended in the 2003 *Report of the Rescue Squad Work Group*. Minimum staffing on extrication-capable units, per FRC policy, is three qualified personnel; however, because these units double

---

[25] RS21 is in a "controlled" status on an infrequent basis, therefore, it responds to a limited number of incidents each year, unlike other rescue squads.

[26] The report recommends moving Rescue Squad 4 to Station 40 permanently. It further recommends that Rescue Squad 17 replace RS4 as one of the six core rescue squads if the Sandy Spring VFD chooses not to move RS4 to Station 40.

as standard engines and trucks, four-person staffing is recommended by NFPA 1710. The 2001 *Aerial Unit Study* also recommends four-person staffing on all aerial units.

Staffing Issues Impacting Rescue [»Cross-reference: Recommendation 32, Section 6]

A Rescue Squad crew of only three personnel typically results in an incident deployment where the driver[27] operates the on-board rescue, power, lighting, and air cascade systems to support the rescue and makes equipment and tools readily available to rescuers, leaving only the unit officer and the third person to perform the specialized task of performing the actual rescue. When motorists are entrapped in separate vehicles, several independent rescues may be necessary, thus requiring the services of more than one rescue team using equipment from the same rescue squad. Occasionally, more than one rescue squad may be needed. Rescue squad tasks at vehicle collisions (the most frequently-occurring rescue incident on a daily basis in the County) include not only rescue of entrapped motorists, but also patient assessment, vehicle stabilizing, and incident scene illumination. Most importantly, if the unit officer is part of the two-person rescue team, then the rescue operation is not being supervised by an officer dedicated solely to that purpose. This can easily diminish the timeliness and effectiveness of the rescue as well as the safety of those performing the rescue.   A rescue squad crew of four would <u>improve both safety and effectiveness</u>. **The fourth person on rescue squads would increase the level of effectiveness and safety of rescue squad operations by:**

- Allowing the rescue squad officer to perform his/her intended supervisory role, while the two firefighter-rescuers perform the rescue

- Allowing the driver/operator to focus on their primary tasks of unit operation and equipment readiness

- Providing the flexibility to divide the 4-person crew into two 2-person teams, when needed (which results in the driver/operator having to abandon his/her normal position at the rescue squad vehicle).

Response Threshold [»Cross-reference: Recommendation 38, Section 6]

Using the same rationale as applied to EMS and suppression units, **a rescue squad that has surpassed the 2500 call load per year threshold has reached a point where the unit's effectiveness is adversely impacted**. As of 2003, two rescue squads had surpassed the 2500 call load per year threshold and others were approaching that threshold. This situation will only worsen over time as the County-wide rescue-related call volume increases. **The MCFRS needs to establish a policy whereby additional rescue squads are placed in service <u>prior to</u> existing units exceeding 2500 calls per year**.

---

[27] Occasionally, the rescue squad driver may participate in performing the actual rescue of entrapped persons, but this pulls him/her away from their primary role of unit operation and equipment readiness.

Future Rescue Issues, Needs and Strategies

As passenger and commercial vehicle designs continue to evolve, the manner in which rescues are performed must constantly be evaluated and updated to ensure the safety of both vehicle collision victims and rescuers. Hybrid vehicles that are powered by a combination of conventional fuels (e.g., gasoline, diesel), alternative fuels (e.g., natural gas) and batteries (in "electric" cars) present dangerous and challenging rescues. Safety systems such as air bags, side impact protection systems, and related systems, while offering added protection for vehicle occupants, can make rescues more dangerous, complex, and time consuming. The increased use of lightweight plastics in newer vehicles also impacts the manner in which motorists become entrapped in damaged vehicles and the severity of injuries received. To address these new issues, MCFRS personnel will need to obtain **new rescue tool technologies and establish improved rescue procedures** that will enhance their abilities to rescue citizens quickly, effectively, and safely. [»Cross-reference: Recommendation 28, Section 6]

In 2004, the only requirements for making up minimum staffing on rescue squads were to be a certified EMT and Fire Fighter II. No formal rescue training was required. To maximize the capabilities of MCFRS rescue squads, their crews require a **higher level of training and expertise**. To this end, the 2003 *Report of the Rescue Squad Work Group* recommends that those personnel comprising minimum staffing for rescue squads should have completed the FRTA's "Site Operations and Vehicle and Machinery Rescue Course" (formerly "Practical Rescue Course"), or an equivalent course, as a minimum training requirement. The requirement would be phased in to allow career and volunteer personnel the opportunity to complete the course. Members of the two Rescue Companies would also be granted equivalency for having completed their department's in-house skills check-off procedure.

The same report further recommends that those personnel comprising minimum staffing for rescue squads should also attain the skills and competencies associated with NFPA Standards 1670 "Standard for Operations and Training for Technical Rescue Incidents," and 1006 "Standard for Rescue Technician Professional Qualifications" as desired levels of expertise. As personnel comprising minimum staffing for rescue squads attain these minimum and desirable levels of competency, the capabilities of rescue squads will greatly improve. Along with improved SOPs, coordination and joint exercises/drills, these new competency requirements will help the MCFRS to achieve another recommendation in the 2003 *Rescue Squad Report* -- that **rescue squad operations fit seamlessly with those of specialty teams** that will, at times, be responding to the same incidents. For example, the first-due rescue squad crew will work at the scene of a trench collapse to free trapped laborers and then work effectively and seamlessly with the MCFRS Collapse Rescue Team upon their arrival. Rescue squad operations must also fit seamlessly with operations of the Water Rescue Team, Hazardous Incident Response Team, and Bomb Squad.

RESPONSE TO HAZARDOUS MATERIALS INCIDENTS

As explained in considerable detail in the Risk Section of this Master Plan, **substantial quantities of hazardous materials are present in Montgomery County on a daily basis**. Hazardous materials ("hazmats") are stored and used in numerous businesses, offices, laboratories, and other facilities throughout

the County, and hazmats are transported through the County by means of vehicles, trains, and underground pipelines, and over the County by aircraft. No portion of the County is free of risk from hazmats, although the urbanized areas are considerably more at risk than other areas.

In response to the County's hazmat risk, the MCFRS has had a hazardous materials response capability since 1981 when the **Hazardous Incident Response Team (HIRT)** was established. Since 1983, the team has been based at Chevy Chase Station 7. Response units consist of Hazmat 7, Support Unit 7, and Engine 71. In 1991, a hazmat support capability was established at Bethesda Station 20, consisting of Engine 201 and Tower 20, to provide an adequate number of hazmat-trained personnel to meet federal and State occupational safety and health requirements. In 2002, a second satellite hazmat capability was established at Gaithersburg-Washington Grove Station 28, with Engine 281 providing quick initial response to the central and northern portions of the County, prior to the arrival of the Station 7 and Station 20 units responding from the south. Since 2002, the full complement of units from all three hazmat stations are dispatched to each hazmat emergency occurring within Montgomery County to assemble the required number of hazmat-trained personnel and specialized hazmat equipment on the incident scene. While all career personnel and most volunteer personnel are trained to the "Hazmat Operations" level in accordance with OSHA and MOSH regulations, the **HIRT has about 80 personnel (all shifts combined) trained to the (highest) "Hazmat Technician" level** at Stations 7, 20, and 28.

Since 1990, the HIRT has averaged 109 incidents per year, or about 8.5 per month. The most commonly encountered hazmats have been flammable/combustible liquids and solids and toxic/poisonous materials. In addition to responding to "conventional" types of hazmat incidents involving commonly used materials, the HIRT and MCFRS also face the threat of more "unconventional" hazmat incidents involving weapons of mass destruction (see discussion below).

The HIRT and its support units have a comprehensive inventory of specialized equipment to handle hazmat incidents safely and effectively. The inventory includes hazmat protective gear; SCBA and other specialized respiratory protection; detection, monitoring and analysis equipment; leak/spill containment equipment and materials; assortment of tools; neutralizing agents; decontamination equipment and supplies; an extensive library of hazmat references; and an onboard computer and fax machine. **While the team is considered one of the most proficient hazmat teams in the nation, it has many ongoing and unmet needs in terms of training, equipment, and apparatus**. For example, **the existing primary hazmat response vehicle has been in need of replacement since 2002** and must be replaced in the immediate future. It is <u>imperative</u> that the HIRT keep pace with the latest hazmat and counter-WMD technology and training to ensure its readiness for future incidents. While the MCFRS, as a whole, is the County's frontline response resource for terrorist incidents, the HIRT and Bomb Squad are the MCFRS' frontline WMD /hazmat/destructive device response resources for saving the lives of both firefighter-rescuers as well as the public. [»Cross-reference: Recommendations 40, 58, 59, & 62 Section 6]

RESPONSE TO DESTRUCTIVE DEVICES & SUSPICIOUS PACKAGES

As described in the Risk Section of this Master Plan, **the County has experienced an increasing number of incidents involving destructive devices and suspicious packages. This trend is expected to continue over the ten-year period of 2005-2015**. The safe and effective handling of these types of incidents is primarily dependent upon the skills and capabilities of the MCFRS Bomb Squad. [»Cross-reference: Recommendations 60-62, Section 6]

The Fire and Explosive Investigations (F&EI) Section operates two response vehicles equipped with a full complement of explosives handling equipment, including specialized protective clothing, a robot and X-ray instruments. With this equipment, the Bomb Squad is able to determine the nature of a suspicious package or actual destructive device and render it harmless and, if necessary, remove it to a location that does not put the public at risk. In the future, state-of-the-art equipment will have to be continuously purchased to keep pace with the complexity of destructive devices being assembled and placed in public places by pranksters, criminals, and terrorists.

A goal for the 10-year period of this Master Plan is to split the fire and explosive investigation function and the bomb squad response function to provide a dedicated service in each discipline. The time demands and complexity of both of these functions continue to increase every year. To operate the program more effectively and safely, additional trained-personnel and equipment will be needed to perform each function. The independent Bomb Squad (as proposed) should have a complement of ten dedicated and centrally-located personnel, with additional auxiliary personnel having primary duties within the Fire Code Enforcement Section and Hazardous Incident Response Team. [»Cross-reference: Recommendation 40, Section 6]

Another goal for the upcoming ten-year period is to increase the depth of certified bomb technicians for the Bomb Squad, so that <u>all</u> members are certified. To accomplish this goal, new Bomb Squad personnel will have to attend destructive devices schools offered at out-of-state federal training facilities such as the FBI's Hazardous Devices School at the Redstone Arsenal in Huntsville, Alabama. [»Cross-reference: Recommendation 61, Section 6]

RESPONSE TO WEAPONS OF MASS DESTRUCTION INCIDENTS

The MCFRS response to weapons of mass destruction (WMD) remained under development at the time this Master Plan was being written and had been tested twice locally -- during the September 2001 attack on the Pentagon, and the October/November 2001 anthrax/unknown powder series of incidents. The MCFRS has been preparing for WMD and other types of terrorist incidents since 1995 following the bombing of the Murrah Federal Building in Oklahoma City. The MCFRS has accomplished, and in some cases continues to pursue, the following projects and initiatives in terms of planning and preparedness for WMD/terrorist/mass casualty incidents:

- Developed a Terrorism Annex to the County's all-hazards *Emergency Operations Plan*
- Revised Annex O (Fire-Rescue Disaster Plan) to the County's *Emergency Operations Plan*
- Enhanced the capabilities of the HIRT, Bomb Squad, and CRT
- HIRT and Bomb Squad members have attended federal schools in Alabama specializing in bomb technician certification and chemical/biological response training
- Stockpiled an inventory of protective clothing and respiratory protection for MCFRS personnel
- Expanded the inventory within the EMS Mass Casualty PODs
- Issued "Bio-packs" to all operational personnel to be used during an actual biological attack
- Obtained federal and State grant funds to support planning, preparedness, and training initiatives
- Provided and continues to provide WMD and mass casualty training to all MCFRS personnel
- Conducted and continues to conduct training exercises involving all County departments and municipal partners
- Applied and continues applying for available federal and State grants to support planning, preparedness, and training initiatives
- Developed a decontamination capability for both MCFRS personnel and the public
- Participated, and continues to participate, in the Washington DC Area "National Medical Response Team" (recently upgraded from a "Metro Medical Strike Team")
- Plans to add five new fire-rescue stations in the up-County and central-County areas to increase the level of readiness
- Participates in the Washington DC Area "National medical Response Team" (NMRT)
- Continues seek opportunities to become better prepared and to improve readiness

Through 2003, the MCFRS and other County departments have had limited experience with actual WMD incidents <u>occurring within the County</u>. The first, and only incident to date within the County, has been a series of prolonged anthrax/suspicious powder incidents in the Fall of 2001, numbering in the hundreds. While the entire nation was still anxious following the September 11, 2001 terrorist attack, a second terrorism incident impacted several municipalities between Florida and New York, including the entire Washington D.C. Metropolitan Area. With the confirmation of anthrax in several cities, citizens became highly suspicious of any powder that showed up in unexpected places and items such as mail, packages, government offices, and public places. Reports of suspicious packages, which created bomb fears among many citizens, were also on the rise during this same period. To handle the sudden deluge of incidents involving suspicious powders, substances and packages and the associated anxiety of County residents, the MCFRS took several measures.

With the MCFRS Bomb Squad and Hazardous Incident Response Team (HIRT) overwhelmed with incidents, the MCFRS set up a complement of two-person vehicles (i.e., MCFRS sedans, SUVs, pickup trucks, etc.) to perform a reconnaissance of each report of a suspicious powder, substance, or package. When the powder, substance or package could not be discounted as non-threatening, then the HIRT or Bomb Squad was dispatched to handle the material/item. On a few occasions, traces of anthrax spores were found at mail facilities and handled safely by HIRT and Bomb Squad teams. The County also established a hotline that citizens could call to ask questions, obtain factual information, and receive reassurance that they were safe. The entire two-month series of incidents served as an important learning opportunity for the MCFRS and all other County departments. It also reinforced the terrorism threat in the County and region.

Although it did not occur in Montgomery County, the September 11, 2001 attack on the Pentagon also impacted the MCFRS. The CRT (MD Task Force 1) was immediately activated by FEMA, and the team spent eight days attempting to save lives and minimizing the damage to one of the nation's most vital facilities. MCFRS members of the Metro Medical Response Team also responded and several spent up to ten days at the site. The incident served as an important learning opportunity for the CRT, as well as the entire MCFRS, regarding the many issues and challenges posed by terrorist incidents.

While the MCFRS is better prepared than many other large municipalities and counties in the United States, there is opportunity for improvement. The MCFRS must focus on the following areas to improve upon its readiness for WMD/terrorist and other mass casualty incidents:

- Continuing to enhance HIRT, Bomb Squad and CRT capabilities
- Continuing to attend federal schools in Alabama and elsewhere specializing in WMD training
- Providing WMD and mass casualty training to all MCFRS personnel
- Conducting training exercises involving MCFRS and other County and municipal departments
- Applying for available federal and State grants to support planning, preparedness, and training
- Acquiring needed equipment with funds awarded through federal and State grants
- Conducting local and regional planning, preparedness, and training funded through grants
- Continuing to participate in the Washington DC Area "National Medical Response Team"
- Adding new fire-rescue stations where needed
- Establishing a "ready reserve fleet" to supplement the regular fleet of MCFRS apparatus
- Expanding logistical capabilities (i.e., food, beverages, cots/mats, water, etc.) to support the callback of career personnel and large numbers of volunteers on-duty at stations, and to ensure at least 72-hour self-sufficiency of all on-duty personnel and MCFRS assets
- Continuing to seek other opportunities to become better prepared and to improve readiness

With the increasing threat of WMD/terrorism incidents in today's world, the MCFRS can never be overly prepared. Improving our readiness will remain a high priority effort. [»Cross-reference: Recommendations 22, 62, & 86 Section 6]

SPECIALIZED RESCUE

The MCFRS offers two categories of specialized rescue: 1) water rescue and 2) collapse, confined space, trench, and high angle rescue. Each category is described below.

• WATER RESCUE

<u>EXISTING WATER RESCUE PROGRAM</u>

To provide the public the most effective water rescue services, the River Rescue and Tactical Services (RRATS) Team was formed in 1998, utilizing existing resources located at Cabin John Stations 10 and 30. In 2002, the MCFRS Underwater Rescue Team was merged with the RRATS Team to consolidate all water-related specialty teams to obtain maximum efficiency and effectiveness.

<u>Mission and Scope</u>: The mission of the River Rescue and Tactical Services (RRATS) Team is to prevent injury or loss of life from any activity on, in, or under the water, by providing emergency rescue services, educational services, and cooperative event-related services. The program covers the inland water environment -- either surface or sub-surface, including rivers, streams, ponds, lakes, and canals; whether open water, ice-covered, or flood waters.

The RRATS Team's customers include the public and other emergency service personnel who are not specifically trained for water rescue emergencies. Both groups of customers may be from any jurisdiction or agency requiring assistance within the Mid-Atlantic region.

Types of services provided by the RRATS Team include the following:

• Emergency inland water rescue and recovery services in any water rescue scenario involving surface and sub-surface water rescue, offered on a 24/7 basis.

• Public education information and demonstrations on water safety and rescue

• Standby safety services at public events involving water activities (e.g., whitewater kayak races)

• Specialized water safety and water rescue training for other organizations

• Emergency assistance to emergency services located outside Montgomery County, as part of standing mutual aid agreements.

Services are provided on a 24/7 basis. A minimum number of team personnel are always on duty to provide service at any time. These services are requested and dispatched through the County's PSCC. RRATS Team personnel and resources are stationed at Cabin John Park Stations 10 and 30. At times of anticipated flooding, additional personnel and resources are positioned at points throughout the County to enable a more

rapid response to calls for water rescue service. For example, trained personnel were deployed in this manner during Tropical Storm Isabel, which struck the County on September 19, 2003.

Resources: RRATS Team resources include up to 60 personnel, 8 boats, 3 dedicated vehicles, and an array of specialized equipment. Most team members are career personnel divided into three shifts, each working a 24-hour shift every third day. The remainder of the team (approximately 10%) is comprised of volunteer members of the CJPVFD.

The RRATS Team apparatus and equipment includes the following:

- 2 airboats, with 300 hp engines
- 2 17-ft inflatable boats, with 90 hp motors
- 2 14-ft inflatable boats, with 40 hp motors
- 2 14-ft aluminum hull "Jon" (row) boats, with 15 hp motors
- 2 boat support units (i.e., custom vehicles designed for towing boats and carrying equipment)
- Dive support vehicle with 6 diving gear sets

Both boat support units and all boats are equipped with a variety of water rescue equipment. In addition to using boat support units for towing the team's boats, other MCFRS vehicles, such as brush trucks and utility vehicles, are used for this purpose when needed. All RRATS Team apparatus and equipment is stored at Stations 10 and 30.

Training: The team provides its members specialized training and procedures to conduct operations in a safe and effective manner, emphasizing adverse conditions which team members encounter. New team personnel undergo an initial training program where personnel must demonstrate a high level of proficiency with the required skills and abilities. Following this initial training, team personnel are then further trained and refreshed on these skills on a continuing basis as part of the routine training program. The team trains every Thursday and on the last Saturday of each month. All team personnel are required to attend training. In addition to training on the Potomac River and other nearby bodies of water, the team is occasionally granted permission to utilize the indoor basin at the Navy's David Taylor Model Basin in Carderock and the pool at the U.S. Postal Service Training Academy in Potomac for training evolutions.

Major RRATS Team Incidents: Major individual incidents that recently required RRATS Team services are listed below:
- September 19, 2003: During Tropical Storm Isabel, four RRATS "strike teams" were pre-deployed at Stations 10, 16, 25 and 29, each strike team consisting of 8 persons. The four teams, combined, deployed 4 inflatable boats, 3 Jon boats, and an airboat. When heavy flooding materialized in Baltimore County, but not in Montgomery County, three of the RRATS strike teams were sent under mutual aid agreement to Baltimore County. The response consisted of 24 team personnel, two command personnel, and four other MCFRS personnel operating in a support capacity. Boats responding to Baltimore included 3 inflatable boats, 3 Jon boats, and an airboat. The RRATS strike teams rescued approximately 200 – 250 persons in Baltimore that night.

- January 18, 2003: Rescued two hunters from the Potomac River when their boat became trapped by flowing ice.

- June 13, 2003: Rescued three persons from vehicles overcome by swift rising water from heavy rains.

- March 9, 2002: Transported MCFRS personnel, portable pump, hose and other equipment to Marsden Island in the Potomac River to suppress a brush fire.

- December 23, 2000: Rescued two hunters from the Potomac River when their boat became trapped by flowing ice.

Summary of 2001-2003 RRATS Team Incidents:

- 2001: Responded to 41 water rescue incidents. Of these, 30 required use of boats. As a result of these incidents, the RRATS Team transported 26 persons by boat to shore.

- 2002: Responded to 48 water rescue incidents. Of these, 23 required use of boats. As a result of these incidents, the Team transported 11 persons by boat to shore.

- 2003: Responded to 119 water rescue incidents. Of these, 37 required use of boats. The Team transported 24 persons by boat to shore. These numbers do not include the responses during Tropical Storm Isabel (see above).

Program Impact/Accomplishments (through 2003):

- Enhanced training of team personnel to the point where conditions that were once thought to be extremely dangerous are now handled with a great margin of safety and security.

- With intensive training and task-specific equipment, the team has increased safety and operational capabilities to that of a year-round water rescue service.

- Provided mutual aid services to Baltimore County during Tropical Storm Isabel, rescuing 200 – 250 persons from flooded areas.

- Provided water rescue specialists to the National Capital Area Park Police Aviation unit during major area flooding, thus providing service to the entire Washington Metropolitan area.

Program Issues:

- Team does not have proper flood and year-round personal protective equipment for all team members.

- Team lacks the ability to properly staff and equip a complete complement of resources for wide area flooding.

- Team has a shortage of experienced command level personnel.

- Team has limited number of trained personnel and specialized equipment for both extended and cold weather diving operations.

- Team lacks the logistical capacity to respond under mutual aid to anything other than a small-scale incident within the metropolitan area. If a positive benefit to the County can be achieved, the RRATS should pursue acquisition of needed logistical resources for large-scale, long-distance incidents, using federal or State grants or private funding sources. Needed logistical resources include transportation, food, shelter, fuel, spare parts and equipment, tools (for maintenance), and administrative resources.

FUTURE WATER RESCUE PROGRAM

The RRATS desires to increase its capabilities to serve Montgomery County and to broaden the scope of its services to include enhanced capabilities to function outside the boundaries of Montgomery County. This could also include capabilities to function with the support of aircraft from different organizations for such purposes as long-distance transport, insertion into isolated or flooded areas, and performing rescues.

The following RRATS goals should be pursued between 2005 and 2015:
- To have all RRATS personnel certified as NFPA-1006[28] Swiftwater and Rope Rescue Technicians
- To have all dive personnel certified as Public Safety Divers, Ice Divers, and Evidence Recovery Divers
- Development of experienced senior command personnel
- Development of more extensive specialized training
- To obtain proper flood and year-round PPE for all team personnel
- Upgrading of dive equipment to fully encapsulate team divers
- Availability of a team-provided, nationally-recognized training certification

[»Cross-reference: Recommendations 64 & 87 Section 6]

In terms of the RRATS future program, the ultimate goal for this team would be a unit capable of deployment anywhere within the United States, where the immediate services of highly skilled water rescuers are needed. These services might be provided in a manner similar to, and possibly in conjunction with, the FEMA US&R program. Interaction with aircraft assets would greatly enhance these capabilities as a primary method of long-distance transport and insertion of personnel and equipment. Aircraft assets would allow rapid response to distant locations isolated by flooding. This would, in effect, increase the effective service area of a limited number of highly-trained water rescue personnel. The team would also be capable of responding to any rescue incident involving water -- floods, surf, ice, etc. The RRATS program should develop procedures and agreements to operate with air assets throughout the region. The team could also develop agreements that would allow for the immediate call-up of needed resources for large-scale incidents.

---

[28] NFPA Standard 1006 – "Standard for Rescue Technician Professional Qualifications"

RRATS Team equipment-related needs include the following:
- Proper flood and year-round personal protective equipment for all team personnel
- Specialty gear for cold water/ice diving
- Reserve boats to be used when primary boats are being repaired, and during large scale incidents
- Establishment of an annual budget to support team operations

Policies and procedures need to be revised or developed for the following:
- Flood operations
- Dive operations
- Personnel notification and mobilization procedures
- Pre-deployment procedures
- Basic-level water rescue training for all MCFRS personnel
- Mutual aid deployment procedures
- Helicopter operations

Concerning training, the RRATS Team must continue regular training routines to develop and ensure the competence of all personnel, thus improving the effectiveness of rescue operations and ensuring the safety of all persons involved. Other training needs include the development of experienced command-level personnel and the development of more extensive specialized water rescue training.

- **COLLAPSE, TRENCH, CONFINED SPACE AND HIGH-ANGLE RESCUE**

EXISTING PROGRAM

In 1988, the MCFRS established the Collapse Rescue Team (CRT) for the safe and effective handling of incidents involving building collapse, trench collapse, confined space rescue, and high-angle rescue. By 1990, the team had met the criteria to become one of FEMA's elite Urban Search & Rescue (US&R) Teams and was then available to respond to FEMA's request for US&R assistance anywhere within the United States. As "Maryland Task Force 1" the CRT is prepared to respond as a County asset, State asset, or national asset. The team will also respond to the District of Columbia and northern Virginia upon request.

The MCFRS CRT, responding to certain out-of-County incidents as a State asset, also responded to the following incidents within the County and region since 2000:

- Fishers Lane garage collapse in Rockville in 2002 – one victim (fatality) recovered
- Trench collapse at Lakewood Country Club in Rockville in 2003 – two victims rescued
- Tropical Storm Isabel in 2003 - CRT on standby; no entrapments reported
- Two separate townhouse collapses in Clarksburg in 2004 – no one trapped in either incident
- Veneer wall collapse at residence in Bethesda in 2004 - one victim (fatality) recovered
- Coal train derailment in western MD in 2001 – one victim (fatality) recovered from damaged house
- Trench collapse in Howard County in 2002 - one victim recovered

- Townhouse collapse in Frederick in 2002 – no one trapped
- Tornado in La Plata in 2002 – assisted with search of area impacted
- Toys-R-Us collapse in Prince Georges County in 2003 – assisted in search operations
- Trench collapse in Frederick County in 2004 - one victim recovered

Since joining the National US&R Response System, MDTF-1 has been activated by FEMA to assist at the following national incidents involving actual or potential need for confined space rescue:

- Bombing of the Murrah Federal Building in Oklahoma City in April 1995
- Terrorist attack on the Pentagon in September 2001 (team deployed for 8 days; IST members longer)
- Hurricane Floyd in 1999 (deployed to North Carolina)
- Hurricane Fran in 1996 (deployed to North Carolina)
- Summer Olympics in 1996 in Atlanta (on standby in Atlanta)
- Hurricane Charley in August 2004 (team deployed to Florida)
- Hurricane Katrina in August 2005 (team deployed to Mississippi)
- Hurricane Ophelia in September 2005 (team deployed to North Carolina)
- Hurricane Rita in September 2005 (team deployed to Texas)

Personnel: A complete FEMA US&R Team consists of a desired staffing level of 210 personnel, split into three separate units. Stated alternately, each team has 70 positions, and each position should be three deep with personnel. Each 70-person unit can function independently of the others and is comprised of the following positions:

- Command Staff: 2 Task Force Leaders, 2 safety officers
- Search Group: 2 managers, 4 canine handlers w/canines, 2 technical search specialists
- Rescue Group: 2 managers, 26 rescue squad personnel, 2 heavy riggers
- Plans Group: 2 managers, 2 information specialists, 2 structural engineers
- Logistics Group: 2 managers, 2 communications specialists, 4 logistics specialists
- Medical Group: 2 managers, 4 medics
- Hazmat Group: 2 managers, 4 hazmat specialists

In 2005, the MCFRS CRT was comprised of 170 members. The team, therefore, needs to recruit and train 40 additional members to fully meet FEMA's desired staffing requirement (i.e., 210 members). About 90% of the team is comprised of career personnel, with the other 10% comprised of civilians (i.e., physicians, canine handlers, structural engineers) and career firefighter-rescuers from nearby jurisdictions in Maryland.

Apparatus and Equipment: Each FEMA US&R Team is equipped with a large cache of rescue and logistical equipment/supplies that has been approved and funded (primarily) by FEMA. For in-County and intrastate responses, the equipment is stored in the Collapse Rescue PODs and transported to incidents by the MCFRS Transport Unit[29]. More equipment is transported, when required, by other MCFRS units. When responding

---

[29] The transport unit, housed at Station 31, is a custom-built truck on which <u>one</u> of the MCFRS "PODs" can be loaded/unloaded by an on-board winch. A Platform on Demand (POD) is a large steel container loaded with specialized equipment and supplies.

as a FEMA Team for a national activation, the equipment cache, loaded on pallets, is loaded onto team-owned tractor-trailers and driven directly to the incident, or off-loaded onto a military or commercial aircraft within the Washington Metro Area for responses >1500 miles. Team personnel en route to national activations usually fly, except for short distance trips.

CRT Training: The CRT has a specialized training facility at the FRTA referred to as the "Rescue Mall," which is comprised of a climate-controlled assembly area/classroom, a non-climate controlled building simulating indoor collapse scenarios used for various training evolutions, and an outdoor rubble area simulating a collapsed structure used for hands-on training. CRT members train at the "Rescue Mall" one day per week, allowing each of the three career shifts to train every third week. CRT members also attend periodic training sessions sponsored by the U.S. Department of Homeland Security through FEMA.

Training is conducted with two primary goals -- local and national response. In addition, federal grants provide funding to support federally-mandated training, including mobilization drills, WMD and hazmat training, canine training, water rescue training, and other types of training. Localized training addresses trench/structural collapse, technical rope rescue, confined space rescue, canine search, incident support, mass casualty response, and related topics.

FUTURE PROGRAM

The County's need for a specialized rescue team is one that will continue for the 2005-2015 period and well beyond. In addition to the occasional in-County accidental-type incident requiring the services of the CRT, the team may be called upon in the future to respond to an in-County terrorist incident involving collapsed or severely damaged building(s). The threat of terrorism makes the team's specialized capabilities all the more important to maintain and to enhance. To improve its effectiveness, the CRT has established the following goals for the ten-year master planning period of 2005-2015, although many of these goals have short-term timelines as established by the Team:

- Increase staffing to the full FEMA-desired level of 210 members (3-deep at each of 70 positions)
- Train 100% of team personnel for their primary discipline
- Train 80% of team personnel for their secondary discipline
- Equip 100% of team members with required personal gear
- Obtain an additional US&R host fire station to improve both local and national response capabilities
- Develop and maintain a fleet (including two box-style trucks) capable of deploying all team assets
- Obtain storage area of sufficient space to inventory and maintain all equipment at Station 31 and an additional 6000 sq ft at another US&R support station
- Hire and train two fulltime staff to oversee the equipment cache
- Obtain the level of equipment required to deploy a local cache independent of the FEMA cache

[»Cross-reference: Recommendation 63, Section 6]

MCFRS has a collapse rescue POD, 3 EMS PODs (for mass casualty incidents) and a hazmat POD. The POD transport unit provides great versatility and efficiency, taking the place of several single-purpose specialty units.

A portion of the funding needed for implementing these goals would be provided by the County, or through grants and/or private donations. FEMA would fund a portion, as well, for training and equipment directly benefiting the national US&R program.

- ## SPECIAL OPERATIONS TECHNICAL FIRST RESPONDERS

Several areas of the County are situated considerable distances from stations housing MCFRS specialty teams, therefore response of specialty teams into these areas can be longer than what is considered desirable. To address this issue, "Special Operations Technical First Responder" capability needs to be established at Station 25 to cover the eastern portion of the County. Another area of the County that needs Technical First Responder capability is the northern portion. All career personnel assigned to a special operations station should be trained and certified to the Special Operations Technical First Responder level. Each station having Special Operations Technical First Responder capability should also have at least one HIRT member, one RRATS member, and one CRT member assigned to the station per shift. The role of the Special Operations Technical First Responders is to assess the nature and scope of incidents involving hazmats, water-related rescue, or collapse/trench/confined space/high-angle rescue and to develop an initial action plan, including resource needs, which can be relayed to command personnel and the ECC.
[»Cross-reference: Recommendation 65, Section 6]

- ## WASHINGTON DC AREA NATIONAL MEDICAL RESPONSE TEAM

The Washington, DC Area National Medical Response Team (NMRT) is one of four NMRTs (the others include Raleigh, NC; Denver, CO; and Los Angeles, CA) established by the U.S. Department of Homeland Security, Emergency Preparedness and Response Directorate. The Washington, DC NMRT was formerly one of 28 "Metropolitan Medical Strike Teams" (MMSTs) across the United States but has since been upgraded to a NMRT.

Approximately 30 MCFRS personnel (i.e., paramedics and EMT-Bs) serve as members of the Washington, DC Area NMRT, comprising about 25% of the 120-member team. Personnel from eleven fire departments and ten law enforcement agencies within the Washington Metropolitan Area comprise the Washington, DC Area NMRT. Doctors and nurses from the region's hospitals also serve on this NMRT.

The four NMRTs have been established to provide fast and effective specialized medical services to address mass casualty incidents within a major metropolitan area. While the NMRT can respond to any mass casualty incident related to natural hazards, terrorism, technological hazards or societal hazards, the Team is specifically designed and equipped to respond to incidents involving weapons of mass destruction. The NMRT can be deployed on a standby basis for special events (e.g., President's State of the Union Address) and mass gatherings (e.g., large event held on the "Mall"), as well as deployed during the onset of an actual incident involving mass casualties.

All NMRT members are trained to the Hazardous Materials Operations level and Weapons of Mass Destruction Operations level. Additional training in mass casualty decontamination and medical management of chemical- and biologically-injured patients composes the entry level training. Advanced training includes Hazardous Materials Technician, Advanced Disaster Medical Technician, and Advanced Hazardous Life Support. Current Team training policy requires members to attend 42 hours of specialized training annually.

To date, the Washington, DC Area MMST/NMRT has been deployed to the following events and incidents:

- Presidential Inaugurations since 1996
- Presidential State of the Union Addresses since 1996
- 18-day period following the September 11, 2001 Pentagon attack
- Various mass gatherings on the Mall in Washington, DC

The Washington, DC Area NMRT has a 5-year fleet plan that calls for placing a portion of the Team's vehicles and resources in Montgomery County, including the following:

- 2 decon vehicles (each equipped with 3 decon tents similar to those carried on MCSU-19 and MCSU-26, water heaters, and supplies)
- 1 reconnaissance vehicle for rapid deployment (equipped with Level-A PPE, SCBA, and meters)
- 1 medical vehicle ("beverage truck" to carry the Team's medical cache)
- 1 Team bus (meeting the military medical specification to carry 42 seated Team members or 16 litter patients)

[»Cross-reference: Recommendations 66 & 72, Section 6]

Should this plan be funded by HSD, a facility, or multiple facilities, will be required to house these vehicles and equipment in Montgomery County.

MASS CASUALTY INCIDENTS (Not Otherwise Addressed Above)

A mass casualty incident (MCI) is one involving numerous injured persons as the result of a single emergency triggering event or concurrent/related triggering events. The patients are usually, but not always, concentrated at a single location. MCIs may be caused by natural disasters, collisions, terrorism, fires, explosions, hazardous material releases, building collapse, civil unrest, etc. Examples of MCIs in Montgomery County might include passenger train collisions/fires, METRO Rail collisions/fires, building fires, bus collisions, hazmat incidents, building collapses, commercial airline crashes, acts of terrorism, tornadoes, hurricanes, lightning, shootings, civil disturbances, and others. Many MCIs are associated with other categories/types of incidents that are addressed elsewhere in this Master Plan (e.g., terrorism, train wrecks, building collapse). MCIs of several types have occurred in the County, and the potential exists for MCIs of any type. Past MCIs to which MCFRS has responded include, but are not limited to, the following:

- 1996 collision and fire involving two passenger trains in Silver Spring resulting in 11 fatalities
- 2002 passenger train wreck in Kensington resulting in more than 100 injured passengers
- 2000 Breast Cancer Walkathon resulting in about 300 patients with heat-related medical problems
- Nursing home fire occurring in the early 1980s in Wheaton resulting in numerous casualties
- Shootings in a Bethesda office in mid-1980s resulting in several fatalities and injured persons

As stated elsewhere in this Master Plan, the MCFRS operates four specialty teams (i.e., Bomb Squad, HIRT, CRT, RRATS Team) that can respond to a variety of MCIs. The MCFRS can also deploy a number of "PODs" (see previous footnote) that provide large quantities of EMS supplies and specialized rescue equipment for use by MCFRS personnel at MCIs. The largest of the MCFRS EMS PODs is also known within the Washington Metropolitan Area COG region as "Mass Casualty Support Unit 731" (housed at Station 31) and is recognized as a Level-II unit, supporting up to 50 patients. MCFRS also has two Level-I MCSUs at Stations 19 and 26, each unit supporting up to 25 patients each.

As stated above in the discussions on MCFRS specialty teams, a National Medical Response Team has been established in the Washington DC Metropolitan Area by the U.S. Department of Homeland Security. The Team is available to assist with any large-scale mass casualty incident occurring within the Metro Area.

For the future, the MCFRS must continuously identify and obtain new technologies and related equipment that are needed for the safe and effective handling of MCIs. The Service must also ensure that all MCFRS personnel receive adequate MCI training and participate in MCI exercises. In the future, successful handling of MCIs will depend upon a well trained and equipped MCFRS force, safe and effective SOPs, and coordination with mutual aid resources concerning planning, preparedness, training, and response and recovery operations. [»Cross-reference: Recommendation 72, Section 6]

DISASTER MANAGEMENT

Disaster management in Montgomery County is the responsibility of the Emergency Management Group (EMG). The EMG is composed of the head of each County department, designated senior staff of each department, and designated representatives of municipalities, MCPS, Montgomery College, utilities, and non-profit public safety/disaster services organizations. **When the Chief Administrative Officer (CAO) activates the Emergency Operations Center (EOC) in response to actual or imminent emergency events impacting the County, the EMG is convened at the EOC to manage and support the County's response and recovery efforts**.

Montgomery County has established a **Disaster Command System** (DCS) that is used by the EMG to manage disasters and major emergency events impacting all, or a significant portion of, the County's population. The main component of the DCS is the **Incident Management System (IMS),** which provides a unified command structure for major incidents involving the response of multiple departments, agencies, and volunteer disaster service organizations. Similar to the Incident Command System (ICS) used by emergency responders in the field, the IMS used at the EOC features a single individual in charge (i.e.,

"Disaster Manager") and has four sectors: Planning, Operations, Logistics, and Administration/Finance. The chart in <u>Appendix G</u> shows the DCS structure.

For each separate EOC activation, the individual who will serve as the Disaster Manager is appointed by the CAO, or can be the CAO himself/herself. In most cases, the CAO will appoint the head of the County department having primary responsibility for a given type of incident. The Fire Chief, or designee, would be appointed as Disaster Manager for fire-rescue related incidents (e.g., major fires, mass casualty incidents such as train wrecks, hazardous materials releases, building collapses, etc.). The Police Chief, or designee, would serve as Disaster Manager for law enforcement-related incidents (e.g., terrorism, sniper incidents, civil disturbances, etc.). The Director of the County's Homeland Security Department, or designee, would serve as Disaster Manager for certain types of homeland security incidents, other than those assigned to the Police Chief or Fire Chief. The HHS Director, or designee, would be appointed as Disaster Manager for health epidemics (e.g., flues, West Nile Virus, "SARS," e-coli outbreaks, etc.). The Directors, or designees, of other County departments (e.g., DPWT, DEP) would serve as Disaster Managers of major incidents/crises where public safety is not a major issue (e.g., pollution incident, fuel shortage, etc.). The DCS and the responsibilities of the EMG are explained in greater detail in the County *Emergency Operations Plan*.

The DCS has served the EMG and County well for many years in the successful management of major in-County emergency events. In the future, the County will continue using the DCS in managing disasters and major emergency events, but regular training and exercises must be conducted on a frequently recurring basis to ensure that the EMG is capable of implementing the DCS effectively. In preparation for regional disasters/major incidents, the County must work with all COG jurisdictions to plan for and exercise joint management of emergency events impacting the entire region. [»Cross-reference: Recommendation 74, Section 6]

SPECIAL EVENTS

Each year, several special events are hosted in Montgomery County; some sponsored by the County and others by public and/or private organizations. Many of these events are recurring such as the annual Agricultural Fair at the Gaithersburg Fairgrounds, Booz-Allen Capital Open (formerly "Kemper Open") at TPC Avenel, and First Night Montgomery held on New Year's Eve[30]. All of these events attract large crowds (5,000 to over 100,000 attendees). Other special events are hosted as well, some annually (e.g., Independence Day fireworks displays throughout the County, Oktoberfest in Germantown, Pike's Peak 10K Run in Rockville, Run in the Parks Marathon), and others are held periodically (e.g., Breast Cancer Walkathon, various community events, craft fairs, large-scale events held at the Gaithersburg Fairgrounds).

These **special events require many County services and often require EMS support** to ensure rapid response and that sufficient and appropriate resources are on hand. Considering the number of participants at these events, the likelihood is high that some participants and spectators will need EMS assistance, particularly if the event involves athletics of any type. Adverse weather conditions such as temperature

---

[30] Event is held most, but not every, year

extremes, humidity, and/or precipitation play a major role in the need for on-scene EMS support, as well. In May 2000, the unseasonably hot and humid weather during a Breast Cancer Walkathon led to about 300 walkers requiring BLS and ALS assistance for heat-related illnesses, respiratory difficulties, and cardiac problems, with about 50 patients being transported to hospitals. The unanticipated and sudden demand for numerous EMS resources presented a significant challenge for the MCFRS. As a result of MCFRS EMS units becoming overwhelmed, the Collapse Rescue Team was dispatched along with their medical cache and the MCFRS EMS PODs to establish a "field hospital" in order to effectively meet patient demand. Several lessons were learned from this prolonged incident:

- A sufficient number of appropriate resources must be in place during any special event;
- MCFRS support must be ready to expand with the size/nature of the event but cannot leave any areas of the County stripped of their regular day-to-day services;
- Vehicular and pedestrian traffic will impact the ability to respond quickly to an incident;
- MCFRS will require the support of MCP, Health Department, hospitals, and possibly other County and private agencies and organizations (e.g., DPWT, American Red Cross);
- Sufficient MCFRS command staff must be on hand at the event to provide timely and effective incident command. [»Cross-reference: Recommendations 24 and 43, Section 6]

PUBLIC INFORMATION (RELATING TO INCIDENTS)

The MCFRS has a **Public Information Officer (PIO) who is responsible for providing information to the public concerning major fire-rescue incidents**. The MCFRS PIO uses several sources of communication to reach the public, including the news media (broadcast and print), MCFRS web site, and County web site.

The PIO responds to major incidents and obtains incident-specific information from the Incident Commander and other MCFRS personnel (e.g., Safety Officer, lead Fire Investigator) as appropriate. **The PIO then provides appropriate information to the public, including some or all of the following**:

- Type of incident
- Location and time of incident
- Number of casualties (civilian and MCFRS personnel), if any
- Number of citizens impacted and how impacted
- Aid being provided to those impacted
- Cause of incident, if known, and if appropriate to release to public
- Preventive measures that citizens can implement to reduce the probability of a similar incident occurring to them, or minimizing the impact if a similar incident does occur.

The PIO cannot release certain types of information, such as the names of persons injured or killed (before next of kin have been notified independently), or the cause of the incident if it is still under investigation. The name(s) of the person(s) responsible for the incident also cannot be identified.

The PIO and his/her staff have numerous non-emergency responsibilities, as well. They are addressed under the heading "Public Information and Community Outreach" in the section below titled "Non-Emergency Functions."

Another approach to disseminating emergency and health/safety information to the public is by means of new alert/notification technologies. A Countywide alerting system (i.e., **"Alert Montgomery"**) was established in 2005 that provides public safety-related **text messages** to citizens via their personal wireless communication devices (e.g., pagers, PDAs, cell phones with text messaging). This system, administered by the County's Homeland Security Department (HSD), allows designated County departments to send text messages containing such information as warnings of imminent or unfolding emergency incidents/events, emergency instructions to the public, or other safety/health-related information to persons registered for this service. In 2005, the HSD was also in the process of establishing a voice-based **community notification system (CNS)** utilizing "reverse 911" technology to disseminate public safety messages to specific geographical areas via phone lines. For example, during a major hazmat spill, the CNS, playing a recorded emergency message, could be used to notify residents and businesses within a certain zip code, or other select geographical area, downwind of the spill to shelter in place or to evacuate. The community notification system does not require registration in order for residents to receive emergency messages, because the system will use an emergency subscriber list of landline phone numbers provided by the local exchange carrier (i.e., Verizon).

DECONTAMINATION

The ability to decontaminate people who have been exposed to hazardous chemicals, biological agents, or radioactive materials has taken on greater importance due to the threat of terrorism, but it has always been a necessary capability due to hazardous materials incidents unrelated to terrorism. **Decontamination of exposed persons, whether emergency responders or the public, is imperative for the wellbeing of those contaminated as well as for hospital staff and patients who will come in contact with victims** transported for examination and/or injuries. Removing contaminants from exposure victims and reducing the spread of contaminants are the reasons for conducting decontamination at incident scenes.

The MCFRS has several decontamination (i.e., "decon") capabilities for MCFRS personnel, however, some capabilities also apply to the public. **The HIRT has a decon system that is primarily used for decontaminating HIRT personnel and other MCFRS personnel** who have worked in close proximity to hazmats at incidents (i.e., those working in "hot" zones and "warm" zones). The system includes a portable shower and various decon solutions and brushes. The decon equipment and supplies are carried on one of the HIRT support vehicles.

Other MCFRS decon capabilities include Mass Casualty Support Units (MCSUs) housed at Silver Spring Station 19 and Bethesda Station 26. MCSU 19 and MCSU 26 are identical Type-I ambulances that have been converted to National Capital Region (NCR) Level-I MCSUs, each capable of supporting up to 25 mass casualty patients. All MCSUs carry a combination of equipment/supplies for mass casualty incidents, and the Level-I units also carry decontamination equipment/supplies. In addition to mass casualty

equipment/supplies, each Level-I MCSU carries clothing to dress up to 200 MCFRS personnel or civilians that have completed field decontamination as well as bags to hold their contaminated personal belongings and clothing. The units also carry Level-B personal protective ensembles (PPE) and full-face respirators to outfit up to 30 MCFRS personnel operating within the "warm" zone at hazmat/WMD incidents. To ensure their readiness (i.e., inventory management/maintenance, training, etc.) and to minimize response time, these units need to be staffed fulltime. There is a third MCSU housed at Station 31, however, it does not carry decon supplies and equipment. It is a NCR Level-II MCSU, capable of supporting up to 50 patients at a mass casualty incident.

In addition, most marked **command staff vehicles carry a WMD PPE Kit**. The kit contains a Level B chemical protective suit, full face piece respirator, booties, and gloves for use by command staff entering warm zones. As of 2005, approximately 50 command vehicles were equipped with these kits.

While the MCFRS does not have a dedicated decon team, all MCFRS personnel have been trained in the use of the department's decon equipment and procedures. Equipment and supplies on the three MCSUs are maintained and restocked by career personnel assigned to Rockville Station 31 – the US&R station. Funding for the supplies on the decon units came mostly from federal anti-terrorism grants and a small portion from the MCFRS budget. MCSUs-19, -26 and -31 are cross-staffed by the crews assigned to Stations 19, 26 and 31. When a MCSU is dispatched to an incident, station personnel respond with both the MCSU and the station's engine. The MCSU-31 Pod is transported by Transport-31.

Over the 10-year period of 2005-2015, the County's two Level-I MCSUs will need to be replaced with box-style trucks which are better suited to the task than the former ambulance units. In terms of equipment and supplies carried on all three MCSUs, a stock rotation/replacement process will have to be developed and funded annually. Finally, decon training for operations personnel will need to be offered on a continuous basis to ensure their readiness for this task.

ON-SCENE REHABILITATION OF FIREFIGHTER-RESCUERS

Incident scene rehabilitation ("rehab") for firefighter-rescuers is an important MCFRS function. Rehab operations exist to ensure the wellbeing of MCFRS personnel working at major long-term incidents. Rehab includes the provision of food and beverages, medical screening, and a climate-controlled shelter area that allows personnel the opportunity to rest out of the elements. Rehab re-energizes personnel who have been instructed to take a break and ensures their physical readiness to return to on-going tactical operations. It also provides an opportunity to identify personnel who are injured or otherwise unfit to return to action and those needing prompt medical attention.

For many decades, the wellbeing of firefighter-rescuers at an incident scene was assured by **canteen units operated by the LFRDs**. The canteens dispensed beverages, food, and encouragement to weary firefighter-rescuers. Several LFRDs still operate these units, including Kensington, Sandy Spring, Rockville, Upper

Montgomery County, and Gaithersburg-Washington Grove. LFRD members load and drive the canteens to incidents when requested, but these units are not always available to respond unless volunteers are available to staff them.

Another resource supporting the incident scene rehab function has been a climate-controlled bus provided by the County. When this concept was first implemented in the 1980s, a County Ride-On Bus was sent to the incident scene. Firefighters could rest in the bus away from the elements and have their vital signs taken by an EMS provider. Then in 2001, a retired Ride-On Bus was given to MCFRS and has been serving as the rehab bus ever since. The bus, known as **Bus-27**, is kept at the FRTA and is used there on a daily basis to transport students and gear around the property. On incidents, Bus-27 works in conjunction with the canteens to serve firefighters.

While canteens and the buses have provided a welcomed service for many years, **the rehab function must be improved and expanded to fully meet the needs of MCFRS personnel**. As the wellness initiative in the MCFRS continues to expand, it is becoming more apparent that the rehab function requires enhancement. Most importantly, **the rehab function must incorporate a formal medical screening component** above and beyond what is included today. Medical screening should include more than taking vital signs; it should also include monitoring of body temperature, blood enzymes, and body hydration levels. In order to offer expanded medical screening to all firefighter-rescuers who are sent to the rehab area, a **larger/wider shelter is required** than that currently provided by Bus-27. The shelter must be configured to allow personnel the space to either lie down or to sit and space for the medical screeners to perform their duties. **A custom-built, climate controlled vehicle or trailer is one alternative** for this purpose. The vehicle or trailer could be fully stocked with all necessary equipment and supplies. **A second alternative is a tent or inflatable structure** that could be erected quickly at the incident scene and set up for rehab use, with equipment and supplies brought in by EMS units or other units. Portable air-conditioners and heaters would have to be integral components of the tent or inflatable structure.

A second required improvement to the rehab function is to improve the overall nutritional value of the food and beverages served. Caffeinated drinks and foods high in fats and processed sugars are firefighter favorites at the fire ground, but these items are less than ideal from a nutritional perspective. **The Wellness, Safety and Training Division should identify foods and beverages that offer firefighters the appropriate level of nutrition and hydration** to replenish nutrients, electrolytes, and water lost during strenuous physical activity. These nutritional foods and beverages should then be acquired and stockpiled for transport to incidents by canteen units. A small quantity of non-perishable, nutritious foods and beverages should also be stored on each primary MCFRS unit to supply that unit's crew during incidents when a canteen unit cannot respond. During hot weather, all units should at least carry a container of ice water. [»Cross-reference: Recommendation 98, Section 6]

Another topic that needs attention is staffing of canteens. Presently, canteens are driven to fire-rescue incidents by available LFRD members, often administrative-only members, such as members of the "Ladies' Auxiliary." These personnel may not always be available every time a canteen is needed at an incident, particularly during the normal business day, Monday-Friday, when many are at work. **The MCFRS should examine alternative staffing of canteens for cases when volunteers are not available**. One alternative is to call upon on-duty or off-duty County employees (e.g., Ride-On Bus operators,

Department of Liquor Control, or MCPS truck drivers, etc.) who are qualified to drive vehicles of this type. Other alternatives need to be identified and evaluated, as well. Canteens play a vital role at long-term incidents, so ensuring their response on a 24/7 basis is of great importance.

A final issue that should be addressed is the effectiveness of the existing FRC-adopted rehab policy (FRC Policy 28-02) to ensure that it meets existing and future rehab needs. Command staff must insist that all personnel operating strenuously at incidents complete on-scene rehab on a rotating basis, and command staff can set a good example by doing so themselves. Stress-related medical problems occurring during incident operations, or soon thereafter, are the #1 killer of firefighters nationwide. Effective on-scene rehab can reduce the incidence of firefighter-rescuer deaths, injuries, and illnesses.

FIRE AND EXPLOSIVE INVESTIGATIONS (F&EI)

EXISTING F&EI PROGRAM

Purpose: To identify hazards and dangerous products that cause, or could cause, accidental and incendiary fires; mitigate explosive-related incidents through the use of sound judgment, rapid intervention and timely mitigation; identify and bring to justice those persons responsible for arson and explosive-related crimes; and to continue to provide fire/arson/explosive awareness training while working in partnership with our community to improve the quality of life within the community.

Scope**:** The Fire and Explosive Investigation (F&EI) Section is the law enforcement branch within MCFRS. In 2003, the Section had eleven investigators, including a Section Chief, two Captains, and eight Lieutenants who work a two-day/two-night/four day off schedule to provide 24-hour coverage. In 2003, nine of the eleven investigators were certified Bomb Technicians[31], and all investigators are certified as Hazardous Material Technicians. An ATFE-certified accelerant detection canine team is also part of the Section. The emergency functions of the F&EI Section include:

- Conducting origin and cause investigations to determine the causes of fires
- Conducting criminal investigations regarding the crimes of arson, false alarms, explosives, and terrorism
- Mitigating incidents involving improvised explosive devices, commercial explosives, military ordnance and weapons of mass destruction

The F&EI Section partners with the following County, State, and Federal departments and agencies:

- Montgomery County Police
- Federal Bureau of Alcohol, Tobacco, Firearms & Explosives
- Federal Bureau of Investigations

---

[31] F&EI personnel attend the FBI's Hazardous Devices School at the Redstone Arsenal in Huntsville, Alabama to obtain their Bomb Technician certification

- Federal Department of Juvenile Justice
- Montgomery County Hazardous Incident Response Team
- Montgomery County Public Schools
- Consumer Products Safety Commission
- State and County Attorney's Offices
- Insurance Industry
- Maryland Fire and Explosive Investigators Association
- Maryland Arson Task Force
- International Association of Arson Investigators
- International Association of Bomb Technicians and Investigators
- Local media

The F&EI Section also works closely with many federal agencies that have work sites within the County. External customers include the citizens who live in, work in, and visit the County on a daily basis. Internal customers include all components of MCFRS and other County departments and agencies.

Service delivery is provided 24-hours per day by shift investigators, who are supervised by a Captain. All of the investigators have take home vehicles that allow coverage for multiple incidents, full bomb squad callouts, serious fires involving injury or death, multiple-alarm incidents, and for the delivery of training and educational programs. The F&EI Section has a response truck with a full complement of bomb squad equipment including a robot and protective clothing. This unit is also used on major fire incidents.

The F&EI Section has had many accomplishments over the years, including the following:

- Established the County's Bomb Squad
- Developed the Accelerant Detection Canine Team
- Served as lead criminal investigative unit for crimes involving weapons of mass destruction
- Implemented improvements in investigator safety
- Established new centralized office location including garage for Bomb Squad unit
- Developed the Fireworks Abatement Program
- Served as advisors to the Juvenile Fire Setters Program ("Operation Extinguish")
- Reduced number of criminal incidents
- Emerged as a leader within the fire and explosive investigation community within the State

The F&EI Section continues to close criminal cases at a percentage above the national average of 16-18%, and the Section has increased the number of outreach programs within the community. The Section has had a significant impact on reducing the number of arson-related crimes and reducing the time to mitigate explosive-related incidents, as well.

FUTURE F&EI PROGRAM

Future Customer Needs: To address the future needs of its customers, the F&EI Section plans to continue providing its current level of service and enhance criminal investigative techniques to solve more cases involving arson and explosives. Customers can continue to expect the F&EI Section to provide guidance in protecting residential communities, businesses, and the County government from the crimes of arson, explosives and terrorism. Other needs will include providing operational security and greater involvement in the planning of major events occurring within the County.

Scope of Program: The scope of the program will call for more service delivery to respond to all incidents in a timely fashion. State-of-the-art equipment will have to be purchased to effectively and safely handle destructive device and arson-related incidents. Vehicle replacement cycles have to be reduced in length to ensure that Section vehicles are reliable, safe, and have an increased capacity for investigators' equipment. The type of services provided by the F&EI Section will be expanded to include environmental crimes and hazardous materials response.

F&EI Goals for 2005-2015:

- Close 50% of all criminal cases
- Increase the depth of certified personnel for the Bomb Squad
- Increase the number of personnel within the Section to keep pace with workload
- Continue efforts to increase incident scene safety

Future Program Delivery: Consideration should be given to splitting the **Fire and Explosive Investigations (F&EI) and Bomb Squad functions** to provide a dedicated service in each discipline. The time and complexity of both of these areas continues to increase every year. To operate the program more effectively and safely, additional trained personnel and equipment will be needed to perform each function. As of 2003, many criminal incidents are not investigated due to the focus on major high dollar incidents, which, in turn, is due to the number of personnel assigned to the Section. If the two functions were to be split in the future, the F&EI Section should have a complement of about 15 personnel to allow for origin and cause investigators and criminal investigators to conduct follow up investigations. The independent Bomb Squad (as proposed) should have a complement of about 10 dedicated and centrally located personnel.

The Bomb Squad needs to increase its explosive detection capabilities on an ongoing basis to improve incident scene safety of all MCFRS and other emergency personnel and to increase effectiveness of the Bomb Squad. Immediate availability of explosive detection canines would be one option for achieving this capability. Presently, the Bomb Squad must rely on other local/regional agencies (e.g., MCP, METRO Police) to provide this capability. Having their own explosive detection canine would enable the Bomb Squad to be self-sufficient in this regard and to quickly clear the incident scene of personnel should an explosive device be located. The most pressing need for this capability would be incidents where terrorists have hidden secondary explosive devices for the purpose of injuring emergency responders. The ability to identify and isolate any secondary devices is of paramount importance to the safety of all MCFRS and other emergency personnel working at scene of a bombing or other suspected terrorist incident.

The need for new and revised policies and procedures will be identified as the environment changes. The current program evaluation process accounts for all of the activities within the F&EI Section but, as changes occur, the evaluation process will need to be examined and modified. Should the F&EI and Bomb Squad become separate sections, as suggested, each will need to have its own unique evaluation process.

[»Cross-reference: Recommendations 40 and 89 Section 6]

NON-EMERGENCY FUNCTIONS

FIRE CODE ENFORCEMENT

Existing Program

Purpose: The purpose of the Fire Code Enforcement Office is to provide County citizens with a living and working environment that is free of fire and life safety hazards by enforcing County and State fire codes. The Fire Code Enforcement Office is the agency tasked to enforce the Montgomery County Fire Safety Code, the Maryland Fire Prevention Code, and numerous NFPA codes and standards. This office also enforces Executive Regulations that amend certain model fire codes and standards that, when adopted, become part of the Montgomery County Fire Safety Code. Executive Regulations may add, or amend, certain codes and standards that fit the specific needs of Montgomery County. Through inspections and system tests, the Fire Code Enforcement Office ensures that all permitted and licensed establishments comply with all applicable State and County fire safety requirements and laws, thus reducing the impact and number of fire related incidents and providing better protection for citizens and property.

Scope: The Fire Code Enforcement Office performs a wide variety of inspections and other services including use and occupancy inspections, enforcement, licensing of County, State and private facilities and services, and inspections of public and private schools and family daycare centers. The office is responsible for witnessing the testing of all newly installed fire detection and suppression systems in new and existing buildings. The many new residential and commercial construction projects result in an increased workload for the inspectors, with several major development projects currently in the planning and development stages within the County. The office also provides nighttime enforcement inspections of public assembly occupancies, fireworks display sites, and many other types of buildings and facilities.

Customers and program partners include the Maryland State Fire Marshal's Office, [County] Department of Permitting Services, County Health and Human Services, Maryland Child Care Administration, County Police, Economic Development Office, Department of Housing and Community Affairs, Maryland-National Capital Park and Planning Commission, Montgomery County Schools, Housing Opportunities Commission, Consumer Product Safety Commission, insurance industry, development and construction industry, individual business owners and tenants of commercial occupancies, Office of the County Attorney, and the independent cities of Rockville and Gaithersburg.

Program Needs and Issues

Significant needs of the Fire Code Enforcement Office include:

- The staffing level and funding level within the Fire Code Enforcement Office will need to be increased significantly in order for the office to attain MCFRS goals and to meet expectations and service needs of internal and external customers.

- Lack of automation results in increased time required to perform inspections, due to processing of an abundance of paperwork and files. Numerous file cabinets required to store the abundance of paperwork also decreases the amount of office space available for employees and customers. Compliance with federal laws intended to reduce paper in the work environment cannot be attained within the Fire Code Enforcement Office until a much higher level of automation is achieved.

- Lack of employing technology that would provide ready access to historical fire code-related information adversely impacts Fire Code Enforcement inspectors, MCFRS operations personnel, and MCFRS' customers.

- Several outdated business processes are still in use by the Fire Code Enforcement Office that lead to system inefficiencies and limit performance improvements.

- Many Operations Division personnel, including many officer-level personnel, lack a fundamental understanding of code and permit-related issues.

- Infrequent interaction between the Fire Code Enforcement Office and civic and business groups (e.g., County's Citizen Advisory Boards, homeowner associations, community associations, business organizations) results in a lack of understanding of fire codes and requirements by business owners, condominium owners/managers, and residents.

Future Program

Future enhancements to the Fire Code Enforcement program are needed, so that residents and business owners may be better served. **Enhancements should include** the following:

- Complete automation of the inspection process to expedite record management, enabling faster inspection turn-around time and valuable statistical data management and retrieval. Automated inspections and record management system should be consistent with federal paperwork-reduction laws and assist in optimizing time management.

- Automated statistics to reduce time required to manually compute statistics. Database records management would assist in identifying trends that impact fire protection.

- Reliable state-of-the-art computer hardware and software applications.

- Electronic access to building and fire protection permit records (including hazmat)

- Electronic business practices that move point of service delivery from the Office of Fire Code Enforcement to the customer.

- A system that generates a revenue stream that places the cost of business on system users[32] to support continued Code Enforcement service enhancements and improved customer service.

- Timely replacement of inspectors' vehicles and equipment.

- Increasing Fire Code Enforcement staffing by up to 50% to keep pace with customer demand, and re-evaluate staffing needs annually thereafter.

- Transferring fire protection plan reviewers and life safety plan reviewers back to the MCFRS Fire Code Enforcement Office from the Department of Permitting Services, so that plan reviews are once again coordinated with code enforcement activities.

- Partnering with the Operations Division to develop and implement an aggressive enforcement program that reduces community and firefighter risk by re-introducing the practice of inspections and building facility familiarization by operational firefighter-rescuers.

- Equipping all Fire Code Enforcement vehicles with mobile data computers and records management access for automation purposes.

- Providing continuous opportunity for fire inspectors to learn about the latest technology (i.e., products, applications, processes) applicable to the functions and duties for which they are responsible.

- Seeking opportunities for Fire Code Enforcement personnel to actively participate in working groups and technical committees at the County, State, and federal levels addressing issues such as fire code development and enforcement, fire protection, hazardous materials regulations, and homeland security.

- Seeking active participation on technical committees for model codes (e.g., NFPA codes) to facilitate specific local applications.

- Implementing training at the FRTA for new firefighter-rescuers that will enhance their understanding of the direct relationship between the building inspection process and responder's safety.

- Incorporating National Fire Protection Association Inspector I certification into Recruit School.

- Providing continuing educational opportunities to Operations personnel on technological improvements to sprinkler systems, fire pumps, fire alarm systems and clean-agent extinguishment systems.

- Actively participating in life safety enhancements for occupants and responders in pre-existing non-conforming buildings and facilities.

---

[32] System users are those individuals or groups utilizing MCFRS Code Enforcement inspection services, including commercial owner/occupants, building and development industries, private educational institutions, fire protection systems installers, etc.

- Implementing performance-based fire and life safety codes, with less reliance on prescriptive code requirements and compliance.

- Including preparedness in fire and rescue operations such as regular skills review, SOP changes, and updates and training opportunities.

- Introducing legislation regarding smoke detectors and automated sprinkler protection enhancements for single-family homes and existing residential multi-family buildings for improved occupant safety.

- Timely amendments to new editions of fire protection model codes for enactment through executive regulations.

- Participating with contractors and installers of the County's Public Safety Communications System who are working on enhancements to new and existing structures and facilities.

Fire Code/Legislative Initiatives

Between 2005 and 2015, **MCFRS should lead the effort to promote the risk reduction legislative initiatives listed below** that are aimed at saving lives, reducing the number and severity of injuries at home and elsewhere, and lowering property damage caused by fire. This should be a joint effort between the Fire Code Enforcement Section and the Public Information & Community Outreach Section.

- Retrofitting of all non-sprinklered nursing homes and assisted living facilities with automated sprinkler systems, within a 10-year period.
- Retrofitting of all non-sprinklered high-rise residential buildings with automated sprinkler systems or engineered fire protection packages within a 12-year period.
- Requiring sprinkler protection for the attic area and attached garages of new buildings
- Retrofitting of non-sprinklered single-family homes with automated sprinkler systems when these homes undergo major/extensive renovation.
- Requiring hard wired (w/battery back up) smoke alarms within each sleeping area and on all levels of all types of existing residential occupancies.
- Prohibiting the use of fuel-fired space heaters in single-family homes. [Law already in existence for all other types of occupancies]
- Requiring that cisterns be installed near the entrances of new developments in non-hydrated areas to ensure a readily available source of water from which to initiate at least a 500 gpm flow rate.
- Requiring that risk reduction classes (i.e., Risk Watch, CHAMP) are taught in County schools.
- Requiring that a safe usage sheet accompany all candles sold in Montgomery County.

[»Cross-references: Recommendations 31, 34, 80, 82-85, 88, 90, and 95, Section 6]

PUBLIC INFORMATION AND COMMUNITY OUTREACH

Background

The MCFRS Public Education Section has evolved from focusing on a single-issue (i.e., fire prevention) back in the 1970s, to a comprehensive, multi-focused strategy of injury prevention, safety, and fire prevention. The section, now known as "Public Information and Community Outreach," focuses on the following major risk areas: fires, falls, motor vehicle collisions, bicycle accidents, choking, struck pedestrians, poisonings, drowning, and unintentional firearm injuries. The PI&CO Section is comprised of the Public Information Office and the Divisions of Community Outreach and Life Safety Education.

A Shared Vision

The Public Information & Community Outreach (PI&CO) Section and the remainder of the MCFRS reflect a shared vision for improved quality of life for the citizens of Montgomery County and reduction in the number of preventable fires, collisions and accidents; fire-related deaths /injuries; and deaths/injuries due to other hazards. MCFRS is committed to addressing these issues through educational programs and community outreach, and by promoting a greater understanding of, and responsible attitude towards, safety.

The PI&CO Section is engaged in detailed planning, evaluation, and assessment of safety programs that involve internal and external stakeholders in meaningful and productive partnerships. PI&CO efforts are focused on making continuous progress towards specific goals and objectives and creating an all-inclusive safety and injury prevention program. The Life Safety Education Division seeks to reduce loss (i.e., lives and property) associated with fires and other hazards through education, information and targeted outreach.

Challenges

Between 2000 and 2004, public demands for fire-rescue services continued to increase while fiscal resources declined. One of the challenges facing the PI&CO Section was that there was more to be done than MCFRS had resources to accomplish. For example, the County's school system (Montgomery County Public Schools-MCPS) is the 18th largest and 12th fastest-growing school system in the United States. Injury is the greatest risk that children face today, and assigning MCFRS staff to all these schools to teach children injury prevention and life-saving actions is of paramount importance. The PI&CO Section has partnered with MCPS and has received their endorsement of the "Risk Watch" curriculum (see description below). The challenge is in the making MCFRS personnel available to augment the lessons being taught in the classroom. While the Division has strategically partnered with other public safety departments/agencies as well, public safety education resources continue to be very limited.

Life Safety Programs

The PI&CO Section's staff of three fulltime personnel is committed to the education and prevention of unintentional injuries. The Section instructs and teaches citizens how to avoid accidents and reduce the risk

of fire in and around their homes and businesses, as well as to proactively plan for their safety during natural disasters and weather-related events. Specific areas of focus and programs are described below.

Prevention Programs in the Community

In the U.S., unintentional injuries are the leading cause of death between the ages of 1 and 44 and represent the fifth leading cause of death overall. Additionally, injuries in the home account for nearly 20,000 deaths and 20 million medical visits annually in the U.S. MCFRS is working hard to educate the community and to do everything programmatically possible to lower these alarming statistics.

Improving Community Safety

The PI&CO Section has introduced many initiatives in recent years aimed at reducing accidental and deliberate fires and unintentional injuries. All life safety programs are focused on the specific needs of the targeted population, including school-age children, working adults, the elderly, the physically disabled, and the general population, and are prepared for multi-lingual audiences (i.e., English and Spanish). Several of these programs are conducted in partnership with other agencies and organizations, including MCPS, community groups, local hospitals, County departments/agencies, and others. In addition, the LFRDs have life safety programs serving the communities in which they are located, such as the Fire Safety House owned and operated by the Gaithersburg-Washington Grove Volunteer Fire Department.

Risk Reduction Strategies

There are **several effective strategies for reducing risk**. One strategy is to <u>persuade</u> people to change their behavior. Most of the current injury prevention programs, and those being established in the County, fall into this category. Strategies for educating the public about risk reduction include newsletters, special events, and educational programs for schools, senior citizen complexes, and other target populations and occupancies.

A second strategy is to <u>require</u> a change in behavior through laws and enforcement of laws. Examples include requiring the use of seatbelts, residential sprinkler systems, bike helmets, and car safety/booster seats. A third strategy is to <u>provide</u> automated protection such as airbags, automated seatbelts, long-life smoke alarms, and residential sprinkler systems.

MCFRS employs each of these three strategies when working with other public agencies, organizations and interest groups to develop and implement effective injury prevention and life safety programs.

The PI&CO Section regularly collects and analyzes fire-rescue incident data and injury data, to identify trends that indicate groups or areas needing assistance. Geographic Information System (GIS) analyses are also conducted to identify high-risk neighborhoods on which to strategically focus outreach efforts and deliver programs and materials.

Safety in Our Neighborhood

The "Safety in Our Neighborhood Program" (SON) has been a highly successful effort whereby firefighters go out into the communities that they serve delivering safety messages and printed materials to the doorstep. When residents are not available, SON packets are left on the door knob. The SON Program integrates all fire prevention and safety programs and provides them directly to residents. Examples of the materials provided include:

- Bilingual (i.e., English and Spanish) safety and injury prevention materials
- Smoke alarms and batteries
- Important seasonal and safety information

"Risk Watch" Injury Prevention Program

Risk Watch is the first comprehensive injury prevention program available for use in schools, public and private. *Risk Watch* has been instituted in Montgomery County as well as three nearby counties. The program was developed by the National Fire Protection Association (NFPA), with co-funding from Lowe's Home Safety Council, in collaboration with a panel of respected safety and injury prevention experts. *Risk Watch* is designed to help children and families create safer homes and communities by teaching the skills and knowledge they need to make appropriate choices about their personal safety and well being.

Risk Watch links teachers with community safety experts and parents. The program is divided into five age-appropriate teaching modules (i.e., Pre-K/Kindergarten, Grades 1-2, Grades 3-4, Grades 5-6, and Grades 7-8); each of which addresses eight injury-related topics. These topics, listed below, represent the eight areas in which children ages 14 and under are at greatest risk of unintentional injury. The modules have been designed for maximum flexibility, so that each program can be taught as a stand-alone unit or easily integrated into core curriculum subjects such as health, language arts, or physical education.

- Motor Vehicle Safety

- Fire and Burn Prevention

- Choking, Suffocation and Strangulation Prevention

- Poisoning Prevention

- Prevention of Falls

- Firearms Injury Prevention

- Bike and Pedestrian Safety

- Water Safety

In response to both natural disasters and manmade emergencies, the NFPA has developed a *Risk Watch* Natural Disasters component designed to prepare children and their families for dealing with disasters before, during, and after a major emergency event. Maryland's effort to help reduce unintentional injury to children launched this nationally recognized school-based curriculum in 100 classrooms during Fall 2003, including schools/classrooms in Montgomery County.

Smoke Alarm Program

Installation of smoke alarms in every residence in the County is a high priority of MCFRS to reduce the number of residents injured or killed in fires. Low-income residences are at particularly high-risk of fire, so those residences are the highest priority on which to focus. Working smoke alarms save lives and, without question, are one of the smartest purchases a homeowner can ever make. Supported by grant-funding and in-kind donations, MCFRS provides free smoke alarms and batteries to qualified County residents. In addition, the "*Change Your Clock/Change Your Battery*" Program encourages property owners to replace their smoke alarm batteries twice during the year when they set their clocks ahead in the Spring and back in the Fall. In addition, the PI&CO Section continues to work closely with the Maryland State Firemen's Association (MSFA) to provide and install smoke alarms for hearing impaired residents.

CERT/CHAMP

The MCFRS Community Emergency Response Team/Community Hazards Awareness and Mitigation Program (CERT/CHAMP) is an educational program for local citizens, business owners, and corporate partners designed to prepare individuals to assist their communities in the event of a catastrophic disaster. The program spans a three-week period and offers information and training on several aspects of emergency management. This program is a joint effort between the MCFRS and the Federal Emergency Management Agency (FEMA) which certifies the program.

Through this program, residents learn information which will assist themselves, their families, and their communities during the first critical hours following a catastrophic event. At the conclusion of the program, students receive a certificate from FEMA and a volunteer CERT/CHAMP identification card. Since the program began in December 2003, there has been significant participant enthusiasm and interest. The topics covered in CERT/CHAMP include:

- Introduction to CERT

- Hazardous Materials and Terrorist Incidents

- Fire Safety

- Disaster Medical Operations

- Search and Rescue

Senior Citizen Programs

Residential fires continue to be the main source of fire deaths in the U.S. Casualties occur in all age groups, but there are millions of Americans against whom fire has taken a heavy toll. These are people with limited capabilities -- the very young, the elderly, and the physically or mentally handicapped. Lacking the ability to cope or escape effectively from fire incidents, these persons require protective watchfulness from their families, friends, and associates. The fire death rate in the U.S. among these groups is three times that of the rest of the population, and these groups are also of highest risk in Montgomery County.

Statistics reflect that injury risks increase substantially with age. Injury, therefore, presents a significant threat to the health and well-being of senior citizens in our County. Injury results not only in premature death, but also in a significant reduction in the quality of life. Targeted and focused education and prevention is critically important to this segment of the population. With seniors over the age of 65 comprising almost 40% of the County's EMS incidents, it is critically important that this segment of the population be approached and educated.

In addition to presentations and the distribution of information, the Community Outreach Division distributes a yearly average of 10,000 "File of Life" resources to the senior and disabled populations. These highly visible "File of Life" packets contain an individual's medical information in the event of an emergency and are typically hung on residents' refrigerators where it is easily seen by MCFRS personnel. The accessibility of this information to first responders has proven life saving on countless occasions.

Special Events

The PI&CO Section hosts or participates in numerous events in communities across the County to interact with citizens and educate them about risk reduction, injury prevention, and fire safety. A representative list of these events is presented below.

- Montgomery County Agricultural Fair
- Various school events
- Various community events
- Department of Recreation-sponsored events
- Fire Prevention Week activities
- Summer Camp Program
- "Meals on Wheels" Safety Program
- Change your Clock/Change your Battery campaign
- Fireworks Abatement Program
- "Holiday Sparkles" Safety Program
- Seasonal life safety programs
- Public Service Announcements
- "KidsFest" focusing on children and family safety
- "March: Month of the Young Child" - events at local malls
- Senior Citizen "File of Life" Safety Outreach Program

- Senior Citizen Stroke Awareness Month (May) – events at various locations
- Regional safety-focused initiatives with Council of Government partners
- Weekly child safety seat programs at the Community Services Building (SafeKids-certified safety seat fitting station)
- Community health fairs

Operation Extinguish – Juvenile Firesetters Program

Juveniles are responsible for 50% of all fires that are intentionally set in the United States. The Juvenile Firesetter Intervention Project (i.e., "Operation Extinguish") is designed to address the problem of juvenile arson in Montgomery County. The reasons for juvenile fire setting range from curiosity to serious pathological disorders. Operation Extinguish initiates a consistent program for each juvenile fire-setting incident referred to the MCFRS. A coalition of firefighters, law enforcement officers, social workers, mental health workers, and educational experts assist in administering the program. Whether it is a matter of fire education or referring a juvenile to other services, the program's goal is to stop the trend of juvenile fire setting in Montgomery County.

Montgomery County SafeKids Coalition

The MCFRS is very fortunate to have an injury prevention network that includes the leader in children's safety and injury prevention -- National SafeKids. The National SafeKids Campaign is the first and only national non-profit organization dedicated solely to the prevention of unintentional childhood injury — the number one killer of children ages 14 and under. From its inception, the Campaign has relied on developing injury prevention strategies that work in the real world -- conducting public outreach and awareness campaigns, stimulating hands-on grassroots activity, and working to make injury prevention a public policy priority. Decisions to focus on particular risk areas are data-driven, based on death and injury rates and the availability of effective preventive interventions.

With a local SafeKids coalition that is comprised of County departments including MCFRS, HHS, Recreation, Police, Sheriff's Office; the County's Car Seat Program coordinator; doctors; school administrators; and several other agencies and corporate representatives, the results and impact of the program on the community and in the County's schools is significant.

A major component of the SafeKids campaign is car safety. Between 1980 and 2000, Montgomery County's population increased by 48% and the number of registered vehicles increased by 76%. Motor vehicle crashes are one of the primary causes of death and injury to children four years of age and younger. The National Highway Traffic Safety Administration (NHTSA) has concluded that safety seats are 71% effective in preventing fatalities, 67% effective in reducing the need for hospitalization, and 50% effective in preventing minor injuries. Unfortunately, non-use and misuse of child safety seats are a major concern. In a concerted effort to stem the tide of extreme risk to the well-being of children traveling in vehicles, MCFRS works in partnership with a local auto dealership to conduct free child safety seat inspection services for the public. In addition, the Community Services Building (i.e., former Fire Station 25 in Aspen

Hill) serves as the official SafeKids Car Seat Fitting Station.

Home Safety Checks and Building Evacuation Planning

MCFRS conducts home safety checks, upon request, in an effort to enhance public safety and educate citizens about the importance of life safety and injury prevention. This proactive approach is designed to promote the establishment of safe communities and familiarizes personnel with the communities that they serve. This service is especially beneficial to senior citizens and mobility-impaired residents who may have difficulty maintaining their vigilance over life safety equipment. MCFRS also works with the business community to develop and review emergency evacuation procedures, use of fire extinguishers, first aid training and other related safety topics.

NOAA Weather Radios

In 2002, MCFRS was able to provide NOAA Weather Alert Radios to Montgomery County's public and private schools through grant funds provided by MEMA. The NOAA Weather Radio broadcasts warnings and post-event information on all types of weather hazards, and is the single most comprehensive source for up-to-date information on weather emergencies. These radios provided critical, and potentially lifesaving, information to schools and to other Weather Alert Radio owners during a series of quick-developing tornadoes in northwestern Montgomery County in November 2003.

Future Public Information and Community Outreach Program

Over the ten-year span of this Master Plan, **the PI&CO Section will continue its existing programs and focus on some new areas and programs**, as well. The new efforts are described below.

Federal Fire Partnership

The U.S. Fire Administration (USFA), U.S. Consumer Product Safety Commission (CPSC), and Centers for Disease Control (CDC) have formed the "Federal Fire Partnership" to collaborate in preventing fires in the U.S., with the goal of eliminating residential fire deaths by 2020. In support of this effort, MCFRS has been planning specific activities to reach this goal in the areas of education, outreach, programs, marketing, and partnerships. Our priority will be to deliver fire-safety education and tools to homes in high-risk communities -- those with fire death rates higher than State and national averages and median household incomes below the poverty level. Homes at highest risk, those with children and elder adults, are priorities for future programs.

Program to Prevent Fire- and Fall-Related Deaths Among Older Adults
From 2000 – 2015, the number of County residents aged 65 and older is expected to increase 32% (from 92,656 to 121,584). During this same period, the number of seniors over the age of 85 is projected to increase by 47%. About 40% of all EMS transports in Montgomery County involve senior citizens.

MCFRS proposes the implementation of the NFPA program "Remembering When: A Fire and Fall Prevention Program for Older Adults," which is designed for a multi-cultural audience and has a complete, step-by-step program that provides life-saving education to this high-risk group. The curriculum was developed by the NFPA, CDC, and other partners. It uses lesson plans, brochures, fact sheets, game cards, and other educational materials to present 16 life-saving lessons. This program is the first of its kind to combine education to prevent both fire- and fall-related injuries among older adults.

Programs for School-Age Children

The PI&CO Section plans to expand its program aimed at school-age children. A brief description of the new initiates is presented below.

- "Risk Watch" Program Expansion – Expanding Risk Watch to each of the 125 elementary schools

- "Make the Right Call" – Instructs children of all ages when and how to use the 911 system.

- Career Presentations - Presentations to various middle and high schools to be coordinated with partners: Connection Resource Bank and the MCPS Family and Community Partnership Unit.

- Summer Camp Program Expansion – MCFRS is working in partnership with the Department of Recreation to bring injury prevention, safety presentations, and related information to each of the County's summer camp programs.

- Scout Troop Presentations - An initiative with the Girl Scout Council and the Boy Scouts of America National Capital Area Council to provide injury prevention and life safety information, career presentations, and assistance in their achievement of medical and first-aid related merit badges.

- Apparatus Demonstrations – Effort to acquaint children and adults with MCFRS apparatus and equipment and include activities to teach basic fire safety information.

Middle School Safety

MCFRS will collaborate with the American Red Cross and the Montgomery County Public School system on a new initiative to provide First Aid and CPR training to all seventh grade students as part of the required health curriculum. Our goal is to integrate additional information into the classes on home escape planning, emergency preparedness, pedestrian and bike safety, and the consequences of having a complacent attitude about life safety.

Fire and Rescue Safety Zone

Montgomery County has set aside 7,000 sq ft for the "Fire & Rescue Safety Zone" in the heart of one of the largest urban renewal efforts undertaken in Maryland. The Fire & Rescue Safety Zone will be a centerpiece in the Silver Spring Urban District, and will be located on the fourth floor of new Fire Station #1 on Georgia Avenue. Other occupants of the building will include a police substation (2nd floor) and the offices of the Silver Spring Urban District (3rd floor). Building upon the model of the "Fire Zone" located in New York City, operated by the FDNY, this project will be the first in the nation to integrate a working fire station into

its programming. The Safety Zone will include aspects of fire fighting, fire safety exhibits, an interactive classroom area, and further exhibits related to urban search and rescue and emergency preparedness. In addition to life safety education, the Fire & Rescue Safety Zone will introduce young people to the fire-rescue service profession and offer community volunteer opportunities.

PI&CO Section Upgrades

The PI&CO Section needs to pursue the following upgrades between 2005 and 2015:

- Add one Public Education Specialist position for each Battalion for a total of five. In addition to general safety knowledge and skills, each could have an area of particular expertise such as Seniors, CHAMP, corporate training, etc.
- If possible, set aside space for an up-County "Kids Safety Zone" in one of the proposed up-County stations
- To the greatest extent possible, include a Community Room in the design of new and renovated fire-rescue stations. Risk reduction education could be a major use of these rooms
- Dedicated funding for the CHAMP Program
- Standardized educational videos, brochures, CD-ROMS, equipment, etc. for distribution at each station
- Purchase/lease of a car and a van for use by the Public Information & Community Outreach staff
- Consider leasing space to pilot test a strategically-located retail shop to sell MCFRS paraphernalia to produce a revenue stream for use by the Public Information & Community Outreach Section. This shop could also serve as a place to host public educational demonstrations and classes

Other Initiatives and Enhancements

The PI&CO Section needs to pursue the following upgrades between 2005 and 2015:

- Conduct a study/survey on age and operability of smoke alarms focusing on target areas
- Establish a targeted program of door-to-door smoke alarm checks with handout of free 10-year smoke alarms to low income residents
- Pilot test a Cable TV fire and injury prevention show, and continue the effort if feedback is positive
- Pilot test a fully staffed customer service vehicle (e.g., van) for conducting home inspections, public education, etc., and make it permanent if it proves successful
- Establish a campaign highlighting the need to replace smoke alarms every 10 years
- Pilot test a mobile fire/injury prevention "lab" similar to that operated by the Home Safety Council, and then operate it permanently if it proves successful
- Pilot test on-line fire/injury prevention classes for the public developed jointly with Montgomery College and MCPS, including the earning of credits. Continue the initiative if it is well received
- Create on-line video communication/training classes for MCFRS personnel
- Establish mandatory fire/injury prevention classes for Operations staff as part of promotional requirements
- Establish discretionary funding for each station to purchase materials/items for public educational events
- Establish "Public Education" stations at select locations for in-depth community outreach

- Include within the design of each new station, or station that will undergo a major renovation, a "Fire Safety Education and Fire Escape Simulator."
- Arrange for dedicated space at the County Agricultural Fair to focus solely on fire/injury prevention
- Establish formal fire/injury prevention awards for citizens and MCFRS staff and an annual ceremony
- Conduct risk reduction/safety seminars for residents, business owners, and MCFRS personnel

[»Cross-references: Recommendations 50-51, 77-80, 86-88, Section 6]

FIRE AND EXPLOSIVE INVESTIGATIONS (NON-EMERGENCY SERVICES COMPONENT)

The Fire and Explosive Investigations Section has non-emergency functions as well as emergency functions (see above). Non-emergency functions include educating residents, business owners, and other County personnel regarding the work performed by the F&EI Section and the risks and precautionary measures that should be taken concerning containers or packages that might contain explosives, incendiary devices, other destructive devices, or suspicious powders/liquids/vapors.   Further information about the existing and future capabilities of the F&EI Section is presented under the "Emergency Functions" heading above.

TRAINING

Providing comprehensive training of the highest quality is of great importance to the success of the MCFRS and to the well-being of its uniformed personnel. Training is the vital first step in ensuring the effectiveness of operations and programs, efficiency within the organization, and safety of uniformed personnel. All-hazards training that prepares career and volunteer firefighter-rescuers for any incidents and situations they may encounter must be comprehensive and effective. The Fire-Rescue Training Academy (FRTA) is charged with providing this high level of training to MCFRS' uniformed personnel.

The Public Safety Training Academy (PSTA) is located on 56 acres of land west of Rockville, inside the triangular area bordered by Darnestown Road to the west, Great Seneca Highway to the east, and Key West Avenue to the north. **Since 1971 when the facility opened, PSTA usage by the MCFRS, County Police, Department of Corrections and Rehabilitation[33] and other departments, agencies and organizations has increased many-fold**. While several specialized training areas[34] have been added to the property since 1971, the academic building itself has remained largely unchanged (both structurally and layout) as have the fire-training "burn" building and the track used for emergency vehicle driver training.

---

[33] Since 2002, DC&R personnel receive their training at the former County Detention Center on Seven Locks Road in Rockville.

[34] Includes flashover simulator, urban search & rescue training facility, hazardous materials training area, and command officers' training facility

In 1971, the area around the PSTA was sparsely inhabited – mostly farmland, a few houses, and a country store. In the past thirty years, much growth has occurred around the Academy, including several housing developments, the Life Sciences Center (consisting of biotechnology facilities and research & development firms), Shady Grove Adventist Hospital, a small shopping center, and several other buildings. In 2001, the mixed-use Traville community began to take shape immediately southwest of the PSTA property across Darnestown Road. The development around the PSTA has had a moderate impact on some of the missions and training activities occurring at the facility. Most notably, **live burning of combustibles and flammable liquids has had to be considerably curtailed to reduce the amount of smoke emanating from the Academy property**. Today, most of the live fire fighting training involves the use of clean-burning natural gas and the flashover simulator.

In addition to the many training courses addressing all aspects of fire suppression, the Fire-Rescue portion of the PSTA (hereafter referenced as "Fire-Rescue Training Academy" or "FRTA") offers courses pertaining to emergency medical services (basic and advanced life support), all types of rescue, incident command, leadership, officers' candidate training, hazardous materials, urban search & rescue, and other topics relating to the MCFRS mission. A list of courses that are typically offered at the FRTA and the number of participants are presented in Appendix H.

The FRTA is used extensively and will be used to even a greater extent in the future following its renovation and expansion (see below). **The FRTA is used seven days per week, year round, including many nights**. It is common for several fire-rescue classes to be in progress simultaneously, with over 100 students at the facility. In addition to training, the FRTA is used frequently by the MCFRS for meetings, presentations, seminars, emergency exercises, promotional exams/assessments, and other events requiring classroom and conference room accommodations and audio-visual equipment.

In addition to training of MCFRS personnel, the FRTA is occasionally utilized to train various State, Federal and other counties' emergency response personnel. Fire-rescue personnel from throughout the nation who attend the annual *Firehouse*® *Conference* in Baltimore have typically come to the FRTA for some of the conference's hands-on training sessions hosted by the MCFRS.

Upon completion of the PSTA renovation/expansion, many types of training and additional courses will be available to MCFRS, MCP, and DC&R personnel as well as other County employees (e.g., Ride-On bus operators and Department of Liquor Control truck drivers using the new driver training area).

Physical Structure of the Existing PSTA

Due to the need for additional classrooms, outdoor training areas, and modernization of the 34-year old facility, the entire PSTA will undergo a major renovation and expansion during the FY06-08 timeframe. These changes will be made in accordance with **Phase 1 of the "PSTA Master Plan,**" but the renovations and additions will not result in any changes to the existing Burn Building and nearby training areas and props. **New facilities under Phase 1 will include a multi-agency driver training area, additional parking, and a public safety memorial. Phase 1 also addresses improvements to the Academic Building's HVAC system, lighting system, and storm water management system**. Concurrent with Phase 1 enhancements will be several independent CIP projects, including HVAC system improvements to

the gymnasium, and installation of a helipad.[35] Later phases of the PSTA Master Plan call for replacement, renovation, or addition of outdoor training areas and props (see details below).

Additional enhancements to the FRTA, which have not been programmed as of FY06 but should be considered for future CIP Budgets, include the following:

- Public Safety Lecture Hall: A needed addition is a Public Safety Lecture Hall[36] to be located in the existing center courtyard. The lecture hall would be the only portion of the PSTA that could seat several hundred firefighters, police officers, US&R Team members, or any large group of County employees requiring a large, secure assembly area for classes, briefings, and graduations. As of 2005, the County had no equivalent facility for assembling several hundred employees in a secure environment at any time with no advance notice.

- Expanded Second Floor: The current numbers of PSTA classrooms, conference rooms, and offices are insufficient to accommodate the demand for classes, PSTA administration, and other activities. As PSTA usage increases, a second floor in the existing Academic Building would greatly enhance the capability to train County public safety personnel. A CIP project that includes the addition of a 2nd floor above the existing classrooms has been established and funded (Project #479909), and construction should occur in the FY06-08 timeframe. Consideration should be given to a future CIP project that would further extend the 2nd floor above the front office area to accommodate future demand for office space and conference rooms.

- Burn Building Replacement/Symtron®: The burn building was built in 1971 and used for Class-A burns for many years before the FRTA converted to the more environmentally-compatible "Symtron" System[37]. The areas of the building that were used frequently for Class A burns (e.g., high temperature room) are no longer used due to damage caused by heavy usage. The entire structure needs upgrading to serve as a realistic training tool. For example, windows and door locks need to be replaced with state-of-the-art training props that will enhance training.

---

[35] The helipad will allow safe landings and take-offs of helicopters at the PSTA for training purposes and to support MCFRS and MCP operational missions.

[36] The lecture hall will serve the needs of MCFRS, MCP, Sheriff's Office, and other County departments. Presently (2004), the County lacks a facility to assemble large groups of employees for emergency briefings, various presentations, and other events in a spacious and secure environment.

[37] The Symtron System is a computer-controlled fire simulator and includes a scenario-controlled assembly for each active training compartment. Computerized fireplace control maintains the safety of the fire training environment by providing automated response to agent application to minimize gas accumulation within the training compartment when the burners are partially suffocated by the initial agent attack. Computerized fireplace control also ensures consistency of response to given actions by the trainees to provide an objective test of trainees skills in dealing with different fire situations

- Class-A Burn Site: The MCFRS' inability to utilize Class A training burns[38] seriously impacts the realistic training required for this dangerous profession. A Class-A burn site located in an off-site rural area would greatly enhance the ability of the FRTA staff to provide realistic on-demand Class-A fire suppression training that will result in a better trained and better prepared work force (both career and volunteer).

- Flammable Liquids Training Area: Flammable liquids are present throughout the County, as they are stored in a variety of containers at numerous types of occupancies and transported daily via vehicles, trains, pipelines and aircraft. The likelihood of MCFRS personnel encountering a flammable liquids fire during their period of service to the County is fairly high. As of 2005, only personnel assigned to the MCFRS HIRT (Hazmat) Team receive training in flammable liquids fires, and this training takes place outside the County at the few training sites of this nature that exist. The capability for all MCFRS suppression crews to use a flammable liquids training area would greatly enhance the MCFRS ability to control and extinguish these fires. A Class-B (i.e., flammable liquids) burn site located in an off-site rural area, preferably co-located with the Class-A burn site described above, would greatly enhance the ability of the FRTA staff to provide realistic Class-B fire suppression training.

- Prop Area Upgrading and Replacement: The prop areas in the vicinity of the burn building need to be replaced or upgraded with the latest technological advances, including forcible entry simulators, ventilation simulators, and urban and rural water supply training props. These props will also need to be budgeted for upgrades, maintenance, and eventual replacement.

- Flashover Simulator: The existing Symtron flashover simulator was purchased in 2002, and has a useful life expectancy of about 10 years. This invaluable training prop should be replaced with state-of-the-art technology around 2012.

- CPAT Building: A separate Candidate Physical Ability Training (CPAT) facility should be built and operated at the PSTA for this specific purpose. The existing CPAT area is in the PSTA gymnasium and is therefore accessible to any person entering the gym. Due to the legal issues concerning maintenance and calibration of the testing equipment, this facility needs to be off limits to everyone except those operating and participating in the MCFRS CPAT Program.

- Additional "Butler" Building: The current Butler-style building was built to store and control the increasing inventory of supplies that are needed for the practical training area on the "Hill" portion of the PSTA property. A second Butler Building is needed on the opposite side of the practical training area from the current structure, in the area presently occupied by the propane simulators. This building would house equipment that is used on that side of the property for training. In addition, it would serve as a facility to provide shelter during inclement weather and another storage area for FRTA use. It could also provide much needed garage area for placement of additional apparatus. The existing Butler-style building should be set-up and made available as an adjunct training area. Much of the hydraulic and fuel

---

[38] Class A burns are training fires involving ordinary combustibles such as wood, paper, and straw bales that produce large quantities of smoke. These "burns" were common in the 1970s and 80s but have become less acceptable to the PSTA's newer neighbors.

powered equipment is stored in this building. This would be an ideal location to teach the maintenance and care of such equipment, instead of carrying the equipment to a classroom in the main Academic Building or FRTA garage.

- Automobile Lab: The FRTA needs to establish, and continuously repair or replace, an up-to-date Automobile Lock and Safety Devices Lab. This area should include a cut-away of vehicles, so students can see and train with vehicle safety systems (locking systems, airbags, etc). These prop areas could be built under the recommended pavilions (see below), so that they are protected from the weather. A partnership should be developed and fostered with vehicle manufactures for equipment and information necessary to make this lab more useful for the rescuer.

- Dry Hydrant Prop: If the FRTA were to someday build a pond and recycle its own water, the addition of a "dry hydrant" prop would assist greatly with rural water supply training. The advantage of such a prop in its real world application would lead to a far greater level of readiness for all personnel whether or not they are assigned to stations in areas of the County lacking fire hydrants, since any suppression unit throughout the County could be dispatched to assist in a rural area. Currently, there is no prop at the FRTA to train engine drivers to use a "dry hydrant". This lack of a realistic training prop has been a major deficiency in the FRTA's rural water supply training program.

- Metro Training Area: The FRTA needs to have a dedicated METRO Rail training area. Due to the extremely dangerous nature of working underground in a rail tunnel and near high voltage lines, it is imperative that personnel train on the actual train cars and rails in as close to a real world environment as possible. METRO is very supportive of the fire-rescue service by making available a rail yard when possible for drills/exercises, but the development of the METRO training facility at the FRTA would greatly support these efforts and better prepare MCFRS personnel for incidents involving the METRO Rail System.

- New Sprinkler Lab: The current sprinkler lab is housed in the existing apparatus garage of the FRTA. The lab offers a good basic orientation to a sprinkler system, but it does not prepare firefighters for the modern sprinkler systems they will encounter on a daily basis. The existing lab does not include residential systems that are now commonplace throughout Montgomery County. An enhanced and expanded sprinkler prop built into a new burn building, or into a pavilion located within the outdoor practical training area, would greatly enhance the present basic level of training. The new lab must have the design capability of being upgraded with the latest building trends and practices.

- Pavilions: These large, covered, outdoor facilities would serve as outdoor break-out teaching areas as well as protected areas to which students could escape during inclement weather (e.g., thunderstorms, snow squalls). These pavilions would allow for greater usage of the outdoor practical training areas, which would free up classroom space in the main Academic Building.

- Bathrooms in Outdoor Training Areas: Currently, there is only one small bathroom facility within the outdoor practical training area. This is woefully inadequate for the number of students training in that area. Presently, large numbers of students must leave the outdoor training area, remove their turnout

gear, and enter the carpeted areas of the FRTA to access restrooms. This is disruptive to the class, uncomfortable for the students, and an inefficient use of training time. To alleviate this problem, additional bathroom facilities should be built within the outdoor practical training area.

- Track for Heavy Vehicles: The FRTA currently has no high-speed driver training facility for heavy emergency vehicles. Presently, a low-speed course consisting of traffic cones is set up to teach backing up and low-speed maneuverability of heavy vehicles. It is important to be able to teach and evaluate drivers of heavy vehicles on a controlled high-speed course prior to taking them out on public roadways or releasing them to the field for on-the-job training. The track could be located off-site of the FRTA.

- Running Track: A running track that would be built upon the PSTA property would greatly enhance the ability for aerobic fitness training. The need for such a track is justified on a daily basis, as MCFRS and MCP recruits and staff must presently leave the property and run, jog, or walk around the local area, either along roads or on sidewalks (where available). Many of these sidewalks are very narrow and poorly maintained, leading to numerous tripping/falling injuries. These surfaces have also led to many injuries such as muscle pulls, heel and calf injuries, and shin splints. A proper track surface would decrease nearly all of these injuries and allow for a safer environment in which to exercise. Creating a track of non-traditional size (i.e., other than 1/4 mile) should be considered, as this would discourage use by non-MCFRS and MCP personnel who prefer ¼-mile tracks, thus prolonging the track's life expectancy.

- Parking Garage: With the ever-increasing usage of the PSTA, the development of a multi-story parking garage must be considered. As the current property is being used to its maximum capacity, the need for parking spots for students driving privately-owned vehicles, as well as for apparatus drivers, has become an increasing problem. It has become, and will continue to be, a safety hazard as well, as students are parking in no-parking areas, which reduces the safety buffer between students and parked vehicles. The garage should have the ground floor built high enough to allow access for the tallest MCFRS apparatus. Upper levels would be used for personal vehicles of students and other visitors. The "footprint" of such a structure would be considerably smaller than the widespread areas used for parking today, and the garage would greatly increase the total number of parking spaces for apparatus and students' privately-owned vehicles.

- On-Site Food Service: Presently, students must leave the PSTA property to purchase meals, as on-site vending machines do not effectively meet students' nutritional needs and offer little selection. Students must walk across Darnestown Road (a dangerous and heavily traveled roadway) to reach the Travilah Square Shopping Center, or travel there, or elsewhere, by vehicle. The time spent to depart, eat, and return leaves less time for training. This problem is worst during daytime classes, such as recruit school, when many students are on campus all day. An on-site deli would effectively address this need and would be used extensively by students and PSTA staff. A vendor could be contracted to operate the deli. A bank/credit union ATM could also be located in this facility for the convenience of students, faculty, and visitors.

FRTA Curriculum Needs

- Accreditation: EMS accreditation is mandatory per COMAR regulations. Accreditation through MIEMSS is a minimum-level accreditation, whereas the FRTA's EMS training section should strive for college-level accreditation via the appropriate channels. The FRTA should continue to strive for a much higher level of educational standards for its students and courses. In addition, the FRTA should look into the possibility of becoming a State-certified higher education facility, very similar to the model of the Maryland Fire and Rescue Institute (MFRI).

- Patient Simulator: The FRTA needs state-of-the-art patient simulation systems. The ability to simulate patient issues and to recreate them for continuous training programs is crucial to an effective educational program. The "Human Patient Simulator," as well as other types of computer programmable simulators, will greatly enhance all EMS training programs. Systems that are no longer meeting program requirements must be removed from use, and funds must be secured annually to purchase state-of-the-art patient simulators as they become available.

- "Grand Rounds" in Emergency Departments/Nursing Homes: With the increasing age of the County's population, MCFRS must foster a relationship with the nursing/convalescent homes in the County, so they can become part of the BLS and ALS training programs. Grand rounds by MCFRS students in hospitals and nursing homes will provide an extraordinary amount of practical experience with the diagnosis of disease and injuries.

- Citizen's Academy: A "Citizens Fire-Rescue Academy," modeled upon MCP's "Citizens Police Academy," would allow citizens the opportunity to become familiarized with the fire-rescue service and to obtain a feel for the courses and programs in which MCFRS personnel participate. The didactic portion of the class could include an overview of the organizational structure of the MCFRS, emergency and non-emergency functions of the MCFRS, risks present in the County, and risk reduction programs. The curriculum could include hands-on training such as first aid, CPR, and use of AEDs and fire extinguishers. Ride-along opportunities could be arranged with local stations, so that citizens could get a first-hand idea of the roles and responsibilities of MCFRS personnel. The class might also include orientation to the Enhanced 911 system, Public Safety Communications Center (PSCC) and the role of MCFRS in disaster management. A tour of the PSCC could be a class activity, as well. The "Citizens Fire-Rescue Academy" curriculum would have to be developed in coordination with the curriculum of the CHAMP program, so that the two programs complement one another but not overlap in content. Participants in each program could be encouraged to participate in the other to provide them a dual opportunity to learn and become involved in community emergency preparedness.

- 2nd High School Cadet Class: The FRTA should encourage the County's Public Schools to develop two sessions for high school cadets. One session would occur in the morning and the other in the early afternoon. These time periods would still allow after-school programs for these students, but would provide better flexibility for students and better utilization of the FRTA. The two sessions could be geographically divided to provide better access for the students from the southern or eastern half of the County during one session and students from the northern or western half of the County in the other

session, which would facilitate better utilization of the County's bus system. A second cadet class would require additional instructors and greater funding. To improve efficiency, MCFRS should consider negotiating a per-student fee with MCPS for high school cadet classes.

FRTA Administrative Needs

In addition to needed enhancements to the physical plant, the FRTA is in need of several administrative improvements as described below.

- Additional Staffing: Additional fulltime staffing is required to properly manage and support the ever-increasing work load of the FRT, both uniformed and non-uniformed administrative support. Up to twelve new positions may be required to provide for recruit instruction, driver training (including the new EVOC II Course), EMS instruction, in-service training, and other types of courses. Training needs include the services of additional personnel at the Captain, Lieutenant and Master Firefighter levels as well as an EMS Nurse Clinician.   Major factors contributing to the need for additional staffing include greater federal, State and local mandates for homeland security and mass casualty training, and greater numbers of students related to these mandates, as well as the need to staff more fire-rescue stations that will need staffing in the future. The need to teach multiple recruit classes within the next few years (to address attrition and the opening of new stations) and, possibly, a second high school recruit class, underscores the need for additional fulltime FRTA staff.   The FRTA maintains a ratio of one instructor for every five students participating in training sessions involving practical skills for fire suppression, practical rescue, and EMS. For a typical recruit class of 35 students, eight instructors are required for all practical skills sessions: seven to provide instruction (one per every five students) and one additional instructor to oversee safety.

- Automated Record Management: Training records must be kept for up to 25 years due to various County, State, and federal personnel regulations. The current process for records management is very cumbersome and time consuming. An automated system that would maintain each record would allow the Registrar to more efficiently maintain the training records as mandated. Records would be purged on time, files would be more easily stored and moved, and records' accuracy would improve. The overall "footprint" in actual storage size would decrease, thus allowing a better use of office space. In addition, an automated records management system is fire-protected and, as such, would better maintain the security of the records.

- On-line Registration: Although currently possible with the existing version of Registrar, on-line registration is not used to any great degree. Students typically enroll via a paper form that is sent to the FRTA Registrar and frequently faxed to the FRTA Registrar immediately prior to the scheduled cut-off date for registration. Candidate students for Advanced Life Support training courses are currently registered on-line via a secure web site. Students are able to register, un-register, and check the availability and the roster for any ALS course offered by the FRTA. The ALS training staff can also notify students from the class roster changes, cancellations or any other special information. These notifications are made via the County's Outlook e-mail system. A web-based registration system for all

FRTA courses should be established that could be used to register all MCFRS students. A procedure for registering volunteers via this system through their LFRD training officers would need to be established.

- Resource Center/Library: The PSTA has no resource center/library, study area, or computer lab for its students, faculty, and other MCFRS personnel. At one time, the PSTA had a County library with a County librarian, but the Academy lost both in the 1980s. Today and in the future, there is a definite need for a facility located within the PSTA that can serve as a combined resource center, library, and study area. A computer lab could be included as well but may serve the students and faculty better as a stand-alone facility within the Academic Building.

- New Moveable Partition Walls: Moveable partition walls in FRTA classrooms must be replaced. These wall systems are used to divide classrooms into smaller training areas. This flexibility is necessary for testing as well as for quick development of work areas or separate user areas (such as during a disaster). The current partitions are cumbersome and difficult to move. The flexibility of modern systems allows for rapid repositioning, as needed.

- Partnerships: Partnerships with government agencies (e.g., NIST), universities (e.g., University of Maryland) and private industry that research and develop firefighting systems and equipment must be pursued and encouraged. A separate office should be established to seek and build these mutually beneficial partnerships.

FRTA Apparatus and Equipment

As described above, the FRTA has many specialized responsibilities, and its resources are used for many needs and activities. There is a need to acquire the apparatus described below for use at the FRTA over the ten year period from 2005 to 2015:

- Class A Pumper: One Class A pumper meeting specifications of the Apparatus Committee and equipped to FRC minimum standards for pumpers. Existing Engine-271 was purchased in 1995 for FRTA use and will likely require a major rehabilitation by 2005 and replacement by 2015 or sooner. Existing E-271 should be kept and maintained as the FRTA's reserve pumper (E272) upon arrival of the new front-line pumper.

- Aerial Unit: One aerial unit meeting specifications of the Apparatus Committee and equipped to the FRC minimum standards for aerial units. For several years, the FRTA has lacked an aerial unit and arrangements must be made for training classes and for in-service training sessions to detail an aerial unit from the field to the FRTA. Occasionally, when several aerial units were out of service or unavailable for other reasons, these units were, likewise, unavailable for use at the FRTA or had to return to service before class sessions were completed. This lack of a dedicated FRTA aerial unit greatly limits the ability of the FRTA to properly educate students and, therefore, reduces their operational readiness and service capabilities. A dedicated FRTA aerial unit, outfitted similar to field units, would provide this teaching capability on a continuous basis. It is well documented that adults learn best by performing the tasks associated with the concepts that they've learned in the classroom. It

is also well documented that students need to practice the skills and techniques in as close to a real world environment as possible, using equipment similar to what is used in the field to become proficient in their use.

- Heavy Rescue Squad: One heavy rescue squad meeting specifications of the Apparatus Committee and equipped to FRC minimum standards for rescue squads. As of 2005, the FRTA has a small cache of rescue equipment that is stored on pallets and in various boxes throughout the FRTA. The FRTA has been able to meet the minimum requirements of the Practical Rescue curriculum by detailing heavy rescue squads from the field to the FRTA for class use. Similar to the situation pertaining to aerial units, rescue squads cannot always be detailed to the FRTA because one or more rescue squads in the field are out of service or for other reasons. The lack of a dedicated FRTA rescue squad greatly limits the ability of the FRTA to properly educate students and, therefore, reduces their operational readiness and service capabilities.

- EMS Units: The FRTA must have at least two dedicated EMS transport units that can be used for role playing training as well as for station response training. These units must meet specifications of the Apparatus Committee and be equipped to State minimum standards for ambulances. For several years, the FRTA lacked a dedicated ambulance, and arrangements must be made for EMS training classes and for in-service training sessions to detail an ambulance from the field to the FRTA. Occasionally, because several EMS units were out of service or unavailable for other reasons, these units were unavailable for use at the FRTA or had to return to service before class sessions were completed. The lack of a dedicated FRTA EMS unit severely limits the ability of the FRTA to properly educate students and, therefore, reduces their operational readiness and service capabilities.

- Box-style Truck: One 28-ft or similar length box-style truck with a lift gate. The FRTA needs a box-style truck that can carry heavy and oversized items that cannot be transported in a pickup truck. This box truck should have a lift gate device and should be of adequate size and load carrying capacity to meet the current and future needs of the FRTA. In the past, the FRTA has had to borrow trucks of this type, when available, from the Liquor Control Board. Many of these trucks were not properly maintained and several were deemed unsafe and had to be returned. An on-site vehicle of this style would better serve the FRTA in its daily operation.

- Bus: One transit-style bus to replace existing Bus-27. In 2001, the FRTA was given a retired Ride-On bus that had been operated since 1984 and logged over 1 million road miles. With the assistance of DPWT and EMOC, the bus was transformed into a vehicle that could support FRTA use and field operations. A new bus should be purchased that could take over the dual role that Bus-27 has performed since 2001. This new bus should be built and designed for the roles of firefighter rehabilitation at fire scenes, treatment and transportation of the "walking wounded" at mass casualty incidents, as well as regular transit activities on the FRTA property and elsewhere as required by the MCFRS. The functionality of Bus-27 has proven itself time and time again, and replacing it with a new transit bus, designed and outfitted to meet MCFRS purposes, would greatly enhance the department's functionality.

- Forklift: One forklift with all-wheel drive, off-road capability. As of 2005, the FRTA does not own a forklift. The need for a forklift is multi-fold. First, the FRTA receives vehicle donations throughout the

year, and most of these vehicles do not run. The FRTA needs to be able to move these vehicles into a storage area, and later move them to an area on the hill where they will be used for extrication training or vehicle fire training. When used for training, these vehicles must be prepped for use. The ability to raise vehicles with a forklift and to work underneath them is critical for personnel safety. Additionally, the FRTA regularly receives deliveries where a forklift would be the preferred tool to unload and move these heavy loads to their proper storage locations in a safe and efficient manner.

- Updated Equipment/Tools: The FRTA must continually replace and purchase equipment similar to that used by field units. The FRTA cannot instruct and update personnel with outdated equipment. This equipment includes hand tools, hose appliances, ventilation equipment, detection/monitoring devices, medical equipment, and other types of equipment.

- All-terrain Vehicles: Two Cushman-type ATVs are needed. Use of ATVs offer several advantages at the FRTA: ATVs can traverse any terrain/conditions (e.g., curbs, crushed stone, mud, snow, ice, tight areas, etc.) encountered on the 56-acre PSTA grounds to deliver loads directly where needed. ATVs also cost less to operate than larger vehicles, and ATVs require less parking and storage space than larger vehicles.

- Staff Vehicles: The FRTA needs one SUV and one sedan, each equipped with emergency warning devices. As of 2005, the entire FRTA staff (except for the Assistant Chief of Training) shares the use of one pick-up truck. The staff's roles have become much more field-supportive in nature, as the FRTA strives to train personnel to be better prepared for emergency incidents. Due to this need, it is increasingly more apparent that uniformed staff and instructors of the FRTA must be involved with field operations and field internships. The ability of the FRTA staff to move around the County and evaluate students in a real world environment is necessary for field readiness. An SUV with 4-wheel drive and one sedan would meet the requirements of the FRTA staff. The year-round functionality of a 4-wheel drive SUV would greatly enhance the ability of the staff and instructors to interact with field personnel regardless of weather conditions. In addition, the SUV would provide another vehicle to tow/pull the various trailers that the FRTA will be using in the future.

- Mobile Air Unit: The FRTA's existing air cascade system is the most heavily utilized system of its kind in the County. Currently, the cascade system is located in the FRTA apparatus garage, and an old school bus is used to store and transport SCBAs at the FRTA. The bus is driven to the burn building, SCBA are used by students and instructors, and then SCBAs are driven back to the apparatus garage to have the cylinders filled, cleaned, and readied for the next training session. The ability to have a mobile air cascade system would greatly benefit instructors and students, as time could be saved refilling SCBA cylinders at the exact site where they are being used rather than transporting them to the cascade system in the garage for refilling and then back to the training area. In addition, a mobile air unit located at the Academy could, at times, serve operational needs in the up-County area much faster than the two existing mobile air units (i.e., Air-1 located in Bethesda and Air-16 located in Silver Spring).

FRTA Technology

As the MCFRS moves further into the 21st century, MCFRS personnel must develop a comfort level with newer technology. The FRTA should play a leading role in encouraging this changeover. Several technological systems and equipment pertaining to training are described below and should be considered for acquisition and use.

- VBrick TV: At the time this Master Plan was being written, the FRTA was using "VBrick" audio and visual encoders/decoders to stream classroom video, DVDs, and satellite programming from the FEMA Educational Television Network (FETN) over the Ethernet to PCs in MCFRS stations. "Stream Player" software allows users to view, capture, and edit the video streams. VBrick has also been used by MCFRS for live broadcasting of the Fire Chief to station PCs. VBrick appliances (e.g., VBrick 3000) compress and format video, allowing it to be steamed to any client attached to the network. A desired upgrade to the FRTA's streaming capability would be streaming video from the FRTA to TVs in fire stations (at a cost of approximately $900 per TV). In addition, video-on-demand (VOD) servers at the FRTA (at a cost of about $14,000 per VOD server) would allow field personnel to view training videos at any time by pulling up a menu of videos from a VOD box (similar to a cable box) above their TV. This system is known as "VBrick TV." The system could also be used to stream MPEG-4 video to the internet for viewing at MCFRS stations.

- CD/DVD Duplicators: As of 2005, the FRTA is completely reliant on paper (rather than electronic media), including the duplication and issuance of hardcopy manuals. The FRTA needs to convert to more electronic media for student manuals and resource materials. The cost of duplication of manuals is high, and a cost savings could be realized by shifting to electronic media. The hardware necessary to continuously create these manuals is costly to run and to maintain. The modern CD/DVD duplicator is very inexpensive to purchase and operate. The cost for a compact disk (CD) is pennies per disk and easily upgraded or enhanced. Every MCFRS fire/rescue station has computers, and most students have personal computers at home. Within the next ten years, many students will likely own laptops or have access to Department-owned laptops for their use at the FRTA. The need for paper manuals should decrease as on-line or CD-based manuals are utilized. The FRTA should mandate the use of laptop computers for all command-level courses.

- Audio-Video Server: An A-V server would allow the storage of video programs, both in-house and purchased programs, to be stored and recalled as requested by the user. The complete system includes a video-on-demand TV reception encoder/decoder unit transmitted and received via the cable TV network through the fibernet network. The flexibility that would be enjoyed by the end user is extremely important due to the on and off viewing that is dictated by the nature of the fire-rescue service.

- Courses by Satellite and Internet: The FRTA should also use, to the greatest degree possible, satellite transmitted programs and Internet-based programs to allow students the greatest flexibility in accessing distance-based training. These three distance-based training technologies, along with proposed changes in recertification requirements for ALS providers and proposed changes in recertification requirements, could lead to major cost savings over the ten year period of 2005 to 2015. The use of distance-based

learning has become the standard for large and small business alike as well as many educational institutions. These training opportunities would also benefit the entry-level student and allow for an increased opportunity for instructors to maintain their credentials and skills.

- Virtual Reality (VR) Simulators: The military has been using VR for real life training of recruits for a number of years with tremendous success. The non-military development of VR is currently available but it is cumbersome, limited in scope and usage, and is costly. Within the next few years, VR will likely become the primary training tool of for all aspects of fire and rescue training. The County and the FRTA must prepare, foster and encourage the use of this type of training. VR will not replace live fire or EMS training, but it will no doubt support and advance such training. The budget and County purchasing regulations must be developed to be sufficiently flexible to allow for accelerated purchase of VR systems, as the current procurement process does not lend itself well to the purchase of technological products.

FUTURE FRTA

Even with the planned multi-phase modernization of the PSTA, the FRTA may outgrow the existing site and facilities at some future time. Furthermore, surrounding growth has negatively impacted the FRTA's ability to train the MCFRS work force in a realistic environment. Toward the end of this Master Plan's life cycle, the County should begin reassessing the functional and spatial needs of the FRTA. Functional needs to assess might include those below.

- Classrooms that meet all standards established by accrediting agencies for both fire and EMS programs

- Symptom-simulated fires for basic level training

- Driver training facility, including computer simulators and a heavy vehicle drivers' track

- Capability to recycle its own water, with the recycled water held in a sufficiently large basin/pond to allow for water rescue training and ice rescue training

- Large running track for personal fitness training

- Facility-wide remotely-controlled cameras for both security and for providing live video feeds of on-demand training programs at the facility

HOMELAND SECURITY PREPAREDNESS AND PLANNING

As described in Section 3 of this Master Plan addressing risk, Montgomery County is at a higher level of risk from a terrorist attack than most counties in the United States because it is located adjacent to the Nation's Capital in addition to having numerous targets of its own. To minimize this risk and prepare for potential terrorist attacks, the County, its municipalities, its businesses, its volunteer organizations and all its residents must work together to prepare itself for responding to an actual or imminent attack. **Homeland security is everyone's responsibility, from elected officials, to the Homeland Security Department (HSD) Director, to other public safety departments, to schools, to business owners, to families, to individuals**.

In addition to HSD, the MCFRS is one of several County Departments (e.g., MCP, HHS, DPWT, others) having a vital role in homeland security. **The MCFRS has a primary role in preparing the public, as well as readying itself, for acts of terrorism**. MCFRS preparedness is addressed under the heading "Response to WMD Incidents" above.

While the MCFRS as a whole participates in preparing the public for terrorism, this responsibility rests primarily with the Public Information & Community Outreach (PI&CO) Section. Working jointly with the County's HSD since January 2005, the PI&CO Section has been promoting terrorism preparedness to the public even before the September 11, 2001 terrorist attacks in Arlington, Virginia and New York City. Before the County's HSD was established, **terrorism preparedness had been conveyed to the public by MCFRS through the broadcast and print media, presentations for civic groups, training courses, MCFRS web site, and through distribution of a CD titled "Montgomery County's Homeland Security Ready Reference Guide for Emergency Preparedness."** Several publications had been obtained by MCFRS from the federal Department of Homeland Security, American Red Cross, and other sources, and some publications have been developed in-house to assist the County citizens in homeland security preparedness. A sampling of these publications includes the following:

- Letters to the public from the County Executive and Fire Chief
- "Home Guide to Emergency Preparedness"
- "Emergency Readiness Checklist"
- "Your Family Disaster Supplies Kit"
- "Disaster Planning for the Elderly"
- "Guide to Emergency Preparedness" in Spanish
- "Homeland Security Preparedness for Private Facilities"
- "Facility Disaster Mitigation"
- "Bio-terrorism" information
- "Bomb Threat" information
- "Dirty Bomb" information

The main message to the public is that the most effective manner in which to prepare for terrorism is the same manner in which the public should prepare for any emergency event. Preparations common to any emergency event should include the following:

- Developing an emergency plan for the family (or occupants of a residence, if not related)
- Establishing a family notification/communications plan (part of the family emergency plan)
- Preparing the family for self-sufficiency for at least 72 hours
- Assembling a family disaster supplies kit for the home
- Assembling a disaster supplies kit for each car - in case motorists get stuck in their cars
- Assembling a disaster supplies kit for the workplace - in case returning home is not possible
- Securing the home for the anticipated hazard(s)
- Securing the workplace for the anticipated hazard(s) - in case returning home is not possible
- Listening to the radio for emergency information
- Assisting neighbors who require help in making preparations

In December 2003, MCFRS' Public Information and Community Outreach Section initiated the CERT/CHAMP Program that trains citizens in the basics of emergency management and what actions they can take to help their families and neighbors prior to and immediately following an emergency event. The program also encourages those completing the training to form Community Emergency Response Teams. The CERT /CHAMP Program is addressed in greater detail under the heading "Public Information and Community Outreach" above.

During the 10-year period of this Master Plan, the MCFRS, along with the County's HSD, must continue its efforts to prepare the department and the public for acts of terrorism. Preparations will minimize the impact of an event and will allow for faster recovery afterwards. Adequate preparedness will allow the MCFRS to respond more effectively to acts of terrorism and will allow the public to better protect themselves and their property from terrorism.

PLANNING AND RESEARCH

The MCFRS planning and research function is assigned to the Planning Office within the Division of Community Risk Reduction Services. **The mission of the Planning Office is to provide comprehensive planning, research, analytical, and GIS support to the MCFRS, and to ensure that the *Fire, Rescue, EMS, and Community Risk Reduction Master Plan* is coordinated with community master plans, emergency plans prepared by the County's Homeland Security Department, and regional emergency plans**. The Planning Office strives to perform its mission with objectivity and to base all conclusions and recommendations upon factual, unbiased data, maps, and other forms of information.

The **core services** of the Planning Office include: provision of planning, research, analytical and GIS support to the MCFRS; participation in the County's homeland security planning and preparedness initiatives; and participation in regional fire-rescue planning programs and initiatives. As part of these core services, the Planning Office has the lead role in: reviewing, amending, revising and implementing the *Fire, Rescue, Emergency Medical Services, and Community Risk Reduction Master Plan;* conducting studies assigned by the Fire Chief; and representing the Fire Chief on site evaluation teams (led by the Directors of the County's five Regional Service Centers) concerning new or relocated fire-rescue facilities.

APPROVED
FIRE, RESCUE, EMERGENCY MEDICAL SERVICES,
AND COMMUNITY RISK REDUCTION MASTER PLAN

As of 2005, two personnel comprised the Planning Office, including a Senior Planning Specialist and GIS Manager. Within 2005-2015, **the Planning Office will require at least one additional planner (FY06-07 time frame) and one additional GIS specialist (FY08-10 time frame) to accomplish the extensive list of planning initiatives listed below**.

During the ten-year period from 2005 to 2015, the Planning Office will need to conduct, coordinate, and/or participate in the following studies, projects, and tasks: [»Cross-reference: Recommendations 1 & 36, Section 6]

- Core services:
    – Provide planning, research, analytical and GIS support to MCFRS
    – Coordinate fire-rescue facility and service needs with the Regional Service Center Directors and associated Citizen Advisory Boards
    – Participate in the County's homeland security planning and preparedness initiatives
    – Participate in regional fire-rescue planning, preparedness, and response programs

- 2005 *Fire, Rescue, Emergency Medical Services, and Community Risk Reduction Master Plan:*
    – Implementation of the 2005 Master Plan recommendations and strategies
    – Review of the 2005 Master Plan 18 months after the Fire Chief took office
    – 5½-year comprehensive review of the 2005 Master Plan (in 2009)
    – Complete revision of the 2005 Master Plan (by 2015)
    – Drafting and recommending amendments to the Master Plan, as needed

- Conduct future phases[39] of the "Station Location and Resource Allocation Study":
    – Phase 3 - Shady Grove, King Farm, and Derwood areas
    – Phase 4 - Northeast quadrant of County, focusing on Route 27, 108 and 124 corridors
    – Phase 5 - Eastern County, focusing on the Route 29 corridor
    – Phase 6 - Western area of County, west of Stations 9, "22," 30, 31, 33, and "35"
    – Phase 7 - Norbeck Road corridor east of Gude Drive

    Note: Phases 3, 5, and 7 should include a component examining the Inter-County Connector as it relates to MCFRS service needs and the delivery of fire-rescue services along the highway and adjacent areas.

- Research the need for and evaluate sites for new or relocated facilities:
    – New station in Shady Grove area
    – Relocation of Station 18 in Glenmont area (dependent on SHA project[40])
    – Relocation of Station 17 (unless station is to be renovated on existing site)

---

[39] Phase 1 (1999) addressed the up-County area, and Phase 2 (2001) addressed station areas 11, 18 and 30.

[40] Station 18 will require relocation prior to the State Highway Administration reconfiguring the intersection of Georgia Avenue and Randolph Road. The anticipated date for this highway project is unknown but likely to occur prior to 2015.

- – Relocation of Station 28 (unless station is to be renovated on existing site)
- – New centralized MCFRS apparatus maintenance facility
- – New centralized MCFRS warehouse

- Coordinate business planning efforts by the MCFRS

- MCFRS Accreditation:
  - – Participate in the process to achieve accreditation status
  - – Participate in the re-accreditation process (every 5 years)

- Assist in the process to achieve improved (i.e., reduced) Insurance Services Office ratings throughout County, with emphasis on rural areas lacking fire hydrants

- NFPA 1710 Compliance:
  - – Assist in preparing a report to County Council on voluntary NFPA 1710 compliance
  - – Assist in developing an implementation policy for voluntary compliance with NFPA 1710

- Coordinate continued implementation of recommendations of FRC-approved studies (e.g., studies addressing water supply, aerial units, rescue squads)

- Conduct research on new fire, rescue and EMS products and innovations

FIREFIGHTER-RESCUER SAFETY AND WELLNESS

Safety

The purpose of the MCFRS Safety Office and the "Safety Management Plan" is to implement measures targeting the reduction of personnel injuries and vehicle collisions. The key element of the MCFRS Safety Management Plan is to provide on-duty Shift Safety Captains (recommended in Section 5 of this Plan to be upgraded to the Battalion Chief level) who will focus on injury and collision reduction through training and direct oversight of MCFRS field personnel during incidents.

- **Existing Safety Program**

The Safety Management Plan delivers safety training, prevention and educational information to field personnel. The existing Safety Captain assists in injury and vehicle collision investigations, significant injury and vehicle collision analysis, line-of-duty death investigations, and response to emergency incidents. The Safety Management Plan delivers service to MCFRS personnel through station visits and interface with Battalion Chiefs, Assistant Chiefs, and Deputy Chiefs. The program, when fully staffed, calls for four Shift Safety Captains [to be reclassified as Battalion Chiefs] and one Safety Chief at the rank of Assistant Chief. The four Safety Battalion Chiefs would result in one on duty each 24-hour shift while also addressing annual leave and sick leave. The impact of the program is measured in the reduction of Worker's

Compensation payouts and insurance premiums for vehicle collisions. In FY04, the Safety Management Plan was not funded due to implementation of a temporary departmental cost savings plan. It is anticipated that the cost savings associated with the reduction in Worker's Compensation payouts per injury/collision and the reduction in vehicle collision insurance premiums will eventually fund the Safety Officer positions.

A key component of the safety program is the *Safe Driving Action Plan* initiated in FY05. The plan includes **25 individual actions to be taken by all MCFRS personnel to reduce collisions** between MCFRS vehicles and other vehicles or objects and to prevent injuries involving apparatus movement. Key actions within the plan include reduced speeds, routine responses to certain non-life threatening incidents, greater caution at intersections and during inclement weather, backing vehicles only when a spotter is present, and wearing of safety belts. The plan also creates a list of career personnel designated to serve as drivers and backup drivers for specific heavy apparatus on each shift. Other key points of the plan include redevelopment of the driver training and certification program, decreasing the number of units responding on EMS incidents, and implementation of the community awareness program titled "See Me, Hear Me, Clear for Me" to educate motorists on the proper manner in which to make way for responding MCFRS apparatus.

- **Future Safety Program** [»Cross-reference: Recommendations 29A & 100, Section 6]

Immediate needs of the MCFRS Safety Program include **funding of the three original Safety Captain positions (reclassified to the Battalion Chief level)** to better cover the County and the safety needs of all fire-rescue employees. During FY06-07, the MCFRS Safety Office will begin the process of budgeting for these staff positions as well as vehicles and equipment to operate the MCFRS Safety Program. **Reclassifying the Safety Captain positions to the Battalion Chief level will allow them to be integrated into the command structure**. This will place a command level officer in charge of one of the most critical functions at the scene of a major incident -- the safety function.

Goals of the future safety program are to:

- **Reduce** the number of preventable **employee injuries**
- **Reduce** the number of preventable **vehicle collisions**
- Realize a **reduction in worker's compensation pay outs**
- Realize a **reduction in vehicle insurance premiums**
- Deliver **behavioral-based safety training and education** to MCFRS personnel
- **Review and revise**, as needed, **safety policies** relating to injury and collision investigation and Significant Injury Team activation

Wellness

- **Existing Program**

The **purpose** of the wellness program is to evaluate the physical, behavioral, and fitness health of all MCFRS personnel, and to monitor their health from entry to retirement. This includes follow up, problem

identification, return-to-work evaluations, occupational disease screening, fitness assessments and prescriptions, behavioral health evaluations, critical incident stress management (CISM), peer counseling, and individual counseling.

The current **scope** of the program is to provide initial medical screening for all personnel and annual screenings for career personnel. Fitness assessments, CPAT mentoring, fitness equipment purchasing, and peer fitness training are conducted for career personnel. Behavioral health services, including counseling and CISM, are available to all uniformed MCFRS personnel.

The program involves direct visits by MCFRS personnel to the Fire-Rescue Occupational Medical Section's (FROMS) Wellness Center in Rockville. Outreach occurs at fire-rescue stations and the FRTA. As of 2004, personnel resources included: the Deputy Chief of the Wellness, Safety, and Training Division, Battalion Chief of Health and Wellness, Exercise Physiologist, Psychologist, peer CISM counselors, Family Support Network personnel, peer fitness trainers, and the FROMS Staff.

Program issues (as of FY05) included the inability to have all components of the overall wellness program in place and the inability to provide the complete array of wellness services to all MCFRS personnel.

Future needs of internal customers (i.e., uniformed MCFRS personnel) include the following:

- **Expansion of health and wellness services to all uniformed MCFRS personnel** (i.e., career and volunteer personnel), including annual physicals

- **Greater outreach and education**

- **Occupational disease prevention and screening**

- **New or revised policies and procedures** on medical standards, fitness, incumbent performance testing, light duty, and injury/illness reporting and tracking

Future needs of external customers (i.e., Office of Human Resources, Office of Management and Budget, Risk Management, County Attorney, Montgomery County Career Fire Fighters Association, Montgomery College, University of Maryland, Managed Care Innovations - third party claims administrator) include cost-benefit analyses of program elements, injury and occupational disease tracking, and improved records/data management.

- **Future Wellness Program** [»Cross-reference: Recommendation 98 & 99, Section 6]

Over the 10-year period of 2005-2015, **expansion of services** and programs should include: expanded injury care, in-house physical therapy, and the addition of a physical fitness facility, and a behavioral health center. **Program goals** for the 10-year period include the following:

- **Continued monitoring of the health of all uniformed MCFRS personnel**, including fitness, medical (colon-rectal cancer screening), and behavioral health monitoring

- Monitoring of the MCFRS staff to **identify trends in injuries and occupational disease**, and targeting programs for the prevention of these health problems

- **Ensuring that the program is available to all uniformed MCFRS personnel,** including annual physicals for career personnel and IECS-certified volunteers

- **Greater access to all health and wellness programs** (e.g., PHLAME - Promoting Healthy Lifestyles; Assessing More Effects) for all uniformed MCFRS personnel through outreach efforts

An achievable level of program enhancements over the 10-year period of 2005-2015, assuming no funding issues, would include: **expansion of current programs** to all uniformed MCFRS personnel, establishing a **behavioral health center** (including the hiring of a psychologist and two licensed social workers), **expanded injury care** at FROMS, establishing a **base level of exercise equipment** for all work sites, **training** for at least 100 peer fitness trainers and 60 peer behavioral health counselors, and **improving records/data management** and tracking capabilities.

The ultimate future program, if funding were available, **might include the following**:

- **Fully staffed medical facility** capable of supporting: annual exams, return-to-work evaluations, and expanded diagnostic capability to support ultrasound, CT, mammography, colonoscopy; physical therapy, and work hardening[41] provided in-house [possibly a joint-public safety facility]

- **Full fitness facility** accommodating 40 people, with classroom capability and behavioral health lab [possibly a joint-public safety facility]

- **Peer fitness trainers in each MCFRS work site** for each shift, and peer counselors in each battalion for each shift

- **Expanded family support network**

- **Expanded injury prevention programs**

- **In-house nutritionist** [possibly a joint-public safety initiative]

An evaluation is needed of the most appropriate and cost-efficient approach to implementing these desirable enhancements to the wellness program. The concept of **joint public safety facilities (shared by MCFRS, MCP, Sheriffs, etc.) must be examined** during this evaluation.

---

[41] A rehab program specific to work conditioning

INFORMATION TECHNOLOGY

MCFRS Information Technology (IT) consists of three critical components: data, technology, and interoperability. Data is derived from several sources, including:
- Computer-aided dispatch (CAD) information
- Record management system (RMS) data records created after EMS and fire incident reports are created utilizing the new "Firehouse" software system
- GIS mapping data that contribute to the accuracy and timeliness of operational and planning decisions concerning resource allocation and station location
- Financial data
- Personnel data
- Budget data

Data can be queried and reports created for many purposes, such as analyzing growth in the county and population concentrations to identify the public's fire-rescue needs. The collection of this data also supports MCFRS performance measures.

The leveraging of technology is critical to providing premier fire-rescue services. The most critical component is the County's Fibernet network, the backbone of our communications system providing vital connectivity between all fire-rescue stations, the PSCC, the FRTA[42], and most other MCFRS work sites. Critical sub-components include the 800 MHz radio system and mobile data computers (MDCs) found in MCFRS apparatus. In addition, the integration of GIS mapping data with the CAD system provides clear and accurate routing recommendations for responding units. The growing need to move to mobile portability with as much data as possible continues to be a challenge. The evolution of the integration of CAD/GIS data, as well as the 800 MHz radio system, has put MCFRS into the forefront of Public Safety usage of technology. Furthermore, the utilization of handheld mail devices allows for communication between personnel located at incident scenes or other remote locations and key individuals at MCFRS headquarters, which has a direct bearing on increased productivity. The utilization of Voice over Internet Protocol (VoIP) and encrypted video are key components that are being implemented, as well. In addition, the need to extend incident management into the field from the EOC, via laptops and communications systems installed in the mobile command post, is critical to the outcome of major incidents.

Interoperability is likely the biggest IT challenge facing MCFRS during the 2005-2015 timeframe. **The sharing of information is imperative for MCFRS** from several viewpoints. The first viewpoint is the ability to share operational and planning information between all MCFRS components. The second is the ability to extend this interoperability into all other Montgomery County departments and agencies. The third viewpoint is the effective sharing of information between MCFRS and COG and NCR jurisdictions, other Maryland counties, State agencies, and federal agencies because of the County's proximity to the nation's capital and the ongoing terror threat. Critical information needing to be shared includes operational

---

[42] An important use of the Fibernet by the FRTA is the streaming of various training-related programming to fire-rescue stations via VBrick and the Ethernet.

data and emergency management information as it is being collected or created within the county's EOC software (i.e., "Responder Asset Management Situational Awareness for Emergencies" or "RAMSAFE"). MCFRS will also need to continue its evaluation of CapWIN[43], an interoperable data/information-sharing network under development by local, State, and federal agencies, to determine its usefulness to the department.

Interoperability with nearby jurisdictions will likely be improved as a result of the 800 MHz re-banding process to be implemented within the region during the 2005-2007 timeframe per FCC-approved plan (see pages 4-5 and 5- 49 for details). In addition, implementation of recommendations found in the report titled "Public Safety Communications Interoperability in Maryland" (dated February 28, 2005; developed through the Maryland Association of Counties and the Governor's Office of Homeland Security) will greatly improve interoperability between counties in Maryland. The report's principal recommendation calls for the creation of a Statewide 700 MHz voice and data network during the 2010-2020 time frame that will allow interoperable communications between public safety departments and agencies throughout Maryland. The system, which will use both Radio over Internet Protocol (RoIP) and Voice over Internet Protocol (VoIP), will become feasible once the 700 MHz band is made available for public safety usage[44] (possibly as early as 2008 as stated in the report). Although system planning, engineering, and design can begin before the 700 MHz frequencies are available, the statewide system will not be functional until infrastructure is in place and operational procedures have been developed, tested, and implemented.

[»Cross-reference: Recommendation 101, Section 6]

RECRUITMENT AND RETENTION [»Cross-reference: Recommendation 35, Section 6]

• VOLUNTEER FIREFIGHTER-RESCUER RECRUITMENT AND RETENTION

MCFRS partnered with the Montgomery County Fire Board in 1997 to provide volunteer recruiting through an annual service agreement. This partnership was formed when a merit position tasked with Volunteer Fire and Rescue Recruiting was abolished in 1997, and the Fire Board indicated they could successfully take over this function. The Fire Board effort had been augmented by a MCFRS vehicle for use in recruitment presentations, and has also been supported through the use of a career firefighter on overtime.

The amount of this service agreement has fluctuated over the seven year period between 1997 and 2004. The amount stood at $41,000/year for several years, but then dropped to $35,000 in FY03 and FY04. The Fire Board recruitment effort has produced large numbers of contacts or "referrals" annually, but has not been adequately tracked to indicate how many of these referrals actually join a local fire and rescue

---

[43] The Capital Wireless Integrated Network (CapWIN) is a partnership between Maryland, Virginia, and the District of Columbia to develop an interoperable first-responder data/information sharing network.
[44] The National Intelligence Reform Act includes an amendment requiring broadcasters to clear 24 MHz of spectrum within the 700 MHz band currently used for analog TV channels 63, 64, 68, and 69.

department, complete the screening process and entry level training, and go on to deliver direct fire, rescue, and EMS services to the citizens of Montgomery County[45].

No data exists on retention rates of volunteer members either. The lack of hard recruitment and retention data led, in part, to the designation in 2002 of a revamped FRC committee (i.e., renamed "Community Outreach, Public Relations and Volunteer Recruitment & Retention Committee") that had been given volunteer recruitment and retention responsibilities. Despite this change, recruiting results did not improve greatly. Nonetheless, **volunteer recruitment and retention remains a <u>high priority</u>, as the County is committed to a combination career and volunteer Fire and Rescue Service.** A fulltime MCFRS recruiter is the best strategy for future recruitment and retention of volunteer (and career) personnel. The recruiter, whose position was established in FY05, must establish a comprehensive and aggressive volunteer recruitment and retention program. In keeping with the MCFRS goal of achieving and **maintaining a diverse work force**, the volunteer recruitment and retention program must ensure that recruitment efforts address this goal. Diversity of the work force is critical to the MCFRS mission, as risk reduction activities and incident response requires daily interaction with the public. This interaction is enhanced when volunteer personnel are representative of the diverse population being protected.

- **CAREER FIREFIGHTER-RESCUER RECRUITMENT AND RETENTION**

Ensuring that the MCFRS has a sufficient number of qualified applicants to meet the department's need for career personnel and retaining these personnel for long-term service remains a top priority over the next ten years and beyond. Considering annual retirements of long-time employees as well as increased staffing needs to staff new stations and to meet the proposed 4-person minimum staffing requirement for engines, aerial units and rescue squads, recruiting qualified applicants and retaining their services for the future is of paramount importance. Being just one of many counties and municipalities within the Washington DC Metropolitan Area, Montgomery County must compete with these jurisdictions to attract the most qualified applicants. After new personnel are hired and trained, the fertile job market within the region can entice employees to switch jobs at any time. **To meet these challenges, the MCFRS must put forth its best effort to recruit and retain qualified applicants.** This task can only be accomplished by establishing a comprehensive and aggressive career firefighter-rescuer recruitment and retention program, led by the fulltime MCFRS recruiter established in FY05, and eventually involving a staff of recruitment assistants.

In keeping with the MCFRS goal of achieving and **maintaining a diverse work force**, the MCFRS recruiter must ensure that recruitment efforts address this goal. Diversity of the work force is critical to the MCFRS mission, as risk reduction and incident response requires daily interaction with the public. This interaction is enhanced when volunteer personnel are representative of the diverse population being protected. As stated above, diversity of the work force is critical to the MCFRS mission, as risk reduction activities and incident response requires daily interaction with the public. This interaction is enhanced when career personnel are representative of the diverse population being protected.

---

[45] The number of active volunteer members recruited by this process is thought to be under 10 percent of the total number of referrals produced.

PROGRAM ELALUATION

MCFRS Goal #9 states that the MCFRS should "establish an organization-wide program of evaluation to determine how well MCFRS goals and objectives are being met and to measure our [MCFRS'] performance and progress." To meet this important goal, the MCFRS needs to **expand the scope of its performance measures program to include measures that will address all MCFRS programs and elements and to make performance measures a regularly-used management tool by all MCFRS program managers**. Program areas whose performance was not being measured in 2004-05 (when this Plan was in development) included all elements of the Division of Volunteer Services, as well as asset management (e.g., apparatus/equipment maintenance, apparatus/equipment replacement, facility maintenance), IT services, firefighter-rescuer wellness, and recruitment and retention. While performance measures were under development for some of these programs, measures must be developed for <u>all</u> of these programs/elements and any others created by the Fire Chief as a result of Bill 36-03 and Chapter 21 (as amended in May 2004). Performance measures are the best manner in which to evaluate programs, provided that complete, accurate and meaningful data is available on which to base performance.

Beginning in FY99, the MCFRS has developed and updated between one and nine performance measures to meet an annual requirement set forth by the County's Chief Administrative Officer and OMB Director. While the requirement to submit measures to OMB was the impetus for MCFRS to first develop performance measures, **MCFRS program managers need to establish an ongoing routine of updating and utilizing these measures regularly (e.g., monthly or quarterly) to measure the performance of their programs.**

Besides the need for additional performance measures, **existing performance measures need to be continuously assessed for needed improvements** that will better measure performance, and **data gathering methods need to be standardized to the greatest extent possible** to collect and compile the comprehensive data on which performance measures are based. Standardization ensures that data collection and compilation will be consistent from month to month and year to year, and from one program manager to the next in line.

Another evaluation method is to perform **benchmarking with fire-rescue departments of similar size and characteristics in jurisdictions of similar size and characteristics** within the region, State or nation. Benchmarking allows for the comparison of performance in one's own jurisdiction with that of other jurisdictions. Benchmarking would allow MCFRS to see how it compares to individual jurisdictions and to the average performance level of all jurisdictions included in the comparison. MCFRS might find it beneficial to perform benchmarking with other fire-rescue departments, as long as jurisdictions comparable to Montgomery County can be included. One issue concerning benchmarking is whether similar performance measures are actually being compared, as there will likely be differences in definitions of terms between jurisdictions (e.g., how each defines "response time") that could impact figures.

Another method of evaluation is the self-assessment process that an applicant fire department must conduct when seeking accreditation from the Commission on Fire Accreditation International, Inc.

(CFAI). The CFAI self-assessment tool provides an in-depth evaluation (featuring 47 criteria) of a fire department's capabilities and level of performance. [The CFAI accreditation process is described at the end of Section 5 of this Master Plan.]

[»Cross-references: Recommendations 102 and 104, Section 6]

FACILITIES

As of 2004, the MCFRS had 41 work sites. In addition to the 33 fire-rescue stations[46], the following work sites were in existence:

- Executive Office Building - Offices of the Fire Chief, Division Chiefs, and staff
- Public Safety Communications Center - Fire-Rescue Communications
- Fire-Rescue Training Academy
- Fire and Explosive Investigations Office, including Bomb Squad
- Fire Code Enforcement Office
- Safety, EMS Quality Assurance, Internal Affairs, and EEO Office
- Fire-Rescue Occupational Medical Section (FROMS)
- Property Section
- SCBA Service & Repair Facility

Each of these work sites is discussed below in terms of existing facilities and future needs.

Note: In the first quarter of 2005, two additional MCFRS work sites were established -- the SCBA Service & Repair Facility and an office within the County Office Building housing MCFRS IT personnel and community outreach staff.

EXISTING FIRE AND RESCUE STATIONS

At the time of this Master Plan's development, there were 33 fire-rescue stations in Montgomery County (see list of stations in **Figure 4.4** and map of station locations in **Figure 4.6 on page 4-109**). The stations ranged in age from greater than 60 years old (e.g., Silver Spring Station 1) to three years old (Sandy Spring Station 4). Twenty seven stations are LFRD-owned, five are County-owned, and one (i.e., Station 4) is co-owned by the Sandy Spring Volunteer Fire Department and the County. Seventeen of the stations are two-story, and the remaining 16 stations are one-story structures. Except for the newest stations, nearly all others have undergone major renovations since their original construction. In addition, building systems such as HVAC, electrical, vehicle emission, roofs, and parking areas have been replaced, repaired, or resurfaced (as appropriate) periodically.

Regardless of their size and design, all stations must meet the functional needs of the personnel that occupy them. Stations serve as "home" for the personnel who spend many hours and even full days at these facilities. In addition to career personnel who spend two, and every third week, three 24-hour shifts in their assigned stations per week, some volunteer members actually live at the stations while they are not at their paid jobs or attending school.

---

[46] Maintenance shops are located at Stations 3, 6, 8, 16, 21 and the BCCRS

**Figure 4.4. FIRE AND RESCUE STATIONS
IN MONTGOMERY COUNTY IN 2005**

Station	Associated Local Fire and Rescue Department	Address	Year Opened[47]
1	Silver Spring	8131 Georgia Avenue	1900
2	Takoma Park	7201 Carroll Avenue	1928
3	Rockville	380 Hungerford Drive	1965
4	Sandy Spring	17921 Brooke Road	2002
5	Kensington	10620 Connecticut Avenue	1946
6	Bethesda	6600 Wisconsin Avenue	1970
7	Chevy Chase	8001 Connecticut Avenue	1931
8	Gaithersburg-Washington Grove	801 Russell Avenue	1978
9	Hyattstown	25801 Frederick Road	1941
10	Cabin John	8201 River Road	1984
11	Glen Echo	5920 Massachusetts Avenue	1954
12	Hillandale	10617 New Hampshire Ave.	1945
13	Damascus	26334 Ridge Road	1945
14	Upper Montgomery County	19801 Beallsville Road	1948
15	Burtonsville	13900 Old Columbia Pike	1995
16	Silver Spring (Four Corners)	111 University Boulevard	1968
17	Laytonsville	21400 Olney-Laytonsville Rd.	1954
18	Kensington (Glenmont)	12251 Georgia Avenue	1953
19	Silver Spring (Montgomery Hills)	1945 Seminary Road	1959
20	Bethesda	9041 Old Georgetown Road	1957
21	Kensington	12500 Viers Mill Road	1962
23	Rockville	121 Rollins Avenue	1963
24	Hillandale	13216 New Hampshire Ave.	1962
25	Kensington	14401 Connecticut Avenue	1990
26	Bethesda	6700 Democracy Boulevard	1974
28	Gaithersburg-Washington Grove	7272 Muncaster Mill Road	1968
29	Germantown	20001 Crystal Rock Drive	1980
30	Cabin John	9404 Falls Road	1970
31	Rockville (North Potomac)	12100 Darnestown Road	1989
33	Rockville	11430 Falls Road	1970
40	Sandy Spring	16911 Georgia Avenue	1971
RC1	Bethesda-Chevy Chase Rescue Squad	5020 Battery Lane	1976
RC2	Wheaton Rescue Squad	11435 Grandview Avenue	1968

---

[47] Year when present facility opened. Some stations have undergone major renovations since opening.

The typical station consists of the following functional areas:

- Apparatus bays/area
- Offices
- Conference/training room
- Watch desk
- Dormitory
- Locker room(s) and showers
- Restrooms
- Kitchen
- Dining Area
- Lounge
- Fitness area
- Storage rooms/closets
- Maintenance areas/rooms
- SCBA room
- Laundry room
- Hose tower or hose drying area
- IT closet
- Utility room/area
- Elevator (in two-story stations)
- Outdoor storage
- Decontamination room (newest stations only)
- Gear storage area separate from apparatus area (newest stations only)

While there are no established time frames for replacing[48] older stations, **the decision to replace stations must be made on a case by case basis based upon the following criteria**:

- **Age** - How old is the original structure (even if renovations have been made)?
- **Condition** - Are structural and non-structural building systems in satisfactory condition?
- **Location** - Does the station remain optimally located to serve the needs of the community?
- **Size** - Is the station too small to meet the needs of occupants and the community?
- **Layout** - Does the existing layout meet functional needs of the modern fire-rescue service?
- **Safety** - Does the station meet modern building/fire codes and latest labor & environmental regulations?
- **Obsoleteness** -Has the station become obsolete in supporting the needs of its occupants and community?
- **Condemnation** - Has the State condemned the existing site for another purpose (e.g., road widening)?
- **Funding** - Are sufficient LFRD and/or County funds available for facility replacement?

As this Master Plan was under development, the MCFRS was aware of one station requiring relocation. The State plans to reconfigure the intersection of Georgia Avenue and Randolph Road, when State funding

---

[48] Replacement means rebuilding the facility on another site or rebuilding the facility on the existing site

becomes available. The planned configuration will require use of the land upon which Kensington Station 18 is sited. For this reason, the KVFD (which owns both the land and station) and MCFRS are aware that Station 18 will require relocation within the Glenmont-Layhill area. As of 2005, efforts were underway to locate a site that is jointly acceptable to the KVFD, County, and the community. The KVFD and MCFRS will work closely with the State and the Mid-County Regional Service Center's Director and associated Citizen Advisory Board to coordinate the relocation of this station. [»Cross-reference: Recommendation 3A, Section 6]

PLANNED AND FUTURE FIRE AND RESCUE STATIONS

In 2000, the County Council approved the need for four new/additional fire-rescue stations in Montgomery County, based upon recommendations presented in the FRC report titled *Station Location and Resource Allocation Study - Phase I*. This approval came about through amendments to the previous *Fire, Rescue and Emergency Medical Services Master Plan*. The new stations will be the first additional stations to be built in the County since Germantown Station 29 in 1981. The new four stations will include the following:

- "Germantown West," at the intersection of Routes 117 and 118
- "Travilah," near the intersection of Darnestown Road and Travilah Road (on PSTA property)
- "Germantown East," within close proximity of Route 355 and Boland Farm Road
- Clarksburg, within the general vicinity of Routes 355 and 121

The first three stations were included in the FY03-08 Capital Improvement Projects (CIP) Program, and the Travilah station has been included in the FY05-10 CIP Program. The projected schedule for opening of these four stations is as follows: [»Cross-reference: Recommendations 2a-2d, Section 6]

- "Germantown West" - FY07
- "Travilah" - FY08
- "Germantown East" - FY08
- Clarksburg – FY09

The "Germantown East" and Clarksburg stations will be Class I stations of approximately 20,000-21,000 square feet, including four apparatus bays and a community room or training room. The Germantown East station is expected to house an EMS unit, engine, aerial unit, and possibly a rescue squad and/or another unit to be determined. Extra bay space will be available for any future units and/or reserve apparatus. It is envisioned that the Clarksburg station will house a medic unit, engine, tanker, and brush unit upon opening and have extra bay space for any future units and/or reserve apparatus. The "Germantown West" station will be a Class II station of approximately 15,800 square feet and will initially house an engine and up to two EMS units, with extra bay space for any future frontline unit(s) and/or reserve apparatus. The "Travilah" station will be a modified Class IV station of approximately 11,125 square feet and will house an EMS unit and an engine upon opening, with limited bay space for future frontline unit(s) and/or reserve apparatus.

A fifth new/additional station is being recommended for the Shady Grove area, in the vicinity of Route 355 and Shady Grove Road. The station would cover a considerable gap in MCFRS' 6-minute response time coverage located between the County's two busiest stations -- Stations 8 and 3. The Shady Grove station's first-due area would include King Farm, Shady Grove Metro Station, future high-density development surrounding the Metro Station, the southern portion of the future Corridor Cities Transitway, the Walnut Hills area, portions of Derwood, and the commercial area along Shady Grove Road between Route 355 and I-270. Interstate 370, portions of I-270, and the future Inter County Connector would be within this station's first-due area, as well. The Shady Grove fire station will help relieve some of the existing call load from Stations 8 and 3. In addition to covering a busy first-due area, this station would be second-due on numerous box alarm assignments in surrounding Station Areas 3, 28, 8, 31 and the area served by the new Travilah station (future Station "32"). Initially, the Shady Grove station will house an EMS unit and an engine but would have extra bay space for any future frontline units. [»Cross-reference: Recommendation 3b, Section 6]

The Shady Grove facility, due to its centralized location, should also house the Duty Operations Chief, an EMS Supervisor (position proposed in this Plan), Fire and Explosive Investigations staff, and specialty vehicles (and personnel to operate them) that serve the entire County including the Bomb Squad, MCFRS Command Post, up-county hazmat unit, decontamination unit(s), air cascade unit, and proposed EMS bus.

If the available site for this facility is of sufficient acreage, it would be an ideal location to house a significant portion of the proposed MCFRS "Ready Reserve Fleet" (RRF). It is envisioned that the RRF would consist of fully-equipped engines, aerial units, rescue squads, EMS units, tanker(s), and command units. This apparatus could be called upon in times of crisis such as a large-scale terrorist attack, other mass casualty incident, or natural disaster, where the regular MCFRS fleet would be overwhelmed by the demand for services. [The RRF is discussed in greater detail under the "Apparatus and Equipment" heading below.] If the available site can accommodate a portion of the RRF, then a second building would likely be constructed solely for this purpose, including office space for the RRF management staff.

Between 2005 and 2015, the MCFRS Planning Office will be conducting additional phases of the *Station Location and Resource Allocation Study* to determine whether additional fire-rescue stations will be needed and where. Should the need for additional stations be identified, this Master Plan will be amended, as appropriate, to include the stations. [»Cross-reference: Recommendations 1 and 36, Section 6]

PUBLIC SAFETY COMMUNICATIONS CENTER (PSCC)

The current Public Safety Communications Center (PSCC) was occupied in July 2003. The facility utilizes a 52,800 square foot, leased building located in Gaithersburg. The multi-purpose PSCC houses 9-1-1 operators, Fire-Rescue Communications, and Police Communications as well as the County Emergency Operations Center (EOC), DPWT's Traffic Management Center, and HSD's Office of Emergency Management. The emergency communications function became operational on July 20, 2003, featuring the County's 800 MHz trunked radio system, computer-aided dispatch system, automated vehicle locator system, and mobile data computers. Management and oversight of the EOC, formerly a MCFRS

responsibility, was transferred to the County's Homeland Security Department on January 1, 2005, when the HSD began operations.

While the PSCC is expected to remain at its existing location throughout the 10-year period of this Master Plan, **spatial and functional needs of the multi-functional Center must be re-assessed** during the latter years of this Plan's life cycle. Considering that the newest PSCC is based upon technology from the 1998-2000 era, existing communications systems will eventually require replacement with newer technologies entering the marketplace. This eventual need for newer systems and equipment, along with the potential need for additional PSCC staff, will be important factors in reassessing future functional and spatial needs of the PSCC. The proposed assessment should be a joint MCFRS, MCP, DHS, and DPWT effort, since all parties share the existing PSCC. Efforts to strengthen coordination and collaboration among the departments will be ongoing.

The Alternate PSCC is the former ECC facility. It was re-engineered in 2004 to have equipment compatible with that installed at the new PSCC. Should the PSCC be unusable for any reason; then operations would move to the Alternate PSCC. There are no plans to move the Alternate PSCC to another site before 2015, although the existing PSCC would likely become the primary Alternate PSCC if the PSCC were to be moved to a new site/facility. A fire station outfitted with appropriate communications equipment could serve as an alternate emergency communications site for MCFRS as well, however, it would not likely be sufficiently large to accommodate MCP and DPWT/TMC functions to serve as an alternate PSCC, and is therefore not recommended.

OFFICES OF THE FIRE CHIEF, DIVISION CHIEFS, AND STAFF

The Office of the Fire Chief, Division Chiefs, and their staffs are co-located in the Executive Office Building (EOB) in Rockville. MCFRS has occupied this office space since the EOB opened in 1981. The EOB is centrally located within the County, serves as headquarters for the County Executive and most of the County's departments with whom MCFRS must interact on a daily basis, and is close to County Council offices where senior MCFRS management attends many County Council hearings and work sessions. During 2001-2002, the MCFRS offices, conference room, and corridors underwent a major renovation to improve their functionality and appearance. Over the 10-year period of this Master Plan, consideration should be given to relocating these offices elsewhere, as MCFRS office space requirements will greatly surpass that available at the EOB, and there are considerable advantages to co-location of all MCFRS management and administrative staff.

FIRE CODE ENFORCEMENT OFFICE

The Fire Code Enforcement Office is located in leased space in Rockville, co-located with other County offices such as the Department of Permitting Services. This location meets the needs of Fire Code Enforcement personnel and its customers and is expected to meet their future needs as well. Over the 10-year period of this Master Plan, there are no plans to relocate this office elsewhere, unless the County does not renew the lease.

FIRE AND EXPLOSIVE INVESTIGATIONS OFFICE

The Fire and Explosive Investigations Office is located in Gaithersburg and houses both the investigators and the MCFRS Bomb Squad units. The plan is to relocate the Fire & Explosive Investigators and Bomb Squad units (i.e., main unit and support unit) to the proposed Shady Grove fire-rescue station.

SAFETY, INTERNAL AFFAIRS, EEO AND EMS QA OFFICES

The MCFRS Offices of Internal Affairs, EEO, Safety and EMS Quality Assurance are located in leased space in Rockville. This location meets the needs of these four functions and is expected to meet their needs in the short- to mid-term future as well. Over the 10-year period of this Master Plan, there are no plans to relocate this office elsewhere, unless the County does not renew the existing lease. Ideally, these offices should be co-located with the offices of the Fire Chief; however, there is inadequate space in the EOB to accomplish this scenario, both now and in the future. If the lease for the existing offices is not renewed in the 2010-2011 time frame, then other MCFRS work sites should be evaluated for housing the offices of Internal Affairs, EEO, Safety, and EMS Quality Assurance. The four functions do not necessarily need to remain together. Two possibilities that should be considered would include the new Travilah fire-rescue station and the proposed Shady Grove station). Regarding the Safety Office, alternative locations for consideration could include the proposed multi-agency warehouse or proposed MCFRS warehouse (whichever alternative is implemented), either of which is envisioned to also serve as a storage and maintenance facility for self-contained breathing apparatus (a function assigned to the Safety Office).

FIRE-RESCUE TRAINING ACADEMY

The facility needs of the Fire-Rescue Training Academy are fully addressed above under the heading of "Training," in the sub-section titled "Non-Emergency Functions."

FIRE-RESCUE OCCUPATIONAL MEDICAL SECTION OFFICE

The "FROMS" Office is located in leased space in Rockville, co-located with other County offices. While this location meets FROMS' needs as of 2005, FROMS will need to move to a larger office in the future if the office's recommendations and desires for expanded facilities and services are to be implemented (see "Firefighter-Rescuer Safety and Wellness" heading above, under the subsection titled "Non-Emergency Functions").

PROPERTY SECTION

The MCFRS Property Section is located in Rockville. The facility stores firefighter-rescuer clothing and gear. The facility does not come close to meeting the existing storage requirements of the MCFRS due to its small size; therefore a larger facility is urgently needed. The new facility should be centrally-located in the Rockville-Gaithersburg area and sufficiently large to store MCFRS clothing, protective gear, SCBA, and equipment and supplies of all kinds. The optimal location would be within a MCFRS or multi-agency

warehouse. An interim solution would be a 30,000-35,000 square foot facility that stores, at a minimum, gear, clothing, and SCBA. [See "Warehouse" heading below for further discussion.]

SCBA SERVICE & REPAIR FACILITY

The SCBA Service & Repair Facility occupies about 5,000 sq. ft. of leased space in Gaithersburg. This facility performs testing of new SCBA and maintenance/repair of SCBA used in the field. It is envisioned that this facility will move into the future MCFRS Warehouse within the 2010-2012 time frame, when the existing lease has been satisfied. The SCBA Service & Repair Facility will eventually require approximately 6,000 sq. ft. of space within the warehouse to fully meet its spatial needs.

MAINTENANCE FACILITIES

The MCFRS has identified the need for a centralized maintenance facility and two satellite shops to serve all MCFRS apparatus. As of 2005, vehicle maintenance was provided by five maintenance shops located at Stations 3, 6, 8, 16 and 21; one per MCFRS, plus a shop at the BCCRS that services BCCRS vehicles only. The six shops consist of only two bays, or less, in each location. Frequently, the shops are filled to capacity with apparatus awaiting repairs and other maintenance. A centralized MCFRS maintenance facility and two satellite shops are needed to replace the existing small shops. The new facilities (combined) would be sufficiently large and adequately staffed to allow for the maintenance needs of the entire MCFRS fleet. This type of operation would offer much greater cost-effectiveness, efficiency, and standardization over the existing system.

Ideally, the centralized maintenance facility should be located in the Gaithersburg-Rockville area, so that no unit had to travel more than half the length or width of the County to reach the facility. All of the moderate- and complex-level maintenance and repairs would be performed at the centralized facility. Routine, less complicated preventive maintenance and minor repairs would be performed at the satellite facilities.

WAREHOUSE

MCFRS has identified the need for a warehouse that would accommodate the storage and distribution of clothing, protective gear, SCBA, equipment, and supplies used throughout the MCFRS (see complete list in Figure 4.5 below). There was no such facility in existence during FY05, except for a Property Section facility (see discussion above) that stored and distributed clothing and firefighting gear only. The warehouse would, for the first time, store these items in one location, rather than the current practice of delivering and storing them in various MCFRS facilities. The facility might also be configured and staffed to provide maintenance for SCBA and other equipment, but not vehicles.

The MCFRS had previously voiced its interest in becoming one of several County departments to share a multi-agency warehouse; however, if that venture is not feasible, then MCFRS should pursue leasing or acquiring a warehouse of its own. Whether a multi-agency or MCFRS-only warehouse, the facility should be centrally located within the County to accommodate convenient access by personnel from all fire-rescue

stations and other MCFRS work sites. Warehouse space of approximately 50,000-60,000 square feet would be required by MCFRS to store all equipment and supplies listed in Figure 4.5.

If, due to budget constraints and/or other issues, neither a multi-agency warehouse or a MCFRS warehouse is feasible over the ten-year period of this Master Plan, the least costly alternative is to construct or lease a smaller facility to, at a minimum, store all uniforms, physical fitness wear, protective gear, and SCBA. Approximately 30,000-35,000 square feet of space would be required to accommodate these minimal needs. As this Plan was being finalized, the MCFRS was entering into a lease for a 33,500 square foot facility in Rockville that would be converted into a warehouse to address the MCFRS' immediate need.

FUTURE FACILITY NEEDS

In addition to the many facility needs described above, including planned and proposed stations, the identification of additional new facilities that will be needed will likely occur over the 10-year life cycle of this Master Plan. The MCFRS Planning Office will be conducting additional phases of the *Station Location and Resource Allocation Study* to determine whether additional fire-rescue stations will be needed and where. [The planned phases of this study are addressed under the "Planning" heading above.]

Figure 4.5 - MCFRS WAREHOUSING REQUIREMENTS

1. **Fire and Rescue Station Support Items**
   - Household Supplies
   - Appliances
   - Furniture
   - Linen and Bedding

2. **Property Section**
   - Uniforms
   - Fire PPE
   - EMS PPE
   - Footwear
   - Gear bags
   - PT Wear

3. **Portable Firefighting Equipment**
   - Hose
   - Nozzles
   - Appliances
   - Fire Extinguishers
   - Hand Tools
   - Ground Ladders
   - Hydraulic Tools
   - Compressed Air Tools
   - Lighting
   - Generators

4. **EMS Supplies**
   - First Aid Supplies
   - Backboards
   - Stretchers
   - Oxygen Cylinders
   - Telemetry Equipment (AEDS, etc.)
   - Gloves
   - Eye Protection
   - Fanny Packs

5. **Central Receiving**
   - Loading Docks
   - Receiving Area
   - Processing Area
   - Inventory and ID

6. **Staff Support Areas**
   - Offices
   - Conference Room
   - Restroom/Locker Room
   - Break Area

7. **Property Disposition Area**

8. **Communications Equipment**
   - Pagers (A/N and T/V)
   - Mobile Radios
   - MDTs
   - Portable Radios

9. **Hazmat Response Equipment**
   - Absorbents
   - Misc. Supplies
   - Decontamination Drums
   - Decontamination Tents

10. **Special Event Equipment**
    - Bicycles
    - Tents
    - All Terrain Vehicles
    - EMS Cart
    - Kid Slide
    - Generator

11. **Self-Contained Breathing Apparatus**
    - Storage and Repair
    - Equipment Calibration

12. **Other Supplies**
    - Supplies not covered elsewhere

13. **Evidence Storage**
    - Evidence collected by Fire Investigators

14. **Courier Program**

APPARATUS AND EQUIPMENT

The discussion concerning apparatus and equipment is organized into the following topics: primary units, specialty units, reserve units, command and support units, and fire-rescue equipment. Each topic is addressed in detail below.

PRIMARY UNITS

The MCFRS operates numerous types of suppression, rescue, EMS, command, specialty, and support vehicles. The 424-vehicle fleet (2005 figure) is comprised of frontline apparatus, reserve apparatus, and support units. "Frontline" refers to units that are regularly staffed and shown in a "controlled" status in the Computer-Aided Dispatch System. These are the units from which the CAD System recommends units to respond on a given incident. "Reserve" apparatus are backup units that can be pressed into service when frontline units are out of service due to mechanical problems, or when volunteer personnel are available to staff additional units to supplement frontline apparatus. "Support" vehicles include sedans, SUVs, cargo vans, and other light duty vehicles.

Frontline apparatus in service in 2005 included the following:
- 31 engines (28 engines, 2 engine-tankers, and 1 quint)
- 46 EMS units (29 ambulances, 17 medic units)
- 14 aerial units (2 are extrication-capable)
- 9 heavy rescue squads
- 3 rescue engines
- 6 tankers (3000 – 3500-gallon capacity each)
- 13 brush trucks
- 9 rescue boats
- 2 air cascade units
- Specialty team vehicles: HIRT, Bomb Squad, RRATS Team, CRT
- Specialty vehicles: Command Post unit, "decon" units, canteens, Bus-27 serving as a "rehab" unit
- Numerous command and utility vehicles

Reserve apparatus in service in 2005 included the following:
- 26 engines
- 15 EMS units
- 8 aerial units
- 1 heavy rescue squad
- 2 brush trucks
- Numerous command and utility units

About 72% of the MCFRS apparatus fleet is owned by the County, with the remaining 28% owned by the LFRDs. Fire, rescue and EMS vehicles are very expensive due to their specialized features and overall specifications. Approximate costs (based on 2004/2005 prices) of these vehicles, <u>without equipment</u>, are shown below, although similar unit types can vary in price due to unique design features. Prices include the most recent increases in the cost of steel.

- Engine - $450,000
- Engine-Tanker - $500,000
- Ladder Truck - $800,000
- Tower-Ladder - $800,000
- Rescue Squad - $800,000
- 3500-gallon Tanker - $350,000
- Ambulance - $160,000
- Medic Unit - $160,000
- Brush Truck/Mini-Pumper - $200,000

The County spends about $3 million annually on fuel and maintenance for the overall fleet. The annual insurance premium in 2003 was about $650,000, with all but $47,000 paid by the County.[49] The purchase, operational, maintenance, and insurance costs of fire-rescue apparatus are considerable, comprising the second highest portion of the annual MCFRS Operating Budget (after career staffing costs).

SPECIALTY UNITS

MCFRS specialty apparatus includes units dedicated specifically for use by the MCFRS specialty teams and several other units of a unique nature that provide specialized services. Specialty team apparatus and other special units are listed below.

- <u>HIRT</u> – Frontline hazmat truck and a support unit. Replacement of the frontline unit is overdue.
- <u>Bomb Squad</u> – Frontline Bomb Squad unit (purchased in 2004) and a support unit
- <u>Transport Unit</u> - Truck used for transporting one (per trip) of several platforms-on-demand (PODs) to an incident scene
- <u>PODs</u> - Enclosed steel containers storing large quantities of specialized equipment and supplies. PODs include CRT, Hazmat, and Mass Casualty PODs.
- <u>CRT/US&R</u> - Reconnaissance vehicles, collapse-rescue PODs, tractor-trailers
- <u>RRATS</u> - Boat Support Units (used for towing rescue boats and carrying equipment), and Dive Support Unit (carries divers equipment, and provides space for divers to don diving or ice rescue gear).
- <u>Command Post</u> – MCFRS command bus, equipped with a variety of communication and information systems, used at major incidents by incident command staff

---

[49] The LFRDs insured about 30 vehicles at a cost of $47,032 in 2003. The LFRDs insure these vehicles under the County's Fire and Rescue insurance policy but pay the premium directly to the carrier.

- <u>Canteen Units</u> - Serve food and beverages to fire-rescue personnel during extended incidents. The following LFRDs own and operate canteens (one each): Kensington, Rockville, Sandy Spring, Gaithersburg-Washington Grove, and Upper Montgomery County.
- <u>ATV</u> - All-terrain vehicle used primarily for rescues along trails, off-road/off-trail rescues, and for use at special events/mass gatherings. As of 2005, the Glen Echo Fire Department and Wheaton Volunteer Rescue Squad owned ATVs.
- <u>EMS Carts</u> - Motorized "golf" carts functioning as partially equipped ambulances at mass gatherings where access of larger vehicles is impractical and unsafe to maneuver due to large crowds. As of 2005, EMS carts were owned by the Silver Spring Volunteer Fire Department and Wheaton Volunteer Rescue Squad**.**
- <u>Bikes</u> - Bicycles operated by an EMT or Paramedic carrying minimal EMS equipment. Used primarily on trails during races/walkathons and during mass gatherings where access of larger MCFRS vehicles is impractical and unsafe to maneuver through crowds. The Bethesda-Chevy Chase Rescue Squad, Wheaton Volunteer Rescue Squad, and Gaithersburg-Washington Grove Fire Department own and staff bikes for this purpose.

RESERVE UNITS

The LFRDs and the County own a fleet of reserve apparatus that is approximately 30% the size of the frontline fleet. The largest portion of the reserve fleet is comprised of pumpers. The composition of the 2005 reserve fleet is listed above under the "Primary Units" heading. Reserve units typically fill in for frontline units that have mechanical or safety-related problems. They may also be placed into a controlled status in the CAD System when sufficient career and volunteer personnel are available to staff them as well as all frontline apparatus at a given station. As of 2005, the MCFRS had an under-sized and unreliable reserve fleet to meet the Department's needs. This problem is addressed below under the headings of "Vehicle Maintenance," "Vehicle Rehabilitation," and "Vehicle Replacement."

COMMAND AND SUPPORT UNITS

Command units include sedans, SUVs, jeeps, pickups, and vans assigned to career and volunteer command officers for emergency response as well as routine/administrative purposes. The MCFRS also acquired a Command Post unit in 2004 used during large-scale/long-term incidents requiring the assembling of numerous command level personnel in a fully functional command and control vehicle. Support units include emergency "utility vehicles" (typically pickups and vans), and vehicles (mostly sedans) used for administrative purposes by MCFRS personnel. There are about 150 command and support units in the MCFRS fleet. These units require periodic replacement due to age, mileage, and overall condition, much like any privately-owned vehicle.

FIRE-RESCUE EQUIPMENT

The MCFRS uses a vast assortment of equipment to provide EMS services, suppress fires, perform rescues and service calls, and to handle incidents involving hazardous materials, destructive devices, and weapons of mass destruction. A list of all the types of equipment used is too voluminous to include in this Master

Plan, however, a brief list of equipment categories is presented below for the benefit of non-MCFRS persons reading this Plan.

- <u>Personal protective equipment (PPE)</u> – turnout gear, SCBA, helmets, boots, gloves, PASS devices
- <u>Specialized PPE</u> – protective suits, gloves, respiratory protection, etc., worn by specialty teams
- <u>Suppression equipment</u> – hoses, nozzles, hose appliances, Humat valve, fire extinguishers, foam
- <u>Ladders</u> – ground ladders of many types and lengths
- <u>Ventilation equipment</u> – axes, power saws, pike poles, smoke ejector fans, etc.
- <u>Forcible entry tools</u> – K-Tool, Haligan Tool, axes, battering rams, sledge hammers, etc.
- <u>Search tools</u> – portable lights, infrared thermal imagers, remote search cameras, acoustical devices
- <u>Power supply</u> – generators, water proof power cords, junction boxes, adapters
- <u>Lighting</u> – vehicle mounted and portable lights of many types and intensities
- <u>Salvage and overhaul equipment</u> – salvage covers, pike poles, shovels, buckets, squeegees, etc.
- <u>Rescue equipment</u> – hydraulic rescue tool, cutters, spreaders, rams, saws, winch, jacks, cribbing, rope, airbags, pneumatic tools, hand tools, etc.
- <u>EMS equipment</u> – AEDs/defibrillators, airway management devices, medications/drugs, bandages, dressings, splints, cots, backboards, stretchers, cervical collars, MAST trousers, IV solutions, etc.
- <u>Hazmat equipment</u> – PPE, detection/monitoring/analysis devices, spill/leak containment equipment /materials, neutralizing agents, decontamination equipment, hazmat reference library and PC, etc.
- <u>Bomb Squad equipment</u> – PPE, detection/monitoring/analysis devices, robot, hand tools, etc.
- <u>Water rescue equipment</u> – PFDs, diving gear, ice rescue suits, rescue lines, lights, etc.
- <u>Collapse rescue equipment</u> – see "Rescue" and "Search" headings above, plus large quantities of specialized equipment for simultaneous rescues of numerous victims
- <u>Incident Command equipment</u> – sector vests, potable radios, MDCs, status boards, pre-plans, etc.

[»Cross-reference: Recommendation 54, Section 6]

The MCFRS must periodically replace its equipment due to wear, age, deterioration, damage, and/or loss. In addition, new types of equipment must be purchased to ensure that MCFRS personnel are given the latest technology and state-of-the-art equipment, tools, and materials to perform their duties at peak effectiveness, safety, and efficiency. The MCFRS must also establish a Service-wide system for ordering, storing, inventorying, distributing, and maintaining all of its equipment, tools, supplies, and materials. Storage is addressed elsewhere in this Plan. In terms of a MCFRS-wide system for ordering, inventorying, distributing and maintaining all MCFRS equipment, tools, etc., the MCFRS must establish a single, centralized purchasing system that handles orders for <u>all</u> needed items throughout the Service, uses bar code inventorying, and provides a single facility to store and dispense the items. This centralized facility would also provide a single location to perform all required maintenance and repair for all MCFRS equipment. This single, all-inclusive system should be more efficient than the existing decentralized system (actually 20 separate systems used by the 19 LFRDs and the County) because it should simplify and facilitate the process, and should achieve cost savings by purchasing items in large/bulk quantities. Many large fire-rescue departments throughout the nation have successfully implemented similar centralized systems.

APPARATUS MAINTENANCE, REHAB, AND REPLACEMENT

In response to a request from the County Council's Public Safety Committee, the Office of Legislative Oversight (OLO) conducted a study in 2003 addressing the organizational structure, maintenance processes, and condition of the MCFRS vehicle fleet. The findings and recommendations of this study are contained in the OLO report titled "*Study of the Inspection, Maintenance, and Repair of Fire and Rescue Service Vehicles*," dated January 27, 2004. The OLO recommended that the County Council aim to achieve the following goals:

- A safe and dependable fleet of fire and rescue vehicles and equipment that meets the Council's standard of vehicle readiness

- A cost-effective system of inspection, maintenance, and repair that keeps all fire and rescue vehicles and equipment in top running condition

While OLO found that some aspects of the MCFRS' current approach to vehicle maintenance worked well, many other aspects of the MCFRS fleet maintenance program were not working well. Problems and issues included the following:

- Substantial time and effort are expended to transfer and deploy units to meet service requirements with available apparatus.

- The MCFRS fleet is aging and deteriorating while MCFRS call load continues to grow. The average age of frontline vehicles is eight years, fifteen years for specialty vehicles, and six years for support vehicles. The construction of new fire-rescue stations has not kept pace with development, resulting in fire and rescue units traveling farther and responding to more incidents. The result is increased mileage for many vehicles, placing increased demand on maintenance.

- Funding had not been sustained for regular replacement of the fleet. MCFRS' replacement plan called for the replacement of 21 vehicles in FY04 at an estimated cost of $7.17 million. For FY05, the plan had called for replacing 20 additional vehicles at an estimated cost of about $10.7 million. The approved FY04 operating budget included lease payments for only five replacement EMS units and only four replacement aerial ladder trucks.

- The results of pump tests and safety inspections indicated that the maintenance programs in place during FY03 were not meeting standards of readiness.

- The approach to MCFRS maintenance has been unfavorable to the development of a consistent maintenance strategy for apparatus, a reliable process for daily vehicle inspections and defect reporting, a standardized approach to vehicle maintenance record keeping, and a system for identifying and correcting apparatus problems.

In 2005, six in-house maintenance and repair shops served about three-quarters of the MCFRS apparatus fleet located. Shops were located at Stations 3 (Rockville), 6 (Bethesda), 8 (Gaithersburg), 16 (Silver Spring), 21 (Kensington), and Rescue Company 1 (Bethesda-Chevy Chase). Mechanics were employees of the LFRD where each maintenance shop was located. These six shops provided maintenance for 11 of the LFRDs. The eight remaining LFRDs used one or more vendors to service their vehicles.

Of the six in-house maintenance shops in 2005, three shops had only one bay each, and the other three shops had two bays each. The nine bays, combined, could accommodate about 10-14 vehicles at a time, depending upon the size of the apparatus. In two of the 2-bay shops, the first-in vehicle was blocked until the second-in vehicle was moved or repaired. The bays were small, constrained, and inefficient by current maintenance standards for heavy equipment. While all six shops could accommodate the range of vehicles to be maintained, many were limited in the use of lifts and tilt-cab vehicles.

The County Council had requested the County's Chief Administrative Officer provide a multi-year plan to improve the MCFRS vehicle maintenance program. The plan was to include tasks to be accomplished, time frames, required resources, and recommendations for the interval for reporting of progress made. The resulting plan, titled "MCFRS Apparatus Management Plan (AMP)," was submitted to the County Council in April 2004 but has been updated several times since then. The AMP's updated recommendations are summarized in Sections 5, 6, and 7 of this Master Plan.