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

INTRODUCTORY STATEMENT

The **purpose** of this *Fire, Rescue, Emergency Medical Services, and Community Risk Reduction Master Plan* is to **set a forward-thinking, rational, and attainable course for the continued delivery of effective and efficient fire, rescue, emergency medical services, and community risk reduction services**. The Plan guides the MCFRS in how best the Service can meet the needs and expectations of its customers and address the overall level of fire-rescue related risk facing the County. The Plan accomplishes this task by addressing what emergency and non-emergency programs are needed, what apparatus and equipment are needed and where, what facilities are needed and where, and how best to train and deploy Montgomery County Fire and Rescue Service (MCFRS) personnel.

The **primary focus** of the *Fire, Rescue, Emergency Medical Services, and Community Risk Reduction Master Plan* is on our **external customers -- the residents and business owners of Montgomery County and visitors to the county**. Other external customers to which this Master Plan is focused include MCFRS' partners, including County departments and agencies, municipalities located in Montgomery County, private sector emergency service organizations serving the County, State departments/agencies, and federal departments/agencies. Internal customers of the MCFRS to which this Plan is also focused include the Fire and Rescue Commission and the many fire-rescue resource groups that support the overall MCFRS.

Considering that many readers of this Master Plan may not be familiar with their Fire and Rescue Service, the Plan includes considerable explanation of fire-rescue terminology, concepts, operations, methodologies, and programs in an effort to make the plan more understandable. Readers are encouraged to review the Acronyms and Glossary sections before reading Sections 1-7.

This Master Plan can also be viewed in its entirety at the following web site:
www.montgomerycountymd.gov/firerescue. The Plan is located within the menu option labeled "Division of Community Risk Reduction Services."

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ACRONYMS

NOTE: Key acronyms are highlighted in **boldface** type.

AED	Automated external defibrillator
AFRA	ALS first responder apparatus
ALARF	Advance Land Acquisition Revolving Fund
ALS	Advanced life support
ARC	American Red Cross
BLS	Basic life support
CAD	Computer Aided Dispatch [System]
CAF	Compressed-air foam
CAFS	Compressed-air foam system
CERT	Community Emergency Response Team
CHAMP	Community Hazards Awareness and Mitigation Program
CIP	Capital Improvements Project
CISM	Critical incident stress management
COG	Council of Governments [Washington Metropolitan Area]
COMAR	Code of Maryland Administrative Regulations
CPAT	Candidate Physical Ability Training
CPR	Cardio-pulmonary resuscitation
CRT	Collapse Rescue Team
DEP	Department of Environmental Protection
DPS	Department of Permitting Services
DPWT	Department of Public Works and Transportation
DVS	Division of Volunteer Services
ECC	Emergency Communications Center
EOC	Emergency Operations Center
EMG	Emergency Management Group
EMS	Emergency medical services
EMT or EMT-B	Emergency Medical Technician or EMT-Basic
EMT-I (CRT)	Emergency Medical Technician-Intermediate (a.k.a. Cardiac Rescue Technician)
EMT-P	Emergency Medical Technician-Paramedic
FEMA	Federal Emergency Management Agency
FRC	Fire and Rescue Commission
FROMS	Fire-Rescue Occupational Medical Section
FRTA	Fire-Rescue Training Academy
GIS	Geographic Information System

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HHS	Health & Human Services
HIRT	Hazardous Incident Response Team
HSD	Homeland Security Department
IC	Incident Commander
ICS	Incident Command System
IMS	Incident Management System
LEPC	Local Emergency Planning Commission
LFRD	Local Fire and Rescue Department
MCFRS	Montgomery County Fire and Rescue Service
MCI	Mass casualty incident
MCP	Montgomery County Police
MCPS	Montgomery County Public Schools
MEMA	Maryland Emergency Management Agency
MFRI	Maryland Fire and Rescue Institute
MIEMSS	Maryland Institute for Emergency Medical Services Systems
MOSH	Maryland Occupational Safety and Health
M-NCPPC	Maryland-National Capital Park and Planning Commission
NCR	National Capital Region
NFPA	National Fire Protection Association
OEM	Office of Emergency Management
OSHA	[Federal] Occupational Safety and Health Administration
PAD	Public Access Defibrillator [Program]
PIC	Personal injury collision
PIO	Public Information Officer
PPE	Personal Protective Equipment
PSCC	Public Safety Communications Center
PSTA	Public Safety Training Academy
RICCS	Regional Information, Communication and Coordination System
RMS	Record Management System
RRATS	River Rescue and Tactical Services [Team]
RRF	Ready Reserve Fleet
SCBA	Self-Contained Breathing Apparatus
SOP	Standard Operating Procedure
UASI	Urban Area Security Initiative [Federal grant program]
US&R	Urban search and rescue
USFA	U.S. Fire Administration
VoIP	Voice over Internet Protocol
WMD	Weapons of mass destruction

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GLOSSARY

Acceptable (or Unprotected) Risk - That risk which the County is willing to accept rather than providing the enormous amount of resources and programs to eliminate, or nearly eliminate, all fire/rescue-related risk throughout the county.

Advanced Life Support (ALS) – Provision of emergency medical services including administering certain life saving drugs; electrical therapy including defibrillation; advanced airway management including orotracheal and nasotracheal intubation; intravenous maintenance therapy, use of pneumatic anti-shock garments, and other advanced-level life support services.

Aerial Unit (or “Truck”) - A vehicle equipped with an aerial ladder, elevating platform, aerial ladder platform, or water tower that is designed and equipped to support fire fighting and rescue operations by positioning and providing access for personnel, supporting the vertical movement of equipment, providing continuous egress, or discharging water at positions elevated from the ground.

AFRA - Advanced life support **F**irst **R**esponder **A**pparatus is any MCFRS unit other than an ambulance or medic unit that has a paramedic and an ALS Kit on board. AFRA's can begin providing ALS service to an ALS patient prior to arrival of a medic unit.

Ambulance (or BLS Unit) - An emergency medical service unit that is equipped and staffed to provide basic life support services, including patient transport.

Apparatus - Emergency fire-rescue vehicle(s).

Basic Life Support (BLS) - Provision of emergency medical services including patient assessment; airway management; cardiopulmonary resuscitation (CPR); rescue breathing; use of automatic external defibrillators (AEDs); treatment of contusions, puncture wounds, broken bones, sprains and strains; spine immobilization; child delivery; and similar basic-level life support.

Biological (etiological) agents – Living organisms or materials derived from them that cause disease in, or harm to, humans, animals and plants, or cause deterioration of material. These agents may be in liquid, aerosolized, or powder forms. There are three types of biological agents: bacteria, viruses, and toxins.

Brush Unit – A fire suppression unit specially equipped for fighting fires in brush, woodlands, grasslands, and croplands. Brush units are typically pickup trucks or jeeps equipped with four-

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wheel drive, a small water tank, small diameter hose, and equipment for suppressing fires in areas that larger apparatus cannot navigate.

Compressed-air foam (CAF) – Fire suppression foam consisting of Class A foam solution, water and compressed air. CAF suppresses fire through cooling action and by cutting off the oxygen supply to the fire. CAF results in very little runoff and water damage and is effective in suppressing fires in structures, vehicles, brush, woods, and Class A debris, but is not effective in suppressing flammable liquid fires (which require Class B foam).

Compressed-air foam system (CAFS) – The system attached to the pump on-board a pumper that is required to produce compressed-air foam. Compressed-air foam is produced at the pump by mixing Class A foam solution, compressed air, and a small percentage (by volume) of water.

Compressed gases – Gases that exert a pressure of at least 41 psi on the containers in which they are stored.

Corrosives – Any materials that cause visible damage or irreversible alteration of human tissue at the site of contact, or cause metals or plastics to corrode at a rapid rate.

CRT – Cardiac Rescue Technician – See EMT-I (CRT)

Cryogenics – Materials stored and transported at extremely low temperatures (e.g., liquid oxygen stored and transported below minus 182 degrees F.

Decontamination – The process of removing a hazardous material or WMD from contaminated protective gear, other types of clothing, equipment, and/or skin and hair.

Destructive Device - An explosive, incendiary, or toxic material that has been combined with a delivery or detonating apparatus, rendering the device capable of inflicting life-threatening injury to people and damage to property; or deliberately modified, containerized, or otherwise equipped with a special delivery, activation, or detonation component that gives the material destructive characteristics of a military ordnance. [State definition]

Emergency – An event that has resulted in, or has the potential to cause, casualties and/or property damage. Examples include: fires, explosions, medical incidents, severe weather, vehicle collisions, hazardous materials releases, structural or trench collapse, and acts of terrorism including the use of weapons of mass destruction.

EMG - The Emergency Management Group is composed of the heads of each County department, designated senior staff of each department, and designated representatives of the County's municipalities, MCPS, Montgomery College, public utilities, and non-profit public safety/disaster services organizations. The EMG is convened under the direction of the County's Chief Administrative Officer to advise the County Executive on the County's capability to

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respond to disasters; to recommend improvements in emergency management planning, mitigation, response and recovery capabilities; to enhance that capability through improvements to the infrastructure, through training and exercises; and to respond to emergencies as needed.

EMT-B – “Emergency Medical Technician – Basic Level” is the State certification given to EMS providers who meet the minimum requirements for providing basic life support services within the State of Maryland. Skills required of personnel certified at the EMT-B level include patient assessment, bleeding control and bandaging, shock management, fracture management, CPR, oxygen administration, medical emergency management, patient-assisted medications, spinal immobilization, patient movement and transport. EMT-B certified personnel must successfully complete the State’s EMT-B course and a field evaluation, and pass a series of State-issued written and practical tests to receive the State’s EMT-B certification. All MCFRS personnel whose names appear on the IECS List are State-certified at the EMT-B Level.

EMT-I (CRT-NREMT 199) – “Emergency Medical Technician – Intermediate” (a.k.a. “Cardiac Rescue Technician”) is the State certification given to EMS providers who meet the minimum requirements for providing an intermediate level of emergency medical services within the State of Maryland. Skills required of personnel certified at the nationally-registered EMT-I/CRT level include all EMT-B skills, plus intravenous fluid administration, medication administration, external jugular cannulation, intraosseous cannulation, decompression thoracostomy, combitube, EKG monitoring and defibrillation/cardioversion, and endotracheal intubation. To become licensed at the EMT-I/CRT-NREMT 199 level, personnel must successfully complete the State’s EMT-I/CRT-NREMT 199 curriculum and written licensing exam, and have the NREMT-199 registration.

EMT-P (Paramedic) - “Emergency Medical Technician – Paramedic” is the State certification given to EMS providers who meet the minimum requirements for providing advanced life support services within the State. Skills required of personnel certified at the EMT-P level include all skills required under the CRT/CRT (NREMT 199) level, plus additional medication administration, nasotracheal intubation, and external transcutaneous pacing. To become a licensed EMT-P, personnel must successfully complete the State’s EMT-P curriculum and a field evaluation, participate in hospital emergency room training, and pass a State-issued ALS protocol licensing exam.

EMS Unit - A vehicle designed to provide emergency medical service and, with the exception of a paramedic chase car, patient transport.

Engine (or Pumper) - Fire apparatus with a permanently mounted fire pump of at least 750 GPM capacity, water tank, and hose body whose primary purpose is to combat structural fires.

Engine-Tanker - A term assigned to a unit that combines the features of both an engine and a small tanker. Engine-tankers typically carry a minimum of 1500 gallons of water, two to three times as much water as carried on a standard engine.

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Explosion – An extremely rapid release of gas and heat capable of causing serious injury or death and major property damage.

Explosive – Any substance designed to produce an explosion, or capable of producing an explosion by reacting with itself.

Fire and Rescue Commission (FRC) – A body composed of 7 commissioners appointed by the County Executive and confirmed by the County Council. Three FRC members represent the public, two members are uniformed career employees of MCFRS, and two members represent the volunteer fire and rescue departments in the County. Chapter 21 of the County Code charges the FRC with recommending how the County can achieve and maintain effective, efficient, and equitable fire-rescue services, and improve the policy, planning, and regulatory framework for all fire-rescue operations. The FRC has the authority to approve policies and regulations proposed by the Fire Chief. The FRC may also advise the Fire Chief, County Executive, and County Council on fire-rescue policies, standards, procedures, plans, programs, and related matters.

First-Due Area – The area surrounding a fire-rescue station whose boundary is the halfway point between that station and surrounding stations. One or more fire-rescue units, as appropriate, are considered first-due from that station to incidents occurring within the station’s first-due area, unless the appropriate unit(s) is/are unavailable due to being committed to another incident, or held in an uncontrolled status within the CAD System.

First Responder Unit – Any fire-rescue unit (e.g., engine, aerial unit, rescue squad, brush unit, tanker) that is staffed with at least one EMT-B, a BLS Kit, and an AED. A first responder unit is dispatched on certain EMS incidents to begin patient assessment and care when the closest EMS unit that has also been dispatched has a greater distance to travel.

Flammable liquids – Liquids having flashpoints less than 100 degrees F.

Flashover – The stage in the development of a fire within a closed room in which all exposed surfaces reach ignition temperature simultaneously and fire spreads instantaneously throughout the room, with flames appearing on all surfaces.

Hazardous material (“hazmat”) - any substance or material posing a threat to health and the environment [EPA definition]. Hazmats are classified as flammable/combustible liquids, compressed gases, corrosives, poisons/toxic materials, oxidizers, flammable solids, etiologic (biological) agents, cryogenics, and radioactive materials.

HIRT – MCFRS Hazardous Incident Response Team that responds to incidents involving hazardous materials, destructive devices, and weapons of mass destruction. The team is

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composed of apparatus and specially trained personnel assigned to all shifts at Stations 7, 20 and 28.

IECS – The operational chain of command and rank structure that integrates all fire and rescue services personnel, both career and volunteer, who have met the applicable training, experience, certification, and credentialing requirements. An IECS List is published periodically listing all certified fire and rescue service personnel who are qualified to comprise minimum staffing on fire-rescue apparatus.

Incendiary device – Any mechanical, electrical, or chemical device used intentionally to initiate combustion and cause a fire.

Incident (fire-rescue) – An emergency event of a nature and scope requiring the services of MCFRS personnel.

Interoperability - The ability of public safety personnel to share information via voice and data systems on demand, in real time, when needed and as authorized.

Local Fire-Rescue Department - One of nineteen independent State-chartered volunteer fire and rescue departments in Montgomery County. Each LFRD has at least one station, and about half of the LFRDs have two or more stations assigned to them by the County. Each LFRD has a uniformed Volunteer Chief, a Board of Directors, and uniformed and administrative personnel who volunteer their services to the community.

Medic Unit (or ALS Unit) - An emergency medical service unit that is equipped and staffed to provide advanced life support services, including patient transport.

Montgomery County Fire and Rescue Service (MCFRS) – The organization responsible for providing all fire, rescue, and EMS services and related services and programs in Montgomery County, Maryland.

Natural hazards - Hazards related to acts of nature such as severe thunderstorms, windstorms, tornadoes, hurricanes, winter storms, floods, mudslides, extreme heat, extreme cold, drought, earthquake, sink holes, insect plagues, and others.

Oxidizers – Chemicals that, when mixed with combustible or flammable material, will start burning or make an existing fire more intense.

Personal injury collision (PIC) – A collision resulting in injury to the occupant(s) of the vehicle(s) involved. A pedestrian struck by a vehicle is a separate incident type.

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Poisons/toxics – Materials capable of causing immediate, or sometimes delayed, injury or death to humans and animals through inhalation, absorption, and/or ingestion. Damage to internal organs and systems can be long-term or even permanent.

Quint – A fire suppression unit equipped with a permanently mounted fire pump, water tank, hose storage area, aerial ladder or elevating platform with a permanently mounted waterway, and a full complement of ground ladders. A quint combines the features of an engine and aerial unit into one vehicle; however, the quint cannot function as both types of units on the fire ground unless it is staffed with at least six qualified personnel. Due to limited staffing under normal circumstances, the MCFRS' lone quint (Quint-40) is dispatched as either an engine or aerial unit, taking advantage of its versatility.

Radioactive materials – Materials that emit atomic particles or waves. There are three types of radiation: alpha, beta and gamma. Of the three, gamma rays can most readily penetrate the body and cause severe damage to tissue, organs and bodily systems. Beta radiation is less penetrating than gamma rays but can cause considerable damage to tissue and internal organs. Alpha particles are the least penetrating and are dangerous only when they have entered the body (usually through an open wound).

Ready-Reserve Apparatus – Reserve fire-rescue vehicles that are fully equipped and maintained to be “turn key” ready for immediate service when needed. Ready-Reserve Apparatus would be used during large-scale incidents such as terrorist incidents, natural hazard events, civil unrest, and other mass casualty incidents where the availability of day-to-day resources cannot keep pace with a sudden, overwhelming spike in demand for fire, rescue, and EMS services.

Rescue Squad - A special service vehicle equipped to provide a wide variety of tools and equipment necessary to effect complex rescues and to assist at structure fire incidents.

Reserve Ratio - The ratio of in-service frontline units to back-up units available to take their place should the frontline units become unusable

Response Time – The elapsed time from the 911 call, to the arrival of MCFRS units at the incident scene.

Risk - The likelihood, probability, or frequency of a damaging or injury-inflicting occurrence (e.g., fire, heart attack, vehicle collision, hazmat incident, act of terrorism, tornado,) in combination with the consequences or severity of that occurrence. Stated mathematically: **RISK = PROBABILITY OF OCCURRENCE X SEVERITY**, where probability and severity can be stated numerically to derive a numerical level of risk that can be compared with other risks in order to rank them. When not stated mathematically, risk is typically conveyed in more subjective terms such as high, medium, low, etc.

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Societal hazards - Hazards related to the close interaction of people in daily activities and adverse occurrences that arise due to various political, physiological, and psychological factors, influences and events. Societal hazards include health/disease epidemics, civil disorder, commodity shortages, and war.

Special service unit – A term derived by the MCFRS that refers to an aerial unit or rescue squad, as both units provide specialized services in support of engines and EMS units.

Tanker - A fire suppression unit that carries a minimum of 2000 gallons of water and provides firefighting water supply to areas without fire hydrants, or areas with non-functioning hydrants. MCFRS tankers carry 3000-3500 gallons of water and are a key resource with respect to the MCFRS' goal to achieve a fire flow of at least 500 gpm for the initial 30 minutes of a structure fire in a non-hydranted area.

Task Force - A group of any type of resources, with common communications and a leader, temporarily assembled for a specific mission, not to exceed five resources. In Montgomery County, a Task Force usually indicates a response of two engines, an aerial unit, a medic unit, and a Command Officer.

Technological hazards - Hazards created by or related to technological infrastructure, business/manufacturing processes, and by-products of a technological civilization. Technological hazards include utility disruptions (power, water, natural gas, and phone systems), dam failures, pollution emergencies, conflagrations, and others.

Terrorism - The unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives. [FBI definition]

WMD – **Weapons of mass destruction** used by terrorists to cause casualties, intimidation, fear, panic, and property damage to the intended target and target population. WMDs include biological, radiological, incendiary, chemical, and high-yield explosive materials.