

THE FIRE SERVICE RELATIONSHIP TO THE NATIONAL CRITICAL INFRASTRUCTURE

Report to the
President's Commission
on Critical Infrastructure Protection

1997



This report was prepared for the President's Commission on Critical Infrastructure Protection, and informed its deliberations and recommendations. The report represents the opinions and conclusions solely of its developer, the International Association of Fire Chiefs.

CONTENTS

1.0	INTRODUCTION.....	1
2.0	OVERVIEW OF THE FIRE SERVICE.....	1
3.0	MISSION OF THE FIRE SERVICE.....	2
3.1	Fire Suppression.....	3
3.2	Emergency Medical Service	3
3.3	Rescue	4
3.4	Hazard Control, Risk Abatement and Technical Operations	4
3.5	Fire Prevention & Public Education.....	4
3.6	Law Enforcement	4
4.0	FIRE DEPARTMENT ORGANIZATION	5
4.1	Local Government.....	5
4.2	Other Public Fire Department	6
4.3	Private Fire Protection.....	6
4.4	Industrial Fire Departments.....	7
5.0	INTERNAL ORGANIZATION STRUCTURE.....	27
5.1	Fire Marshals.....	8
5.2	Sworn Versus Civilian Employees.....	8
6.0	FIRE SERVICE RESOURCES.....	9
6.1	Mobilization Capabilities	9
7.0	RISK MANAGEMENT	11
8.0	FEDERAL GOVERNMENT RELATIONSHIP.....	12
9.0	STATE GOVERNMENT RELATIONSHIPS	13
10.0	INCIDENT MANAGEMENT SYSTEMS	14

11.0 TECHNICAL OPERATIONS.....	15
12.0 RESPONSE TO TERRORISM INCIDENTS.....	16
12.1 Vulnerability to Attack.....	17
12.2 Other Public Fire Department	17
12.3 Current Programs	18
13.0 REGIONAL AND NATIONAL RESPONSE TEAMS.....	18
14.0 VULNERABILITY TO DISRUPTION OF SERVICES.....	19
14.1 Water Supply	19
14.2 Fire Stations and Equipment	20
14.3 Communications Systems	20
14.4 Communications Centers	20
14.5 Telephone Systems.....	21
14.6 Radio Systems	21
15.0 RADIO SPECTRUM.....	22
RECOMMENDED ACTIONS	24

Our Nation's First Line of Domestic Defense:

The Fire Service Relationship to the National Critical Infrastructure

1.0 Introduction

The fire service represents the first level of defense against a variety of threats to the physical safety and health of people and property in the United States. The fundamental mission of the fire service is to prevent, control or reduce the harmful consequences of dangerous situations, including expected, unexpected and unanticipated occurrences. This unique mission requires the fire service to be well prepared to deal with risks that are known and recognized and to be equally prepared to adapt to unexpected situations.

The critical nature of the fire service mission goes beyond providing fire suppression, rescue, emergency medical and other services that protect individual citizens and their property. The fire service also has significant responsibilities for ensuring that the other components of the critical infrastructure will be able to function without interruption, in order to fulfill their respective missions. Effective intervention by the fire service could play an important role in preventing or limiting the disruption of several other critical functions and services.

This paper addresses the vulnerability of the fire service to threats that could reduce its ability to fulfill its mission, with an emphasis on exceptional circumstances, threats and hostile actions. It also addresses the ability to mobilize additional fire service resources in response to these situations, recognizing that the specific plans to implement this type of mobilization do not currently exist in most areas.

2.0 Overview of the Fire Service

The fire service exists in many different forms throughout the United States and encompasses a very large number of individuals and organizations. Although it is primarily associated with local emergency response organizations, the fire service operates at all levels of government as well as the private sector. The total size of the public fire service is estimated as 30,000 fire departments with approximately 1.1 million members¹.

All of the major metropolitan cities in the United States and most cities with more than 50,000 population are protected by municipal fire departments and career firefighters. The career fire service is estimated to include about 3,000 fire departments and approximately 250,000 full-time paid fire fighters. The largest career fire department has more than 11,000 full time employees (New York City), while the majority have fewer than 50 employees.

¹These estimates do not include wildland fire fighting organizations (most of which are operated by state or federal government agencies) or private sector industrial fire brigades.

Volunteer fire departments protect most of the rural areas and smaller communities in the United States, as well as many of the suburban areas surrounding large cities. There are estimated to be approximately 27,000 volunteer fire departments and more than 850,000 volunteer² firefighters in the United States, although there is no definitive inventory of the departments or their membership. The individual organizations range in size from fewer than 10 to several hundred members.

The distinction between career and volunteer fire departments is not absolute, since many fire departments include both career and volunteer firefighters in varying proportions. Combination systems are often found in small to medium sized cities, as well as some suburban counties with more than 500,000 population.

Due to the concentration of population in and around the major metropolitan cities, it is estimated that more than 60% of the total population of the United States is protected by fewer than 300 of the largest fire departments. This figure is also difficult to establish because many people live in areas that are protected by volunteer or combination career/volunteer fire departments and work in areas that are served by career departments, or vice-versa.

3.0 Mission of the Fire Service

The image of the fire service is most often associated with fire suppression activities, however fire departments have evolved into multi-hazard risk management and emergency response forces. The mission has expanded to include a wide range of threats to public health and safety and the fire department is expected to take whatever action is necessary in any situation. The fire service has also become increasingly involved in protecting the environment.

While the specific functions performed by different fire departments vary considerably, the overall fire service mission can be described as encompassing five primary areas:

1. Fire Suppression
2. Emergency Medical and Rescue Services
3. Hazard Control and Risk Abatement
4. Fire Prevention and Public Education
5. Enforcement of Fire and Safety Codes, Laws and Regulations

This broad definition of the fire service mission includes the primary responsibility for emergency response and intervention in situations that have the potential to harm persons or

² The term volunteer generally applies to individuals who do not consider fire fighting to be their career occupation; this includes some who are compensated for their time and many who receive very little or no compensation for their activities.

property, as well as efforts to manage risks, reduce vulnerability to potential threats and prepare for situations that could occur at some time in the future

3.1 Fire Suppression - The United States has more fire suppression capability, in terms of firefighters, vehicles and equipment, than any other industrialized nation. The United States also has a relatively high rate of fires in comparison with other industrialized nations, which tends to justify the emphasis on fire suppression capability. The rate of fires is particularly high in low income areas and older urban areas, many of which would be highly susceptible to very large and damaging fires if they did not have effective fire fighting forces.

The basic strategy of fire suppression combines rapid response to control fires while they are small (offensive strategy), along with the ability to confine and overwhelm any fires that exceed the capabilities of the initial attack (defensive strategy). The great majority of fires are successfully controlled, particularly in urban areas where fire departments are generally deployed to respond within 3 to 5 minutes to any fire that occurs - most structure fires do not spread beyond the room of origin and very few involve more than a single building. The total capability of the fire suppression resources that are available in most urban areas can confine or control very large fires

The fire suppression capability does not always equal the level of fire risk, particularly in smaller communities and rural areas. The massive "wildland interface" fires that often threaten suburban areas and small communities in the western states, illustrate that the combination of high winds, low humidity and limited water supplies can overwhelm the capabilities of any fire suppression forces.

3.2 Emergency Medical Service - In most cities the fire department responds to more medical calls than fires or any other types of incidents. Over the past 20 years there has been a major shift by fire departments toward providing emergency medical service (EMS), accompanied by very significant advances in the accepted standards of emergency medical care. Approximately 60 percent of the emergency medical service in the United States is provided by fire department-based organizations.

This expansion of the mission has resulted in a large increase in the total number of emergency responses by fire departments. In some cases the fire suppression and emergency medical service functions are fully integrated, with personnel trained and equipped to perform both missions, while other fire departments have separate EMS or ambulance divisions.

Where the fire department is not the primary provider of EMS, it is often the "first responder" agency, working with a separate EMS department or a private ambulance company. A "first responder" is dispatched to situations where a patient's condition requires rapid intervention and a fire suppression unit can reach the patient more quickly than an ambulance. Whether it is the primary provider or a first responder agency, the fire suppression force is likely to be a major component of the medical response capability for a mass casualty incident, as well as the primary rescue resource.

3.3 Rescue - In most areas the fire department is also responsible for conducting rescue operations, which range from relatively simple to highly complex and dangerous situations. All firefighters have at least basic rescue skills and many fire departments have rescue companies that are trained and equipped to perform more complicated rescue operations. There have been major advances in training, equipment and technical skills related to rescue over the past two decades, which have resulted in the development of many specialized technical rescue teams for particular types of incidents.

The list of rescue specialties includes vehicle extrication, confined space rescue, swift water and underwater rescue, urban search and rescue (rescue of victims from collapsed structures), high angle rope rescue, mountain rescue and several others. Specialized rescue teams are usually developed to deal with the types of incidents that are most likely to occur in a particular community or region. In many cases the teams are made-up of individual fire fighters who have the advanced training, while others involve fire suppression companies that have been designated to perform specific technical rescue functions in addition to their regular duties.

3.4 Hazard Control, Risk Abatement and Technical Operations - Fire departments are generally responsible for the regulation and control of other types of hazards particularly the transportation, storage, handling and use of hazardous materials (*hazmat*). This includes the responsibility for responding to incidents that involve spills and releases of hazardous substances, which would also include terrorist incidents that involve explosives, nuclear materials and biological or chemical agents.

Some fire departments, particularly in major cities, have dedicated hazardous materials units that specialize in performing the technical response functions, while others have organized special teams similar to the special rescue teams. Regional response teams often involve participants from more than one fire department.

3.5 Fire Prevention & Public Education - During the past 20 years there has been a significant decline in the number of fires and in the number of fire deaths and injuries in the United States, most of which can be attributed to improvements in fire prevention and public fire safety education. Fire prevention measures decrease the level of fire risk by eliminating hazards, requiring safe construction and ensuring that systems to detect and control fires are installed and properly maintained. Public education efforts are designed to increase public awareness of hazards and to teach safe practices. Public education programs have also become a vehicle to train the public in appropriate self-help procedures and to develop community based response capabilities for other types of emergency situations, such as earthquakes and hurricanes.

3.6 Law Enforcement - The fire department is usually responsible for investigating and determining the causes of fires, which is the first step in most arson investigations. Some fire departments have the full responsibility for investigating arson, while others work with state fire marshals or with police investigators on criminal cases. Federal law enforcement agencies, particularly the Bureau of Alcohol, Tobacco and Firearms and the FBI, have increased their involvement in arson cases and expanded their relationships with local fire investigations units in recent years.

In addition to regulating the storage and use of explosives within local jurisdictions, several fire departments are directly involved in investigating bombings and some operate the local bomb squads. The fire service is likely to be the first responding agency to most terrorist incidents to provide medical treatment, conduct search and rescue operations, control fires and deal with explosives, chemical agents and other types of hazards. This involvement in terrorist incidents requires a close working relationship with investigating agencies to identify, protect and recover evidence.

Many fire departments also work closely with the Drug Enforcement Administration and other law enforcement agencies in shutting down drug labs that utilize dangerous chemicals. Some fire departments have assigned medical personnel to train with police SWAT teams and support their operations.

The application of fire prevention codes, life safety codes and building codes to limit the level of fire risk is an additional law enforcement function. The fire service is also increasingly involved in the enforcement of environmental protection regulations relating to the storage and use of hazardous materials.

4.0 Fire Department Organization

Most of the fire departments in the United States operate at the local government level, however there are many variations in their organization and structure in different states and regions. Fire department organization structures are often based on a combination of history and tradition, as well as state legislation.

4.1 Local Government - Most career fire departments are organized as part of a municipal government and supported by local tax revenues. The Fire Chief usually reports directly to the Mayor or City Manager or to an appointed Public Safety Director or Commissioner. While most towns and cities operate their own fire departments, others have joined with neighboring communities to operate unified fire departments and some obtain services from a neighboring community or from a county or regional fire department.

Fire districts are separate governmental bodies that are organized specifically to collect and appropriate tax revenues for the limited purpose of provide fire department services. Most fire districts are established by counties to protect unincorporated areas and they often have their own elected fire commissioners or appointed governing bodies. Incorporated communities sometimes contract with fire districts to serve their areas or delegate a portion of their local taxing authority to a fire district to obtain their services. Fire districts also have the option of contracting with another provider, such as a nearby town or city, instead of operating their own fire department to deliver the service.

The relationships between volunteer fire departments and local governments are much more variable, particularly from state to state. Volunteer fire departments are often established as

independent non-profit corporations and many are supported by non-tax revenues, including a wide range of fund raising activities. In other cases they are supported by fire district taxes or direct appropriations from counties or municipalities.

In some states volunteer fire departments are established by state charter and are independent of any local government authorities. While there may be no direct structured relationship between the volunteer organization and the local government, there is usually some form of official authorization or delegation of responsibility to the volunteer fire department to provide emergency services to the community. These relationships are often based on local history and regional traditions.

Volunteer fire chiefs and officers are often elected by the members of their departments, although their authority to act as public safety officials is generally established through state legislation or through official appointment by the local governmental body. In many cases an elected volunteer fire chief has the same legal authority and responsibilities as a fire chief who is appointed by the chief executive of a city or town, although this varies considerably with state and local laws.

4.2 Other Public Fire Departments - The Federal Government, many state governments and other quasi-governmental bodies, such as airport authorities and port authorities, also operate fire departments. Some of these fire departments are highly specialized, such as airport fire departments, while others are very similar to local fire departments. The on-site fire departments often have reciprocal mutual aid relationships with surrounding fire departments and some routinely respond to calls in the immediate area around their facilities.

Each of the armed forces operates its own network of fire departments to protect their larger bases and facilities. Several other federal agencies operate fire departments to protect their large and high risk facilities, particularly where the risks exceed the capabilities of the local fire service; an increasing number of these fire departments are operated by private contractors instead of government employees.

Federal agencies have no direct authority or responsibility to provide fire protection outside the boundaries of federal property or to require fire protection to be provided by other levels of government. Local fire departments generally do not have authority or jurisdiction within federal facilities, although they often provide protection for federally owned and operated properties within their geographic areas, including many smaller military installations.

4.3 Private Fire Protection - There are a few private companies that provide fire department services as contractors to municipalities or fire districts. Where there is no public fire protection, some of these companies offer their services to individual property owners on a subscription basis. The relationship of these private fire departments with surrounding public fire departments is often limited.

4.4 Industrial Fire Departments - Many large industrial facilities operate their own fire departments or fire brigades³, particularly large installations that involve exceptional risks or have special requirements. These on-site fire departments protect many strategically significant facilities, such as nuclear power stations, oil refineries and chemical plants that require very specialized capabilities, however built-in fire protection systems also play a significant role in limiting the risk levels at these facilities. The on-site fire departments may have to be self-sufficient, particularly where the location is geographically isolated or the risks are beyond the capabilities of conventional fire departments. In a few areas, where there are many facilities with their own fire departments, they have established extensive mutual aid arrangements with each other, similar to mutual aid agreements among public fire departments⁴.

When the facility is located within a jurisdiction that has a public fire department, the operations of the industrial fire department are usually subject to the command authority of the local fire chief, who has the legal responsibility to ensure that public safety is the first priority. In addition to providing the expertise and specialized equipment that may be essential for an on-site emergency, these organizations can often be a valuable resource to the public fire service - some participate in mutual aid networks as specialized resources and respond outside their facilities to assist public fire departments.

5.0 Internal Organization Structure

Fire departments are almost always structured as paramilitary organizations under the command of a Fire Chief⁵, however the size and complexity of their organization structures vary significantly. In a large fire department there may be several Assistant Chiefs, Deputy Chiefs or Division Chiefs in charge of major functions or large geographic areas. District or Battalion Chiefs would be responsible for managing operations in smaller areas. The ranks of Captain and Lieutenant usually refer to the officer in charge of a single fire station or the crew assigned to a specific vehicle.

The rank of the officer in charge of a particular incident would escalate as the magnitude of the incident increases. In a city, a Battalion Chief is likely to be in charge of a routine incident, while

³ There are many more fire brigades than fire departments in the industrial sector. An industrial fire brigade is generally comprised of an organized group of employees who have been trained to take limited action in the event of fire or emergency, while an industrial fire department often has full-time employees who perform similar duties to public fire departments within a particular facility or complex.

⁴ One example is the Houston Ship Canal, which is lined with more than 100 large and high risk industries. Many of these facilities have their own fire departments which have developed their own mutual aid network, known as the Channel Industries Mutual Aid network. In the Corpus Christi area several petroleum companies have established the Refinery Terminal Fire Company, which protects several refineries and related facilities.

⁵The title of Fire Chief is usually reserved for the highest ranking officer in charge of a fire department, whether it is a large or small organization. A number of specific duties, responsibilities and empowerments often accompany the official designation of an individual as the Fire Chief of a local jurisdiction, depending on state and local laws. The titles of Director or Superintendent are sometimes used in place of Fire Chief, particularly in large cities. The term Commissioner usually applies to an elected or appointed official with administrative authority over the fire department, including the members of an elected governing body that oversees a fire district, however some Fire Commissioners also perform the functions of the Fire Chief.

an Assistant or Deputy Chief is likely to respond and assume command of a larger incident. The Fire Chief may personally take command of an exceptionally large or complex incident.

A similar rank structure is used in most small fire departments, including many volunteer departments. A volunteer fire department with one fire station could have a Fire Chief, Deputy and Assistant Chiefs, Captains, Lieutenants and several other officers, however the senior officers may have much more limited command and management responsibilities than the equivalent officers in a large department. In some areas, particularly on the east coast, there may be dual levels of responsibility, with a paid Fire Chief in overall charge of the community's fire services and a volunteer fire chief in charge of each independent volunteer fire company.

5.1 Fire Marshals - The title of Fire Marshal is usually applied to an individual who is responsible for law enforcement functions related to fire safety, as well as fire cause investigations. The State Fire Marshal is responsible for enforcing codes that are adopted at the state level and often has authority over all local enforcement officials. A city or county fire marshal would have similar responsibilities at the local level and may be deputized to enforce the state laws and regulations as well as local codes and ordinances. In some areas the term "fire marshal" is applied to the entire law enforcement staff and the individual in charge could be a "Chief Fire Marshal."

Where the fire department is operated by a city or county, the Fire Marshal is usually subordinate to the Fire Chief. Some smaller towns and cities that are protected by volunteer fire departments have paid fire marshals to perform the fire prevention, code enforcement and investigative functions. In rural and unincorporated areas, where volunteers or fire districts may be responsible for fire suppression, the code enforcement and investigative functions may be assigned to a County Fire Marshal or a Deputy State Fire Marshal.

Many state and county fire marshals have additional responsibilities related to the coordination, support and training of firefighters, particularly volunteers⁶. Each state has a designated individual or organization responsible for coordinating firefighter training, who may or may not come under the state fire marshal. Some states have extensive networks of full-time and part-time instructors to provide training to fire departments, while others leave this function entirely to local jurisdictions.

5.2 Sworn Versus Civilian Employees - The employees of career fire departments are often divided into sworn (or "public safety") and civilian groups. The sworn personnel are generally those involved in emergency response functions that involve an elevated level of risk, while the civilian employees usually perform non-hazardous support and technical functions, including fire prevention and code enforcement. In most cases the civilians are considered to be outside the rank structure and are not covered by public safety pension plans, which allow for earlier retirement and special benefits. This distinction usually does not apply to volunteer fire departments, although many have membership categories for "non-combat" members.

⁶ Some states have very specific and demanding training requirements for volunteer fire fighters, while others have no regulations or requirements.

6.0 Fire Service Resources

The overall distribution of fire suppression resources in the United States, in terms of equipment and personnel per capita, is believed to be greater than in any other country. This is primarily due to the high degree of decentralization of the fire service, with each local jurisdiction evaluating and meeting its own needs. The combined resources of the fire service have the ability to provide tremendous quantities of personnel and equipment for fire suppression and other types of emergencies, particularly in the highly industrialized and populated areas.

Most urban areas have fire stations distributed to be capable of responding to any built-up area within 3 to 5 minutes and have the ability to assemble large quantities of resources very quickly for a major incident. While large cities usually have the resources to conduct large scale operations with the forces that are on-duty in their own fire stations, the surrounding suburban areas are often served by dozens of much smaller fire departments, often a mixture of career, volunteer and combination organizations. The smaller fire departments usually have extensive mutual aid networks, which often include the central city.

Mutual aid networks can provide for the response of very large fire suppression forces, even to relatively small communities. Mutual aid networks are often organized at the county or regional level and many utilize a central facility to provide dispatch and communications services for several local fire departments. Some of these systems coordinate the operations of numerous individual fire departments as if they were a single department, while others are only utilized for exceptional situations.

Small towns and rural communities often have very limited fire suppression resources, in comparison with cities, and many have only limited mutual aid resources available to assist the local forces. While the major risks that require large concentrations of fire suppression resources are more often found in cities, many small communities have the potential for equally large fires and other types of emergency incidents. Response time is often a problem in rural areas, due to the long travel distances that may be involved, however the level of fire risk tends to be much lower in rural areas than in urban areas.

6.1 Mobilization Capabilities - A few states, notably California, Washington, Missouri and Florida, have developed extensive statewide fire service mobilization plans. These systems provide the capability for a prompt and well organized response to large scale incidents, particularly wildland fires and natural disasters. California has the most experience in this type of operation, based on its history of wildland fires, earthquakes and civil disturbances that often involve hundreds of vehicles and thousands of fire fighters. The fire service in California routinely assembles units from different departments to form task forces, which may then respond long distances to assist on major incidents. These task forces may be committed for several days or weeks and are supported by an extensive statewide communications and logistics system.

Most metropolitan areas have the capability to assemble hundreds of firefighters, with more than enough fire apparatus and equipment for almost any situation, although there is always a possibility that the capacity of local forces will be overwhelmed by a single incident or a combination of simultaneous incidents and circumstances. Large cities often have the capability to handle very large and complex incidents with their on-duty forces and may rarely need to call for any additional resources. Many suburban and rural areas have the ability to assemble equally large forces through their mutual aid networks, including career and volunteer personnel, although it may take considerably longer to assemble them at the scene of an incident.

Career fire departments usually have only 25% to 35% of their personnel are on duty at any given time - the remainder can be considered as a strategic reserve for exceptional situations. While many smaller career departments routinely utilize their off-duty personnel to reinforce their on-duty forces, some large departments may not need to recall their off-duty personnel for even the largest incidents. The larger departments often have very limited procedures in place to recall their off-duty forces.

Volunteer fire departments have to depend on their individual members to be available and to respond when they are needed and many have very limited resources on weekdays, when most of their members are at work. Many suburban volunteer departments are adding career personnel to provide daytime weekday coverage, but have an excess of personnel available at night and on weekends.

Experience has shown that it is seldom a problem to convince fire fighters, particularly volunteers, to respond to a serious incident - there is a tendency to respond to any incident where there is a possibility of providing assistance, even over long distances. Most major incidents will prompt the response of more than enough resources, with or without the organization and coordination to utilize them effectively. This type of response can demonstrate the quantities of resources that are available and emphasize the need for command and control⁷.

Fire fighters are also usually willing to remain on duty as long as they are needed, particularly when they are actually involved in emergency operations. A long duration commitment could be a problem for volunteers, particularly if the primary need is for stand-by resources as opposed to conducting operations. Very few fire departments have the funding that would be needed to mobilize their off-duty career personnel for extended periods or to support long duration commitments of their career or volunteer forces. When this type of commitment is required, the funds usually comes from state or federal disaster relief.

⁷ It is not unusual for individual or small groups of fire fighters to transport themselves to the scene of a disaster and to offer their services, if they have reason to believe that they are needed. This indicates that there is a wealth of willing and available resources, anxious to participate in emergency operations. The weakness is often the ability to organize and effectively utilize these resources, as well as inconsistencies in training, insurance coverage and potential liability exposure.

7.0 Risk Management

The basic role of the fire service can be viewed as a form of risk management at the community level. The primary duty of the fire department is to protect the community from fires, which is accomplished through a combination of fire prevention and fire suppression efforts. Fire prevention and public education programs should reduce the probability that fires will occur and limit the consequences if a fire does occur. In theory, the appropriate level of fire suppression capability could be determined through a cost/benefit analysis, balancing the fire prevention and fire suppression efforts. If all of the situations and consequences could be accurately predicted, the fire suppression capability should balance with the level of fire risk in the community.

It is feasible to reduce the level of fire risk by eliminating potential fire causes, establishing physical limitations on the potential magnitude of a fire and ensuring that the occupants will be able to escape, however it is not feasible to completely eliminate the possibility that a fire will occur. Fire suppression capability is essential in most communities, however the fire suppression resources can also be utilized to perform other important functions, including emergency medical service and rescue operations.

Public fire protection requirements are generally not determined by applying sophisticated risk management models or evaluation systems, because there are too many variables involved in protecting the community and the population at large. Risk management models can be applied to the protection of individual facilities within a community and are particularly applicable to the components of the critical infrastructure.

The risk analysis should consider the possibility of a fire that originates within the critical facility as well as a fire that threatens to spread to the facility from an adjacent property. It should also consider the possibility that a relatively minor fire could disable or interrupt the operations of the critical facility or that a fire at a different location could have the same effect. The risk analysis should also consider the risk that the facility presents to the surrounding area, such as the potential release of a hazardous material that could cause death or injury to people or severe harm to the environment.

When evaluating the capabilities of the fire department that protects the facility, the risk analysis should consider the need to rescue and provide medical treatment for injured persons and the ability to assist individuals who are needed to operate essential systems under high risk circumstances, as well as the ability to control a fire. All of these functions could be required simultaneously, particularly if a deliberate attempt is made to disable the critical facility.

The concept of acceptable loss is particularly significant in relation to protection of the critical infrastructure. The fundamental strategy of public fire protection is defensive - to protect the community at large by limiting any fires that occur to a magnitude that can be considered an acceptable loss to the community. Confining a fire to a single property may be an acceptable loss to the community, but it may be unacceptable in relation to that particular facility, which may require automatic fire protection systems, fire resistive construction or its own fire department to provide an acceptable level of protection.

The public fire service may or may not have a significant role in protecting individual components of the critical infrastructure. Some critical facilities are located in areas where there is no public fire department. Even a large fire department with strong resources may not have the capability to adequately protect a property that presents a very high risk. For example, a petrochemical plant may present risks of fires or explosions that are much greater than any fire department can be expected to control, but its separation from other properties may limit the potential loss to that single facility. At the opposite end of the scale, a telephone switching center or a computer center, which could have tremendous strategic significance, could be totally disabled within a few minutes by a relatively minor fire. In each of these cases a risk management analysis would determine the level of fire protection that should be engineered into the facility, taking all of these factors into account.

8.0 Federal Government Relationships

The Federal Government has a major role in relation to emergency management and disaster planning, as well as the response to and recovery from declared disasters. The Federal Emergency Management Agency (FEMA) manages the disaster assistance programs that support and assist state and local jurisdictions when a federal disaster is declared. When this occurs a strong temporary relationship is often established with the local fire service, particularly where the fire chief is also responsible for a community's emergency management functions.

In most cases the mobilization of local resources to assist in disaster response and recovery operations is coordinated through state emergency management agencies. FEMA operates the Urban Search and Rescue (USAR) Program, which involves 27 locally based response teams. The USAR teams can be dispatched to major incidents anywhere in the United States⁸ that involve heavy rescue operations, such as collapsed buildings⁹. Most of the USAR teams are operated by fire departments and fire department members are involved in all of the teams. These teams are an integral component of the response plan for earthquakes and hurricanes, as well as major terrorist incidents, such as the Oklahoma City bombing.

FEMA also includes the United States Fire Administration and its National Fire Academy, which are responsible for several programs and advanced education opportunities for the fire service. Both of these agencies are located at the National Emergency Training Center in Emmitsburg, Maryland, which is also the focal point for training state and local officials in emergency management. The US Fire Administration programs provide valuable assistance to local fire departments, but the agency does not directly fund, regulate or participate in the delivery of fire services.

⁸ The State Department supports a related program to make this capability available for disasters in other countries.

⁹ Approximately 20 of the 27 authorized USAR teams are considered to be fully trained and equipped, ready for immediate deployment. The remaining teams are in the process of becoming certified for operational deployment.

Several other Federal agencies have programs that support or involve relationships with the fire service. These include the Department of Transportation, which is particularly involved with hazardous materials transportation, as well as the Coast Guard and the Environmental Protection Agency, which are concerned with spills and releases of hazardous materials. The Department of Energy works with FEMA in providing training programs for emergency responders relating to radioactive materials. The Federal Aviation Administration provides funding for many airport fire departments and conducts research related to aircraft fire fighting and rescue operations.

The Department of Transportation supports emergency medical services through the National Highway Traffic Safety Administration. The Public Health Service is also involved in supporting emergency medical services and recently initiated the Metro Medical Strike Team (MMST) program, which involves the fire departments in several metropolitan areas.

The Department of Justice is working with fire departments on counter-terrorism training programs. The Bureau of Alcohol, Tobacco and Firearms and the FBI both work with local fire investigators on arson investigations, bombings and related cases and the Drug Enforcement Administration has a relationship with many fire department hazardous materials teams due to the problem of hazardous chemicals that are involved in many drug labs. The Department of Justice also operates the Public Safety Officer Benefits Program, which covers deceased and disabled firefighters

The Department of Defense has begun to provide training to the fire departments in major metropolitan areas to plan and prepare for terrorist activities that involve nuclear, chemical and biological agents. The fire departments that are operated by the Department of Defense often work closely with local fire departments and provide a valuable back-up resource for many communities. The Department of Defense has also assisted fire departments in training with explosive devices and sponsors many research projects that have proven to be valuable to the public fire service.

The Federal and state governments have the major responsibility for fighting wildland fires, particularly on state and federal lands. The forces that provide wildland fire protection are usually seen as a separate branch of the fire service and have a fairly limited relationship to the fire departments that protect most urban and built-up areas, although it is not unusual for urban fire departments to become involved in wildland interface fire fighting operations¹⁰. Some local fire departments have contractual agreements to provide the initial attack on wildland fires on state or federal lands and participate in the nationwide system for major wildland fires.

9.0 State Government Relationships

The states have the exclusive authority to enact laws and regulations relating to public fire protection and each state has somewhat different legislation governing the organization and

¹⁰The wildland interface issue is most prominent in the western states, particularly California. California's Division of Forestry and Fire Protection, which is one of the largest wildland fire fighting organizations, also provides structural fire protection for many small local communities through contractual relationships. Most of the urban fire departments in California are routinely called-upon to fight massive brush fires that threaten urban areas.

operation of fire departments by local jurisdictions. The differences in state regulations, as well as history and tradition, account for the major differences in the organization of fire departments in different states and regions.

None of the states requires local government agencies to provide public fire protection or specifies the type of fire department or the level of fire suppression service that must be provided, although some require local jurisdictions to enforce mandatory state fire and safety codes. Fire protection is considered as one of the fundamental reasons for establishing local government structures and it is generally left to local jurisdictions to decide if fire protection will be provided and to determine the type of fire department and the level of service. While the state laws and regulations that apply to the establishment of fire departments are generally permissive, very few organized communities are without some form of fire fighting organization.

Each state has a State Fire Marshal who is responsible for enforcing fire safety regulations, however the placement and functions of these positions and the size of the supporting staff vary considerably among the states. Some states have very stringent fire safety regulations, while others have much more limited requirements. In some states the Fire Marshal also has a major responsibility for supporting and coordinating fire departments, while others have very limited relationships with local fire services.

Each state also has some type of state level organization that is involved in firefighter training, however these vary significantly in the scope of their activities. Some states have mandatory training and certification requirements for all firefighters, while others simply provide a network to inform fire departments of training opportunities that are available to them. The training coordination functions may or may not be assigned to the state fire marshal.

10.0 Incident Management Systems

Effective command and coordination are essential components of an effective emergency operation. Several variations of incident command (or incident management) systems were developed by different fire service organizations during the 1970s and 80s and there has been a major effort during the 1990s to blend these models into a single system that can be used for all types of emergency incidents.

The same basic incident command system (ICS) is now used by most fire departments and by many other public safety agencies, as well as FEMA and most state emergency management agencies. The use of ICS provides a common structure for effective coordination and cooperation, which is essential when multiple agencies are involved in a large scale situation. All federal agencies that respond to emergency incidents should be required to adopt and utilize ICS.

Radio communications are an essential element of an effective command and control system. Most fire department radio systems have limited capabilities for interagency communications and usually cover only limited geographic areas. The units from neighboring fire departments may be unable to communicate with each other, unless regional mutual aid channels are available and

incorporated into the incident command procedures. This can present a severe problem when units from different fire departments have to work together at the same incident, particularly if they leave the geographic areas where their radio systems are designed to function.

This problem is even more complex when other agencies become involved in an incident. Law enforcement and emergency management agencies often use radio systems that do not allow for communications with each other or with local fire departments. State and federal agencies also utilize different radio systems and may be unable to communicate outside their normal geographic areas. (Refer to the following section on Radio Spectrum.)

The actual operations of different fire departments can also be difficult to blend, since they often use different equipment and tactics. These differences tend to be resolved through the use of ICS and standard operating procedures. Fire departments that routinely operate together tend to adopt compatible procedures, however units from fire departments that do not normally operate together may have significant coordination problems. These differences are most pronounced between rural and urban fire departments and between different geographic regions, however there are many cases where the fire departments that respond to the opposite sides of the same street have never worked or planned together.

11.0 Technical Operations

The field of technical operations (or *special operations*) for fire departments has been growing in scope and complexity over the past decade. The fire department has always been the primary rescue service in most communities, however the level of sophistication in performing different types of technical rescue operations has increased very significantly. Most fire departments are also the primary responders to hazardous materials spills and releases.

While most firefighters have at least a basic level of training in several different types of technical and rescue operations, many fire departments have developed specialized teams that have advanced training and equipment for specific types of incidents. The technical rescue field involves a large number of specialties, including extrication of persons from transportation accidents, from machinery, from collapsed buildings, trenches and tunnels, from elevated structures, from water, or from anywhere else they become trapped. These teams usually involve firefighters who are trained to a technician or specialist level in a specific technical area, which usually relates to the types of incidents that are most likely to occur in that geographic area.

Most large cities and metropolitan areas have highly trained and well equipped hazmat teams, which are prepared to deal with the types of incidents that are most likely to occur in the local area. In less populated areas the response may involve a regional team with members from several different fire departments and other public safety agencies. Fire department hazmat teams often train and work with teams from particular industries, particularly at large facilities that produce or use large quantities of hazardous materials. They also develop relationships with other governmental agencies that have specialized capabilities or responsibilities, such as Coast Guard units and radiation response teams from the Department of Energy.

12.0 Response to Terrorism Incidents

The threat of terrorist attack is a major concern to the fire service. The combination of emergency medical service, technical rescue and hazardous materials response places fire departments in a critical position for response to these incidents. The fire service would have the primary role in any incident that involves injuries or entrapment, which would include bombings and explosions¹¹. The fire department is also the only agency that can provide the rapid intervention that is essential to rescue and treat individuals who have been exposed to a toxic material, which would be critical for situations similar to the Tokyo subway incident. Several of the hazardous materials teams from metropolitan cities have begun to train with military teams to prepare for this possibility.

The fire department is likely to arrive first at the scene of a terrorist incident and would be expected to retain command of the incident until search and rescue operations are completed and all physical hazards have been stabilized. The fire department would be the primary agency to identify and isolate the hazardous area, conduct rescue operations, decontaminate victims and initiate medical treatment, which could expose the emergency responders to the same hazards as the victims they are attempting to rescue and treat. This could place the rescuers in very high risk situations for which they are not adequately trained, equipped or funded at the present time. Fire department hazardous materials teams could also be involved in stopping the release, neutralizing the agent and recovering the remaining product.

The increasing risk of terrorist incidents requires the establishment of improved working relationships among all of the public safety and law enforcement agencies that would be expected to respond, beginning with integrated incident command procedures and compatible radio systems. Most fire departments have established working relationships with their local law enforcement agencies, since they are usually organized under the same local government structure and routinely respond to many of the same incidents. There is a particular need for increased coordination and cooperation between the federal military and law enforcement agencies and the fire service, since they usually do not have the same type of established working relationships.

The fire service should also be included in the sharing of intelligence and in developing plans and preparations for potential acts of terrorism. The law enforcement and national security agencies that deal with this type of information generally do not consider the fire service as part

¹¹ The search and rescue operations that followed the Murrah Building and World Trade Center bombings were among the largest rescue operations conducted in recent years and the local fire departments had overall command of both incidents until all search and rescue operations were concluded. The New York City Fire Department committed more than 500 personnel to the World Trade Center incident and New York City EMS, which is now part of the Fire Department, committed an equivalent force. Their functions included controlling the fires which were burning in the basement and filling the towers with smoke, evacuating the towers, searching for and rescuing persons who were trapped in the rubble, as well as passengers trapped in elevators, evaluating the toxicity of the smoke, determining if toxic products were present in the bomb residue and dealing with ruptured gas and water lines. The EMS forces treated and transported approximately 1000 patients.

of the anti-terrorism intelligence network, so potentially critical information is often not shared with the primary emergency responders. In some cases law enforcement agencies have developed elaborate plans for responding to anticipated situations, including actions to be taken by the fire department, without involving the fire service in the planning process.

12.1 Vulnerability to Attack - In addition to being involved with the consequences of a terrorist incident, there is an increasing concern that the fire service and other emergency responders may themselves become terrorist targets. This could include direct attacks on fire department or public safety facilities intending to incapacitate emergency response capabilities in advance of a major attack at some other location. The decentralization of fire department facilities provides a degree of security, since it would be necessary to attack several different locations to incapacitate the emergency response forces in most cities, however disabling a central communications facility or its essential radio, telephone or computer systems could have a major impact on emergency response capabilities.

Deliberate attempts to interfere with operations at the scene of an incident have been reported in many incidents that occurred in other countries and have been anticipated in the United States. Two recent bombings in the Atlanta area involved secondary devices that were placed to target responders to the first explosion.

12.2 Training and Equipment Requirements - Most of the terrorist incidents that have occurred in the United States, up to this point, have required the fire service to apply basic skills and capabilities that are applicable to other types of situations, although some of the larger incidents have presented tremendous challenges in relation to their scale and complexity. Experience has shown that the fire service and other locally based emergency response agencies are the only forces that can be expected to respond and take action quickly enough to save lives and control escalating situations when these incidents occur, however this can only occur when the local forces have the necessary training and equipment to take effective action.

The possibility of a terrorist attack involving nuclear, biological or chemical agents, similar to the Tokyo subway incident, is an increasing concern, particularly due to the number of patients that could be involved and the complex locations where an incident could occur in a major city. The fire service provides the only capability that can respond, initiate rescue operations and provide treatment for the victims quickly enough to save lives in this type of incident. In most urban area the fire service would be on the scene and ready to initiate action within 5 minutes, but lacks the equipment and training to operate safely and effectively. The potential exposure of responders before the nature of the incident is recognized is a particular concern, because it is often difficult to determine that these agents are involved during the first few critical minutes.

The military forces currently have almost all of the expertise, equipment and trained personnel to deal with these types of situations, however the specialized military units may take several hours to respond, once they are notified. The primary responders must have the appropriate training advanced equipment to take effective action very quickly in order to save lives and control escalating situations. Most fire departments are not even aware of how to request the appropriate assistance, if they encounter this type of incident.

Even fire departments that have fully trained and well-equipped hazardous materials teams are generally unprepared for this type of incident. Most hazmat team operations are planned around the very cautious entry of a small team into a contaminated area, while wearing fully encapsulated protective clothing. This would be far from adequate for a situation that could involve dozens or hundreds of contaminated victims in a stadium or subway system, particularly if the incident involved several different locations at the same time. Most fire departments and EMS systems are also ill-prepared to deal with more than a few contaminated patients at the same time, from the perspectives of providing appropriate treatment and decontamination and protecting the rescuers from the toxic agents.

12.3 Current Programs - In response to requests from the fire service, more than \$30 million has been authorized for federal agencies to provide training to local response forces in chemical/biological and nuclear threats, however, the actual delivery of the programs has not yet begun. Under the Anti-Terrorism and Effective Death Penalty Act, the Department of Justice is scheduled to provide awareness level training for local fire and emergency responders in the 120 largest jurisdictions. This training is being developed in cooperation with Federal Emergency Management Agency and the National Fire Academy, which have a close relationship to local fire and emergency medical service responders.

The Nunn-Lugar II provision of the Department of Defense Authorization Act includes a program for the military to provide “hands-on” operational training for responders in 27 large metropolitan areas over the next two years. This program is intended to establish local response capabilities in the most likely target areas, which can be supplemented by highly specialized military teams.

13.0 Regional and National Response Teams

The development of regional and national response teams is a relatively new concept to the fire service. The network of Urban Search and Rescue (USAR) teams, which is supported by FEMA, has become a primary rapid deployment resource for large scale incidents. The USAR teams are designed to be self-contained units that can be transported by military aircraft to the area impacted by a natural disaster, such as a hurricane or earthquake. The network is authorized to establish 27 that can each deploy approximately 54 highly trained and fully equipped rescue specialists. Most of the USAR teams are based in metropolitan areas and organized by the local fire departments, although they usually involve members from several agencies.

The role of the USAR teams has expanded since the Murrah Building incident to focus on terrorist incidents as well as natural disasters. Fifteen of the USAR teams were dispatched to Oklahoma City and each operated on the scene for several days. The program is also being expanded to improve its geographic coverage and several additional USAR teams are being developed outside the FEMA program.

A similar network of Metro Medical Strike Teams (MMST) for mass casualty incidents is being developed by the Public Health Service, with a particular emphasis on response capabilities for terrorist incidents. The first team has been established and is based in Washington DC and involves most of the fire departments in the metropolitan area. Similar teams are being developed in the 20 largest metropolitan areas and at least three of these teams will be designated for rapid deployment, similar to the USAR teams. This capability would be particularly significant for a terrorist attack that involved the release of toxic materials or biological agents in areas where a large number of patients would be involved.

The ability to provide rapid response is particularly significant to the fire service. Specialized resources, such as the USAR and MMST teams could take several hours to respond to an incident that does not occur in one of the metropolitan areas that will have these capabilities. Until this assistance arrives, it would be up to the local fire service to take whatever action is possible.

14.0 Vulnerability to Disruption of Services

The fire service is vulnerable to many of the same potential threats that would have an incapacitating impact on the nation as a whole, particularly during the time that would be required to implement effective contingency plans. Most fire departments have developed plans to prepare for situations that can be anticipated locally, such as earthquakes and hurricanes, which disrupt electrical and telephone service, rupture gas and water lines, damage buildings, and cause an immediate increase in the demand for fire, rescue, medical and most other types of emergency services.

There has been much less planning to prepare for major disruptions in fire department service delivery capabilities on a regional or national level. A nationwide disruption of the supply and distribution system for diesel fuel and gasoline would render fire department vehicles inoperative within hours or days. An epidemic would incapacitate firefighters as quickly as the general population. While there are several potential threats that could at least temporarily disrupt the ability of the fire service to perform its mission, the depth of resources that exists within the fire service would provide the ability to restore basic services fairly quickly in most situations.

The logistical support requirements that are needed to provide basic fire services are not particularly complex - firefighters require food, water and basic supplies, fire trucks require fuel and tires, and fire suppression generally requires an adequate water supply. If these basic resources are available, the fire service can provide its essential services at a basic level. Firefighters are usually skilled at adaptation and, if necessary, the fire service can commit large numbers of trained and equipped personnel to deal with specific situations or to increase the level of protection in areas that are threatened¹².

¹² This theoretical discussion does not address the mechanisms that would have to be utilized to implement the conceptual responses to different types of situations.

14.1 Water Supply - Public water supplies are essential components of the municipal infrastructure and critical to the fire risk balance in most urban areas. Without the complex system of pumps, storage tanks and mains that delivers water to hydrants, the fire department would be limited to fighting fires with the water that could be obtained from lakes, rivers, swimming pools and other sources or transported to the scene by tanker trucks. The risk of conflagrations would be greatly increased, particularly during periods of strong winds and low humidity¹³.

Many large buildings and industrial facilities depend on public water supplies for their internal fire protection systems and would be extremely vulnerable if a fire occurred while the water supply to these systems was disrupted. Some of these facilities have on-site water storage tanks to provide for service interruptions.

Underground water systems are particularly vulnerable to earthquakes and some of the west coast cities have developed extensive contingency plans to fight the fires that can be anticipated after an earthquake occurs. San Francisco and Oakland have developed temporary above-ground water supply systems for this contingency. There have been several instances where the public water distribution systems in smaller communities have been temporarily disrupted and the local fire departments were able to provide limited service by stretching hose lines to bodies of water or adjoining communities.

14.2 Fire Stations and Equipment - In many cities the fire stations, fire apparatus and fire fighting equipment, including the public water supply systems, reflect the deteriorating condition of the municipal infrastructure. The economic forces that have allowed this deterioration to occur are no less significant in relation to fire protection and fire department services than to any other critical service. Fire departments require trained personnel, operational equipment and functional facilities to effectively perform their mission.

14.3 Communications Systems - Most fire departments are highly dependent on their communications systems, particularly radio and telephone systems. The most critical communications requirements are:

- processing requests for service
- dispatch and coordination of units responding to those requests
- command and control of operations at the incident scene
- logistical support for operations

14.4 Communications Centers - The central communications centers used by many fire departments are vulnerable to a variety of internal and external risks. Some of these centers are located in structures that are susceptible to a fire, a broken water pipe or an electrical failure within the facility itself, while others could be seriously damaged by an earthquake, flood, windstorm or other natural forces. In many cases the communications facilities for police, fire,

¹³The combination of high winds, low humidity, limited access, inadequate water supplies and available fuel can result in the types of urban conflagrations that occurred in Oakland, California in 1991 and Chelsea, Massachusetts in 1973. These fires could not be stopped by huge forces of fire fighters as long as all of the extreme conditions persisted.

and emergency medical services are located under the same roof and could be incapacitated by a single event or terrorist action. Where back-up facilities are provided, most have limited capabilities and many are even more vulnerable than the primary facilities.

Many communications facilities have been designed to withstand particular threats, but are vulnerable to others. Some large cities have their public safety communications centers in well guarded locations, but depend on computer systems that have no back-up capabilities and inadequate emergency power supplies. The original fire communications centers in many cities were isolated and built to resist fires, while those designed during the 1940s and 50s were built in bunkers to provide protection from air raids. The newer communications centers in several west coast cities have been designed to withstand earthquakes, while those in Florida are built to resist hurricane force winds.

14.5 Telephone systems - The public telephone system is the primary means that citizens have to notify the fire department of emergency situations. In most areas virtually all requests for service reach the fire department via the telephone network, including calls from cellular and wireless telephones and alarms that are transmitted by automatic systems¹⁴. Outbound communications to the fire stations and to other agencies also utilize the telephone system, including the telephone lines between the communications center and radio transmitter and receiver sites.

A major disruption of the telephone system could occur at a telephone company central office, in the 9-1-1 trunks between the central office and the fire department communications center, or within the communications center itself. Different telephone systems have a variety of redundancies and safeguards against disruption, however many are highly vulnerable, particularly at the point where the lines from different central offices enter the fire department or public safety communications center.

14.6 Radio systems - All fire departments rely on radio systems to communicate with units that are away from their stations and to coordinate operations at the scene of incidents. Many fire departments also transmit all dispatch messages to their stations by radio. The use of advanced communications technologies, such as mobile computers and terminals, automatic vehicle locators and tracking systems is increasing rapidly as these systems become feasible and affordable. (Refer to the following section on Radio Spectrum.)

The primary radio transmitter and receiver sites are often vulnerable to attack or damage from natural forces, which could partially or totally disable a radio system. In many cases the radio and telephone systems are intimately related, because telephone lines are used to connect remote transmitter and receiver sites with the communications center, so a major disruption of the telephone network would also incapacitate the radio system. The degrees of redundancy and back-up capability vary considerably among different systems, however many are extremely vulnerable to accidental disruption or sabotage.

¹⁴ Only a few cities, mostly in the northeast, have maintained separate fire alarm telegraph systems with their own overhead or underground wiring throughout the community.

Although fire departments are highly dependent on electronic communications systems for normal operations, their distributed resources allow individual units to function independently if their communications systems are disrupted. In a worst case scenario, most fire departments could restore at least rudimentary communications with their units within 24 to 48 hours, but the ability of the public to call 9-1-1 for emergency assistance could be disrupted for much longer. Some fire departments have procedures to establish patrols to look for problems in the community while communications systems are disrupted, while others utilize their stations as local community resources. These strategies have been reasonably successful in the immediate aftermath of natural disasters, such as Hurricane Andrew.

15.0 Radio Spectrum

The fire service is particularly concerned with the limited availability of radio spectrum in relation to the increasing demand for advanced communications systems. Most fire departments operate on frequencies within one of four widely separated segments of the frequency spectrum and there are no additional frequencies available in the highly populated areas to expand the existing systems or upgrade their capabilities. Increasing workloads and growing populations are creating the need to expand or replace existing communications systems, while advances in technology are making much more sophisticated systems available to the fire service and other public safety agencies. In many cases the ability to adopt these new technologies is severely limited by the lack of available of radio spectrum as well as the high cost.

Inter-operability is an important consideration in the design of new radio systems, to support the operations of units from different fire departments and multiple agencies at major incidents. The need for improved inter-agency and inter-jurisdictional communications has been recognized in several metropolitan areas, particularly in the analysis of the Murrah Building and World Trade Center bombings. The technology is available to address these needs, however the advanced systems cannot be utilized unless the necessary radio spectrum is available and all of the agencies agree to plan and develop coordinated systems using compatible technologies.

The Federal Communications Commission is currently involved in the process of allocating critical portions of the radio spectrum for different uses, particularly the group of frequencies that is immediately adjacent to the group of 800 megahertz frequencies that have been available to public safety agencies for the past two decades. All of the available frequencies in the currently allocated range have been assigned in most highly populated areas and additional frequencies are needed to meet the current and projected future needs. The operational advantages and cost avoidance that could be achieved by reserving this band of frequencies for their use have been documented in several studies.

The fire service and other public safety groups believe that their communications requirements should have priority over commercial broadcasting and other uses and cannot afford to compete with private sector in bidding for rights to the limited spectrum that is available. These needs were expressed by the Public Safety Wireless Communications Advisory Committee (PSWAC)

report that was transmitted to the President, members of Congress and the Federal Communications Commission earlier this year.

The reservation of the needed spectrum for public safety agencies is a critical issue for the fire service. An allocation of 24 megahertz of spectrum is needed immediately and a total of 70 megahertz will be needed by 2010. The immediate requirements include a reservation of 2.5 megahertz for frequencies that will provide the needed inter-operability among systems. All federal agencies should be required to adopt technologies that will support inter-operability and the efficient use of spectrum, particularly in high demand areas.

The fire service strongly supports proposed legislation that would reserve the needed spectrum for current and future needs and also allocate a portion of the revenue that is anticipated from auctioning other available spectrum to commercial users. This revenue would allow public safety services to adopt the advanced technologies that are currently beyond their fiscal capabilities.

Recommended Actions

1. Automatic fire alarm and sprinkler systems should be installed in all industrial, commercial and residential buildings. This proven technology of early warning and fire suppression capability needs to be required in all new construction of any kind, required to be retrofitted in all appropriate critical infrastructure facilities and required in existing industrial, commercial and multi-residential facilities. Automatic fire detection and suppression systems enhance the protection of the critical infrastructure from the threat of fire. (Section 7.0)
2. The current programs to provide awareness and operational training for fire service responders should be continued and expanded to reach a larger segment of the fire service. (Section 12.3)
3. The fire service also needs the advanced detection and monitoring devices and protective clothing for nuclear, biological and toxic agents that are currently available to military teams. (Section 12.2)
4. The fire service encourages the designation of FEMA to coordinate all of the future training and preparedness programs for local responders through the Senior Interagency Coordinating Group. This is the most effective structure to coordinate the efforts of the different federal agencies and ensure that the training reaches the appropriate responders. (Section 8.0)
5. A suitable site should be established for large scale simulation and technical training exercises. The establishment of this capability was authorized by Congress in the Anti-Terrorism and Effective Death Penalty Act of 1996 and is considered a major priority by the fire service. The training facility must meet stringent requirements for technical capabilities and should be fully funded by the federal government, including stipends for trainees from local government agencies. (Sections 12.2 and 12.3)
6. Future training should be directed to the strategic level, in addition to the tactical/operational and awareness levels. This training should develop improved interagency coordination for large scale operations. (Section 13.0)
7. The Incident Command System should be adopted and used by all federal, state and local agencies that respond to emergency and terrorist incidents. (Section 10.0)
8. The fire service should be included in the sharing of intelligence information and the planning for anticipated terrorist incidents. (Section 12.0)
9. The Metro Medical Strike Team concept should also be continued and expanded to provide coverage for additional areas. Specialized medical supplies and equipment,

which have previously been limited to the military forces, should also be made available to local responders. (Section 13.0)

10. Asset forfeiture funds are recommended as a source of revenue to support increased training and preparedness activities. Local revenue sources do not provide the additional funds that are needed to support expenditures related to terrorism training and preparedness, as well as improved coordination with law enforcement agencies. (Section 12.0)
11. The recommendations of the Public Safety Wireless Communications Advisory Committee should be adopted by the Federal Communications Commission. (Section 15.0)
12. A specified amount of the total moneys received by the federal government from FCC spectrum auction sales should be set aside to create a fund from which low interest loans can be made to state and local governments to purchase necessary communications equipment to keep pace with the rapid changes in technology and to promote interoperability. (Section 15.0)