Houston-Galveston Area Council

Sharing Resources ● Sharing Strengths

H-GAC Regional Strategies for First Responder Preparedness

August 28, 2002

"Local units are the first to respond, and the last to leave the scene."

—President George W. Bush

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Foreword

The *H-GAC Regional Strategies for First Responder Preparedness* acknowledges:

- Local elected officials remain in charge and will, as always, determine the requirements for their respective jurisdictions.

- This regional plan is deliberately broad in scope and is intended to address events that exceed the capabilities of individual jurisdictions.

- The recommendations of this regional plan are scalable. The regional objectives can be adjusted in proportion to resources available.

- Establishing standardized terminology, protocols, and equipment improve efficiency and effectiveness of training.

- Maximum utilization of funds and equipment standardization may be best achieved through regional cooperative purchasing.

Description of Regional Situation (H-GAC)

Introduction

A disaster is an event that overwhelms available resources at the disaster site. It can be a result of naturally occurring phenomena, man made circumstances or a combination of both. The First Responders to such an event are expected to secure the area, respond to the needs of the victims, and preserve life and property.

The event may determine the first responders. Therefore, in addition to public safety and emergency management officials, first responders may include elected officials, public works departments, utility departments, transportation officials and hospital personnel. Protecting first responders and preventing them from becoming victims may be a determining factor in the outcome of the response to the event.

The current terrorist threat of an attack using weapons of mass destruction adds a new dimension to otherwise randomly occurring acts. Terrorism introduces premeditated, deliberate attempts to cause as much damage with as many victims in as wide an area as possible. In many cases, it is further designed to destroy the continuation of government at any and all levels.

Unique Issues

The Federal Bureau of Investigation (FBI) has identified the following nine key assets as being vulnerable to terrorism. According to the Texas Coastal Regional Advisory System (TCRAS) and the Joint Terrorism Task Force (JTTF) initiative, the area served by the Houston-Galveston Area Council possess all nine.

- Energy (i.e. South Texas Nuclear Plant, Power Grid, Pipelines)

- Oil and Gas (i.e. Petrochemical complexes, Tank Farms)

- Water (Lakes, River Authorities, and Ports)

- Telecommunications (Intranet, Computer manufacturing, Fiber Optics, Major switching stations)

- Banking and Financial Institutions

- Transportation (Airports, Rail, Houston Ship Channel, Pipeline, Public Transit, Roads, Bridges and Tunnels)

- Emergency Services

- Continuity of Government (Infrastructure)

- Other (Diverse religious establishments, Universities and Schools, Tourist/Entertainment/Sports facilities, NASA)

Local Emergency Plans

The Department of Emergency Management (DEM) database indicates that 131 jurisdictions in the H-GAC region have approved emergency preparedness plans. Local resources will always be called on to be the first to respond; this regional plan document is designed to complement plans already developed by local jurisdictions. It does not replace the local government's plans already in place. However, a comprehensive regional approach will be necessary in the event of area-wide catastrophes.

This Regional Plan effort, which covers the thirteen-county Gulf Coast Planning Region, with a population of 4.8 million people, will:

- Identify resources available

- Encourage the sharing of those resources

- Establish agreements for the sharing of those resources (Mutual Aid Agreements)

- Maintain inventory of available resources and agreements

A further goal of this plan is to identify resource gaps and seek funding to eliminate those gaps. With the input of county and city emergency management professionals, government first responders, public health officials and private industry representatives, this document describes strategies for coordinating efforts to respond to disasters in the future and prioritizing needs.

Regional Needs

- In the government sector there are only two full-time, fully staffed 24/7 Hazardous-Materials Response Teams in the region. It can be expected that any disaster involving the use of weapons of mass destruction would require the skill and expertise of trained Haz-Mat teams and additional teams are needed.

- The equipment that is currently available to respond to an attack using weapons of mass destruction is not standardized across the region.

- Many agencies have achieved communication interoperability but others have not.

- It can be expected that an attack would require the response of multiple agencies and jurisdictions. This would require:

  - Pre-authorized Regional Mutual Aid Agreements

  - Regional Unified Command System

  - Equipment Standardization

  - Interoperability of Communications (voice and data)

Regional Strategies

Planning

- Encourage agencies without approved Emergency Management Plans to complete a plan or join another plan

- Execute Regional Mutual Aid Agreements

Equipment and Resources

- Provide at least one additional fully staffed 24/7 Haz-Mat team to the region

- Provide a minimum of two trained Haz-Mat Technicians in each of the thirteen counties

- Equip trained Haz-Mat Technicians with detection equipment

- Increase the number of Bomb Technicians in the region

- Provide an adequate supply of standardized equipment to be placed throughout the region. Equipment items such as rescue equipment, protective clothing, self-contained breathing apparatus (SCBA), detection equipment, decontamination equipment, and communication equipment

- Provide two mobile command center units that could be deployed anywhere in the region

Communications

- Obtain funding for a regional radio communication system infrastructure to address issues of communications interoperability

  - Priority 1 – Radio and Computer Infrastructure

  - Priority 2 – Communication System User Interfaces

  - Priority 3 – Subscriber Equipment and Training

  - Priority 4 – Develop a Redundant Public Switched Network for 9-1-1

- Develop protocols and structure for the Regional Unified Command System, Incident Command and Emergency Operations Center

Training and Exercises

- Provide training and exercises to ensure that the local Haz-Mat Technicians and Bomb Technicians are prepared to work as a Team

- Obtain equipment that can be used and destroyed in the field exercises

- Conduct multi-jurisdictional table-top and field exercises

- Produce exercise evaluations and recommendations

- Conduct training for the command staff who will be called upon to take charge of the Unified Command and the Incident Command

- Conduct exercises of the Unified Command System

Planning and Continuity of Government

"It's going to take regionalism to coordinate use of funds ... regionalism is going to be the means by which we make our homeland defense work."

This quote came from State Representative Bob Turner of District 13, Chairman of the House Public Safety Committee, on November 8, 2001 at the Houston public meeting of the Governor's Task Force on Homeland Security.

Background

Each jurisdiction is required to file an Emergency Management Plan (EMP) with the Texas Division of Emergency Management (DEM). In order to ensure that all agencies are covered by an approved plan, H-GAC will host workshops conducted by DEM staff that will help local officials complete or update the local basic plan and each required annex. Workshops on *Annex V Terrorist Incident Response* will be scheduled.

The anticipated magnitude of a deliberate terrorist event or use of weapons of mass destruction would likely exceed the ability of any one jurisdiction to respond adequately using only their own resources. For this reason, a more regional approach enhances the ability to effectively address the needs. The Houston-Galveston Area Council Regional Plan is designed to recognize the opportunity to maximize available resources through planning, cooperation (mutual aid), communication, training and exercises.

The regional approach makes it possible to institute a coordinated Regional Unified Command System when appropriate and agreed to by the participants. In this way, no one unit is in charge, but working together whether at the Incident Command Post or Emergency Operations Center all staff have a clear understanding of roles and assignments. A tentative emergency response staff and structure should be established before such an emergency occurs.

Understanding Roles and Responsibilities

The relationship and working responsibilities between all the emergency response personnel should be clearly understood before an incident occurs. Each participant has either a command or a support role, and it is important to remain focused on the tasks required during disaster response. The lack of a comprehensive agreement could create either a duplication of effort or negligence in addressing the issue at all.

Defined Continuity of Leadership (Continuity of Government)

This topic speaks to the necessity of having a management structure in place that allows for the effective and safe management of an incident that requires a regional response. In the event of such a disaster, it should be clear as to who is in charge at all times and in all sectors within the

site of the incident. Establishing a chain of command through the selection of a leader, his/her deputy or second-in-command, and those further down the line can greatly improve operations if the leader or anyone else in a position of authority has to be absent for any reason. Following this protocol there will always be someone in charge on site who can make decisions regarding disaster management.

Regional Incident Command System

The Regional Incident Command System (RICS) is a set of common procedures for organizing personnel, facilities, equipment and communications at the scene of an incident. The establishment of the RICS must be done in advance of its implementation. Deliberate and routine multi-jurisdictional exercises and regular review and evaluation are required to ensure the organized management of emergency incidents.

Emergency incidents need to be managed appropriately to ensure personnel safety, reduce the confusion and damage an incident can cause and allow critical decision making with limited information and severe time and resource restrictions. An effective regional incident management system provides the foundation for an effective response.

The RICS can be used for any type or size of emergency, ranging from a minor incident involving a single unit to a major emergency involving several agencies. The RICS allows agencies to communicate using common terminology and operating procedures. It also allows for the timely utilization of resources during an emergency.

To facilitate the Regional Incident Command System, formal adoption of a regional mutual aid agreement by participating parties will be required. Execution of this document will enhance coordination and efficient utilization of available equipment, supplies and personnel.

Deficiencies	Regional Strategies
Without complete and approved plans, jurisdictions have limited ability to respond to a disaster and subsequently may not qualify for federal or state financial assistance	Conduct workshops to complete and update plans as required
Control and jurisdictional relationships must be clear in a multi-jurisdictional response to a disaster. This includes pre-designated authority delegation and chain of command	Provide technical assistance to develop Incident Command System models. Develop regional protocols
Duplication of efforts can waste energy and resources	Training and exercises Regional planning and protocols

Deficiencies	Regional Strategies
Assure seamless transfer of authority to maintain government functions during the incident. Smooth transfer of authority and return to normalcy following the incident	Regional planning
Essential facilities may not be available for use due to damage or evacuation	Negotiate agreements with private industry to obtain facilities

Communications and Interoperable Communications Equipment

"We lacked communications, and there really was no one to take control."

This quote came from Ken LeMaet, the President of the Texas City Terminal Railway following the April 16 and 17, 1947 Texas City Disaster. These same observations were made again when Hurricane Andrew hit Florida in 1992. Reviews of both the bombings of the Alfred P. Murrah Federal Building in Oklahoma City on April 19, 1995, and the World Trade Center on September 11, 2001, cite failed communications as complicating the response.

Background

The term *interoperability* describes the ability of governmental agencies to communicate across jurisdictions and with each other. It is being applied nationally to both voice and data communications. Current technology offers a variety of cost effective methods to achieve interoperability. However, the issues of policy and information security must be addressed and satisfied before complete interoperability can be achieved. In order to overcome these very real obstacles, local elected leaders need a comprehensive regional communications plan with recommended goals to establish a region-wide, interoperable communications system.

In the H-GAC region, the Regional Radio System includes 246 departments in eight (8) counties and is hosted by Harris County Central Technology Center. It uses the SmartZone Regional Radio System for routine communications and for responding to events requiring a multiple agency response. Agencies participating include law enforcement, fire and rescue, EMS, area hospitals, public works, universities, school districts, transportation, and others. However, some jurisdictions that would play a major role in a disaster are not currently integrated into the regional system. Without total integration the emergency management communications effort is fragmented between different radio systems and coordination is impaired.

Regional Radio System Considerations

To be effective, public safety must have adequate radio frequencies for communications in all areas of its jurisdictions. Radio communications between agencies in large metropolitan regions is a must, especially in law enforcement. The ability to provide communications is a function of goal setting, planning, and financing. In law enforcement, both voice (plain and secure) and data from mobiles and portables is desirable. In order for communications to occur, frequencies must be available and the appropriate radio dispatch and computer equipment in the dispatch center and other agency offices must complement the equipment used in the field.

All radio communications should occur without the dispatcher or other users needing to know the technical location of field radio equipment towers with respect to the calling field officer.

Support equipment should be configured in such a way as to provide expedited mobile data and good voice quality radio signals from any compatible mobile or portable radio user within the region at all times.

Radio Transmission Sites

The proper planning and installation of modern radio and associated support equipment at the appropriate sites will provide a stable state-of-the-art radio network for all radio users in the region. It will also provide additional system capacity so that a true regional radio system can be developed for law enforcement and public safety. In addition to the existing radio sites, the use of additional towers in the City of Houston, Fort Bend County, Missouri City, League City, and the City of Pasadena will be needed to integrate compatible radio systems into a SmartZone Regional System. Regional radio coverage from all of these tower sites can be enhanced at a reasonable cost and provide automatic and seamless backup for all users in the event of a natural or man-made disaster at any of the sites. Seamless radio communications with tremendous capabilities for public safety can result from such a SmartZone regional radio network.

Law Enforcement Vehicles

Vehicles used by law enforcement and other public safety agencies today should, at a minimum, be equipped with standardized mobile radios, mobile computers, and automatic vehicle location equipment. Radios should be programmed so that all needed communications with Dispatch, the District Attorney's Office, the jail, outside agencies, and other local government agencies can be transmitted or received **routinely** by voice or data without leaving the vehicle. Voice communications should be available from mobiles or portables throughout the region as required.

Data communications should be used routinely to communicate with any department or office as needed, and to routinely retrieve database information without dispatcher intervention. The user device can be a mobile data terminal (MDT), a laptop with a RF modem, or a PC with a RF modem. This mobile data capability can provide each user with a printout of all needed communications and can reduce errors. Additionally, report writing by the officer can reduce the time and manpower required to routinely update incident or other reports.

Automatic Vehicle Location (AVL) systems should be used to pinpoint the location of all uniformed police or fire vehicles or marked emergency vehicles for safety and to expedite the dispatching of the closest unit to an emergency call for service. The government satellite Global Positioning System (GPS) is currently available to provide location information to each vehicle as needed. This data can be transmitted to the dispatch office either by mobile data terminal transmissions or by voice radio with transmissions which are transparent to the user. When a vehicle is responding to an emergency call, the vehicle location equipment could immediately begin updating the location of the vehicle to the radio dispatcher at an increased rate as soon as movement is detected, the emergency lighting and siren is activated, or upon command. This updated information should be provided to a centralized system so that dispatchers are always aware of **all vehicles** which are responding to high priority emergency calls throughout the

region. This technical capability can be provided with technology which is available today, but much planning and coordination between user agencies and dispatchers is required. Standardized radio call signs and/or naming conventions are required. Additional radio frequencies are also required to carry the extra data transmissions required by this type of system.

Dispatch Centers

Dispatch Centers should be at locations which are capable of housing representatives from each jurisdiction and service represented. The center should be equipped with state-of-the-art radio, telephone, and computer-aided dispatch equipment with graphical capabilities. These systems should be capable of receiving radio, routine and emergency 9-1-1 telephone calls during both "normal" and "emergency" conditions such as storms or other natural or man-made disasters. Computer equipment to receive and compile mobile data information and reports should be interconnected to this facility via existing or proposed fiber optic networks. Backup uninterruptible power systems and backup generators should provide power to operate all critical equipment and air conditioning systems for several days without assistance from outside power utilities.

Personnel operating this center should be well-trained and capable of performing both routine and emergency communications system configuration to extend, or eliminate the communications to both law enforcement and non-law enforcement as the need arises. An example is the "dynamic regrouping" and/or multicasting of resources to a specific talkgroup for traffic officers and heavy equipment operators at the site of a tornado or other disaster. Another example is the inhibiting of stolen or illegal radio equipment as they are detected or disabling the radio transmitter of a "stuck mike" or interfering radio. Each type of emergency, or "storm plan" should be well-planned, defined, configured, and stored in the system for implementation as needed. Preplanning of these "storm plans" permits decision-making by the correct personnel before the emergency occurs and prevents mistakes caused by "the heat of the moment". Accurate equipment inventory, radio numbers, and ID assignments must be maintained and coordinated.

The type of management required to operate such a facility should be determined by the appropriate elected and/or appointed officials from all agencies represented in the region.

System Network Security

A large regional radio system of the type described needs special attention in the area of system network security. Security becomes the job of all users on the system but special equipment and procedures are needed to assist in network security. Policies regarding equipment use should be thoroughly developed, approved by the appropriate body, and explained to all users of the system, and then enforced.

It is imperative that all inventory and individual identification and talkgroup numbers be managed by a single entity. The information required in the linking of many different systems together to form the radio network is very sensitive. The integrity of the personnel involved in

network security must be impeccable. Programming of all radio and associated equipment must be closely supervised and performed in a tightly controlled facility, preferably by a single department. If a breach of security is detected, standard reporting procedures to the appropriate authorities must be followed and a thorough investigation should follow. Although the technique of network security is beyond the scope of this plan, it is a very critical element of the overall system and must receive the proper attention to protect the integrity of the entire system.

Governance

Governance is the most difficult part of any multi-jurisdictional system. Further, in order for such a system to function properly at all times, it must be adequately funded regardless of the political issues and differences which may arise between participating agencies. Grant funds can get a system started but a long-term financial plan is needed. Governance deals with the ways in which agencies assure themselves of getting a return for their regional participation.

In this case, "Governance" is the system by which radio resources are directed and controlled. The governance structure specifies the distribution of rights and responsibilities among different participants in the system and spells out the rules and procedures for making decisions on regional affairs. By doing this, it also provides the structure by which the regional objectives are set, and the means of attaining those objectives and monitoring system performance.

One possible approach is to establish a governance board as the controlling body. Representation should be made up of key individuals who have decision-making authority within their respective jurisdictions. Governance is about promoting system fairness, transparency and accountability.

Regional Radio System Issues

The following describes radio and public safety communication capabilities and issues and provides a conceptual plan to address these issues in the H-GAC Region. The concept is based upon the integration and migration of compatible radio systems into a Regional Radio System for voice and a Regional Data System for mobile data operations. Other systems and equipment, such as Computer-Aided Dispatch (CAD), Automated Fingerprint Identification System (AFIS), Automatic Vehicle Location (AVL), and Geographical Information System (GIS), are mentioned to show how all systems can be enhanced when integrated into a regional system utilizing shared resources.

Fragmented Public Safety Radio Frequency Bands

Much progress has been made in the past few years, however, public safety radio communications are still fragmented. Many public safety agencies operate their own radio systems with little or no ability to intercommunicate with each other. Since most public safety radio frequencies have been licensed and additional frequencies are at a premium, severe congestion occurs during busy radio periods. These busy periods restrict the amount of communications which can occur.

Lack of Continuity

Many law enforcement agencies operate and patrol the same geographical boundaries without the ability to intercommunicate or share resources. For example, if a Police unit is requested for an incident, and no unit is available, the incident goes unattended until a Police unit is available. At that same time, there may be a Sheriff patrol unit, a Constable patrol unit, a Transit Police unit, and any number of other units from adjacent jurisdictions available and in the immediate area. However, they cannot respond because no common method of radio communications is available to alert them or their dispatch offices.

All law enforcement agencies within a county with the power of arrest must present their cases to the District Attorney's Office to determine if charges are appropriate. In many cases, additional information is needed from the arresting officers by the District Attorney's Office. The District Attorney's Office must call the jurisdiction's dispatcher who must then attempt to locate and advise the officers to call the District Attorney's Office. This scenario is oversimplified compared to the actual process required. This is another routine scenario where intercommunication between agencies is a problem. In all cases involving arrest, the District Attorney's Office should be able to routinely communicate directly with the arresting officers by voice radio or mobile computer as needed.

Status of Emergency Vehicles

In a large metropolitan region such as that served by H-GAC, many small cities and agencies are intermingled with larger cities and agencies with varying jurisdictional boundaries. Emergencies occur daily throughout most of these jurisdictions with little, if any pre-planned coordination. Public safety vehicles responding to an emergency may be unaware that other emergency vehicles may also be responding to the same or a different emergency within close proximity to each other. In many cases, their paths cross which could be tragic. Currently, there is no mechanism to coordinate the activities of responding emergency vehicles in overlapping jurisdictions.

Use of VHF and UHF Channels

VHF (high band) and UHF (ultra high) radio frequencies are currently used by many public safety agencies and by many volunteer fire departments and emergency medical units as their primary band of operating frequencies. VHF is also used for intercity communications within the state of Texas by the Department of Public Safety and other law enforcement agencies. UHF is used by the Houston Police Department for voice radio operations. The migration of public safety operations to 700-800 MHz trunking systems precludes the ability to communicate on VHF or UHF unless a secondary radio is installed to operate on the specific VHF or UHF radio system.

Inadequate Radio Coverage

In-building radio coverage presents a problem to most radio systems, regardless of the band of frequencies used. Special equipment must be installed inside each building to permit radio

communications to occur with systems or units outside the building. Buildings such as jails, hospitals, and underground tunnels are normally constructed with structural materials which block radio signals. Bi-directional amplifiers and specialized transmission lines are required. In some operations, simplex radio operation can be used with handheld radios if outside communication is not required. The problem is greatly amplified and very expensive when multiple agencies operating on different radio systems and frequency bands attempt to solve the same problem within the same set of buildings.

Emergency Management

Emergency Management and disaster communications in general are hampered by poor radio communications and poor resource coordination. This problem was addressed in 1996, when TranStar was opened with the City of Houston, Harris County, Metro, and other entities operating from the same building for emergency management purposes. At this time, City, County, and Metro have radio communications capabilities from this location, however limited emergency management communications exist with surrounding counties.

Policies and Procedures

Radio policies and procedures vary from system to system in the region. To be effective, within public safety communications, a set of standardized policies and procedures should be developed and followed. These standards range from training of users on the front-end to the implementation of emergency radio procedures during a natural or man-made disaster. Few, if any such standards currently exist in this region. Policies which do exist are general in nature and procedures are generally developed on-the-fly by users who do the best that they can.

Emergency Radio Dispatch

Frequently, public safety radio dispatchers are operating within the region with little or no direct interaction except by telephone. Therefore, emergency and routine calls for service can cross jurisdictional boundaries without the knowledge of controlling dispatchers. This results in loss of manpower and poor resource management. In many cases, this practice is dangerous for responders to the call and is a disservice to the citizens.

Funding, Charge-back, Reciprocal Service

Although the technology and hardware are available to provide for fully interoperable public safety communications, implementation is far beyond the local available funds. The cost to implement Regional Communications Priority One (basic software and hardware for infrastructure) is estimated to be around $36 million. Clearly outside financial assistance is critical to achieve the desired goals. However, in a regional radio system, duplication can be avoided and funding sources can be pooled and shared.

In the proposed regional system a chargeback mechanism should be developed to distribute the expense of the system to the users in the proper proportions. In Harris County for example, all radio services are documented as they occur and a monthly summary is provided to the County

Auditor for billing. A method should also be devised to offset the costs involved with reciprocal services between agencies and departments. In Harris County, interlocal agreements with outside agencies who own compatible radio systems are written with no cost clauses, and each department absorbs those programming expenses internally. This is mutually beneficial to all concerned.

Cellular Phones

An over-reliance on the use of cellular telephones as the primary means for communication may result in a total shutdown of responder communications. Often the cellular phone system is utilized during training events, but this often proves to be unworkable during an actual incident. Experience has shown that the cellular telephone systems will be overwhelmed with demands for service and will not be a reliable means of communications. If the staff assumes that they can rely upon their personal or jurisdiction-issued cellular phones during an actual crisis, that assumption could be deceptive. Also, as has been stated before, bypassing dispatch can have unintended consequences.

Further, during a large-scale incident the radio systems could potentially be overwhelmed with operations traffic. The use of a Radio Amateur Civil Emergency Service (RACES) system or other local (Amateur Radio) HAM radio may also be considered. All systems should be tested on a regular basis.

National Public Safety Planning Advisory Committee Region 51

Several years ago, the Association of Public Safety Communications Officers (APCO) realized the need for additional radio channels for public safety throughout the country. At that time, all public safety radio channels were licensed in most metropolitan areas. All frequencies from low band throughout the 800 MHz band of frequencies were in use and no system growth was possible. At that time, frequencies in the 821-824 MHz and 866-869 MHz were being held in reserve by the FCC. All of those channels have been licensed and the pool is now exhausted.

Federal Communications Commission Spectrum Refarming PR Docket 92-235

In 1995, the Federal Communications Commission defined a plan to refarm all frequencies below 800 MHz with the exception of low band frequencies (below 50 MHz). This plan indicated a widespread change in the communications industry. The purpose of refarming is to provide additional radio frequencies to meet the ever-growing demand for spectrum. New technology will permit the division of existing radio channels into two (2) and later four (4) channels where a single channel now resides. This dictates that most existing radio equipment operating below 800 MHz must be replaced to meet the new standards. On January 29, 2001, the FCC began accepting applications for licensing using 12.5 kHz channels. This may result in widespread radio interference for existing users of 25 kHz channels. Many public safety and law enforcement agencies must change the equipment they currently use, and in many cases, move to other frequency bands as the new narrowband channels are licensed and implemented. A few years ago, the Houston Police Department unofficially estimated a major investment of over

twenty million dollars ($20,000,000) just to maintain their current level of voice communication on the 460 MHz band as a result of refarming.

Current Communication Systems within the Region

Many radio systems currently exist in the Greater Harris County region. Some are compatible with each other and some are not. A brief description of some of these systems follows:

Harris County - The Harris County Radio System currently uses eight tower sites and ninety-six (96) radio channels on a Motorola SmartZone widearea trunked radio system. This system serves approximately 15,000 radios in both law enforcement and non-law enforcement for Harris County and for approximately 246 departments throughout the region. The system is capable of dynamic regrouping, telephone interconnect, voice encryption, as well as the standard features of Motorola SmartZone widearea trunking. Seven (7) radio channels have been upgraded to support both analog and digital formats. Voice encryption is available but is not used. Three (3) of these radio channels are used to support the Mobile Digital Terminal System using Motorola RDLAP radio technology for mobile computing, and Motorola GPS receivers for vehicle location. Currently, approximately 1300 mobile computers are configured for this system with less than 75 equipped with GPS equipment. All tower and equipment sites are interconnected via T1 or wireless T1 microwave radio equipment. One (1) law enforcement talkgroup is used as a patch between talkgroup HPD-1 and the Houston Police Department Citywide radio channel for interoperability.

Houston Police Department - The Houston Police Department (HPD) provides for voice communications on UHF in the 453-465 MHz frequency band on approximately twenty (20) conventional radio channels. Transmitting and receiving sites are distributed and interlinked with fiber optics throughout the City of Houston to provide for mobile and portable radio coverage. Voice encryption is available but is not widely used. Data communication is accomplished on the 800 MHz band of frequencies on nine (9) conventional radio channels and is linked to a computer-aided dispatch system within the police emergency dispatch center. Many outside agencies utilize the HPD radio system to communicate with HPD, or to monitor their activities.

Houston Fire Department - The Houston Fire Department (HFD) operates a sixteen (16) conventional channel simulcast radio system utilizing three primary radio sites in the 453-460 MHz band of frequencies. These channels are operated from the dispatch center in the Fire Alarm Building in downtown Houston and utilize towers distributed around the city. In 1995, HFD began the process of implementing a GPS-AVL system for their first responder units for approximately 250 units.

City of Houston Aviation Department - The Aviation Department operates on a five (5) channel Ericsson trunked radio system operating in the 806 MHz band.

City of Houston (Non-Public Safety) - The remainder of the City of Houston departments who use radio communications operate on a single-site twenty (20) channel Motorola SmartNet trunked radio system from the Chase Bank building in downtown Houston. This system serves approximately 4000 radios in various city departments in a non-public safety environment.

Pasadena - The City of Pasadena currently operates two (2) Motorola 821 MHz SmartNet trunked radio systems. Nine (9) radio channels operate from the First Interstate Bank building in downtown Houston. Eleven (11) radio channels operate from the Police Department in Pasadena. The Pasadena Police Department also operates a two (2) channel Motorola Mobile Data Terminal System with approximately 150 MDTs.

Fort Bend County - The Fort Bend County Sheriff's Department operates a seven (7) channel 821 MHz Motorola SmartNet trunked radio system from a single tower in Richmond. This system serves the Fort Bend County Sheriff, Constables, other county departments and the City of Rosenberg. They also share a single conventional radio channel with Missouri City to support mobile data communications using the Motorola RDLAP protocol. An interlocal agreement with Harris County has been approved to integrate this system into the Regional SmartZone System and five (5) additional 821 MHz channels have been licensed by Harris County for use in the Regional Radio System.

Houston Independent School District - The Houston Independent School District operates a fifteen (15) channel 821 MHz Ericsson trunked radio system for departments within their school district.

Missouri City - Missouri City operates a six (6) channel 806 MHz Motorola SmartNet trunked radio system from a single tower in Missouri City. This system serves all of Missouri City, Stafford Police, and Sugar Land Police. The City of Sugar Land is co-owner of this system. . An interlocal agreement with Harris County is being considered to integrate this system into the Regional SmartZone System and six (6) additional 821 MHz channels have been licensed by Harris County for use in the Regional Radio System.

Montgomery County - Montgomery County operates an 821 MHz Ericsson trunked radio system for agencies within their county. The Montgomery County system is functioning on 16 channels currently. Five additional channels are being implemented. Fifteen of the seventeen fire departments in Montgomery County operate on a VHF radio frequency.

League City - League City operates a five (5) channel 806 MHz Motorola SmartNet trunked radio system from a single tower in League City. The Pasadena Police Department also utilizes resources of this system for extended coverage and interoperability. An interlocal agreement with Harris County is being considered to integrate this system into the Regional SmartZone System.

Brazoria County – Brazoria County operates a five (5) channel 821 MHz Motorola SmartNet trunked radio system from a single tower in Angleton. Two additional towers are being added to provide coverage in the northern (Pearland tower) and southern parts (Brazoria South) of the county. An interlocal agreement with Harris County has been approved to integrate this system into the Regional SmartZone System. Thirteen (13) additional 821 MHz channels have been licensed by Harris County for use in the Regional Radio System.

Galveston County - Galveston County operates a twenty-two (22) channel 821 MHz Motorola simulcast trunked radio system. A change in the interlocal agreement with Harris County is being considered to integrate this system into the Regional SmartZone System.

Waller County – Waller County currently operates in the VHF band of frequencies. Six (6) channels in the 821 MHz band have been licensed by Harris County for operation in the Regional Radio System.

Liberty County – Liberty County currently operates in the VHF band of frequencies. Six (6) channels in the 821 MHz band have been licensed by Harris County for operation in the Regional Radio System.

City of Humble –Humble currently operates on the Regional Radio System. Eleven (11) 821 MHz radio channels have been licensed in Humble by Harris County for operation in the Regional Radio System. A new tower site will be equipped and integrated into the system.

Regional Priorities

The region's overall strategy is to integrate all existing compatible radio systems/channels, both voice and data, into a Regional Radio System for the purpose of interoperability and to encourage user agencies to acquire and use appropriate radio equipment to access the system, especially for first responders.

To expand the communication system to include all entities, the following types of equipment are needed: additional infrastructure, command and control equipment, tower sites, base station equipment, microwave, fiber optics, and other interconnecting systems as well as a redundant control site. H-GAC priority needs are as follows:

- Priority 1 – Radio and Computer Infrastructure
- Priority 2 – Communication System User Interfaces
- Priority 3 – Subscriber Equipment and Training
- Priority 4 – Develop a redundant public switched network for 9-1-1 calling

Deficiencies	Regional Strategies
Area wide voice and data communications	Continue expansion of Regional Communications System beginning with expanding infrastructure
Limited and crowded radio frequencies	Encourage use of technology such as digital trunked systems
700 MHz spectrum delayed	Purchase digital equipment that can be used on 800 MHz and also on 700 MHz when available
Cellular telephone service unreliable in emergency conditions	Encourage HAM and RACES participation in planning

Deficiencies	Regional Strategies
WMD incidents require support from other than traditional public safety first responders – such as public works, utility departments, and hospital personnel – requiring wide-spread communication	Expansion of a regional system can accommodate many diverse users using trunked technology and talk groups. This provides for the desired interoperability without interfering with routine communications.
Limited wireline communication facilities (phone, fax, internet)	Enhance use of internet capabilities as a back-up for communications
Communications towers may be damaged	Establish communication agreements with private industry such as TV, radio, satellite, and microwave
9-1-1 emergency communications systems could be damaged or inoperable due to evacuation during an incident	Negotiate with telephone companies to establish high-tech, redundant infrastructure networks
Non-standardized symbols & nomenclature may cause gaps in communication at critical times	Standardization of symbols, markings and nomenclature to be distributed to all jurisdictions once accomplished
In multi-jurisdictional events, First Responders may be unfamiliar with incident location	Implementation of enhanced 9-1-1 Mapped ALI
Currently, first responders in the region use VHF, UHF and 800 MHz trunking systems.	As an interim solution, set up a regional team to put enabling hardware in place and establish the guidelines for activation during a regional incident until a regional radio system can be fully implemented

Special Operations Units
and
First Responder Teams

First Responder Teams arriving on the scene of a major disaster may include firefighters, emergency medical personnel, and law enforcement officers. Emergency response may include: 1) search, 2) rescue, 3) medical/trauma, 4) hazardous materials, 5) explosives, 6) public works and 7) utilities.

Implementing Regional Strategies

Data included in this section obtained from Texas Forest Service Surveys, Firehouse Magazine Surveys, and various Texas fire departments.

Existing Haz-Mat Resources

Existing Haz-Mat resources in the H-GAC region indicate a significant response capability to routine incidents. However, the risks present for WMD events support the need to expand Haz-Mat resources throughout the region.

Proposed Haz-Mat Resources Needed In The 13-County H-GAC Region

Ten fire departments in the region employ only full-time 24/7 paid personnel *(2 in Fort Bend County, 4 in Harris County, 2 in Galveston County, and 2 in Montgomery County).* An additional 37 departments have some paid fire fighters working with their volunteers. The 140 other departments include only volunteers.

In the Region's fire departments there are three levels of Haz-Mat preparedness/response present: **1)** fully-staffed 24/7 paid teams, **2)** Technicians in paid departments with primary duties on engines, rescues, and ladders, and **3)** Technicians working in volunteer departments. The only fully staffed 24/7 paid Haz-Mat response teams in the 13-county region are in the Houston Fire Department consisting of two teams. These are on-duty companies requiring 4 duty shift rosters for 24/7 response. The combined total for both companies is 10 per duty shift.   They operate from 2 Haz-Mat Trucks *(each with a Junior Captain in charge)*, 1 Foam Pumper, and 1 Utility Truck. At least three paid fire departments (Conroe, Texas City and The Woodlands) have Technicians assigned to other primary duties. The Texas City Fire Department stipulates that all new hires must achieve and maintain Haz-Mat Technician certification as a condition for continued employment.

Regional deficiencies include on-duty personnel, apparatus, rescue equipment, protective clothing, SCBAs, detection equipment, decontamination equipment, and communication equipment.

At least one additional fully staffed 24/7 Haz-Mat response team and at least 26 designated Haz-Mat Field Technician positions are recommended to meet the needs of the 13-county region.

Implementation, Assessment and Response

Hazardous materials incidents are realistic, real time occurrences within the region's industry groups and transportation infrastructure. Haz-Mat teams are in place and on duty in most industrial complexes. Outside these facilities there are pipelines, roadways, and waterways transporting gas, petroleum and petrochemical products across the region around the clock throughout the year. When a potential incident arises there is need for rapid assessment and response throughout the region. Public Haz-Mat command and personnel deployment are needed beyond the resources currently available.

Description	Current Resources	Recommended Resources	Deficiencies	Deficiency Cost
Haz-Mat Teams	2 HFD Teams *(40 positions covering 24/7)* Limited on duty resources available in other FDs	3 or more fully staffed teams	1 or more fully staffed teams	$1.4 million or more per year per team
Haz-Mat Field Technicians	None	26 or more positions *(minimum)* Two per county	26 field positions	Determined by local jurisdictions
Motorized Apparatus	2 HFD Haz-Mat Trucks plus Trucks in other FDs	3 or more Haz-Mat Trucks	1 or more Trucks	$450,000+ based on equipment included in acquisition per truck
Personnel Protection & Equipment	Supplied through FDs Inventories	Outfit 46 or more additional positions	Gear for all first responders	To be determined through competitive bids
Detection Devices	FDs equipment for existing Technicians	Procure devices for personnel expansion	Devices for at least 46 first responders	To be determined through competitive bids
Funding	FDs Budgets	Population-based assessments for expansion		Grants for equipment, assessments for personnel

Hazardous Materials Incidents along the I-10 Corridor from El Paso to Baton Rouge, LA

There are **1,015** miles of highway along the Interstate 10 corridor from El Paso, Texas to Baton Rouge, Louisiana. During 2001, there were **4,180** Hazardous Materials incidents along this route or within paid fire department jurisdictions with Haz-Mat first responders. HFD reported **1,656** incidents as stated in the table below. In some instances, requests for hazardous materials assistance could not be accommodated due to lack of existing resources.

Fire Department	Number of Incidents	Percent of Total
El Paso, Texas	807	19.31%
San Antonio, Texas	833	19.93%

Houston, Texas	**1656**	**39.62%**
Beaumont, Texas	39	0.93%
Lafayette, Louisiana	260	6.22%
Baton Rouge, Louisiana	585	14.00%
YR 2001 Totals:	**4180**	**100.00%**

Recommendations

Equipment and Personnel Deployment

Haz-Mat Field Technicians are recommended for deployment to insure real time field responses in the 13-county region. At least 26 Technicians (two per county) would be required to assess the extent of each incident and determine whether on-site responders could contain the site, or whether to request a 24/7 Haz-Mat Team for mitigation. Some Haz-Mat infrastructure is already in place in other departments where certified Haz-Mat Technicians are on duty but assigned to engine companies.

Haz-Mat Field Technician positions could be created from within paid or volunteer fire departments or among other paid city or county employees and assigned to feasible locations in the 13 counties. These Technicians would be certified by the State of Texas. The Technicians would train, exercise, and maintain their skills and expertise by working at set intervals with Houston Fire Department Haz-Mat operations.

Personnel expenditures for designated Haz-Mat Field Technicians would be borne by their sponsoring jurisdictions. Protective clothing, detection and other field equipment would be considered part of any grant application.

Funding for personnel costs to establish additional fully staffed 24/7 Haz-Mat Teams would require an annual assessment in each participating jurisdiction based on population in order to provide regional response to the 13-county area.

HPD Bomb Squad

Deployment of trained first responders in the field is now available on call to respond with Houston Police Department Bomb Squad operations. These responders are trained to perform specific Bomb Squad duties. Strengthening the Bomb Squad is also recommended in accordance with the same concepts stated for Haz-Mat Field Technicians.

Haz-Mat Field Technician Training and Exercises

The State of Texas prescribes training and issues certification required for all Haz-Mat Technicians. In order to qualify and maintain state certification as a Technician, 120 hours of instruction must be completed followed by a minimum of 20 training and exercise hours per year. In addition, the Houston Fire Department requires a minimum of 20 hours in-service training and exercises per year. Haz-Mat Field Technicians would be required to comply with all of the above.

Equipment and Apparatus Needs for Haz-Mat Operations

SEL 2001, *"Standardized Equipment List for 2001"* includes an extensive list of federally-approved equipment and apparatus for use by first responders in combating weapons of mass destruction and other incidents involving hazardous materials. The list includes 7 categories:

1. Personal Protective Equipment
2. Operational Equipment
3. Explosive Device Mitigation and Remediation
4. Interoperable Communications and Information Systems
5. Detection
6. Decontamination
7. Medical

Inventory and needs assessment of specific items should indicate specific items for inclusion in grant applications. The following items are at the top of the regional list:

- Protective Clothing
- **S**elf-**C**ontained **B**reathing **A**pparatus (SCBA)
- Supply of spare SCBA air bottles/cylinders
- Thermal imaging camera systems
- Radios, scanners, lap tops
- Detection devices for **N**uclear, **B**iological, **C**hemical (NBC)
- Portable decontamination units
- Identification systems
- Motorized Haz-Mat apparatus with related equipment on board
- Motorized Air Cascade apparatus for refilling SCBA bottles/cylinders
- Equipment and Command Center trailers

Governance

Participation in any regional, multi-jurisdictional first responder program requires mutual aid agreements among the parties. An operational management structure will need to be established that provides for the distribution of rights and responsibilities among all the participants. A multi-jurisdictional task force must set regional objectives designed to ensure that participating jurisdictions are receiving services for their regional participation.

Comparison of Hazardous Materials Incidents along Interstate Corridors

The number of hazardous materials incidents in the H-GAC region along the I-10 and I-45 corridors and within the boundaries of fire department jurisdictions during calendar year 2001 was **1,821** incidents. This is compared to **1,115** incidents in the DFW Metroplex along the I-20, I-30, I-35 and I-45 corridors with significantly more resources available for responses to only **60%** of the Houston region's incident volume.

Public Works

Background

A major event resulting in a large number of casualties, damage to buildings and infrastructure and disruption of essential public services can overwhelm the capabilities of individual jurisdictions.

Basic needs such as water, wastewater treatment and solid waste and debris management may be hampered by damaged facilities, equipment and infrastructure. Access to the emergency areas may be dependent upon the reestablishment of services and the removal of debris. In many cases the emergency road repairs must be given first priority to support immediate lifesaving responses.

There may be conflicting demands for water for fire fighting, drinking and sanitation which exceed available resources. Due to a need for severe water use restrictions, the public may need to be informed on ways to conserve water. These restrictions will require vigilant enforcement to ensure compliance.

Local governments may need to coordinate hygienic measures due to impaired wastewater treatment. The lack of water may be so severe and sustained that water supply points may need to be established and supported for the distribution of potable water.

Debris management includes the emergency clearance of debris for access in and out of the region and longer-term removal, processing, permits and waivers handling may be required.

Public Health

Background

Traditionally, "First Responder" has been understood to be fire services, emergency medical services and police services. However, the introduction of biological or chemical terrorism and Weapons of Mass Destruction may now expand the traditional definition of first responder. The "First Responder" will be determined by the incident. In all cases, the police will be responsible for securing the area but, for example, in an incident involving a toxic release, traditional first responders would initially be working at a disadvantage due to a limited knowledge of the agent. Accordingly, public health officials should focus on identifying the toxic agent used in a Weapons of Mass Destruction (WMD)/Terrorism incident and identifying the resources available to conduct on-scene analysis. Typically, the public health department represents a credible local source for information pertaining to health information and may themselves become first responders.

The Emergency Operations Center (EOC) typically does not have all the resources within its organizational structure and must depend on other resources and state agencies for additional support and assistance. The EOC staff should not hesitate to tap the resources the Disaster District Committee (DDC) can provide to assist with chemical agent response efforts.

Ultimately, the public should be informed as early as possible about a chemical agent's signs and symptoms. The medical facilities selected to administer treatment should also be made available to the public. Further, provisions must be made to communicate with those who are hearing impaired, visually impaired and/or non-English speaking. Special evacuation procedures may need to be developed for these persons as well as the elderly and disabled.

Much has been learned in the public health sector due to the anthrax attack. The Centers for Disease Control and Prevention (CDC) reports that it is using the West Nile virus outbreaks as a practice for responding to a bio-terrorist attack. Both the CDC and its parent agency, the Department of Health and Human Services, have been working with state and local health departments to improve laboratories and create better and faster systems to detect terrorist attack. In addition, they have created public-health-training programs for clinicians, laboratory staff and public health officials to help define clinical symptoms, diagnostics and testing procedures. The efficient and timely testing will also help reduce the consequences of hoaxes and pranks.

Biological and Chemical Weapons of Mass Destruction

Recent threat analysis conducted by the Federal Bureau of Investigation and the Department of Defense continue to project explosives as the most likely weapon of choice for mass destruction. Other possibilities include biological toxins, industrial chemicals and biological pathogens.

Biological and Chemical Weapons of Mass Destruction

Biological	Symptoms
Anthrax	Bacteria cause fever, septic shock, difficulty breathing, death in 24-72 hours
Botulinum Toxin	Toxin causes blurred vision, difficulty swallowing, paralysis, respiratory failure, death in as few as 24 hours
Aflatoxin	A mold toxin: can cause hemorrhage, convulsions, coma, liver, cancer, death
Smallpox	Highly contagious virus causes high fever, headache, vomiting and delirium. High morbidity and mortality in unvaccinated individuals.

Chemical	Symptoms
VX Nerve Gas	Disrupts nervous system, causes convulsions, respiratory paralysis, death
Sarin	Attacks nervous system, paralyzes muscles used for breathing; can cause death in minutes
Mustard Gas	As liquid, causes skin and eye burns and blisters. Inhaled, can cause long term respiratory disease and cancer.

It is generally accepted that the attack on large water supplies would be an ineffective method to deliver weapons of mass destruction due to the diluting effect on such large quantities of water. Further, standard water treatment practices currently used would greatly diminish the effectiveness of biological agents introduced into the water supply. Of greater concern, are the numerous pumping stations located in remote areas which are less protected and more vulnerable.

Communications with the hospitals

It is vital that hospitals be involved in communication training if they are to satisfy their crucial roles in the event of an actual WMD/Terrorist incident. A concerted effort should be made early in the incident to ensure that all players are aware of the challenges they face. Memoranda of Understanding (MOU) with the first responders and the hospital response capabilities are essential necessities and should be completed prior to an emergency.

It is important that the physical space allocated for the hospital's liaison section be adequate for their needs. It would be useful for those personnel to be located in their own area as opposed to working within the operations or planning sections. As deficiencies are presented to the hospital liaison staff they can process and pass this information to the operations and planning sections as appropriate.

Deficiencies	Regional Strategies
Identify and track release of unidentified toxins, either of a chemical or biological nature	Monitor school absences to identify evidence of sudden acute illness or unexplained pockets of absences
Protect water pumping stations that could be used to interfere with the delivery of safe water	Monitor water quality and identify alternative resources
Quickly detect possible terrorist attack in its beginning stages	Monitor emergency room visits, 9-1-1 calls and calls to poison-control centers Expand and improve laboratory facilities as appropriate to address timeliness and accuracy of lab results in a biological or chemical attack
Air vents in public buildings could be used as possible means of delivery for airborne toxins (of either chemical or biological origin)	Increase security
Secure health care facilities from 1) contamination, 2) being overwhelmed with walk-ins during a crisis	Specialized law enforcement teams ready to secure health care facilities
Notify the population of dangers and threat to public health without generating panic	Develop early warning notification system (reverse 9-1-1) Utilize TV and radio for public notification and updates
Protect first-responders from being victims	Personal protection equipment Training Effective communications Target teams (identified appropriate personnel who are equipped and trained to respond)
Limited isolation facilities (quarantine / treatment)	Pre-negotiate arrangements for use of suitable shelters

Deficiencies	Regional Strategies
Incident may require large quantities of Atropine, potassium iodide, antibiotics, and other essential items to neutralize the effects of biological incident	Identify emergency stockpiles of pharmaceuticals Pre-negotiate contracts with pharmaceutical suppliers
Integrated protocol needed for fire and police	Develop a medical sampling protocol that integrates with 1) fire, and 2) police protocols and needs – and adjust those two to work with the medical protocol

Community Outreach

Background

Those populations with special needs should be provided with appropriate emergency instructions. The local media (broadcast television, cable television, radio, and newspaper) should provide information as disseminated by the Public Information Office (PIO).

Deficiencies	Regional Strategies
Capability to warn the Visually/Mobility Impaired population of an emergency	Messages and news advisories on radio, NOAA Weather radio, or door by door notification Assemble and maintain a database for use by emergency responders
Capability to warn the Hearing Impaired population of an emergency	Captioned messages and news advisories on television, printed media, TDD, Texas Relay, Reverse 9-1-1
Capability to provide for the special needs of the elderly population during emergency response	Conduct training for emergency responders on the special needs of the elderly population during an emergency response
Capability to warn the Non-English Speaking population of an emergency	Multilingual messages and news advisories provided on radio, NOAA Weather radio on television and in printed media, use Language Line
Public switched network used for routing 9-1-1 calls is old technology	Develop redundant public switched network for routing 9-1-1 calls
Public needs multiple means for being warned about catastrophic incidents	Develop early warning notification system (reverse 9-1-1)
First responders may be unfamiliar with geography of incident area	Develop Mapped ALI to provide geographic mapping location information to 9-1-1 dispatchers

Reference H-GAC Regional 9-1-1 System Features in attachment.

Strategies for Use of Federal, State, Regional and Local Resources

Equipment

Background

In order for equipment to be used effectively, it must be in good condition and the operator must be familiar with its use. The equipment must be maintained, stored and ready at all times for immediate deployment. For these reasons, not all jurisdictions have the same equipment. The use of mutual aid agreements should be encouraged to compensate for lack of equipment in a particular area.

Mobile Command Center

Jurisdiction incident command vehicles should be configured in a way to facilitate incident management. There should be at least two appropriately equipped mobile command posts of sufficient size to serve as an effective Incident Command Post (ICP). They should be based at separate locations.

Incident Command Posts are typically deployed in the vicinity of an incident in order to facilitate its management. A vehicle-based ICP can be a versatile tool that provides a high degree of flexibility and independence of operations, while providing essential resources. However, because it is based in a vehicle there are limitations. The agency responsible for providing a mobile ICP should initiate an assessment of the equipment requirements and capabilities that will be placed in the vehicle and, as important, which will fit within the platform.

Deficiencies	Regional Strategies
Incident may require decontamination and detection equipment for mass casualties	Obtain detection equipment and decontamination units and distribute strategically throughout region. Strengthen existing Haz-Mat capabilities through the addition of Haz-Mat Teams
Incident may require the transportation of mass casualties	Negotiate with Metro, private bus companies, and school district transportation departments

Deficiencies	Regional Strategies
Biological and/or chemical exposure may require isolation facilities for large numbers of people	Agreements with companies and schools to use their facilities & equipment
Incident may require large quantities of gas masks and personal protection equipment	Purchase additional equipment; provide training on use of said equipment
Search and rescue equipment	Purchase additional extrication equipment and identify private industry sources for extrication equipment in more remote areas
If funded, a regional communications system can be expected to take from 2-5 years to complete. In the meantime, a reliable method to provide interoperability for events requiring multi-jurisdictional responses is needed.	Until a regional system providing complete interoperability can be fully implemented, obtain funding for enabling hardware between agencies with different frequencies. These devices are estimated at $12,000 to $15,000 each. Set up a regional team to put enabling hardware in place and establish the guidelines for activation during a regional incident until a regional radio system can be fully implemented.

Communications

Background

Obtain funding for a regional radio communication system infrastructure to address issues of communications interoperability.

- Priority 1 – Radio and Computer Infrastructure

- Priority 2 – Communication System user Interfaces

- Priority 3 – Subscriber Equipment and Training

- Priority 4 – Develop a redundant public switched network for 9-1-1

Develop protocols and structure for the Regional Unified Command System, Incident Command and Emergency Operations Center.

Mutual Aid Agreements

Background

Mutual Aid (Mutual Support) Agreements should be executed in advance of any disaster or incident where the request for support is needed. In most cases, state and federal reimbursement will only cover support provided as the result of already standing agreements. Mutual aid support occurs more quickly and efficiently when the proper coordination has been established in advance through a mutual aid memorandum of agreement/understanding. Mutual Aid Agreements include:

- Description of type and location of equipment and aid that is available to all parties involved;

- Training in use of equipment in multi-jurisdictional scenarios;

- Process through which reimbursement of costs is to be completed and under what conditions mutual aid will be exchanged; and

- Elected officials' authorization.

Local jurisdictions should establish formal mutual aid agreements that can be implemented effectively during an incident in which assistance is needed beyond the jurisdictions' normal abilities or capabilities.

Strategies

H-GAC is developing an inventory of existing Mutual Aid Agreements. Identified gaps or discrepancies will be addressed by the Regional ad-hoc taskforce. Master agreements will be developed on a county by county basis to cover agencies in each county. A Regional Master Mutual Aid Agreement has been proposed that would cover any participating jurisdictions in the region. This concept can be expanded between Councils of Governments in order to benefit from specialized services and expertise such as bomb squads and hazardous materials units.

Deficiencies	Regional Strategies
Ensure that every jurisdiction is a party to a Mutual Aid Agreement	Develop a master Regional Mutual Aid Agreement. Encourage participation in countywide Mutual Aid Agreements.

__Training__

Background

It is important to develop and deliver training for the consequence management of a terrorist act/incident. This should be done on a regional level to fill the gaps in training, and purchase and maintenance of equipment that would accomplish implementation of region-wide management of such incidences. Participants should also include representatives of private and public industries who are vulnerable and can contribute assets and skills.

This regional plan proposes to develop comprehensive, multi-jurisdictional, multi-discipline training for all first responders. This training will focus on skills for incident commanders, emergency managers, search/rescue/haz-mat teams, law enforcement personnel, public health and public works professionals. The training will be enhanced with multi-jurisdictional exercises and follow up evaluations benefiting the entire region.

Training available through TEEX

The National Emergency Response and Rescue Training Center (NERRTC) based in College Station, Texas is part of the Texas Engineering Extension Services (TEEX), an agency of the Texas A&M University System. The Center provides a variety of courses to prepare local and state officials and emergency first responders to plan for, react to, and recover from acts of terrorism including those involving the use of weapons of mass destruction (WMD) and other special incidents. This training can be conducted at the local jurisdiction's location and the direct cost of the training is covered by a grant from the Department of Justice, Office of Domestic Preparedness.

The following summary includes a description of courses currently offered and participant eligibility requirements. H-GAC will work with TEEX to encourage maximum participation in this valuable training.

Course Title	Description	Participant Audience, Objectives & Course Contact
WMD/Terrorism Awareness for Emergency Responders (Internet)	Participants will possess a basic understanding of the terrorism threats, WMD hazards, delivery devices and methods, and fundamentals of the Incident Command System (ICS) for response to a WMD incident.	Any emergency responder from all disciplines/services Course Contact: Steve Hightower 979/845-2586 Steven.Hightower@teexmail.tamu.edu

Emergency Medical Services (EMS): Basic Concepts for WMD Incidents (Internet)	Participants will possess a basic understanding of WMD incident management, WMD-unique EMS responder considerations, and specific issues related to the medical response to a WMD incident.	Emergency responders from the following disciplines: 1) EMS Technicians/Paramedics, 2) Public Health, 3) Physicians/Physician Assistants, 4) Hospital/medical treatment facility personnel, 5) private Sector, 6) County, state and federal EMS personnel who will respond with a local jurisdiction during a WMD/terrorism incident. <u>Participants must work in one of the above disciplines/services and have completed a WMD/terrorism incident awareness course.</u> Course Contact: John Rinard 979/458-2262 **John.Rinard@teexmail.tamu.edu**
Public Works: Basic Concepts for WMD Incidents (Internet)	Participants will possess a basic understanding of the federal controlling authorities for WMD/terrorism incidents; an overview of the Incident Command System (ICS) for WMD/terrorism incidents; and a knowledge of the federal resource available to assist and support their jurisdiction in the event of a WMD/terrorism incident.	Public Works managers and supervisors from a broad spectrum of PW disciplines within a jurisdiction including, but not limited to, 1) Water/Wastewater and Storm Drainage, 2) Solid Waste, 3) Telecommunications, 4) Transportation; Roads; and Streets, 5) Electric Power and Gas, 6) Building Codes Inspection and Enforcement, 7) Public/Mass Transit; Air/Rail/Port Authorities, 8) Parks and Public Facilities, 9) Traffic Control Systems and Operations. <u>Participants must work in one of the above disciplines/services and have completed a WMD/terrorism incident awareness course.</u> Course Contact: Roy Robinson 979/458-6758 Roy.Robinson@teexmail.tamu.edu
Threat and Risk Assessment (T&RA) (Local Jurisdiction)	Course trains key response personnel within a local jurisdiction who are required to prevent, mitigate, manage, and/or resolve a WMD/terrorism incident. (This course is an integral component of the DOJ Nunn-Lugar-Domenici Domestic Preparedness Program.)	Emergency response supervisors, managers, and staff from the following disciplines/services: 1) Law Enforcement, 2) Fire, 3) Emergency Medical Services, 4) Hazardous Materials, 5) Public Health, 6) Public Works, 7) Emergency Management, 8) Private Sector and Military (if invited by host jurisdiction) <u>Participants should work in one of the above disciplines/services, possess a working knowledge of the jurisdiction's Emergency Operations Plan and Terrorism Incident Annex to the Plan and have completed a WMD/terrorism incident awareness course.</u> Course Contact: Jim McClung 979/458-2038 Jim.McClung@teexmail.tamu.edu
Threat and Risk Assessment (State): State Domestic Preparedness Strategic (SDPS) Planning **Threat and Risk Assessment (State): State**	Focuses on providing facilitation and assistance to the State Administrative Agency (SAA) in developing the state's DOJ/Office for Domestic Preparedness (ODP) Three-Year Statewide Domestic Preparedness Strategy (SDPS). The intended outcome is a draft plan that assists the state	SAA-selected personnel and related work groups responsible for developing statewide plan. Participants may represent any of the seven major response disciplines delineated in the DOJ/ODP Assessment and Strategy Development Tool Kit and any others deemed necessary by the SAA.

Domestic Preparedness Strategic (SDPS) Planning (CONTINUED)	in developing a three-year domestic preparedness strategic plan.	Course Contact: Tom Shehan 979/458-6919 Tom.Shehan@teexmail.tamu.edu
Incident Management/Unified Command (IM/UC)	Trains emergency responders, their supervisors and managers in the skills necessary to effectively plan for and manage a WMD/terrorism incident by adapting the existing Incident Command System (ICS) to the unique challenges posed by the integration of local, state, and federal agencies and departments into a unified command structure.	Emergency responders, supervisors, and managers, from the following disciplines/ services: 1) Law Enforcement, 2) Fire, 3) Emergency Medical Services, 4) Hazardous Materials, 5) Public Health, 6) Public Works, 7) Emergency Management, 8) Private Sector and Military (if invited by host jurisdiction), 9) County, state and federal EMS personnel who will respond with a local jurisdiction during a WMD/ terrorism incident. <u>Participants must work in one of the above disciplines/services, possess a working knowledge of the jurisdiction's Emergency Operations Plan and Terrorism Incident Annex to the Plan and have completed a WMD/terrorism incident awareness course.</u> Course Contact: Steve Hightower 979/458-3402 Steven.Hightower@teexmail.tamu.edu
Emergency Medical Services (EMS): Operations and Planning for WMD	Trains emergency medical service personnel to properly perform patient triage, transport, and treatment in the event of exposure to biological, nuclear, incendiary, chemical and explosive weapons.	Emergency responders from the following medical specialty areas: 1) EMS Technicians/ Paramedics, 2) Public Health, 3) Physicians/ Physician Assistants, 4) Hospital/medical treatment facility personnel, 5) Private Sector, 6) County, state and federal EMS personnel who will respond with a local jurisdiction during a WMD/terrorism incident. <u>Participants must work in one of the above disciplines/services, have completed a WMD/terrorism incident awareness course, NERRTC EMS: Basic Concepts for WMD Incidents, and a first responder, basic or intermediate paramedic course or other advanced medical certification or license.</u> Course Contact: John Rinard 979/458-2262 John.Rinard@teexmail.tamu.edu
Public Works: Planning for and Responding to a WMD/Terrorism Incident	Trains public works managers and supervisors in their critical infrastructure and public services responsibilities, and roles as they relate to a community's preparation and response to a WMD/terrorism incident.	Public Works managers and supervisors; and one managerial/supervisor-level participant from each of the following disciplines/ services: 1) Fire/EMS/Hazmat, 2) Law Enforcement, 3) Public Health, 4) Emergency Management <u>With the exception of the four disciplines/ services listed above, participants must hold managerial or supervisory positions within the public works discipline/service. All participants must have completed a WMD/ terrorism incident awareness course.</u> Course Contact: Roy Robinson 979/458-6758 Roy.Robinson@teexmail.tamu.edu

Deficiencies	Regional Strategies
Training and maintenance of Haz-Mat equipment and personnel	Develop and implement plan to assure that all entities with this equipment are kept up to date via ongoing training provided by Houston Fire Dept.
Region-wide exercises being conducted using local plans, resources, and equipment in a coordinated effort	Develop plans to coordinate and execute regional table-top and live training exercises Conduct multi-jurisdictional table-top and live training exercises
Regional Incident Commander training and exercises	Conduct training and table-top exercises for incident commanders
Disposable equipment for live training exercises	Obtain disposable equipment for use in exercises
Regional Training and Exercises for Search and Rescue Operations	Conduct Regional Training and Exercises for Search and Rescue Operations
Regional Haz-Mat Training for Law Enforcement and EMS personnel	Conduct Regional Haz-Mat Training for Law Enforcement and EMS personnel

<u>Exercises</u>

Background

Currently exercises are being conducted only within local jurisdictions. It is necessary to develop and conduct exercises that assess existing local and regional plans and procedures for consequence management of a terrorist act or incident involving WMD with the outcome of enhancing those plans and procedures.

Deficiencies	Regional Strategies
Region-wide exercises using local plans, resources, and equipment in a coordinated effort.	Develop plans to coordinate and execute regional table-top and live training exercises Conduct table-top and live training exercises

Interlocking Plans with Surrounding Regions

Background

The H-GAC region is bordered by five Council of Governments regions: Southeast Texas Regional Planning Commission, SETPRC; Golden Crescent Regional Planning Commission, GCRPC; Brazos Valley Council of Governments, BVCOG; Capital Area Planning Council, CAPCO; and Deep East Texas Council of Governments, DETCOG. Because catastrophic incidents observe no boundaries, coordination between H-GAC and these bordering regions is necessary.

Planning Regions of the Upper Texas Coast Working Together in Homeland Security

Planning Area	Counties in Area	Geographic Area	Population
Golden Crescent State Planning Region (GCRPC), Victoria	**(7)** Calhoun, Dewitt, Goliad, Gonzales, Jackson, Lavaca, Victoria	6,097 square miles	181,512
Houston-Galveston Area Council (H-GAC), Houston	**(13)** Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller, Wharton	12,444 square miles	4,852,781
South East Texas Regional Planning Commission (SETRPC), Beaumont	**(3)** Hardin, Jefferson, Orange	2,196 square miles	385,782
Totals:	**23 Counties**	**20,737 square miles**	**5,420,075**

The Texas coastline extends for more than 200 miles along the southern boundaries of the three regions.

Interior Planning Regions Adjacent to H-GAC Region Working Together in Homeland Security

Planning Area	Counties in Area	Geographic Area	Population
Brazos Valley Council of Governments (BVCOG), Bryan	**(7)** Brazos, Burleson, Grimes, Leon, Madison, Robertson, Washington	5,124 square miles	265,230
Capital Area Planning Council (CAPCO), Austin	**(10)** Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, Williamson	8,480 square miles	1,300,294
Deep East Texas Council of Governments (DETCOG), Jasper	**(12)** Angelina, Houston, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, Tyler	9,906 square miles	353,765
Totals:	**29 Counties**	**23,510 square miles**	**1,919,289**

Populations were obtained from the 2002 Texas State Directory

The Houston-Galveston Area Council (H-GAC) shares boundaries with five (5) other Councils of Governments including 52 Texas counties. The total combined land area is 44,247 square miles containing a total population of 7,339,364.

Deficiencies	Regional Strategies
Mutual Aid Agreements between regions.	Develop Cooperative Working Agreements between H-GAC and bordering regions.

List of Acronyms

AFIS	Automatic Fingerprint Identification System
ALI	Automatic Location Identification
APCO	Association of Public Safety Communications Officers
AVL	Automatic Vehicle Location
CAD	Computer-Aided Dispatch
CDC	Centers for Disease Control
DDC	Disaster District Committee
DEM	Division of Emergency Management
EMP	Emergency Management Plan
EMS	Emergency Medical Services
EOC	Emergency Operations Center
FBI	Federal Bureau of Investigation
GIS	Geographical Information System
GPS	Global Positioning System
HAM	Handheld Amateur Radio
HFD	Houston Fire Department
H-GAC	Houston-Galveston Area Council
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
JTTF	Joint Terrorism Task Force
MDT	Mobile Data Terminal
MOU	Memoranda of Understanding
NASA	National Aeronautics and Space Administration
NBC	Nuclear, Biological, Chemical
NERRTC	National Emergency Response and Rescue Training Center
PIO	Public Information Officer
RACES	Radio Amateur Civil Emergency Service
RICS	Regional Incident Command System
SCBA	Self-Contained Breathing Apparatus
TCRAS	Texas Coastal Regional Advisory System
TEEX	Texas Engineering Extension Services
UHF	Ultra High Frequency
VHF	Very High Frequency
WMD	Weapons of Mass Destruction

Addendum

The H-GAC Public Safety Program Manager is designated as the grant program manager and will monitor grant programs for H-GAC in accordance with any federal and state guidelines.

All written comments received by H-GAC regarding the plan will be maintained at the H-GAC offices. Copies of these comments can be viewed or obtained by contacting the H-GAC Public Safety Program Manager at:

H-GAC

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