



Texas
Statewide Communications
Interoperability Plan
2008 - 2010

List of Acronyms	
Item/Acronym	Definition
APCO	Association of Public Safety Communications Officials
ARC	American Red Cross
BZPP	Buffer Zone Protection Plan
CASM	Communications Asset Survey and Mapping
CI	Critical Infrastructure
COG	Council of Governments
COWs	Cells/Channels on Wheels
DDC	Disaster District Committee
DFW	Dallas Fort Worth
DHS	Department of Homeland Security
DPS	Department of Public Safety
EOC	Emergency Operations Center
ETMC	East Texas Medical Center
FCC	Federal Communications Commission
GDEM	Governor's Division of Emergency Management
GJXDM	Global Justice XML Data Model
IACP	International Association of Chiefs of Police
ICTAP	Interoperable Communications Tactical Assistance Program
ICS	Incident Command System
IP	Internet Protocol
JOC	Joint Operations Center
KR	Key Resources
LCRA	Lower Colorado River Authority
LETPP	Law Enforcement Terrorism Prevention Program
LMR	Land Mobile Radio
MHz	Megahertz
MOU	Memorandum of Understanding
NIMS	National Incident Management System
NPSPAC	National Public Safety Planning Advisory Committee
OEM	Office of Emergency Management
P25	Project 25 (formerly APCO Project 25)
POC	Point of Contact
PSAP	Public Safety Answering Point
PSIC	Public Safety Interoperable Communications
RACES	Radio Amateur Civil Emergency Service
RECIM	Regional Emergency Communications Information sharing
RFI	Request for Information
RFP	Request for Proposal
NPSPAC	National Public Safety Planning Advisory Committee
SCIP	Statewide Communications Interoperability Plan
SHSP	State Homeland Security Program
SIPRNET	Secret Internet Protocol Router
SME	Subject Matter Expert
SOC	State Operations Center
SOI	Standard Operating Instructions

List of Acronyms (continued)	
SOP	Standard Operating Procedures
STR	Strategic Technology Reserve
TARC	Texas Association of Regional Councils
TCLEOSE	Texas Commission on Law Officer Standards and Education
TEEX	Texas A&M Engineering Extension
TFS	Texas Forest Service
TIC	Texas Interoperability Coordinator
TICP	Tactical Interoperable Communications Plan
TRCIP	Texas Radio Communications Interoperability Plan
TSA	Salvation Army
TSIEC	Texas State Interoperability Executive Committee
TVE	Tactical Validation Exercise
TXMF	Texas Military Forces
TxRC	Texas Radio Coalition
UASI	Urban Area Security Initiative
UHF	Ultra High Frequency
VHF	Very High Frequency
XML	eXtensible Markup Language

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1 Introduction

The Vision of the Texas Homeland Security Plan is to “*Optimally position Texas to prevent acts of terrorism, protect critical infrastructures and key resources, and respond to and recover from all disasters.*” A priority action of the Homeland Security Plan is to “*establish a statewide network of interoperable radio systems.*”

Figure 1 illustrates the planning and development of the Texas Statewide Communications Interoperability Plan (SCIP). This process started with the *Texas Radio Communications Interoperability Plan (TRCIP)*, the *Texas Interoperability Channel Plan*, and the SAFECOM SCIP Methodology. The SCIP is built around the National Priorities, NIMS, the new National Preparedness Guidelines and Target Capabilities List, the concerns identified in 27 focus group sessions, and the initiatives prioritized in a Statewide Strategic Planning Session. The SCIP Governance committees (the TxRC Executive Committee, the TxRC Steering Committee and the TxRC Working Groups) planned and facilitated the meetings, group sessions, research and data collection and the development of the SCIP.

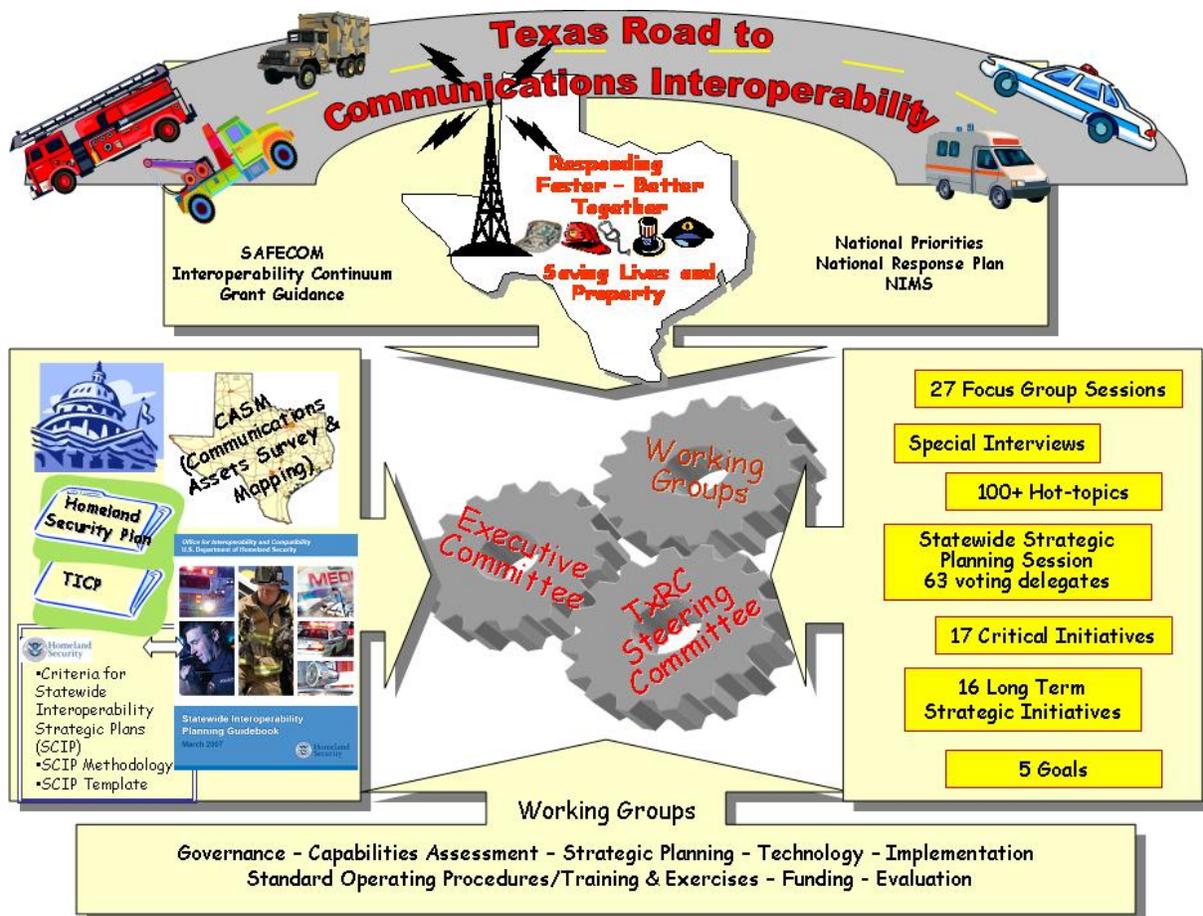


Figure 1 - Texas Road to Communications Interoperability

The TxRC is a voluntary association of representatives of local, state, tribal and federal government agencies and response organizations or their representatives. Current participants include representatives of local governments and emergency response organizations from across Texas. The complete membership list can be found on the TxRC website at <http://txrc.region49.org/>. The TxRC has not endorsed any specific radio communications equipment or products.

Texas has 24 state planning regions (designated as regional planning commissions, councils of governments, or development councils). Each planning region also has a state regional emergency management organization, designated as a Disaster District, which is coordinated by the Texas Department of Public Safety.

During the 27 regional focus group sessions conducted throughout the State, public safety agencies were asked strategic questions regarding their current communications capabilities based on specific elements of the SAFECOM Interoperability Continuum. The survey questions are listed in Table 1.

Table 1 - Survey Questions on Public Safety Communications.

1. Does your radio system have the capacity and coverage you need to perform your job effectively?
2. Do your public safety agencies have the ability to talk on the Texas Interoperability channels through your dispatch center or a mobile command vehicle?
3. a) Have you identified the technology and equipment needed to provide your public safety agencies with communications interoperability?
3. b) Do your public safety agencies have the necessary funding and/or a plan to acquire funding to meet your communication needs?
4. a) Have the NIMS requirements been incorporated into your SOP's?
4. b) Has a NIMS certified Communications Unit Leader been identified?
4. c) Do you have regular and realistic exercises that address potential problems in the region and involve the participation of all personnel?
5. Is your interoperable system used every day for managing routine calls as well as emergency incidents?

Regional surveys were completed by representatives of public safety agencies operating within the region's jurisdictions; each regional focus group discussed the questions and answer, with either YES or NO being the best representation of regional communications capabilities. Some focus groups chose to respond by county, others chose not to respond to a few questions, while other groups gave specific detailed responses to each question. All responses for each focus group were reviewed and grouped. The results of this basic survey highlighted communications gaps that must be addressed. Survey results indicated that, of the 24 Texas regions, some public safety agencies in 12 regions do not have the capacity and coverage needed to perform their job effectively. Some public safety agencies in seven regions do not have

the ability to talk on the Texas Interoperability Channels through radio dispatch or a mobile communications vehicle and some public safety agencies in ten regions have only recently begun conducting communications exercises. Of 24 regions, 20 do not currently have funding to overcome these identified gaps in communications operability and interoperability. More information on the Focus Group Sessions can be found in Section 3, "Methodology."

1.1 National Preparedness Guidelines

Communications is the fundamental capability within disciplines and jurisdictions that practitioners need to perform the most routine and basic elements of their job functions. Agencies must be operable, meaning they must have sufficient wireless communications to meet their everyday internal and emergency communication requirements before they place value on being interoperable, i.e., able to work with other agencies. Communications interoperability is the ability of public safety agencies (police, fire, EMS) and service agencies (public works, transportation, hospitals, etc.) to talk within and across agencies and jurisdictions via radio and associated communications systems, exchanging voice, data and/or video with one another on demand, in real time, when needed, and when authorized. It is essential that public safety has the intra-agency operability it needs, and that it builds its systems toward interoperability. (More information on the Target Capabilities List can be found at <https://www.llis.dhs.gov/getFile.cfm?id=26724>)

Three of the priorities identified in the National Preparedness Guidelines are the focal point woven throughout the *Texas Statewide Communications Interoperability Plan*:

- Expand regional collaboration
- Strengthen information sharing and collaboration capabilities
- Strengthen communications capabilities

"The unique needs of each community determine how to best address needs in light of the risks, and thereby achieve optimal and *reasonable levels of preparedness*."¹

Interoperable Communications is a National Priority: Interoperable and operable communications capabilities are developed to target levels in the states, tribal areas, territories, and designated urban areas that are consistent with measures and metrics established in the Target Capabilities List (TCL).

The goal of the Governor, all public safety agencies in Texas, and the Texas Radio Coalition is for emergency responders to have direct and seamless communications by 2015; however, improving safety for each of the men and women who respond to the call for help on a daily basis is our greatest purpose.

¹ National Preparedness Guidelines, September 2007, page 2.

SCIP Evaluation Criteria Matrix

A "SCIP Evaluation Criteria Compliance Matrix" is included with this document (Appendix F). The matrix details where each required criterion can be found in the document to provide reviewers the ability to locate information within the plan easily and to ensure that each of the criteria is addressed.

2 Background

In 2005 Texas adopted the SAFECOM standards and used the SAFECOM Interoperability Continuum as a tool to develop the *TRCIP*. The *TRCIP* was supplemented by the *Texas Interoperability Channel Plan* and a Channel Plan Memorandum of Understanding. The Channel Plan MOU establishes permissions and guidelines for the use of the designated interoperable/mutual aid radio channels. Signers to the MOU include state, local, tribal and federal jurisdictions, and the non-governmental organizations such as the American Red Cross, the Texas Salvation Army, state utility agencies, non-profit EMS organizations, and numerous volunteer fire departments. Presently over 1,400 MOUs have been signed by individual agencies, and/or cities and counties (some city and county MOUs are inclusive of all agencies within the jurisdiction) ranging from the Abilene Police Department to the Zephyr Volunteer Fire Department. The 24 state planning regions and three DHS-designated Urban Areas were required to develop regional Tactical Interoperable Communications Plans (TICPs) to implement the *TRCIP* and the *Texas Interoperability Channel Plan*. Where applicable, these plans covered both voice and data interoperability. The State's initial goal was to establish a minimum level of communications interoperability through gateways, IP network switches and these shared channels in all 24 planning regions in Texas by 2007. Most regions and Urban Areas have achieved tactical voice interoperability using the designated shared channels and gateways, and data/video interoperability with IP network switches and shared software. Tactical interoperability is being tested in all regions through state-sponsored tactical interoperable communications exercises. The *TRCIP*, *Texas Interoperability Channel Plan*, and the Channel Plan MOU can be found under "SCIP documents" at the Texas Radio Coalition's (TxRC) statewide planning web site: <http://txrc.region49.org/>.

On May 24th, 2007, the Texas Director of Homeland Security officially requested the Texas Radio Coalition to update the *State of Texas Radio Interoperability Plan* according to the criteria established by SAFECOM for Statewide Communications Interoperability Plans. The first step in this process was to do a preliminary assessment (survey) of public safety assets and capabilities. The TxRC and the Texas Association of Regional Councils (TARC) asked public safety agencies throughout the state to complete a Communications Capabilities and Assets Survey. More than 1,000 surveys were received from responders representing a wide variety of agencies and organizations — an urban police department serving 3 million people; a volunteer fire department serving a population of less than 100; a utility company

providing electricity, water and wastewater services in 58 counties; an EMS organization serving 14 hospitals with 12 regional trauma centers in 15 counties.

Please see Section 3 - Methodology for the complete chronicle of the SCIP creation.

2.1 State Overview



TEXAS

With an area of 261,797 square miles and a population of 23,507,783, Texas is the second-largest state in both area (behind Alaska) and population (behind California). The highest elevation point is the Guadalupe Peak at 8,749 feet, and the lowest is the Gulf of Mexico at sea level. Texas is internationally known for its energy and aeronautics industries, and for the Port of Houston ship channel – the largest in the United States in international commerce and the sixth-largest port in the world.

(Criteria 1.1)

This vast state includes many local and regional governments with widely differing public safety capabilities, including

- 254 counties
 - The most populous county has more than three million residents
 - The least populated county has 60 residents and is the most sparsely populated county in the U.S.
- 1,206 incorporated cities.
 - Three of the ten most populous cities in the United States.
 - 83% of Texas cities have a population less than 5,000.
- DHS-designated Urban Areas
 - Tier 1 urban area: Houston
 - Three Tier II urban areas: El Paso, San Antonio, and Dallas-Fort Worth-Arlington (these three areas operate as a single metro urban area)
- Three tribal nations

- 24 state planning regions established in state law, and a like number of regional emergency management organizations known as Disaster Districts whose boundaries are coterminous.

Texas is served by more than 5,300 public safety agencies and organizations, both career and volunteer, from state, local and federal agencies, tribes, commercial and non-profit agencies, and from utility companies and medical trauma centers. Table 2 shows the number of agencies by category. This list is not all-inclusive, many tribes, commercial agencies, parks, non-profit hospitals, EMS organizations, and state public utility companies have staff or contract public safety personnel. (The information in Table 2 is provided by: the Governor’s Division of Emergency Management, Texas Police Chiefs Association, Texas Fire Marshal’s Office, the Texas Department of State Health Services, the U. S. Census Bureau and Capitol Impact.com.)

Table 2 - Texas Jurisdictions & Public Safety Agencies

254	Texas Counties
1,206	Incorporated Cities
254	Sheriffs’ Offices
254	County Emergency Management Directors or Coordinators
464	Municipal Police Departments
823	Special Law Enforcement Agencies (Tribal Law Enforcement, Constables, Airports, ISD’s, Colleges/Universities, Fire Marshals)
2,058	Career and Volunteer Fire Departments
850	EMS Provider Organizations
125	Designated Trauma Facilities
34	State Public Safety Agencies

In 2005 Texas Law Enforcement Agencies responded to 1,110,326 calls. These calls included murder, rape, robbery, aggravated assault burglary, larceny-theft and motor vehicle theft.²

The call volume for the Emergency Medical Service providers in 2003 was 925,000 calls. For the past eight to ten years the call volume has increased approximately 5% per year. A conservative estimate of the 2006 call volume would be 1,070,803.³

² Texas Department of Public Safety Crime Records Service, The Texas Crime Report for 2005. http://www.txdps.state.tx.us/administration/crime_records/pages/crimestatistics.htm#2005

In Texas for 2005, career and volunteer fire departments statewide reported and responded to 93,914 total fires, (a fire occurred every 6 minutes), causing 147 civilian fire deaths, and 734 civilian fire injuries. 8,169 were incendiary/suspicious fires. (The fire statistical incident information is collected and submitted by all participating fire departments; participation is voluntary and not all fire incident information is complete. Only 985 (less than half) fire departments participated in incident reporting in 2005.)⁴

2.1.1 NIMS & Multi-Agency Coordination Systems (MACS)

(Criteria 2.5)

The Governor's Division of Emergency Management has implemented a well developed Multi-Agency Coordination System which is compliant with NIMS and the National Response Plan. A summary of MACS is: "call often and call early"

- The first responder on scene becomes the local Incident Commander (IC) and remains IC until he/she is replaced by an IC with more experience and expertise or the incident operational period exceeds 12 hours.
- If needed, the IC may call for additional resources from other disciplines within the jurisdiction and/or other jurisdictions including adjacent cities or county.
- If needed, the IC may contact the city and/or county Emergency Manager to open the Emergency Operations Center; at this point the Emergency Manager will notify the Chief Elected Official and the DPS Regional Liaison Officer (RLO). The RLO is the emergency management link between the state government and city and county governments and non-governmental organizations.
- If additional and/or special resources are still needed the Emergency Manager makes a formal request to the Disaster District Chair (DDC) for state resources.
- The DDC may contact the State Operations Center (SOC) for additional state-level action if necessary.

To be eligible for Homeland Security Grants, all local governments and state agencies were required to adopt and implement NIMS procedures by September 30, 2006. Use of an Incident Command System (ICS), compliant with the National Incident Management System, is required for use of any regional interoperability resource. (Also see Section 5.5 NIMS Compliance.)

Figure 2 provides a graphic assessment of how MACS is implemented in Texas. More details on MACS and Incident Command implementation is provided in Sections 2.1.1.1 through 2.1.1.3.

³ Texas Department of State Health Services <http://www.dshs.state.tx.us/emtraumasystems/formsresources.shtm>

⁴ Texas Fire Incident Reporting System 2005 Fire Statistics; <http://www.tdi.state.tx.us/fire/fmtexfir.html>

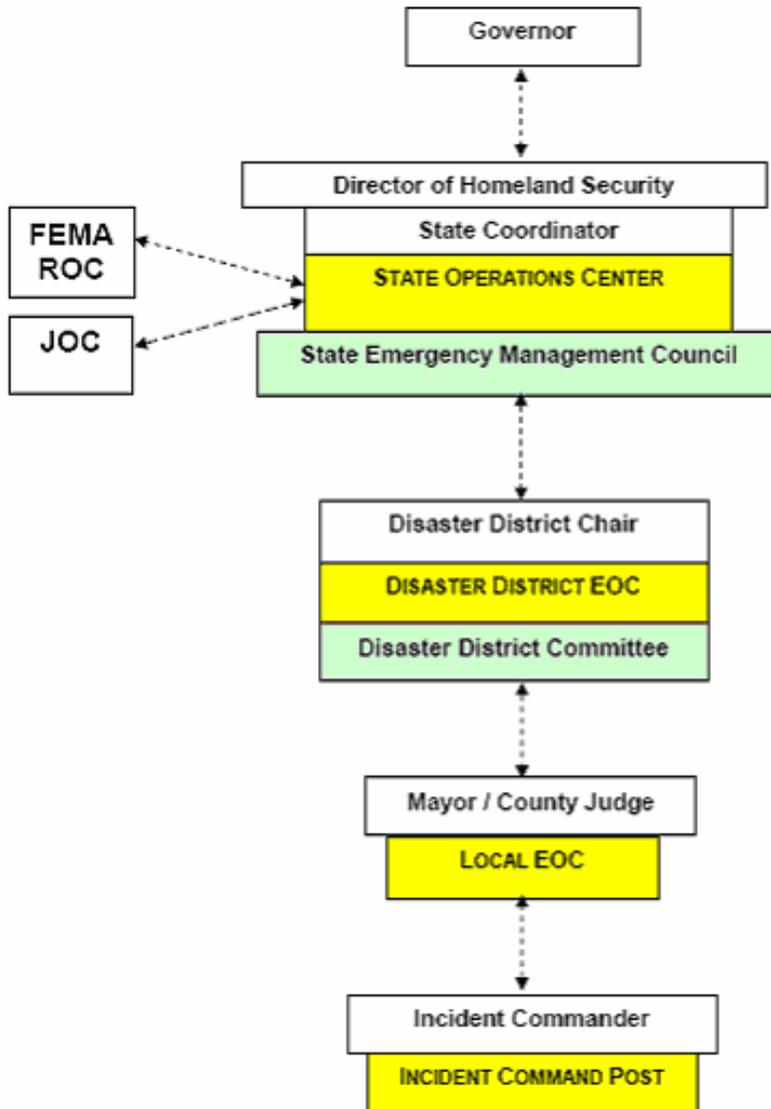


Figure 2 - Channels for Requesting Operational Assistance.

Local emergency management and homeland security organizations may be organized at the city level, at the county level or as an inter-jurisdictional program that includes one or more counties and multiple cities. Most local governments have an Emergency Operations Center (EOC) staffed by members of its various departments that is activated to manage the response to major threats and incidents and coordinate internal and external resource support. Some local governments have an alternate or mobile EOC as well. *An Incident Commander typically directs the on-scene responses by local responders from a field command post set up at or near the incident site.* Responders from other jurisdictions and state and federal responders that have been

called on to assist when local resources are inadequate to deal with a major emergency are integrated into the local incident command system.

- ◆ *The Incident Commander, or designee, shall determine when a situation exists that requires use of a regional interoperability resource and notify his/her dispatch center.*
- ◆ *The dispatch center having jurisdiction over the incident follows internal agency standard operating procedures (SOPs) to contact specific agencies requested by the Incident Commander. The Agency providing the requested resource will follow its standard operating procedures pertaining to notifications and call-ups.*

2.1.1.1 Disaster Districts

Disaster Districts are the State's regional emergency management organizations that serve as the initial source of state emergency assistance for local governments. A Chairman, who is the local Texas Highway Patrol commander, directs Disaster District operations. A Disaster District Committee, consisting of state agencies and volunteer groups that have resources within the District's area of responsibility, assists the Chairman in identifying, mobilizing, and deploying personnel, equipment, supplies, and technical support to respond to requests for emergency assistance from local governments and state agencies. Disaster District chairs may activate and commit all state resources in their area of responsibility to aid requesters, except that activation of the National Guard or State Guard requires prior approval by the Governor.

State resources committed to assist local governments normally work under the general direction of the Disaster District Chair and take specific task assignments from the local Incident Commander. If the resources of a Disaster District are inadequate to provide the type or quantity of assistance needed, the request for assistance is forwarded to the State Operations Center (SOC) for state-level action.

Legislation enacted during the 80th Session of the 2007 Texas Legislature realigned Disaster District / State Planning Regions boundaries to coincide with the boundaries of the 24 State Planning Regions/Councils of Governments. Additional information on the State Planning Regions can be found in Section 2.1.2 Regions/Jurisdictions.

2.1.1.2 The State Operations Center (SOC)

The SOC is operated by the Governor's Division of Emergency Management (GDEM), and serves as the state warning point. The SOC uses an extensive suite of communications to receive and disseminate warning of threats to regional warning points and to State, local, tribal and federal officials and non-governmental agencies; monitors emergency situations throughout the state, and provides information on these events to federal state, and local officials; and coordinates state assistance to local governments that are dealing with emergencies. The suite of communications at the SOC includes:

- Video Teleconference System (VTC) to all Disaster District EOCs.
- Texas Warning System (TEWAS), a direct push to talk landline system to all National Weather Service Offices, DPS Communications Facilities, and the National Warning Center.
- Satellite Radio System
- Satellite Telephone System
- CAD - Communications Aided Dispatch System with connectivity to TLETS/NLETS for Message Distribution.
- State Radio Amateur Civil Emergency Services (RACES) and Military Auxiliary Radio Service (MARS) Radio Networks with HF/VHF/UHF amateur bands.
- WebEOC management software

The SOC coordinates more than 5,000 emergency incidents per year. The SOC is housed in an underground bunker three stories below ground level at the Texas Department of Public Safety Headquarters in north central Austin.

2.1.1.3 The State Emergency Management Council

The Emergency Management Council is composed of 34 state agencies, the American Red Cross (ARC), and the Salvation Army (TSA). The Council is established by state law to advise and assist the Governor in all matters relating to disaster mitigation, emergency preparedness, disaster response, and recovery. During major emergencies, Council representatives convene at the State Operations Center (SOC) to provide advice on and assistance with response operations and coordinate the activation and deployment of state resources to respond to the emergency. Generally, state resources are deployed to assist local governments that have requested assistance because their own resources are inadequate to deal with an emergency. A complete list of the Emergency Management Council representatives can be found at <http://www.txdps.state.tx.us/dem/pages/statelocalemergencymgmt.htm>.

2.1.1.4 Threats and Their Impact

Texas leads the nation in Federal disaster declarations and has for some years. Since 1953, Texas has had 228 major disaster declarations. Texas has the largest number of tornado impacts of any state and leads the nation in the occurrence of flash flooding and in deaths caused by such flooding. Texas is number two in the nation for hurricane and tropical storm impacts. It is also impacted by ice storms, occasional earthquakes, and major heat waves. Texas is regularly affected by large-scale and persistent drought and related wildfires; Fires burned 1.7 million acres in 2006 and drought caused more than \$6 billion in agricultural losses. Because massive quantities of oil, gas, and hazardous materials are produced, used, stored, and transported throughout Texas, the State experiences large numbers of fires, explosions, and hazardous material accidents at both fixed facilities and during transportation operations. Because of the lengthy and porous Mexican border, a sizeable seacoast, the large number of international air, highway, and rail routes and major highways that exist in Texas, and the great number of potential targets in the State, Texas is considered to have a

significant risk of trans-national organized crime and a potential terrorist threat, particularly in its major urban areas and areas adjacent to the Texas – Mexico border.

Because Texas experiences frequent major disasters, local responders in most areas of the State have extensive experience in communicating with other local responders and with state and federal responders, who are frequently called on to assist local governments in dealing with major emergencies and disasters as part of a unified command. Large rural areas of the State have minimal land-line or cellular telephone service and limited radio communications infrastructure.

2.1.2 Regions/Jurisdictions

The Texas Association of Regional Councils coordinates common activities of the State's 24 planning regions, which are voluntary associations of local and Tribal governments formed under Texas law. The regional entities and local governments join state, federal, and private partners, to provide cost-effective planning and more efficient public services statewide.

Additional information on the 24 planning regions and the counties within each region can be found at www.txregionalcouncil.org. City and county web sites provide specific public safety agency information. Information on state agencies can be found at Governor Perry's web site, <http://www.governor.state.tx.us/>.

The map in Figure 3 depicts the service area of each Planning Region and the list to the left of the map provides the name of each Planning Region in alphabetical order.

Number	Region Name
18	Alamo Area Council of Governments
5	Ark-Tex Council of Governments
13	Brazos Valley Council of Governments
12	Capital Area Council of Governments
23	Central Texas Council of Governments
20	Coastal Bend Council of Governments
10	Concho Valley Council of Governments
14	Deep East Texas Council of Governments
6	East Texas Council of Governments
17	Golden Crescent Regional Planning Commission
11	Heart of Texas Council of Governments
16	Houston-Galveston Area Council
21	Lower Rio Grande Valley Development Council
24	Middle Rio Grande Development Council
3	Nortex Regional Planning Commission
4	North Central Texas Council of Governments
1	Panhandle Regional Planning Commission
9	Permian Basin Regional Planning Commission
8	Rio Grande Council of Governments
15	South East Texas Regional Planning Commission
2	South Plains Association of Governments
19	South Texas Development Council
22	Texoma Council of Governments
7	West Central Texas Council of Governments

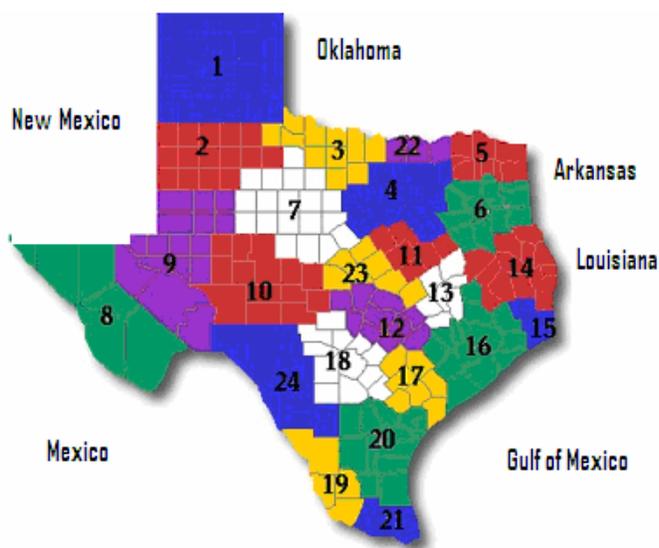


Figure 3 - State Planning Regions & Disaster District Boundaries

2.1.2.1 Geographic and demographic information

Texas is a vast state that includes coastal prairies, southeastern pineywoods, a central hill country, and portions of the Great Plains and the southwestern desert.

Possessing enormous natural resources, Texas is a leader in oil and gas production, refining and petrochemical production, and the manufacture of computer and telecommunications equipment, containers, industrial gases, cement, steel, and processed food. The state also has a very large banking and insurance industry.

Texas is a major agricultural state with extensive farming, ranching, animal feeding, and agricultural processing operations. It leads all other states in such categories as cattle, sheep, and cotton. Texas ranches and farms also produce poultry and eggs, dairy products, greenhouse and nursery products, wheat, hay, rice, sugar cane, and peanuts, and a variety of fruits and vegetables.

Some 20 million Texans live in urban areas and 3 million reside in rural areas. The State of Texas includes 10 major urban areas, a sizeable number of mid-sized cities, and large rural areas. Texas major urban areas include Houston, the Dallas-Fort Worth area, San Antonio, El Paso, Austin, Corpus Christi, Lubbock, Laredo, and Amarillo. Additionally, there are 1.4 million people in the cluster of medium-sized cities known as

the Lower Rio Grande Valley, in far south Texas adjacent to the international border with Mexico. The Dallas-Fort Worth metropolitan area actually includes six very large cities and dozens of smaller towns. Austin is the fastest growing city among the 20 most populous U.S. cities. However, the vast majority of Texas cities have less than 5,000 residents.

The largest concentrations of population in Texas are in the Houston area and other cities and counties along the upper Gulf coastal plains (more than 3 million people), the Dallas-Fort Worth metroplex, El Paso in far west Texas, and in the Austin-San Antonio corridor in central Texas. Parts of the Panhandle, portions of deep East Texas, and inland areas of South Texas are sparsely populated. Desert areas of West Texas are very sparsely populated

Texas shares state borders with New Mexico, Oklahoma, Arkansas, and Louisiana and has close working relations with those states. Texas and the four other states participate in the Emergency Management Assistance Compact (EMAC), and have regularly exchanged emergency personnel and equipment during major emergencies and disasters. The five states comprise the Federal Emergency Management Agency's Region VI and participate in regularly scheduled meetings to confer on emergency preparedness, response, and recovery activities and homeland security programs. Border counties in Texas are authorized by law to provide mutual aid assistance to neighboring counties in other states.

The 1,240 miles of the international border with Mexico forms the western and part of the southern border of Texas; it includes 23 international ports of entry. Border counties in Texas are authorized by law to provide firefighting assistance to neighboring cities in Mexico and the U.S. Environmental Protection Agency has sponsored a number of cross-border emergency assistance agreements between U.S. and Mexican border cities. Texas has provided emergency assistance to Mexico on a number of occasions and the Mexican Army recently provided feeding and medical support for evacuees in Texas during Hurricane Rita.

Texas has 367 miles of coastline on the Gulf of Mexico, which includes 13 major sea ports. Texas has 23 commercial airports and more than 250 general aviation airports. More than 300,000 miles of highways assign Texas with the nation's largest highway system. Texas also has the nation's largest rail system, which is served by 45 rail companies. Texas has more than 7,000 dams and over 2,500 critical infrastructure facilities. Texas has the Nation's largest oil and gas production facilities, massive refining and petrochemical production complexes, plus more than 300,000 miles of pipeline. Two nuclear power plants are located in Texas as well as the U.S. Department of Energy's Pantex Nuclear Weapons Plant. Some 18 major military bases and extensive defense industrial production facilities are also located in Texas.

Texas Indian Tribes:

There are three federally recognized Indian Tribes in Texas today:

- The Alabama-Coushatta Tribe of Texas has a population of about 500 and is located on a 4600 acre Indian Reservation near Livingston, Texas in Polk County.
- The Kickapoo Traditional Tribe of Texas is located near Eagle Pass in Maverick County on the international border with Mexico.
- The Ysleta del Sur Pueblo Tribe is located near El Paso in El Paso County.

Texas-Mexico Border:

Texas shares 1,240 miles of international border with Mexico which provides 23 ports of entry. In 2006, more than 163 million people and vehicles crossed the Texas-Mexico border through bridges in Brownsville, Del Rio, Eagle Pass, El Paso, Fabens, Hidalgo, Laredo, Presidio, Progresso, Rio Grande City and Roma ports of entry. This number includes trucks, loaded and empty truck containers, trains, loaded and empty rail containers, train passengers, buses and passengers, personal vehicles and passengers and pedestrians.

Texas Homeland Security Director, Steve McCraw, said that since March 2006, 347 people from "terrorism-related countries" have been arrested crossing the border in Texas. The number of Iraqis captured at the border has tripled since last year. "*A porous border without question is a national security threat,*" he said.⁵

NAFTA

The North American Free Trade Agreement (NAFTA) eliminated the majority of tariffs between products traded among the United States, Canada and Mexico, and gradually phased out other tariffs over a 15-year period. Texas lies near the center of NAFTA's economic space—about equidistant from Mexico City and Toronto, and networks of highways and rail lines that lead to some of the world's busiest border crossings. Approximately 80% of Mexico's trade with the US and Canada passes through Texas. Truck crossings at Laredo, for example went from 60,000 trucks per month pre-NAFTA to 135,500 trucks post-NAFTA.⁶

NAFTA covers both land and sea ports of entry. Texas now ranks as America's top exporting state, with about 14 percent of the nation's overseas sales. Exports to Mexico rose—as many expected—but Texas products have also found expanding markets in Canada, Europe, Asia and Latin America as a direct result of NAFTA.⁷

⁵ http://www.dailytexanonline.com/home/index.cfm?event=displayArticlePrinterFriendly&uStory_id=963ca78f-8610-469c-b11c-9a3d066ad186

⁶ Ellis, D., Lomax, T., Pisarski, A, Cox, W, and McEwan, J. Shaping the Competitive Advantage of Texas Metropolitan Regions: The role of Transportation, Housing & Aesthetics. Report for the Governor's Business Council Transportation Task Force. November 2006. Available at: <http://www.texasgbc.org/Reports3.htm>

⁷ "Did NAFTA Spur Texas Exports?" By Anil Kumar; Federal Reserve Bank of Dallas; <http://www.dallasfed.org/research/swe/2006/swe0602b.html#box>

2.1.3 Urban Areas/TIC Plans

(Criteria 1.6)

Along with the Urban Area TIC Plans, Texas required each of the 24 Planning Regions to develop Regional Tactical Interoperable Communications Plans. Each plan was reviewed and evaluated by a Technical Advisory Group (TAG). The TAG used the SAFECOM Continuum to determine the status of each region's communications capabilities and made recommendations on how to advance regional interoperability along the Continuum lanes. Tables 3 and 4 provide details on each of the Regional Tactical Interoperable Communications Plans and the Urban Area TIC Plans.

Table 3 - Regional Tactical Interoperable Communications Plans

Regional Tactical Interoperable Communications Plans – Page 1				
#	Region Name / Council of Governments (COG)	Counties In The Region / COG	Regional TICIP Completion Date / Revision	Regional TICIP POC Name and E-mail
18	Alamo Area COG	Atascosa, Bandera, Bexar, Comal, Frio, Gillespie, Guadalupe, Karnes, Kendall, Kerr, Medina, Wilson	May 2006	Don McFarland, dmcfarland@aacog.com
5	Ark-Tex COG	Bowie, Cass, Delta, Franklin, Hopkins, Lamar, Morris, Red River, and Titus	October 7, 2005	Larry Trevino, ltrevino@atcog.org
13	Brazos Valley COG	Brazos, Burleson, Grimes, Leon, Madison, Robertson, and Washington	January 2005 / Revised February 2006	Ron Mayworm - rmayworm@bryantx.gov
12	Capital Area COG	Bastrop, Blanco, Burnet, Caldwell, Fayette, Hays, Lee, Llano, Travis, Williamson	September 2005 / Revised December 2005	Ed Schaefer, eschaefer@capcog.org
23	Central Texas COG	Bell, Coryell, Hamilton, Lampasas, Milam, Mills and San Saba	January 2004 / no revisions	Shannon Mattingly – smattingly@ctcog.org / Mike Simmons – msimmons@ctcog.org
20	Coastal Bend COG	Aransas, Bee, Brooks, Duval, Jim Wells, Kenedy, Kleburg, Live Oak, McMullen, Nueces, Refugio, San Patricio	June 24, 2005	RJ Thomas, rj@cbcogem.org
10	Concho Valley COG	Coke, Concho, Crockett, Irion, Kimble, Mason, McCulloch, Menard, Reagan, Schleicher, Sterling, Sutton, Tom Green	October 11, 2005 / Revised April 6, 2006	Steve Kuhlmann - steve@cvcog.org / Nicole Gonzalez - Nicole@cvcog.org
14	Deep East Texas COG	Angelina, Houston, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, Tyler	May 24, 2005	John McDowell, jmcdowell@detcog.org
6	East Texas COG	Anderson, Camp, Cherokee, Gregg, Harrison, Henderson, Marion, Panola, Rains, Rusk, Smith, Upshur, Van Zandt, Wood	November 16, 2004	Donetta Murphy, Donetta.Murphy@twc.state.tx.us
17	Golden Crescent Regional Planning Commission	Calhoun, DeWitt, Goliad, Gonzales, Jackson, Lavaca, Victoria	N/A	Melody Lytle, melodyl@gcrpc.org

Regional Tactical Interoperable Communications Plans – Page 2				
#	Region Name / Council of Governments (COG)	Counties In The Region / COG	Regional TICP Completion Date / Revision	Regional TICP POC Name and E-mail
11	Heart of Texas COG	Bosque, Falls, Freestone, Hill, Limestone, McLennan	October 2007	Dennis Stapleton, dennis_stapleton@lacy-lakeview.org ; Frank Patterson, frankp@ci.waco.tx.us ; Cheryl Walz, cheryl.walz@hot.cog.tx.us
16	Houston-Galveston Area Council	Montgomery, Walker, Harris, Chambers, Liberty, Fort Bend, Colorado, Matagorda, Waller, Austin, Galveston, Brazoria and Wharton	December 2006 / Revised March 2007	Mark Pemberton mark.pemberton@h-gac.com or Heather Brown heather.brown@h-gac.com
21	Lower Rio Grande Valley Development Council	Cameron, Hidalgo, Willacy	March 2006	George Garrett, ggarrett@rioplexwireless.com
24	Middle Rio Grande Development Council	Zavala, Dimmit, Real, Val Verde, Maverick, Edwards, Uvalde, La Salle, and Kinney	February 25, 2007	Spade Condry, spade@911planning.com
3	Nortex Regional Planning Commission	Archer, Baylor, Clay, Cottle, Foard, Hardemann, Jack, Montague, Wichita, Wilbarger, and Young	N/A	Mary Kilgo – mkilgo@nortexrpc.org
4	North Central Texas COG	Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, Wise	Completed April 19, 2006 / no revisions	Dan Scrivner, j.scrivner@dallascityhall.com Fred Keithley, fkeithley@nctcog.org
1	Panhandle Regional Planning Commission	Dallam, Sherman, Hansford, Ochiltree, Lipscomb, Hartley, Moore, Hutchinson, Roberts, Hemphill, Oldham, Potter, Carson, Gray, Wheeler, Deaf Smith, Randall, Armstrong, Donley, Collingsworth, Parmer, Castro, Swisher, Briscoe, Hall, and Childress	November 22, 2004	David Cann, dcann@theprpc.org .
9	Permian Basin Regional Planning Commission	Andrews, Borden, Crane, Dawson, Ector, Gaines, Glasscock, Howard, Loving, Martin, Midland, Pecos, Reeves, Terrell, Upton, Ward, Winkler	Work in progress	Barney Welch, Director, - bwelch@pbrpc.org

Regional Tactical Interoperable Communications Plans – Page 3				
#	Region Name / Council of Governments (COG)	Counties In The Region / COG	Regional TICP Completion Date / Revision	Regional TICP POC Name and E-mail
8	Rio Grande COG	El Paso, Hudspeth, Culberson, Jeff Davis, Presidio, Brewster, Ysleta del Sur Pueblo Tribe (Tribal nation)	January 2006	Marisa Quintanilla, marisaq@riocog.org
15	South East Texas Regional Planning Commission	Hardin, Jefferson and Orange Counties	November 2004, Revised 2005	Sue Landry, SETRPC, (409) 899-8444, ext. 401 slandry@setrpc.org
2	South Plains Association of Governments	Bailey, Cochran, Crosby, Dickens, Floyd, Garza, Hale, Hockley, King, Lamb, Lubbock, Lynn, Motley, Terry, and Yoakum	Not completed	David R. Corder, dcorder@spag.org
19	South Texas Development Council	Jim Hogg, Starr, Webb, Zapata	August 2004	Oscar Ramirez, oramirez@stdc.cog.tx.us
22	Texoma COG	Cooke, Fannin, Grayson	April 19, 2006	Sarah Somers, ssomers@texoma.cog.tx.us
7	West Central Texas COG	Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Kent, Knox, Mitchell, Nolan, Runnels, Scurry, Shackelford, Stephens, Stonewall, Taylor, and Throckmorton.	April 2007, Revised August 2007	Tom Mann/Bill Shaw/Janna Owen tmann@wctcog.org bshaw@wctcog.org jowen@wctcog.org

Table 4 - Urban Areas TIC Plans

UASI Area	Regions / Jurisdictions	TICP Title/ Completion Date	TICP POC Name & POC Email
Tier 1 Houston Urban Area	All jurisdictions and disciplines within the City of Houston; Harris, Montgomery, Ft. Bend, Brazoria and Galveston Counties; Port of Houston; METRO.	Houston Urban Area Tactical Interoperable Communications Plan Completed: 3/5/2006 Exercised: 9/19/06	Sgt. Mike Macha Houston Police Department/ Mayor's Office of Homeland Security 713-437-6981 or 713-825-3553 (cell) Michael.Macha@cityofhouston.net
Tier 2 Greater Dallas/Fort Worth/ Arlington Urban Area	All Cities, Townships and Villages, including all government agencies and disciplines within the eleven counties of: Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise	TIC Plan – Greater Dallas, Fort Worth, & Arlington Urban Area Completed: 3/2006 Exercised: 6/20/2006	Dan Scrivner, Communications Supervisor City of Dallas 3131 Dawson, Dallas, TX 75226 214-670-7995 j.scrivner@dallascityhall.com Alternate: Fred Keithley, Director of Community Services, North Central TX COG 616 Six Flags Drive, Arlington, TX 76011 817-695-9171 fkeithley@nctcog.org
Tier 2 San Antonio Urban Area	All Cities, Townships and Villages, including all government agencies and disciplines within Bexar and Comal counties	Alamo Area Region, San Antonio Urban Area Tactical Interoperable Communications Plan Completed: May 2006 Exercised: 10/2006	Don McFarland Homeland Security Director Alamo Area Council of Governments (210) 362-5296 dmcfarland@aacog.com
Tier 2 City and County of El Paso Urban Area	All Cities, Townships and Villages, including all government agencies and disciplines within the County of El Paso	DHS does not require a TICP of a new UASI; however the El Paso "Rio Grande COG Planning Region completed a Regional TICP January 2006.	Bonnie V. Guinn Public Safety Technology Manager City of El Paso 8600 Montana, Suite C El Paso, Texas 79925 Office: 915-771-1050 Fax: 915-778-0600 Email: guinnyv@elpasotexas.gov

- The Houston Urban Area (Tier 1) is located on the Texas Gulf Coast.
- The Dallas/Fort Worth/Arlington Urban Area (Tier 2) is located in north central Texas.
- The San Antonio Urban Area (Tier 2) is located in south-central Texas.
- The El Paso Urban Area is located in far west Texas and adjoins the international border with Mexico.

The location of the four urban areas in Texas that participate in the DHS Urban Area Security Initiative (UASI) grant program is depicted in Figure 4. Each urban area consists of one or more counties and one or more cities.

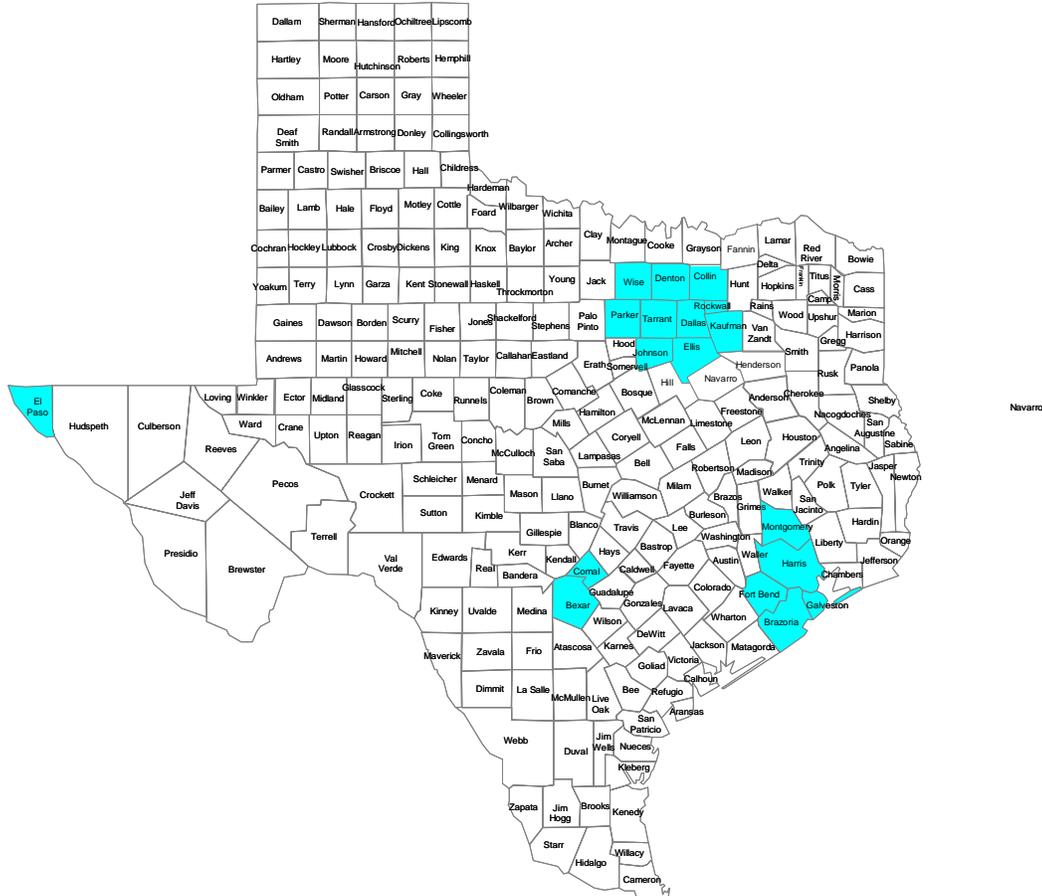


Figure 4 - State Urban Area Participants

2.1.3.1 Summary of Scorecard Recommendations & Progress

Houston Urban Area

A. Governance: The Houston Urban Area Working Group Executive Committee and the Regional Interoperable Communications Committee (RICC) have delayed establishing a formal charter until responses to a Request For Proposal for a new radio system are received, evaluated and a vendor selected for the migration to the 700-800 MHz spectrum by the City of Houston. Once a vendor is selected, the focus group will formalize the roles, responsibilities and agreements for the governance of the system.

The City of Houston has hired a Project Manager for the strategic design and implementation of the wireless platform to ensure that the new system is compatible with regional communication systems. The Project Manager is also responsible for working with the RICC to establish formalized agreements with regional partners. The goal of the Urban Area is a standards-based, P-25 compliant shared system that would facilitate seamless communications within the region. The Houston Urban Area is working closely with regional and state partners to assist in establishing a State Communications Interoperable Plan.

The Houston Urban Area Working Group Executive Committee has made interoperable communications a priority and has worked towards implementing an interoperable communication solution for the region. Alternative sources of sustained funding for the design, development and installation of a shared system are being examined. The Houston Urban Area Working Group will not fund projects that are not P-25 compliant, are not in the 700-800 MHz frequencies, or are stand-alone, in order to leverage those funds towards shared systems.

B. Standard Operating Procedures: SOP's developed with the Houston Urban Area Tactical Interoperable Communications Plan (TICP) have been distributed within the Houston Urban Area. The Houston-Galveston Area Council is developing a 13-county COG TICP. All regional exercises have an interoperable communications component to evaluate the training and usage by local, state and federal partners and identify gaps and best practices.

C. Usage: Console patches exist between the Harris County Regional Radio System, the Federal Interoperable Channels and the City of Houston Police and Fire Departments to ensure regional interoperable communications between the different systems/frequencies. These patches are used daily by first responders in the region. The 24-hours-a-day console patch between the City of Houston and the Harris County Regional Radio System will discontinue when the City of Houston completes the migration to the 700-800 MHz spectrums within the next 2-4 years.

Several mobile gateways are deployed within the City of Houston to achieve tactical communications with first responders who are on disparate systems. These gateways are used on a daily basis to coordinate tactical response within the region.

Greater Dallas/Fort Worth/ Arlington Urban Area

A. Governance: A regional Memorandum of Understanding (MOU) has been completed, accepted by the Interoperable Governance Committee, and distributed to the 89 jurisdictions that participated in the Regional Initiative. Although regional communications plans exist, they are not the strategic plans recommended by the Scorecard. The focus to date has been on achieving interoperability through governance, training and exercises, and the use of gateways and patches. The new vision is to reach the optimal level of interoperability with regional standards-based shared systems. The largest challenge to plan development is the lack of

participant staff time to devote to the project. Sustained funding, as recommended, is being examined. Draft recommendations, such as taxes, a communications authority, or other local funding, will be developed and presented to the Governance Committee. Regional Standard Operating Procedures are being examined by end user personnel for applicability. In addition, regional training programs are being examined to determine the best method for the region.

- B. Standard Operating Procedures: As stated earlier, a set of standard operating procedures is being evaluated by end users. The Tactical Interoperable Communications Plan is currently being revised to condense the size of the document to make it more user friendly and less redundant
- C. Usage: The State of Texas is incorporating communications interoperability into their regimen of regional exercises. Additional exercises were planned, although funds were not available through the 2007 Homeland Security Grant Program. Additional, non-state-directed, exercises would be desirable to test inter-regions' and inter-jurisdictional interoperability throughout specific parts of the region.

San Antonio Urban Area

- A. Governance: A regional MOU has been completed, accepted by the Interoperable Governance Committee, and distributed to the 71 agencies and the Department of Army. Although regional communications plans exist, they are not the strategic plans recommended by the Scorecard. The focus statewide to date has been on achieving interoperability with training and by providing gateways and patches where needed. The new goal is to provide seamless interoperability by building out standards-based shared systems. The largest challenge to plan development is the lack of needed uninterrupted time to devote to the project. Sustained funding, as recommended, is being examined. Draft recommendations, such as taxes, a communications authority, or other local funding, will be developed and presented to the Governance Committee. Regional SOPs are being examined by end user personnel for applicability. In addition, regional training programs are being examined to determine the best method for the region.
- B. Standard Operating Procedures: The San Antonio UA incorporated existing communications interoperability policies, practices and procedures into the TICP. The UA has taken steps to distribute and provide training on the SOPs. Recommendations include additional basic and advanced training through in-service refreshers and training courses to ensure that all participating first responder agencies attain and maintain NIMS/ICS compliance.
- C. Usage: The San Antonio UA demonstrated an ability to use available communications interoperability solutions. Recommendations include regular testing and exercise deployment of regional interoperability resource to improve proficiency in their use and consider adding communications interoperability as a component of all future exercises. The State of Texas is incorporating

communications interoperability into their regimen of regional exercises. Additional, non-state-directed, exercises would be desirable to test inter-regions' and inter-jurisdictional interoperability throughout specific parts of the region. The region will be holding a small regional interoperability exercise, prior to the State Communications Exercise, to test assets and also to determine agency equipment capabilities.

2.1.4 Current Communications Interoperability Environment

(Criteria 1.4)

Regional and Local Communications: Texas communications systems vary greatly. Because of sparsely populated areas, as well as barren regions and piney forest wilderness areas, much of rural Texas has few land telephone lines and less cellular phone service. These areas are also impacted by limited operability of public safety radio communications systems.

Most of the geography of Texas operates on wideband VHF conventional systems. This allows for some interoperability in coverage areas, however it is not spectrum efficient and there is a need for additional public safety radio channels in regions adjacent to suburban and urban areas. Also, many of these systems operate on unreliable infrastructure 20 years old providing only partial operability.

The metropolitan areas are typically proprietary 800 MHz trunking with few Project 25 systems. Some of the proprietary systems are 20 years old and a majority of the systems are more than 10 years old. System managers are unable to expand the capacity and coverage of these systems because of lack of available radio channels. Most regions operating on proprietary radio systems have been equipped with gateways and/or console patches to provide interoperability with adjacent cities and counties. Some of these regions have communications vans equipped with various interoperability components. Many of the older systems are experiencing problems finding replacement parts to keep the systems operable.

Two DHS designated Urban Areas, Houston and Dallas/Fort Worth/Arlington use several different and aged radio systems within the city for emergency communications. Detailed information on each individual Urban Area follows.

An additional problem most of the regions identified is keeping good communications people trained and experienced on the various types of interoperability equipment. Additional information on specific regional and local communications systems can be found in Section 4.2 Technology under Systems, Types and Agencies.

Texas/Mexico Border Region: The State of Texas has the longest international border and the most net traffic across the border. The border includes sizeable urban areas such as El Paso, which is a Tier 2 UASI, as well as major cities such as Laredo, Brownsville, and McAllen. City of Laredo is located on I-35 and is 2nd in the nation for

international truck traffic. I-35 is a critical corridor for commerce in the United States. Big Bend National Park is a 1,252 square mile mountainous park with 118 miles of international border. *A significant portion of the international border between El Paso and Brownsville is very rural with no terrestrial radio communications or cell phone communications of any kind — no operability.* The urban areas typically operate 800 MHz proprietary systems. There are 6 proprietary 800 MHz trunked radio systems in the Lower Rio Grande Valley area. El Paso has a proprietary 800 MHz trunked radio system. City of Laredo recently implemented an 800 MHz Project 25 trunked radio system. The rural areas typically utilize wideband analog VHF. The Middle Rio Grande Development Council, a south Texas COG, is in the process of implementing a regional VHF Project 25 trunked system.

Houston Area Urban Area: The City of Houston is the largest city in Texas, and the fourth largest city in the US. The Port of Houston is ranked first in the United States in foreign waterborne tonnage, second in the U.S. in total tonnage, and tenth in the world in total tonnage. Houston is located on the Gulf Coast and is susceptible to hurricanes. There are many different radio systems in the Houston area. *The city's police and fire departments utilize aging UHF conventional analog systems that have severe limitations with coverage, capacity, and interoperability. The City of Houston Public Works agencies operate on a proprietary 800 MHz trunked system. There are no available unused 800 MHz or UHF channels in the Houston area, so Houston is looking to the 700 MHz band to meet its coverage and capacity needs.*

Houston is the county seat of Harris County, which owns and operates a Regional Radio System with many participating cities and counties. The Regional Radio System covers Harris County and parts of eight other counties, and provides interoperable communications for more than 33,000 users from more than 515 different departments/agencies. Harris County is currently in the process of transitioning from 800 MHz proprietary trunking to Project 25. Aviation Police and the Port of Houston are in the process of migrating to the Regional Project 25 trunked system. *With around 17,000 radios required for City of Houston Police, Fire, and Public Works, the current Harris County Regional Radio System does not currently have the capacity necessary to meet the communications needs of the City of Houston.*

The City of Houston together with Harris County jointly submitted an application for a COPS Tech grant, and recently received an award. The project includes purchase and installation of three P25 master sites and a simulcast prime site. Harris County will be implementing one of the master sites to provide redundancy of their regional system and will be interlinking that master site to the redundant set of master sites for the City of Houston's new P25 system once constructed. The use of P25 standards based equipment will enable emergency responders within the area to enjoy much higher levels of interoperability and provides much needed redundancy for current systems.

Dallas/Fort Worth/Arlington Urban Area: The Dallas/Fort Worth Metroplex is the most densely populated area of the State. The Cities of Dallas, Fort Worth, and Arlington are all in the top 50 most populated Cities in the United States. The region includes the

core counties of Dallas and Tarrant and the jurisdictions within the counties. In addition, the counties of Collin, Denton, Ellis, Johnson, Kaufman, Parker, Hood, Rockwall, and Wise and the designated agencies within these counties, comprise the greater UASI region. The population of this eleven-county region exceeds 5.625-million people, including a large number of international residents attending major universities in the Metroplex. The area is a major tourist and business destination with more than seven million visitors annually. The North Central Texas Urban Area has 34 Critical Infrastructure/Key Resources (CI/KRs) identified under the Buffer Zone Protection Plan (BZPP) which have a direct and vital impact to the state and nation. Among them are the two metropolitan transportation systems, AMTRAK rail, and major transportation hubs at DFW Airport, Love Field, and Union Station in Dallas.

The Region has multiple conventional and trunked radio systems operating in the VHF, UHF and 800 MHz radio bands. There are 15-20 proprietary 800 MHz trunked radio systems in the region. Dallas Police and Fire operate an aged analog UHF conventional system, while Public Works operates on 800 MHz proprietary trunking. City of Fort Worth/Tarrant County operate a regional 800 MHz proprietary trunking system providing interoperability with several other trunked, multi-agency systems: City of Fort Worth Public Works, Northeast Tarrant Consortium, Cities of Arlington, Mansfield, Grand Prairie. In addition, Denton and Collin Counties, and City of Plano operate 800 MHz proprietary multi-agency, multi-jurisdictional radio systems. Migration of any system in Dallas/Fort Worth/Arlington is a challenge due to the large subscriber base and existing redundancy and interoperability. Maintaining redundancy and interoperability is critical. *There are no 800 MHz frequencies available in the Metroplex, and migration to Project 25 will require 700 MHz which is currently completely blocked.* In the rural areas, VHF is primarily utilized. Parker County recently purchased a Project 25 VHF trunking system.

The Dallas Police Department has installed a network of wireless video surveillance cameras. The cameras are presently deployed in two areas, the central business district and the area north of Fair Park. These cameras are configured in a mesh network; using open standards based 4.9 GHz with backhaul provided by unlicensed microwave. The project was funded by a local foundation and as other funds become available, it is expected that the coverage will be expanded to more areas. In the Dallas/Arlington/Fort Worth UASI, both Fort Worth and Arlington have plans for wireless surveillance camera deployment.

El Paso Urban Area: FY 2007 is the first year that El Paso has the benefit of a UASI designation. City of El Paso is the second largest international border crossing in the United States, and the sixth-largest city in Texas. It adjoins Ciudad Juarez, Mexico, the fifth largest city in Mexico. Some 2.3 million people live in the combined metropolitan area. This is the largest population center on any international border in the world. El Paso is also a major transportation route supporting both domestic and international trade. Major transportation hubs are Union Pacific Railroad and El Paso Natural Gas Pipeline.

El Paso has 4 international border ports-of-entry bordering its sister city of Ciudad Juarez, Chihuahua, Mexico and an international airport. Ciudad Juarez, with its population of more than two million, provides much of the labor force that fuels the economic engine in this region. As many as 100,000 foreign citizens cross into El Paso daily to work. The primary border crossing that links El Paso, Texas, and Ciudad Juarez is used by more than 100,000 people a day, with 20,000 of those daily travelers crossing over doing so on foot. That makes the U.S. Port of Entry on the El Paso side one of the busiest border stations along the entire 2,000-mile U.S.-Mexico boundary.

El Paso currently uses an analog 800 MHz Radio System for public safety communications. User agencies include Fire, Police, Airport Rescue Fire Fighting, Airport, Health, transit department (Sun Metro) and the Zoo. The City of El Paso Public Works Departments utilizes the city's 450 MHz radio system. The two systems are patched via a gateway during major incidents. A remote wireless electronics station associated with the city's 800 MHz Public Safety radio system located at the El Paso County's Sheriff's Office's Dispatch Center allows the patching of VHF County and State Agency subscriber units. El Paso has, and will continue to collaborate with approximately 20 non-governmental agencies for voice interoperability. These agencies are: El Paso, Anthony, Canutillo, Socorro, San Elizario, Horizon, and Fabens Independent School Districts; University of Texas at El Paso; Community College of El Paso; Ysleta del Sur Pueblo; Union Pacific Railroad Co.; Red Cross; Salvation Army; Providence Memorial Hospital; Las Palmas Hospital; Del Sol Hospital; William Beaumont Hospital; R E Thomason Hospital; and Far West Texas and Southern New Mexico Regional Advisory Council on Trauma.

The City of El Paso has a MOU with Ysleta del Sur Pueblo (one of the State's three tribes) in which the permanent site license for the 800MHz analog NPSPAC (National Public Safety Planning Advisory Committee) channels under the Ysleta del Sur Pueblo's license is used for the UASI Region. The Tribe also provided one of the repeaters which are used for TAC 1 Channel. The Tribe has an analog 800MHz Conventional system that provides communications for the reservation and has recently become an agency on the City of El Paso's 800MHz analog Public Safety voice system.

Data operability in El Paso is provided over both broadband networks with nine hot-spots and 800MHz infrastructure. Applications range from text messaging to streaming video. Devices include Air Cards, Blackberry's, and notebooks. Agencies in El Paso using data communications include, but are not limited to: City and County of El Paso, El Paso Independent School District Police Department, Socorro Police Department and University of Texas at El Paso Police Department.

San Antonio Urban Area: The City of San Antonio is the second largest city in Texas, and the 7th largest city in the United States. In 2002, nearly 20 million visitors came to San Antonio to visit attractions such as the River Walk, the Alamo, Sea World of San

Antonio, the Six Flags theme park, and see events like the National Collegiate Athletic Association (NCCA) Final Four Basketball Tournament in 2004 and again in 2008.⁸

San Antonio is known as “Military Town USA”. Lackland AFB, Randolph AFB, and Fort Sam Houston are located in San Antonio. Kelly AFB closed in 1998, and was reconfigured as a federal government aerospace contracting facility. Kelly is now known as Port San Antonio. San Antonio is also home to various state, federal and reserve strategic training bases.

San Antonio and Bexar County implemented a proprietary 800 MHz trunked radio system in 1999-2003. Although San Antonio and Bexar County have a combined population of 1,493,965, they are surrounded by mostly rural counties. Most of these rural areas use the County Sheriff’s VHF conventional radio system for emergency communications. Gateways have been implemented to provide communications interoperability. *However, out of the seven adjacent counties, five of the counties have major operability problems.* Some of the equipment in use is more than 20 years old, and does not provide adequate coverage for the county.

Most recently, San Antonio has been designated by the State to activate the Alamo Regional Command Center during major emergencies and disasters. San Antonio is a major evacuation shelter hub, expecting over 40,000 evacuees during hurricanes, and it has also become the logistics staging area for major disasters occurring along the coast or our southern border with Mexico. During Hurricane Dean in 2007, over 1,300 buses and ambulances, as well as upwards of 3,000 responders staged in San Antonio awaiting assignment. Managing this wide variety of resources and personnel is a major communications challenge. San Antonio plans to overlay their existing 800 MHz radio system with a 700 MHz P25 system to provide interoperable communications to a wide variety of regional, state, and federal responders. Their ultimate goal is to provide a radio system with seamless roaming for responders from San Antonio to the coastal and border regions of Texas.

Bexar Metro 9-1-1 District, Bexar County and the City of San Antonio were recently awarded a 2007 COPS Tech grant. This award will be used to implement a Regional Emergency Communications Information sharing, and Mobile data system (RECIM). Phase I of the project will provide CAD and Mobile Data for public safety agencies in Bexar, Comal, and Guadalupe Counties. Phase II will integrate agencies in Wilson, Atascosa, Bandera, Medina, and Kendall Counties. Phase III will push the system into the 12 Counties comprising the Alamo Area Council of Governments. Ultimately, Phase IV will extend information sharing capabilities to agencies along the I-35 corridor. An additional \$6 million has been identified locally to implement the other phases of the project not covered by the COPS Tech grant. The total cost of all the phases is estimated at \$15 million. Subsequent phases will include a shared records management structure. The organizations involved include forty-six (46) local law

⁸ City of San Antonio, Economic Development Department, http://www.sanantonio.gov/edd/driver_industries/hosp/ti_vr.asp

enforcement, fire and emergency medical service agencies along with non-governmental organizations such as volunteer fire departments.

The data system will use commercial broadband as primary data transport back to the existing host systems, and future mobile, RMS and Field Reporting Systems. Notebooks and other mobile devices will be used in the field. All PSAPs within Bexar, Comal and Guadalupe counties will soon be connected with dedicated fiber. This connectivity will provide the PSAPs access to the CAD. In addition, a Citrix Server(s) will be used to support locations (command vehicles, etc.) that need access to the full CAD application but do not have a dedicated fiber connection to the core system. The result will be a regional system that supports the interoperability requirements of public safety responders located in this region. This will allow smaller cities with less population and funding to be part of a large network and have first class applications with minimal investment in equipment.

Texas Department of Public Safety (DPS): – Texas DPS is the primary public safety first responder agency for the State covering 254 counties with approximately 3000 patrol officers. The Department’s major communications challenges include console functionality and interoperability. DPS plans to network its existing 32 communications facilities in order to maximize existing resources and facilitate interoperability. DPS is in the process of implementing a VHF Project 25 conventional radio system. As more users are converted to the system the need for additional frequencies has become increasingly evident. Currently the Department has limited ability to contact other agencies or officers who operate on a trunked radio system environment. The Department will migrate toward a statewide hybrid trunked radio system utilizing 700 MHz where feasible. The Department has networked five communications facilities into the Harris County Regional Radio System and two communications facilities into the City of Austin/Travis County Regional Radio System for interoperability. The Department will continue to work with regional radio systems and other first responder entities to achieve *interoperability*.

Lower Colorado River Authority (LCRA): The Lower Colorado River Authority has one of the largest 900 MHz trunked systems in the state, covering 37,000 square miles and 54 counties. Public safety, transportation, school districts, municipal city and county governments, and state agencies utilize the LCRA system, which makes it difficult for these agencies to interoperate with users in the VHF, UHF, and 800 MHz bands. Gateway devices, console patches, and other solutions to the problem are costly to implement due to the size of the LCRA system.

LCRA will submit a PSIC Investment Justification for a project to implement a 700 MHz overlay to its existing 900 MHz system. This project will install redundant switches and a conventional gateway and other equipment for seamless integration into existing regional and local systems to improve interoperability.

Texas Department of Transportation (TxDOT): The Texas Department of Transportation is the state agency charged with providing basic transportation and road

infrastructure for the entire State of Texas. Communications with TxDOT have been a challenge due to TxDOT's use of Low Band VHF (47Mhz) for the past 40-plus years. Beginning in 2003, TxDOT began a major migration program to move from Low Band communications to the VHF High Band (150Mhz) frequencies for better operability and interoperable communications as well as with other state and local agencies.

Currently, TxDOT operates over 290 VHF High Band repeaters located at maintenance sections (in most cases at the county level) around the state with over 15,000 mobile, portable and base radios deployed in the field. The VHF operations are combined with the Houston District operating on the Harris County Sheriff's Office wide-area 800 Mhz trunk system, the Austin District operating on the LCRA 900Mhz wide area trunk system and the Laredo District, operating on the Middle Rio Grande COG's wide-area VHF system to provide TxDOT with communications for its operations.

TxDOT has gathered field-deployable assets for communications emergencies consisting of 10 portable VHF High Band repeaters, over 100 portable VHF High Band radios, 8 portable base/control stations, a mobile communications vehicle with HF, Low Band, High Band, UHF, 700/800 Mhz, 900 Mhz and Satellite Phone capabilities.

Additionally, TxDOT has the only HF Single Sideband (SSB) radio network deployed in Texas dedicated to agency or public safety use. There are HF SSB radio stations located at each of the 25 district offices around the state with 3 mobile HF stations. These can be operated on licensed HF public safety frequencies as well as the RACES and other Amateur Radio HF frequencies. Plans are being developed to integrate a digital HF email system into the HF network for passing large amounts of text and other information via HF radio.

TxDOT is making the commitment to work very closely with state, local, tribal, and federal agencies by partnering where it is suitable for communications operability and interoperability. TxDOT recently partnered with Harris County in acquiring a P25 trunking switch that will be used for a 700 MHz system planned for the coast of Texas for interoperability.

Texas Military Forces: The Texas Military Forces (TXMF), consisting of the Texas Army National Guard (TXARNG), Texas Air National Guard (TXANG), and Texas State Guard (TXSG), are directed and supported by the Texas Adjutant General's Department (AGD). Personnel include 19,000 part-time citizen soldiers and airmen, 4,000 full-time personnel including soldiers, airmen, and both State and Federal civilian employees dispersed at 107 National Guard armories, training sites and Air National Guard Bases across Texas, all trained, equipped, and organized into deployable units. They are commanded by the Adjutant General of Texas, who reports to the Governor for State missions and the Department of Defense for Federal missions. The TXMF possesses approx \$4 billion of federal equipment including combat vehicles, trucks, helicopters (UH-60, CH47), and airplanes (C-130, C-23, C-26, C-12, and F16) and support equipment. Over the past few years, the Department of Defense has deployed units of the TXMF totaling more than 12,000 personnel to Bosnia, Kosovo, Iraq,

Afghanistan and other locations in the Global War on Terror. The State of Texas has depended heavily on the TXMF in response to disasters deploying more than 4,000 troops for Hurricanes Katrina and Rita in 2005 and most recently 4,700 troops and 600 vehicles for Hurricane Dean in 2007. The TXMF serves as a supporting agency in State Hurricane Evacuation. The TXMF stands ready to deploy up to 10,000 personnel on short notice in support of the State as part of an ICS-centric Joint Inter-Agency Task Force (JIATF) in support of State emergency management plans. The TXMF serves as the focal point for coordinating and obtaining all Department of Defense assets that may be needed by the State, then coordinates integration of those assets into the State response.

While the TXMF is almost entirely federally funded, that funding supports personnel pay and federal equipment designed for wartime operations. Any State use of TXMF federally funded equipment or personnel generally requires reimbursement by the State. The TXMF has significant quantities of battlefield communications equipment including radios, networks, and satellite terminals. Unfortunately, these systems are extremely labor and manpower intensive, largely not interoperable with non-DOD agencies, and routinely require DOD advanced approval to place into operation.

To be viable as a rapid responder for State emergencies, the TXMF has obtained relevant, interoperable communications equipment from federal funds for Base Support for the data network. As a result, required modernization of the data network that supports the deployable packages has been delayed; the network is in dire need of infrastructure modernization to continue to be able to support State needs during disasters. No State funds have been allocated or reimbursed to support this capability. Current interoperable communications and satellite packages support the deployed National Guard Task Force(s) and other critical Inter-Agency command posts and emergency response forces as outlined in Annex N (Direction and Control) to the State Emergency Management Plan. This includes Area and Unified Commands such as the Disaster District Committees (DDCs), State Emergency Response Team (SERT), State Incident Command Posts (ICPs), Emergency Operations Centers (EOCs), Evacuation Hubs, and Evacuation Fuel Points, etc.

Interoperable communications used by TXMF for state response include:

- Joint Operations Center (Austin, TX) - WEBEOC and full spectrum communications
- Task Force HQ Command Van (45') w/ VHF/UHF FM (non-P25) on Texas Interoperability Channel Plan, Aviation Radios, MSAT, Military Radios,
- Five Commercial Deployable Satellite Packages with high-speed data providing VOIP phones, data drops, gateway with VHF/UHF/800 (some-P25) and HF or INMARSAT
- A Portable Fly Away Package with VHF/UHF FM (non-P25) on Texas Interoperability Channel Plan, Aviation Radio, MSAT
- VHF Handheld (non-P25 XTS-5000) on 150MHz Texas Interoperability Channel Plan channels

- A VHF Portable Repeater (non-P25)
- UH60 and CH47 helicopters with commercial VHF/UHF radio (non-P25)
- 900 - Blackberrys (Phone, Email and SMS Text Messaging)
- 1000 - Cell phones
- 10 Deployable HF Stations w/Email via HF PMBO gateways (TXSG on MARS & RACES/Ham nets)
- Sustaining Base Command and Control Data Network with Primary and Alternate Data Centers, dedicated ATM T1 data links to 101 sites and all required systems to support disaster response, MS Exchange Email, CITRIX Remote Access Portal, VPN, WEBEOC, SharePoint Website, etc. Supports all deployed satellite packages.

Non-Interoperable communication equipment used by TXMF includes:

- 2000 UHF Handheld (non-P25 XTS-5000) on 380-420 MHz
- Two UHF Repeaters P25 (380-420 MHz)
- >20 Portable military 20watt HF stations (PRC-150) capable of voice and data modes
- A Large Military Satellite Package (CBCS) (many phones and much data, large scale) Requires DOD satellite airtime approval.
- >1000 - Military SINCGARS Radio (30-88MHz) FM/Digital/Secure.
- >20 - Military Single Channel Satellite Radios (SCAMP, PSC-5, PRC-117F) Requires DOD satellite airtime approval.
- TKO (Texas Knowledge On-Line) - Common Operational Picture data SharePoint Website (internal TXMF File Sharing).

2.1.5 Summary of Current Problems and Possible Solutions

(Criteria 1.5)

- **Lack of training and education on current interoperability capabilities and structure.** Currently, Texas uses console patches and gateways for interoperability between disparate systems. Unfortunately, in most cases where interoperability has been established with gateways or patches, users are unfamiliar with the interoperable capabilities. SCIP Goal #4 “Facilitate integrated Standard Operating Procedures and Training Programs to enhance effective use of interoperable communications systems,” address this problem in accordance with the SAFECOM Continuum. *A possible solution — A primary initiative of the SCIP is to carefully evaluate, plan, design and revise and/or implement new SOPs and Training & Exercise Programs.*
- **No available channels in specific radio band in many metropolitan and rural areas.** The growth in Texas complicates radio system challenges because communication systems can not keep up with the increased need for coverage and capacity. With no available channels in applicable radio bands in some of the rural areas and most of the major urban areas, agencies are utilizing ‘band-

aid' solutions until spectrum and funding become available. *A possible solution — (1) migrate wideband VHF systems to narrowband and/or digital, (2) push for the continued deployment of 700 MHz channels and systems.* Texas 700MHz projects include: Plano and Frisco, two cities in the Dallas/Fort Worth/Arlington UASI, have designed and funded 700 MHz projects; within the next three to five years, Dallas plans to upgrade and expand an existing system with 700 MHz frequencies to provide interoperable communications to public safety agencies; Houston has designed a 700 MHz interoperable communications system and is preparing an RFP to build it; Harris County needs funding to increase capacity and expand its regional system into new areas with 700 MHz frequencies; San Antonio is exploring the use of 700 MHz for system enhancements and partnerships which leverage existing infrastructure and resources to increase the coverage area and agencies served; El Paso needs 700 MHz for mutual aid and international operability; the Texas Department of Public Safety recently deployed a 700 MHz system at the State Capitol complex in central Austin, which is tied into the Austin-Travis County/Williamson County Regional Radio System.

- **No operability in parts of Texas.** Emergency communications operability remains a problem for many public safety agencies in rural Texas including but not limited to Regions 7, 19, 14, 5 and 18, and especially along the Mexico border. Public safety communications systems have limited reach in a considerable area of the State; these areas often have few landline communications, and minimal or no cellular telephone communications. Many of the rural areas suffer from lack of backup power and rusting towers. *A possible solution — (1) build-out the Border Communications Plan by upgrading and/or expanding existing P25 systems along the border; (2) regional planning and collaboration on the strategic implementation of infrastructure, including tower replacement; and (3) identify and provide equipment to meet specific communications safety needs of our first responders.*
- **Aged equipment.** Many of the existing trunking systems have aging equipment that no longer have parts available or support from the vendors. *A possible solution — is addressed in Goal #5 and it's Objective: "Identify all funding sources available for interoperable communications and develop a timeline with associated costs to migrate to a technology environment that provides state, local, regional, and tribal entities with the level of interoperability that is defined in the Statewide Communications Interoperability Plan."*
- **Minimum interoperability.** The range of interoperability spans the SAFECOM Continuum from extreme "limited" in many areas to a "high degree" in very few of the regional radio system areas. *A possible solution — shared/mutual-aid channels, patches, gateways, switches, and the growing of regional P25 systems.* The data provided by CASM will provide information to identify the right solution for the specific area.

More details on solutions are provided in Section 5.4, Strategic Initiatives.

2.2 Participating Agencies and Points of Contact

(Criteria 1.2)

The whole of the TxRC membership contributed to the development of the Texas Statewide Communications Interoperability Plan. Members of the individual Working Groups drafted specific sections of the plan for review by the TxRC Steering Committee. When all sections of the SCIP were assembled, a draft SCIP was provided to ICTAP for review. The TxRC Steering Committee met with ICTAP representatives, and over two days discussed and made changes throughout the document.

Because of the number of agencies and individuals that participated in the development of the SCIP, the complete list is published as Appendix A of this document. The list includes more than 100 individuals.

2.3 Statewide Plan Point of Contact

(Criteria 1.3)

Currently the Texas Radio Coalition is working under the direction of the Texas Homeland Security Director, Steve McCraw, to develop the Statewide Communications Interoperability Plan. Mr. Jim Harrison, Office of the Governor, has been designated as the interim Texas Interoperability Coordinator while Texas seeks the right person to fill the position on a permanent basis.

Name: Jim Harrison
Title: Homeland Security Governmental Affairs Coordinator
Agency: Office of the Governor
Phone: 512-463-3904
E-mail: jharrison@governor.state.tx.us

The Interoperability Coordinator should have a combination of business process, management, operational, procurement, and technical skill, and political savvy. The goal is to have a full time qualified coordinator in place by March 1, 2008. An overview of the Texas Interoperability Coordinator / Project Manager Description follows:

The Interoperability Coordinator/Project Manager will:

- Oversee, plan, schedule and control activities related to planning and implementing statewide communications interoperability.
- Fulfill project objectives by applying theoretical, managerial and communications skills to satisfy project requirements.

- Lead, coordinate and integrate committee and individual efforts in this regard and build positive professional relationships with users.
- Report to the Governor’s Office, but seek the advice of the Texas Radio Coalition SCIP Executive Committee and Steering Committee, and preside over the User and Technical Committees and ad-hoc working groups throughout the project.

2.4 Scope and Timeframe

(Criteria 1 .7)

Major funding programs for interoperable communications prioritize funding for critical infrastructure, UASIs and highly populated areas. Texas has one Tier 1 UASI – Houston, three Tier 2 UASIs – Dallas/Fort Worth/Arlington, El Paso and San Antonio, two major cities with populations over 250,000 (Austin and Corpus Christi), and a number of counties with populations under 10,000 along the coast and international border. A primary concern of Texas public safety agencies is communications operability. And, a major concern for Texas and the nation is securing the international border with Mexico and the Texas coastline.

“The NIMS places responsibility on individual Federal, State, local, tribal, and territorial governments and agencies for establishing a preparedness cycle in advance of an incident and for including the private sector, organizations, and individual citizens, as appropriate.”⁹

The critical functions that this Texas statewide plan will focus on for the next three years are:

- Promoting state legislation that enforces and provides funding for timely and cost-efficient execution of strategic plan initiatives which support all aspects of statewide communications and interoperability.
 - Milestone: Identify and enlist a legislative champion/sponsor by June 2008.
- Establishing and mandating the technology standard for the *Texas Statewide Communications Interoperability Plan* and providing regional migration strategies using the SAFECOM Continuum as a guide.
 - Milestone: Develop regional migration plans by March 2009 to reach the goal of seamless standards-based interoperability.
- Providing communications operability and interoperability through permanent designated mutual aid infrastructure where necessary.
 - Milestone: Identify and prioritize areas where mutual aid infrastructure is needed by June 2009.
- Providing communications necessary to secure the international border and coastline with the expanding regional collaboration of state, local and tribal

⁹ National Preparedness Guidelines; September 2007; page 3.

agencies using available funding and governance agreements as suggested in the SAFECOM Continuum.

- Milestone: Fully develop the border and coastline regional interoperability plans by June 2008.
- Providing interoperable communications for the DHS-designated urban areas.
 - Milestone: Deploy 700 MHz channels in the urban areas and seek special funding by 2009.
- Improving and expanding regional responder efficiency and effectiveness through integrated-coordinated Standard Operating Procedures and Training Programs with mandated evaluations and certifications using the SAFECOM Continuum as a guide.
 - Milestone: Provide recommendations for training and exercise programs and develop SOP templates by June 2008.

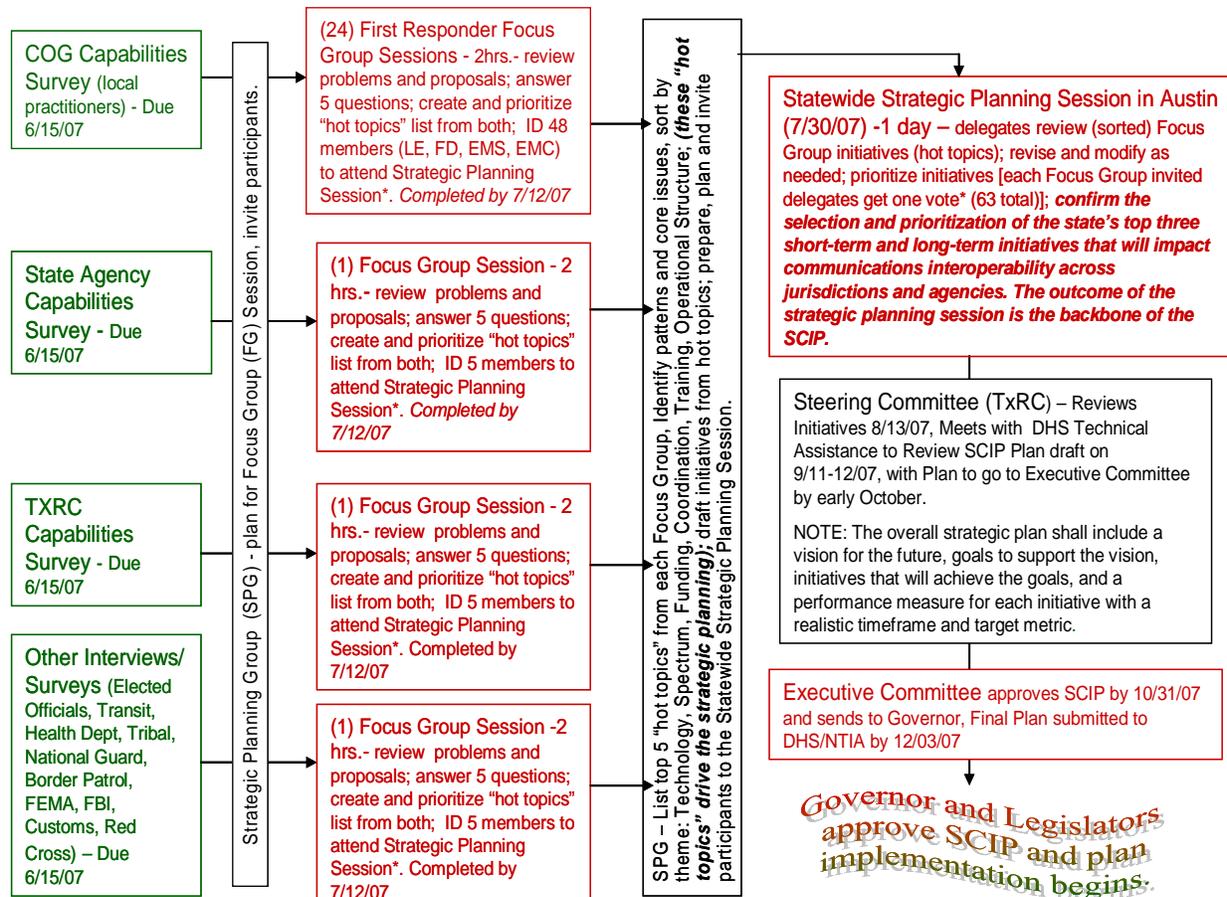
As we endeavor to provide interoperable communications to all public safety agencies we will:

- Design solutions to immediate problems with the intent of reaching our long term goals.
- Design operability with clear appreciation of what others are doing in the area.
- Try to provide solutions that attain both voice and data interoperability in a parallel technology.
- Strive to make communications better by improving current capabilities in small, logical, affordable and achievable steps.

3 Methodology

(Criteria 3.1)

The TxRC, with the assistance of TARC and the State Administrative Agency (SAA), organized 27 Focus Group Sessions for regional entities and urban areas, local governments, state and federal agencies, and non-governmental organizations, specifically volunteer fire departments. Each focus group identified their communications needs and concerns. More than 130 Texas critical infrastructure and emergency responders, communications professionals and elected officials representing more than 5,000 public safety agencies gathered at the Statewide Strategic Planning Session to develop and prioritize short and long-term initiatives for interoperable communications for the Texas SCIP. Figure 5, the SCIP Strategic Initiative Flow Chart, is a graphical chart that clearly relates the development process for the strategic initiatives, vision and goals of the SCIP. Figure 5 starts with the Communications Assets Survey and concludes with the Governor approving the SCIP.



*Voting ratio is established by SAFECOM Methodology.

Revised 10/01/07

Figure 5 - SCIP Strategic Initiative Flow Chart

The Communications Assets Survey was designed to identify where the individual agency’s communications capability fell in the SAFECOM Continuum, e.g. did the agency participate in “Multi-agency Full Functional Exercises Involving All Staff” or only provide “General Orientation on Equipment”. The survey was the preliminary effort to identify gaps in communications interoperability across Texas.

The focus group sessions were the next opportunity for agencies to discuss where their communications fit into the SAFECOM Continuum. Each group was asked five questions centered along the Continuum capabilities, e.g. “Have the NIMS requirements been incorporated into your SOP’s?” Answers to the questions were from a regional perspective and provided insight to regional interoperability to the public safety agency participants and for the SCIP. The results of this process was a total of 24 regional focus group sessions and three special focus group sessions, which identified specific operability and interoperability concerns of more than 5000 public safety agencies and non-governmental organizations (non-profit EMS and 44 volunteer fire departments representing the concerns of these specific organizations statewide), to send to the Strategic Planning Session for review. At the Statewide Strategic

Planning Session, delegates from the focus groups prioritized initiatives for the state plan.

Working groups were organized within the TxRC to research and recommend solutions for initiatives to progress forward along the Continuum and achieve statewide interoperability. The state's DHS urban areas provided the necessary leadership along with their invaluable experience gained by the development of their Tactical Interoperable Communications Plans, exercises and scorecard recommendations. During monthly meetings as well as video conference sessions, subject matter experts, UASI representatives, and regional first responders collaborated on Governance, Technology, Training and Exercises, Standard Operating Procedures and Usage to facilitate the production of the SCIP. Appendix E lists the Working Groups' members and identifies their discipline and the group they represent, e.g. Region, State Agency, etc. The working groups and their responsibilities consist of:

1. The Governance Group is drafting the governance documents including the charter/mission statement, organization chart, rules and responsibilities, meeting schedules and authority.
2. The Capabilities Assessment Group is driving the assessment of current communications technology across the State. The CASM¹⁰ (Communications Asset Survey and Mapping) tool provided by the DHS Interoperable Communications Technical Assistance Program (ICTAP) is being used to inventory the communications assets in the state. The CASM tool tracks equipment available and in use and depicts how it fits together. As agencies acquire new equipment and/or capabilities CASM will be updated.
3. The Strategic Planning Group facilitated 27 focus group sessions and the Strategic Planning Session, the development of the strategic initiatives, proposed the long-term vision for interoperability, and is recommending investment priorities and justifications.
4. The Technology Group researched, analyzed and recommended both voice and data interoperability solutions and best practices and continues to do so.
5. The Implementation and Evaluation Groups will continue to devise the action plans, timeline and critical success factors, along with the assigned roles and responsibilities, to achieve the short- and long-term initiatives.
6. The Standard Operating Procedures and Training and Exercises Groups will continue to evaluate existing statewide programs and develop procedures to overcome the gaps and achieve interoperability across the SAFECOM Continuum. The Group is following the SAFECOM Writing Guide for Standard

¹⁰ http://www.ojp.usdoj.gov/odp/docs/CASM_tribold8Final.pdf

Operating Procedures as a basis to provide regional templates to planning areas and to review existing SOPs.

7. The Funding Group is identifying funding sources, developing a comprehensive funding strategy to sustain interoperability and identifying resources to leverage active projects.

Figure 6 portrays the evolution of the critical initiatives for the Texas SCIP. Each initiative is linked to a SCIP goal and back to the SAFECOM Continuum for the development of the statewide plan and statewide interoperability (see Section 5.4).

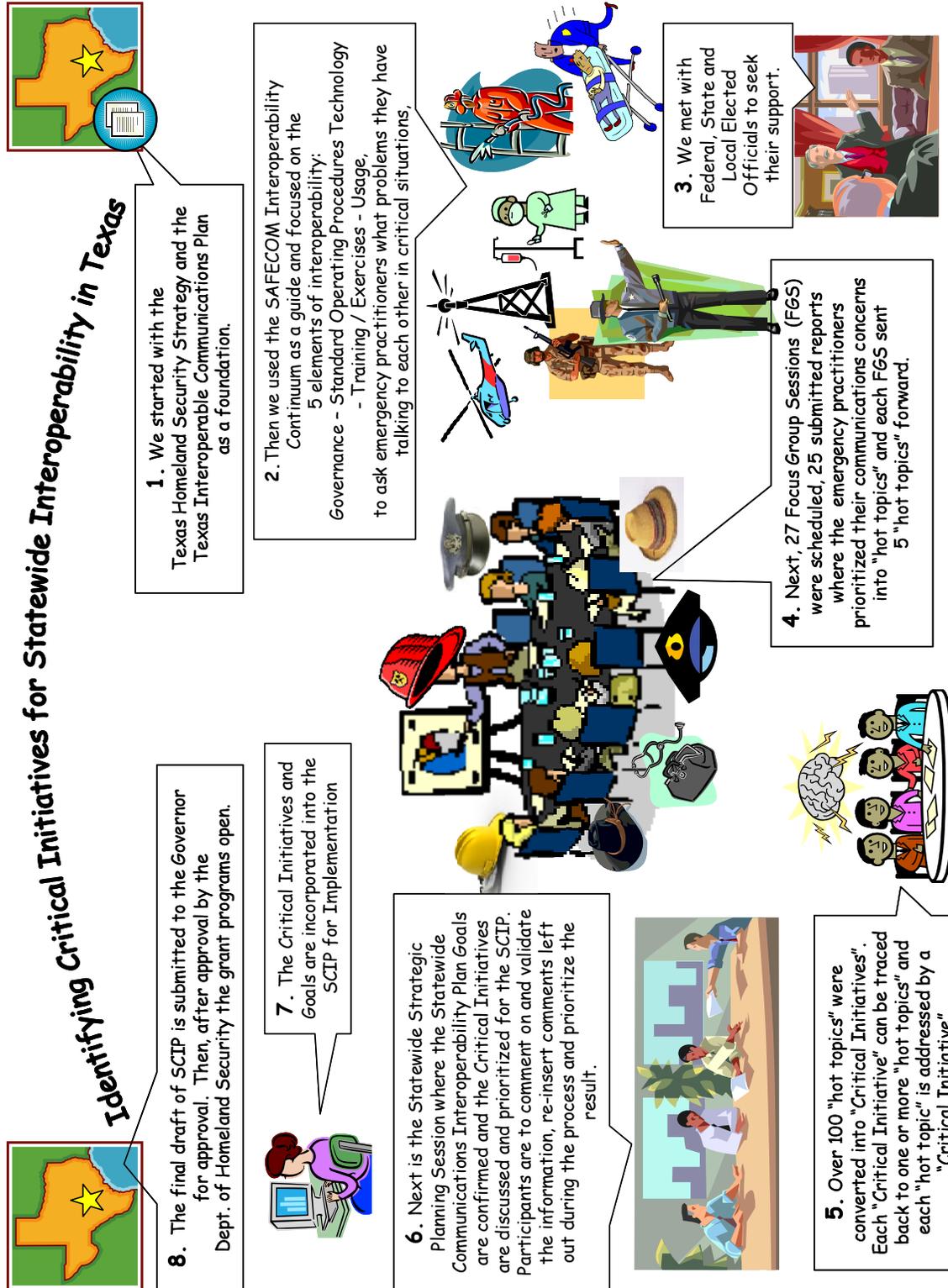


Figure 6 – Developing the Texas Statewide Communications Interoperability Plan

(Criteria 3.3)

Because Texas has four UASI areas, UASI representatives experienced in developing their TICPs were available to take leadership roles in the creation of the Texas SCIP. The UASI Exercises had identified similar gaps in interoperability as were identified in the Capabilities Survey, shown in Figure 6. UASI TICP Scorecard Recommendations which are the nucleus of this SCIP include:

- 1) Obtain acceptance from all participants on regional strategic plans for communications;
- 2) Develop an interoperable funding strategy, including sustainability, that address long-term communications interoperability needs; and
- 3) Prioritize regional interoperability procedures and associated training that are accepted by leadership.

Five of the seven critical components discussed in Section 2.4 of the SCIP are directly related to the UASI TICP's; with one component specific to the UASI's: *Providing interoperable communications for the UASI areas.*

3.1 The Process for Implementing the Texas Statewide Plan

(Criteria 3.4)

Performance measurement, effective program management, continuous assessment of the statewide plan milestones, and implementation of midcourse corrections where necessary, are crucial steps in effective planning and achievement of goals. Strategic plans set the foundation by establishing priorities and strategies for implementation, and by assigning responsibility and allocating resources. Performance measures are the tools that provide ongoing assessment of the impact and outcome of operations, as well as an appraisal of the efficiency and effectiveness of the processes surrounding the operations.

An essential element in any performance measurement process is in the current status of the State, both locally and regionally, with regards to both Operability and Interoperability and calibrating a baseline of performance. Baseline measures identify the current situation, and/or projections for the immediate future, given existing and anticipated circumstances. The statewide deployment of ICTAP's CASM tool will be used to gather and identify these baseline capabilities. Jurisdictions will be required to enter communications assets and capabilities into CASM and provide regular updates to be eligible for funding. The State has made assistance available to any jurisdiction that requests aid, and El Paso has developed a program to simplify and speed the data entry process that will be available on the TxRC web-site at <http://txrc.region49.org>

Defining strategic objectives and building operational and tactical plans for implementation requires a comprehensive understanding of current operations, and accurate and precise measures of key performance indicators. Planning and

implementing projects that are tightly aligned to the strategic objectives require careful and continuous monitoring to ensure efficient operations, effective implementation, and adequate return on the investment of time and resources needed.

Technology: Before a local jurisdiction may submit a project for consideration by the State, a preliminary review must be done at the regional level by the Communications Committee or some similar group of the appropriate Council of Governments, Development Council or Planning Council. (Where possible, reviewers should represent a cross-section of the communications community and include representatives from cities, counties and Tribes where appropriate; conventional and trunked systems, and VHF, UHF, 700 MHz, 800 MHz and 900 MHz systems.) Jurisdictions must have baseline information (towers and POC/name) entered into CASM to show the jurisdictions' commitment to adhere to the SCIP. Projects that are deemed to satisfactorily meet the State's Plan will be submitted to the State for formal review. A peer evaluation will be utilized for review of investment justifications seeking funding to implement projects inline with the Statewide Plan to ensure consistency with the statewide planning process.

The Texas Interoperability Coordinator, with advice from the Texas Radio Coalition, will convene panels of peers and subject matter experts (SMEs) to evaluate and review the local submissions. Peers will be current or former members of the local, State or tribal emergency response community and agency telecommunications support personnel. SMEs will be individuals who are knowledgeable about, and have experience in, public safety/emergency response radio communications. When possible, SMEs will be chosen from agencies represented on the Texas Radio Coalition. To maintain objectivity and ensure accountability, peers and SMEs will:

- Not serve on a panel assigned to review the application of a local jurisdiction which the reviewer helped to prepare.
- Not serve on a panel assigned to review the application of a local jurisdiction which employs the reviewer.
- Not serve on a panel where the panel decision could potentially provide – directly or indirectly – financial, professional or personal benefit to the reviewer.
- Not be employed by an equipment manufacturer that could – directly or indirectly – benefit by the peer review panel decisions.

3.2 PSIC Requirements

(Criteria 11.1)

Interoperable Communications Planning, Coordination, Acquisition, Deployment, & Training

The TxRC has used the SAFECOM Interoperability Continuum as a guide and focal point for the development of the communications interoperability plan. The Technology Working Group has much experience on project management and deployment. The SAA and GDEM have supported the TxRC with information on state facilitated funding programs, acquisition and training and exercise programs. This group is committed to achieving the goals and vision of this SCIP. This will be accomplished by:

- Requiring regional planning and informed technology acquisitions for all communications grant packages.
 - Identifying solutions which involve a “system of systems” approach that incorporates existing technologies and allows for the development of new technologies and functionality in the future;¹¹
 - Requiring new infrastructure to be open architecture, non-proprietary, spectrum efficient, and/or standards-based.
 - Requiring new voice and data systems to meet the SAFECOM Statement of Requirements.
 - Providing specifications for voice and data systems reliability, redundancy and replacement.
 - Prioritizing system connections both by region and statewide implementing the connections that respond to the greatest threat first.
 - Producing a technical migration plan that can be used by local, regional and state entities to assure that a standards-based shared system can be reached within a reasonable timeframe.
 - Developing a detailed process for frequency coordination, radio interference and conflict mediation.
 - Assisting with the development of regional Governance agreements where none exist.
 - Assisting with the development of regional SOP’s for communications interoperability.
 - Assisting with the development of joint training packages and regular regional exercises.
- 1) Regarding 700 MHz: Incumbent television broadcast operations on channels 62 (Killeen), 65 (El Paso), 67 (Houston area), and 68 (DFW area) will delay full public safety access to all 700 MHz channels in their areas until the mandatory date for analog TV clearance on February 17, 2009. Plano and Frisco, two cities in the Dallas/Fort Worth/Arlington UASI, have designed and funded 700 MHz projects, and are waiting for channels to be made available. Within the next three to five years, Dallas plans to upgrade and expand an existing system with

¹¹ “How does SAFECOM address the needs of emergency response agencies?”
<http://www.safecomprogram.gov/SAFECOM/about/faq/>

700 MHz frequencies to provide interoperable communications to public safety agencies. Houston has designed a 700 MHz interoperable communications system and is preparing a RFP for its construction. Harris County plans to expand its regional system into new areas with 700 MHz frequencies. San Antonio is exploring the use of 700 MHz for system enhancements and partnerships which leverage existing infrastructure and resources to increase the coverage area and agencies served. El Paso needs 700 MHz for mutual aid and international operability. The Texas Department of Public Safety recently deployed a 700 MHz system at the State Capitol complex in central Austin.

- 2) Regarding interoperability with 700 MHz: The Technology Working Group plans to use patching and gateway device technologies to interface with disparate systems to be incorporated into the new statewide communications architecture, while migrating to a P25 Standards-Based solution. (Fixed or Mobile Deployable Network-to-Network Gateways – provide radio interoperability during missions requiring communications between diverse organizations using different radios and different frequencies. Network-to-Network gateways offer a standard way to link wireless infrastructures.)
- 3) Regarding advancing interoperability that utilizes other public safety spectrum: The immediate and critical need is for reliable communications operability from El Paso to Brownsville. The Middle Rio Grande Development Council (MRGDC) is in the process of constructing infrastructure for regional VHF trunked Project 25 communications in three border counties and six adjacent counties. By partnering with the MRGDC, this regional communications system will be expanded to provide communications along the entire international border. Existing state, local, tribal and federal agency and non-governmental organization communications facilities and infrastructure will be utilized where possible. This system will be the primary communications for most local and some state public safety agencies along the border, and provide interoperability for all public safety agencies responsible for securing the border.

(Criteria 11.2)

Strategic Technology Reserve (STR)

Because the Department of Public Safety is the designated first responder state agency, DPS will continue to implement and manage the STR equipment from various strategic locations across the state. The STR may include:

- Command/Communications Trailers
- Primary Towing Vehicles
- Portable Radios P25 with Trunking
- Cellular on Wheels
- Trunking Site on Wheels
- Laptop Computers for each Command Trailer
- Suitcase Digital Repeaters with Trunking
- IP Gateway Devices

- FRS Radios
- Portable Generators
- Cargo Trailers
- Portable Gateway Devices
- Video Downlink for Helicopters
- Satellite Telephones and Radios
- HF Radio Equipment

Texas has planned for the effects of tropical storms or hurricanes making landfall on its coast. The nature of these storms permits the pre-positioning of resources before anticipated landfall. Analysis of this problem has identified the need for communications augmentation along disaster evacuation routes before landfall. Further analysis reveals the need for communications restoration after a catastrophic event further inland. The STR proposal meets those requirements by facilitating mutual aid communications and status reporting during evacuation operations and providing resources for rapid restoration of services. The STR resources can be used in the Urban Areas with established TICPs and inventories of interoperable systems. When called upon to support planned events or respond to hostile events, the STR assets can provide augmentation to expand the area of coverage of existing systems, take the place of existing systems during planned events to free local systems for response if necessary, or replace local systems damaged during a hostile event.

(Criteria 11.3 & 11.4)

Local and Tribal Government Entities and Non-governmental Organizations Involvement in Interoperable Communications Planning and Solutions

Because more than 50% of the TxRC leadership is composed of local government and non-governmental groups, the planning and prioritization of these needs and solutions are foremost and tightly woven throughout the goals, objectives and strategic initiatives.

Cities & Counties: Local governments active in the SCIP process make-up more than 50% of the TxRC membership, and have key leadership roles such as four positions on the TxRC Executive Committee and co-chairpersons of five Working Groups. The estimated ratio of local government active participation on the TxRC Steering Committee is 54%. 24 of the 27 Focus Groups that identified the concerns and strategic initiatives for the SCIP were facilitated by regional Councils of Governments for local public safety agencies. Primary leadership that fueled the development of the SCIP was provided by local government and public safety organizations.

Alabama-Coushatta Tribe of Texas: The Alabama-Coushatta Tribe participates in Homeland Security and Interoperable Communications planning in the DETCOG area. The Tribe has signed both the DPS Channel Plan MOU and the Texas Forest Service MOU. The Tribe Fire Department has been issued communications equipment purchased with Homeland Security funds. The Tribe has mutual aid agreements with Polk County and area fire departments. The County Sheriff's Office provides law enforcement for the Tribe. Both the Fire Department and Security Department have

the County Sheriff's primary radio channel in their equipment for emergency contact, and the mutual aid channels for incident management.

Kickapoo Traditional Tribe of Texas: Until a few years ago the Kickapoo Tribal Police Department had no interoperable communications capability for their 22 officers. The Kickapoo Tribal Police Department is a non-governmental emergency responder agency. Since early 2005 the Middle Rio Grande Development Council of Governments (MRGDC) has assisted the Kickapoo with radio communications and planning for future interoperability. The Tribe signed the regional and State Interoperability MOUs and was provided their own unique talkgroup on the nine-county MRGDC P25 Regional Interoperable Radio System which provides the Tribe's current communications. The Tribe currently has a radio dispatch console and a few mobile and portable radios for their officers. These radios have the state interoperable radio channels as well as the regional radio system interoperability. The Kickapoo Tribe has been invited to actively participate on the TxRC Steering Committee. The TxRC and the MRGDC will continue to include the Tribe in interoperability planning and addressing their needs.

Ysleta del Sur Pueblo: Although this Tribe has an analog 800MHz conventional system to serve their reservation, they have chosen to join the City of El Paso's public safety system for regional interoperability. In doing this, as the UASI builds out system interoperability with sites and upgrades, the Tribe will benefit.

Eventually, as the Border system is completed, the Ysleta del Sur Pueblo Tribe and the Kickapoo Tribe will be linked and have seamless interoperability.

Non-Governmental Organizations:
(Criteria 11.4)

Non-governmental organizations are integrated throughout the TxRC structure and in its planning committees. More than 45 EMS organizations and volunteer fire departments actively participated in 24 of the regional focus group sessions. Because of focus group and TxRC participation, their needs are integrated into the regional and urban area concerns, needs and initiatives discussed throughout this document.

State River Authorities: There are several river authorities in Texas, which are non-profit state water and electric utilities that perform certain public safety functions. A representative of the Lower Colorado River Authority is a member of the Executive Committee and another representative co-chairs the Technology Working Group along with a local government representative.

EMS and Trauma Systems: A representative of the East Texas Medical Center (ETMC), a non-profit regional health care and trauma system which provides EMS service to more than 17 counties and close to 17,000 square miles, is a member of the Executive Committee. Another EMS and trauma systems representative co-chairs both the Implementation and Governance Working Groups, and is on the Funding Working Group.

Radio Amateur Civil Emergency Service: The RACES, is a public service provided by a reserve (volunteer) group of Amateur Radio (Ham Radio) Operators that is administered by local, county and state emergency management agencies, and supported by the Federal Emergency Management Agency (FEMA) of the United States government. The TxRC Steering Committee includes a representative from this group. As a part of the Amateur Radio Service, it provides radio communications for civil-preparedness purposes only, during periods of local, regional or national civil emergencies, including natural disasters such as earthquakes, hurricanes, wildfires, power outages, floods, victim searches, air crashes, and many others. The Governor's Division of Emergency Management (GDEM) administers the state RACES program, which is organized by districts throughout the State. GDEM personnel participated in writing this plan.

4 Current Statewide Assessment

4.1 Governance Structure

The Governor appointed the Texas Radio Coalition (TxRC) “as the governing body for the Texas Statewide Communications Interoperability Plan, with the primary purpose of the TxRC to oversee public safety communications interoperability in Texas and the preliminary development and on-going reviews and revisions of the Texas Statewide Communications Interoperability Plan. Responsibility will include, but not be limited to making official recommendations to the Governor of Texas, the Texas Homeland Security Director, the Governor's Division of Emergency Management , concerning public safety communications interoperability, technology, training, exercises, standard operating procedures, implementation and funding of same. The TxRC is comprised of various agencies and associations that represent the local first responder perspective, a critical element that allows the TxRC to serve as a voice for that community.”

Executive Authority

(Criteria 4.1)

In 2005, Senate Bill 9 became state law directing the Governor to coordinate statewide efforts to achieve radio interoperability. In December 2005, Governor Perry issued the first statewide radio interoperability strategic plan. Prioritizing Homeland Security Funds towards radio interoperability equipment, the Governor set January 2007 as a deadline to utilize gateways and patches to achieve interoperability statewide.

The next step along the SAFECOM Interoperability Continuum is Standards-Based Shared Systems. Governor Perry partnered with the Texas Radio Coalition to develop a statewide plan for optimal interoperability — Standards-Based Shared Systems.

This statewide radio interoperability administration authority is cited in Section 421.096 of the Government Code:

Sec. 421.096. INTEROPERABILITY OF RADIO SYSTEMS. The office of the governor shall: (1) develop and administer a strategic plan to design and implement a statewide integrated public safety radio communications system that promotes interoperability within and between local, state, and federal agencies and first responders; (2) develop and administer a plan in accordance with Subdivision (1) to purchase infrastructure equipment for state and local agencies and first responders; (3) advise representatives of entities in this state that are involved in homeland security activities with respect to interoperability; and (4) use appropriated money, including money from relevant federal homeland security grants, for the purposes of designing, implementing, and maintaining a statewide integrated public safety radio communications system.
Sec. 421.097. ASSISTANCE. The office of the governor may consult with a representative of an entity described by Section 421.096(3) to obtain assistance or information necessary for the performance of any duty under this subchapter.

The Texas Radio Coalition is a member of the Governor's First Responder Advisory Council and thus designated by state law to advise the Governor on relevant Homeland Security issues.

Sec. 421.041. FIRST RESPONDER ADVISORY COUNCIL. (a) The First Responder Advisory Council is a permanent special advisory committee created to advise the governor or the governor's designee on homeland security issues relevant to first responders, radio interoperability, the integration of statewide exercises for hazards, and the related use of available funding. (b) The council is composed of: (1) one representative for each of the following sectors of the state, appointed by the governor or the governor's designee: (A) law enforcement; (B) firefighters; (C) private first responders; and (D) emergency medical services; and (2) other members, as determined by the governor or the governor's designee.

Figure 7 is the TxRC organizational chart; it identifies the three committees and eight working groups:

Texas Radio Coalition

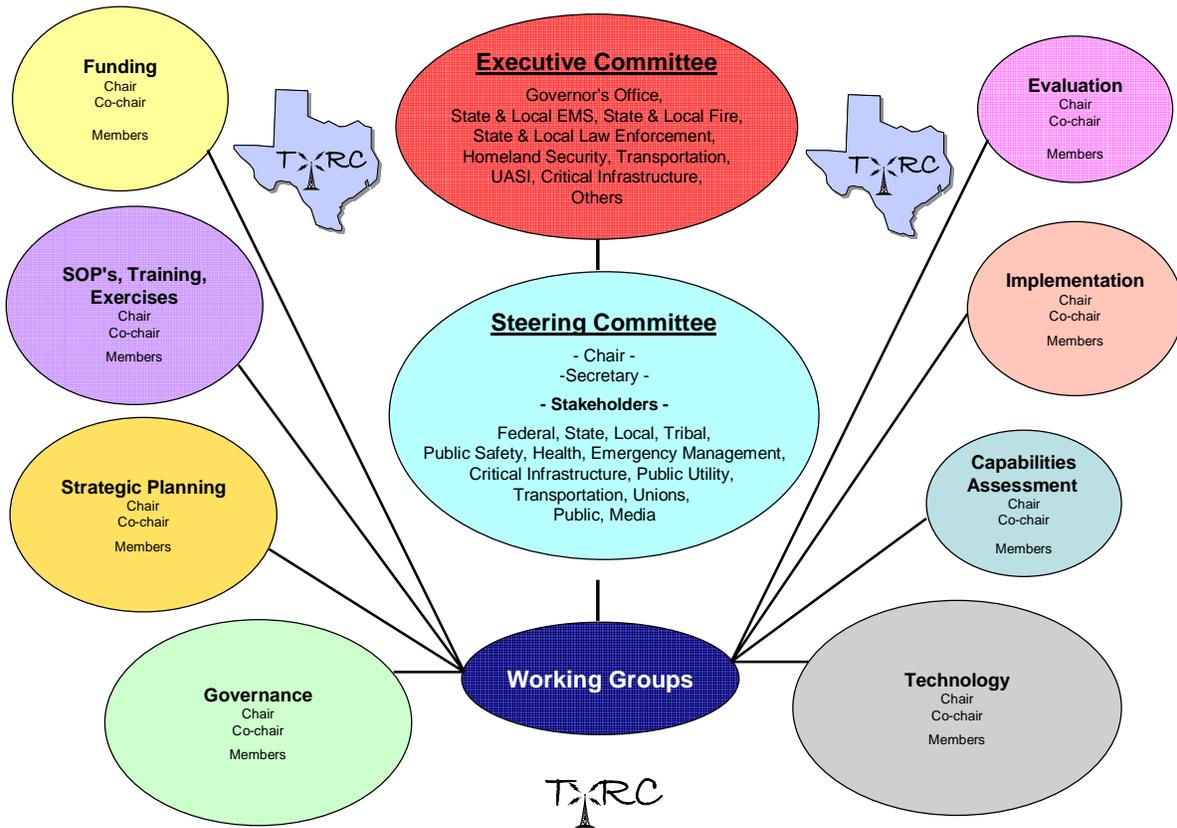


Figure 7 - Organizational chart for the Governance body of the Texas SCIP

(Criteria 4.2)

The SCIP established Governance Structure is made up of the three bodies of the Texas Radio Coalition, they are:

Executive Committee: An oversight body composed of higher-level administrators who will be vested with final decision-making authority by the Governor of Texas. This Committee is selected by the Governor’s Office and the Texas Homeland Security Director. The Executive Committee shall: build relationships at the local, state, Tribal and federal levels; leverage resources where appropriate; educate and update representatives from the Governor's Office and appropriate legislative committees, and the public regarding the state's interoperability work; and approve any revisions to the Statewide Communications Interoperability Plan.

Steering Committee: This advisory group has regular monthly planning and review meetings, plus web-conferences when needed. The group consists of interdisciplinary,

inter-jurisdictional representatives from across the State that have a broad knowledge of wireless communications and hold a formal or informal leadership position within their agency. The Steering Committee will: develop a roadmap for the future and/or a project plan for public safety communications interoperability; establish working groups with appropriate representatives from the public safety community to ensure that technical issues are thoroughly researched; develop outcome-based strategic planning; provide a method to capture lessons learned for future operations; review and recommend goals and objectives to the executive committee; review and recommend short and long-range plans to the executive committee; recommend adoption and modification of operating policies and procedures to the executive committee; and translate information and communicate with communities to build support for statewide interoperability efforts; review and make recommendations of revisions to the SCIP; provide subject matter experts to assist in peer reviews of communications interoperability grant applications to the State Administrative Agency (SAA).

Working Groups: Temporary, narrowly chartered Working Groups were formed for specific tasks, such as conducting research and collecting data. Current TxRC Working Groups consist of:

- Governance Group (Co-chairs: Travis County Emergency Services Wireless Manager; East Texas Medical Center (ETMC) Communications Director)
- Capabilities Assessment Group (Co-chairs: UASI Sr. Systems Technologist; Regional Homeland Security Director)
- Strategic Planning Group (Co-chairs: City of Austin Wireless Communications Services Manager; City of Bryan Radio System Engineer)
- Technology Group (Co-chairs: UASI Sr. Systems Technologist; Utility/Critical Infrastructure Telecommunication Operations Manager)
- Implementation / Evaluation Group (Co-chairs: UASI Deputy Director Radio Communications Services; ETMC Communications Director; Sheriff's Office Communications Manager; Sergeant- Sheriff's Office)
- Standard Operating Procedures / NIMS / Training & Exercises Group (Co-chairs: UASI POC; Regional Homeland Security Director)
- Funding Group (Co-chairs: Director, Border Research and Technology Center; Sheriffs' Association of Texas, County Sheriff)

Charter

(Criteria 4.3)

The Governance Committee is currently finalizing the Texas SCIP Governance charter based on the SAFECOM/DHS template: "Creating a Charter for a Multi-agency Communications Interoperability Committee." The draft charter is available for review at <http://txrc.region49.org>. Upon completion the charter will be submitted to the Executive Committee and Governor's office for approval. The target date for finalizing this is 3/01/08.

Schedule of Meetings

(Criteria 4.5)

In order to build the Statewide Communications Interoperability Plan, the TxRC agreed to meet the second Monday of each month and scheduled web meetings to facilitate additional efforts.

Most Working Groups meet as needed to research, recommend and/or draft language for the statewide plan. The TxRC and Working Group meetings schedule may change once the Texas SCIP is finalized and approved.

At a minimum, the Executive Committee will meet annually. However, an Executive Committee meeting may be called for special circumstances by the TxRC Steering Committee or a current member of the Executive Committee.

Members of the Governing Body

(Criteria 4.4)

Each member of the TxRC is considered a representative of the Governing Body. To review the complete membership, go to <http://txrc.region49.org>.

A list identifying the Executive Committee members and agencies/organizations, as well as contact information, is shown in Table 5. Appendix E identifies the Working Group members and their affiliations.

Table 5 - The TxRC Executive Committee List

Statewide Communications Interoperability Plan Executive Committee					
Affiliation	Title, Agency / Organization	Area Represented	Name	Address	E-Mail Address
State and Local Elected Officials	Mayor, City of Lubbock	Region 2	The Honorable David A. Miller	P. O. Box 2000, Lubbock, TX 79457	dmiller@mail.ci.lubbock.tx.us
	Chairman, Texas Association of Regional Councils - Mayor, City of Ganado	Statewide & Region 17	The Honorable Clinton Tegeler	P. O. Box 882, Ganado, TX 77962	clintont@gcrpc.org
State and Local Emergency Medical Services	Vice President/COO, East Texas Medical Center EMS	Region 6	Tony Myers	ETMC – EMS, 352 S. Glenwood Blvd., Tyler, TX 75702	tmyers@etmc.org

State and Local Health Officials	Regional Medical Director, DSHS Region 8	State	Sandra Guerra-Cantu, M.D., M.P.H.	7430 Louis Pasteur, San Antonio, TX 78229	sandra.guerracantu@dshs.state.tx.us
	Health Director, City of Laredo Health Department	Region 19	Dr. Hector F. Gonzalez, M.D., M.P.H.	2600 Cedar Street, Laredo, TX 78040	hgonzalez@ci.laredo.tx.us
State and Local Fire Response Services	2008 President, Texas Fire Chiefs' Executive Board - Fire Chief, Sugar Land Fire & Rescue	Statewide & Region 16	Dannie Smith	10405 Corporate Drive, Sugar Land, TX 77478	dannie.smith@sugarlandtx.gov
	Fire Chief, City of San Antonio	Region 18	Charles N. Hood	116 Auditorium Cir., San Antonio, Texas 78205	charles.n.hood@santonio.gov
State and Local Law Enforcement	Director, Texas Department of Public Safety (DPS)	State	Col. Thomas A. Davis, Jr.	Texas DPS 5805 North Lamar Blvd. Austin, Texas 78752-4422	tommy.davis@txdps.state.tx.us
	Sheriff, Hidalgo County	Region 21	Lupe Trevino	711 El Cibolo Road Edinburg, Tx 78540	sherifftrvino@hidalgo.org
State and Local Homeland Security Offices	Director, Homeland Security, State of Texas	State	McCraw, Steve	Office of the Governor, 1100 San Jacinto Avenue, Austin, TX 78701	smccraw@governor.state.tx.us
State and Local Transportation Agencies	Executive Director, Texas Department of Transportation	State	Amadeo Saenz	125 E. 11 th Street, Austin, TX 78701	asaenz@dot.state.tx.us
Major Urban Area	CIO, Harris County, Texas	Region 16	Steve Jennings	406 Caroline, 4 th Floor, Houston, TX 77002	steve_jennings@co.harris.tx.us
Critical Infrastructure	Executive Manager of Corporate Services & CIO, Lower Colorado River Authority	Multi-Regional	Christopher Kennedy	3700 Lake Austin Blvd., Austin, TX 78703	ckennedy@lcra.org
Other Organizations	Chief Information Officer, City of Austin	Region 12	Pete Collins	625 E. 10th St., Suite 900, Austin, TX 78701	pete.collins@ci.austin.tx.us
Non-Voting Advisors to Executive Committee	Homeland Security Governmental Affairs Coordinator and Interim Statewide Communications Interoperability Coordinator, Office of the Governor	State	Jim Harrison	Office of the Governor, 1100 San Jacinto Avenue, Austin, TX 78701	jharrison@governor.state.tx.us

Director, Southwest Public Safety Technology Center, Sheriff's Association of Texas	Texas Radio Coalition (TxRC) – Technology Advisor	Joe Peters	1601 S. I.H. 35, Austin, TX 78741	joe@txsheiffs.org
Wireless Communication Services Mgr, City of Austin Communications and Technology Management	Texas Radio Coalition (TxRC) – Statewide Communications Interoperability Plan Coordinator	Mike Simpson	1006 Smith Road, Austin, TX 78721	mike.simpson@ci.austin.tx.us

4.1.1 Agreements Relating to Interoperable Communications

(Criteria 4.6)

Jurisdictions in each of the Regions have established various Memoranda of Understanding (Interlocal Agreements) for mutual aid/emergency services during disaster situations which include communications. State agencies, Tribal governments, organizations, ports, transits and other agencies have also signed communications agreements. The Texas Interoperability Channel Plan established a Channel Plan MOU specifically for mutual aid communications. Additionally, Texas Senate Bill SB 11, enacted by the 80th Legislature, provided for creation of a statewide mutual aid system agreement which:

- (a) Establishes the system to provide integrated statewide aid response capacity between local government entities without a written aid agreement.
- (b) Provides that an aid request is considered to be made under the system unless the requesting and responding entities are parties to an agreement in effect when the request is made.
- (c) Provides that this system does not affect an agreement between entities in effect on or before the effective date of the legislation or restrict entities in entering into an agreement as otherwise authorized by statute after the effective date.
- (d) Provides that, if a request is made between entities that are parties to an agreement, the terms of the agreement control the rights and obligations of the parties.

The Governor's Division of Emergency Management administers the system.

4.2 Technology

700 MHz Regional Planning Status as of October 24, 2007 – There are six FCC-designated planning regions in the state of Texas. The FCC has approved the Region 40 (Dallas/Fort Worth area) 700 MHz plan. Region 51, in the Houston area, has completed writing of its plan and has submitted it to their adjoining regions for review and concurrence. The other four regions (49, 50, 52, and 53) are in various stages of writing their plans. However, all plans are affected by the recent FCC decisions that reconfigured the 700 MHz band. The CAPRAD computer-generated nationwide pre-allocation sort of frequencies must be re-done utilizing the new frequency configuration; this necessary first step is hoped to be completed during the first quarter of 2008.

Following this re-sort, Region 40 will have to resubmit their plan to the FCC for a new approval, and the other regions can resume their planning processes. Figure 8 identifies the location of the six FCC designated planning regions in Texas.

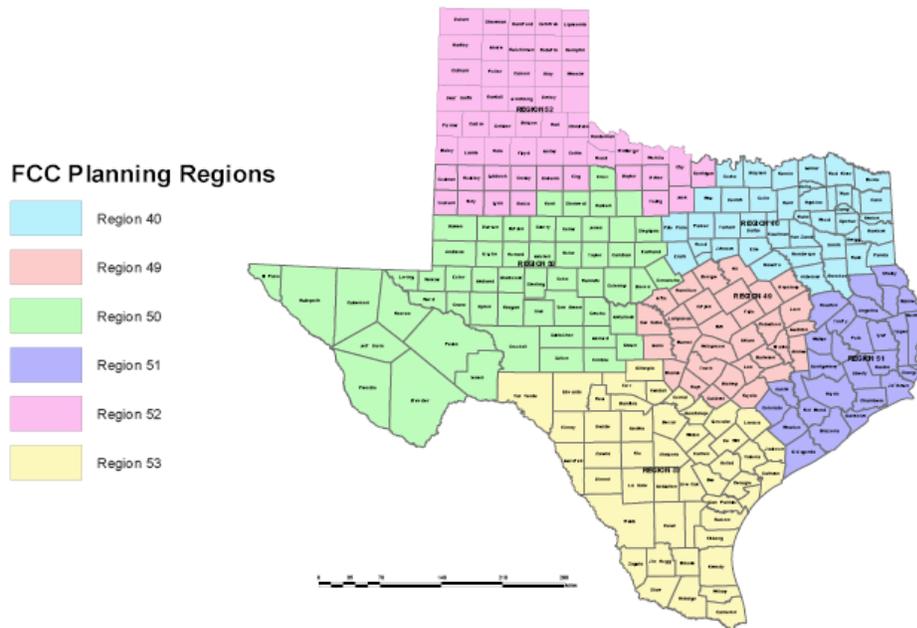


Figure 8 – FCC Designated Regional Planning Areas in Texas

In addition, incumbent television broadcast operations on channels 62 (Killeen), 65 (El Paso), 67 (Houston area), and 68 (DFW area) will delay full public safety access to all 700 MHz channels in their areas until the mandatory date for analog TV clearance on February 17, 2009.

800 MHz Rebanding Status as of July 7, 2007 – Of the six FCC-designated planning regions in Texas, four of these regions (40, 49, 51, and 52) are included in the

Transition Administrator's Wave 2 grouping of regions for rebanding. The other two regions (50 and 53), because of their borders with Mexico, have been included in the Wave 4 grouping of regions for rebanding.

The FCC has also recently postponed the Wave 4 schedule for those licensees within 110 km of the Mexican border, along with those licensees affected by their proximity to border licensees (in general, those licensees within 113 km of the Mexican border), until such time as frequency agreements can be reached with the Mexican government.

Most public safety licensees in the Wave 2 regions are engaged in the planning process; a few have entered negotiations with Sprint Nextel for their Frequency Reconfiguration Agreements. All licensees outside the border area have entered the Transition Administrator's mediation process. To date, no actual physical rebanding work has been started for NPSPAC licensees in Texas.

Designated interoperability (shared) channels - The State of Texas has licensed frequencies for Mutual Aid Channels, the Texas Interoperability Channel Plan, for all agencies providing public safety services in the State. Use of the interoperability channels shall be prioritized:

1. Emergency or urgent operation involving imminent danger to life or property
2. Disaster or extreme emergency operation requiring extensive interoperability and inter-agency communications
3. Special event, generally of a pre-planned nature
4. Joint training exercises
5. Inter-agency and en-route communications in accordance with local and regional policies and procedures.

The Texas Interoperability Channel Plan and Channel Plan MOU require agencies to:

- Participate in regional communications planning (generally arranged by regional Council of Governments) that provides for regional radio communications interoperability.
- Manage use of the interoperability frequencies by its employees, ensuring compliance with the *Texas Interoperability Channel Plan* and federal/state/local laws, ordinances, and rules.
- Use the interoperability frequencies authorized hereby for their intended purpose of coordination between emergency response agencies and resources. Such coordination may occur during interagency operations, en-route travel, or on-incident.
- Use the interoperability frequencies for operational and en-route communications in accordance with local and regional policies and procedures.
- Use the interoperability frequencies for on-incident communications in accordance with the Incident Communications Plan established by the on-scene Incident Commander.
- Prioritize use of the interoperability frequencies:

- Emergency or urgent operation involving imminent danger to life or property
- Disaster or extreme emergency operation requiring extensive interoperability and inter-agency communications.
- Special event, generally of a pre-planned nature
- Joint training exercises
- Inter-agency and en route communications
- Implement radio communications procedures consistent with the National Incident Management System (NIMS) and Incident Command System (ICS) including:
 - Use “plain language” without 10-codes or agency-specific codes/jargon.
 - Use the calling protocol: "Agency-Unit #, this is Agency-Unit #", rather than "Unit # to Unit #". Examples: "Bryan EMS 1605, this is Tyler Fire 2102" or "Incident Command, this is DPS 505"
- Ensure that mobile, portable, and temporary base radios intended for use by agency leadership (officers) are configured with the appropriate in-band interoperability frequencies as found in the Texas Interoperability Channel Plan. This means that, as a minimum, the interoperable frequencies would be added to the day-to-day frequencies used by that entity.

Table 6 lists the *Texas Interoperability Channel Plan* frequencies, their designated name, and how the channel is to be used.

Table 6 - Texas Interoperability Channels

**VHF 150 MHz Wideband Interoperability Channels
(Mobile and Portable Configuration)**

Receive	Transmit	CTCSS	Label	Use
154.950	154.950	Carrier Squelch ONLY	Texas Law 1	Calling channel, on-site, mobile to mobile
155.370	154.950	127.3 TX only	Texas Law 2	Calling channel, to contact base stations
155.475	155.475	127.3 TX & RX	Texas Law 3	On-scene tactical - command channel
154.280	154.280	127.3 TX & RX	Texas Fire 1	On-scene tactical - command channel
154.265	154.265	127.3 TX & RX	Texas Fire 2	On-scene tactical - command channel
154.295	154.295	127.3 TX & RX	Texas Fire 3	On-scene tactical - command channel
155.340	155.340	127.3 TX & RX	Texas Med 1	On-scene tactical - command channel
151.385	151.385	127.3 TX & RX	Texas Air 2	Air-to-Ground communications with state and federal aircraft ONLY *

*Texas Air 1 is reserved and not available for use in this plan

**VHF 150 MHz Narrowband Interoperability Channels (12.5 kHz)
(Mobile and Portable Configuration)**

Receive and Transmit	NAC	CTCSS	Label	Use
155.7525	\$061F	156.7 TX & RX	VCALL	Calling Channel
151.1375	\$061F	156.7 TX & RX	VTAC1	On-scene tactical - command channel

154.4525	\$061F	156.7 TX & RX	VTAC2	On-scene tactical - command channel
158.7375	\$061F	156.7 TX & RX	VTAC3	On-scene tactical - command channel
159.4725	\$061F	156.7 TX & RX	VTAC4	On-scene tactical - command channel *

* recommended for air-to-ground with state and federal aircraft only

UHF Narrowband Interoperability Channels (12.5 kHz) (Mobile and Portable Configuration)

Receive	Transmit	NAC	CTCSS	Direct/ Label	Repeater Label	Use
453.2125	458.2125	\$061F	156.7 TX & RX		UCALL	Calling Channel (repeater)
453.2125	453.2125	\$061F	156.7 TX & RX	UCALLD		Calling Channel (direct)
453.4625	458.4625	\$061F	156.7 TX & RX		UTAC1	Tactical - Command Channel (repeater)
453.4625	453.4625	\$061F	156.7 TX & RX	UTAC1D		Tactical - Command Channel (direct)
453.7125	458.7125	\$061F	156.7 TX & RX		UTAC2	Tactical - Command Channel (repeater)
453.7125	453.7125	\$061F	156.7 TX & RX	UTAC2D		Tactical - Command Channel (direct)
453.8625	458.8625	\$061F	156.7 TX & RX		UTAC3	Tactical - Command Channel (repeater)
453.8625	453.8625	\$061F	156.7 TX & RX	UTAC3D		Tactical - /Command Channel (direct)

700 MHz Interoperability Channels (12.5 kHz) (Mobile and Portable Configuration)

Receive	Transmit	NAC	Direct Label	Repeater Label	Use
764.24375	794.24375	\$061F		7CAL59	Calling Channel , primary (repeater)
764.24375	764.24375	\$061F	7CAL59D		Calling Channel, primary (direct)
774.25625	804.25625	\$061F		7CAL75	Calling Channel , (secondary, repeater)
774.25625	774.25625	\$061F	7CAL75D		Calling Channel, (secondary, direct)
764.74375	794.74375	\$061F		7TAC63	Tactical Channel (repeater)
764.74375	764.74375	\$061F	7TAC63D		Tactical Channel (direct)
765.89375	795.89375	\$061F		7MOB72	Tactical Mobile Repeater (repeater)
765.89375	765.89375	\$061F	7MOB72D		Tactical Mobile Repeater (direct)
765.99375	795.99375	\$061F		7TAC73	Tactical Channel (repeater)
765.99375	765.99375	\$061F	7TAC73D		Tactical Channel (direct)
774.75625	804.75625	\$061F		7TAC79	Tactical Channel (repeater)
774.75625	774.75625	\$061F	7TAC79D		Tactical Channel (direct)
775.50625	805.50625	\$061F		7MOB88	Tactical Mobile Repeater (repeater)
775.50625	775.50625	\$061F	7MOB88D		Tactical Mobile Repeater (direct)
775.85625	805.85625	\$061F		7TAC89	Tactical Channel (repeater)
775.85625	775.85625	\$061F	7TAC89D		Tactical Channel (direct)

800 NPSPAC Interoperability Channels (25 kHz)* (Mobile and Portable Configuration)

Receive	Transmit	NAC	CTCSS	Direct Label	Repeater Label	Use
866.0125	821.0125	\$061F	156.7 TX & RX		8CALL	Calling Channel (repeater)
866.0125	866.0125	\$061F	156.7 TX & RX	8CALLD		Calling Channel (direct)
866.5125	821.5125	\$061F	156.7 TX & RX		8TAC1	Tactical - Command Channel (repeater)
866.5125	866.5125	\$061F	156.7 TX & RX	8TAC1D		Tactical - Command Channel (direct)
867.0125	822.0125	\$061F	156.7 TX & RX		8TAC2	Tactical - Command Channel (repeater)
867.0125	867.0125	\$061F	156.7 TX & RX	8TAC2D		Tactical - Command Channel (direct)
867.5125	822.5125	\$061F	156.7 TX & RX		8TAC3	Tactical - Command Channel (repeater)
867.5125	867.5125	\$061F	156.7 TX & RX	8TAC3D		Tactical - Command Channel (direct)
868.0125	823.0125	\$061F	156.7 TX & RX		8TAC4	Tactical - Command Channel (repeater)
868.0125	868.0125	\$061F	156.7 TX & RX	8TAC4D		Tactical - Command Channel (direct)

*in the future 800 MHz channels will be relocated 15 MHz lower under FCC order

The complete *Texas Interoperability Channel Plan* with conditions for use and specific guidelines for each frequency band, the Channel Plan MOU, and Texas Regional Interoperability Plans can be found at <http://tsiec.region49.org>. Additional interoperability channels specific to a region can be found in the Communications Asset Survey and Mapping (CASM) web-based tool provided by the DHS Interoperable Communications Technical Assistance Program.

4.2.1 Statewide Capabilities Assessment

(Criteria 5.1)

The size of Texas and the number of agencies that operate on disparate systems make a statewide communications assessment a very challenging task. To accomplish this, Texas has chosen to use the CASM web-based tool. CASM will be utilized to map the existing communications assets, mutual aid and interoperability capability, coverage and resources. As a result, this information will identify the communications and mutual aid gaps across the State, and progress along the SAFECOM Continuum. El Paso has developed a "CASM Help" program to assist with and speed-up the data entry function. The El Paso CASM Help program will be made available to all agencies via the TxRC web site. The target date for completing the data entry of state, local, tribal and non-governmental public safety communications assets into CASM is December 1, 2008.

CASM Status

The UASI cities, regional systems and the state agencies are currently entering their communications assets into CASM. The Regional Councils of Governments and the state will assist local public safety agencies identify and list both voice and data communications assets and management systems. In order to be eligible for funding, a jurisdiction must commit to provide the information necessary to complete CASM for their jurisdiction and provide regular updates.

The Technology Working Group will use the information provided by CASM to develop regional migration strategies. As the CASM information is evaluated, the Technology Group will draft specifications for voice and data systems reliability, redundancy and replacement.

Identifying gaps in communications: In order to quickly identify the most prominent gaps in communications interoperability, public safety agencies were asked to complete a statewide communication capabilities survey. This survey was distributed to the Emergency Management Coordinators of every county with the assistance of the Regional Councils of Governments. Emergency Managers collaborated with public safety agencies to complete the surveys in a timely manner. The assessment included, but was not limited to the following:

- Types of primary voice radio systems
- Frequency assignments of each emergency responder organization
- Current methods of interoperability (console patch, gateways, etc.)
- Current mobile data systems in service
- Current data & incident management systems
- Current SOP's and training availability
- Use of the State Interoperability Channel Plan

Section 4.2.2 lists and provides some information on most of the regional and multiple agency voice radio systems in Texas. The Technology Working Group will be gathering information on existing data systems and incident management systems as they complete the development of the strategy for statewide data interoperability.

4.2.2 Systems, Types and Agencies

Forty-eight Texas radio systems used by public safety agencies are listed on the following pages. In addition to the systems listed are another estimated 200+ city and/or county radio systems. The systems are listed by category: regional P25 systems, other multiple agency P25 systems or upgrading to P25, wide-area non-P25 systems, and other large conventional systems. This information shows the great number and various types of individual radio systems across Texas and demonstrates

the importance of regional and statewide interoperability. The TxRC has chosen to use the CASM tool for the statewide capabilities assessment. Details on each of the systems listed below can be accessed through CASM.

There are five large regional public safety systems in the State of Texas that are Project 25 compliant, or are migrating to Project 25. They are:

1. The Harris County/H-GAC Regional Radio System, which supports 515 agencies and more than 33,000 users covering over 10,000 square miles of that region. They are in the process of migrating to Standards-based P25 and working with other agencies to collaborate on a single system to cover East Texas with the hope to aid Public safety agencies in the evacuation process.
2. The East Texas Medical Center (ETMC) System covers 15 counties, providing primary communications for 250 local and volunteer, non-governmental public safety agencies and 7,000 users. The ETMC operates an 800 MHz analog system through rural counties in east Texas. Due to the age of the equipment, the system is no longer supported by the vendor and must be transitioned to P25. Financial assistance is needed since the transition will be a great monetary burden to all, especially the volunteer public safety agencies. The new ETMC sites will tie into the Harris County/H-GAC Regional P25 System extending that coverage from Galveston to Dallas. The joining of the systems will create a standards-based system that uses 700/800 MHz covering 25 counties.
3. The Austin-Travis County Regional Radio System shares its controller with the newly-upgraded Williamson County system. Together they serve more than 100 agencies and 13,000 users. Future projects will connect agency-owned systems in other neighboring counties to the Austin-Travis County system, with the goal of creating a shared standards-based system that covers the entire ten-county planning region.
4. The Middle Rio Grande Development Council Regional Radio System is a multi-phase VHF P25 trunking system supporting the multi-agency and multi-discipline jurisdictions along the Texas-Mexico border area which includes: 9 counties, 51 membership agencies, the Kickapoo Traditional Tribe of Texas, plus state and federal users.
5. City of El Paso's 800 MHz analog system is migrating to a P25 standards-based voice radio system. This is a multi-phased, hybrid 800 MHz/VHF trunking system supporting the multi-agency and multi-discipline jurisdictions along the Texas-Mexico border areas which include the Ysleta del Sur Pueblo. The El Paso UASI/Region 8 P25 Interoperability Radio System covers El Paso County with future plans to interface with the P25 Border Communications Project (Texas and New Mexico).

Examples of other communications systems that are currently P25 or upgrading to P25 include:

1. The City of Laredo with a three-site simulcast system, 1,700 public safety and city department users.
2. Excel Energy is installing 32 sites in the Panhandle area.
3. Parker County currently has a four-site simulcast P25, VHF trunking system under construction that will support 27 agencies and 1,200 users. The new VHF system will integrate an existing 800 MHz system for increased regional interoperability.
4. Montgomery County is in the RFP process to acquire a P25, 800 MHz trunked system that will integrate into the Harris County Regional Radio System.
5. The City of Houston is in the RFI/RFP process to acquire a P25, 700 MHz trunked system that will integrate into Harris County Regional Radio System.
6. The City of Bryan currently uses a mixed mode, 800 MHz trunked system. It has partnered with the City of College Station, Brazos County, Texas A & M University, the City of Brenham, and Washington County, to seek funding for a P25, 700/800 MHz, shared system that will encompass the entire area, and be expandable into the remaining five counties of the Brazos Valley COG. This system will be linked to the adjoining regional shared systems of the Harris County Regional Radio System and the Austin-Travis County/Williamson County Regional Radio System.
7. City of Odessa transitioned to 800 MHz P25 in September 2007.
8. Panhandle Regional Planning Commission is implementing a multi-year transition to VHF P25 for 205 response agencies in the region's 26 counties.

Examples of other wide-area or large non-P25 systems across the state include:

1. Lower Colorado River Authority: LCRA has one of the largest 900 MHz trunked systems in the state, covering 37,000 square miles and 54 counties. Public safety, transportation, school districts, municipal city and county governments, and state agencies utilize the LCRA system, which makes it difficult for these agencies to interoperate with users in the VHF, UHF, and 800 MHz bands. Gateway devices, console patches, and other solutions to the problem are costly to implement due to the size of the LCRA system.
2. City of San Antonio, Bexar County, has a large, digital 800 MHz trunked system that primarily covers Bexar County but also provides limited coverage in Medina, Bandera, Kendall, Comal, Wilson, and Atascosa counties, serving more than 26 agencies and 7100 users.
3. The City of Beaumont, Jefferson County has a large simulcast system that covers Hardin County.
4. The City of El Paso is using an analog, 800 MHz four-site simulcast trunked system.
5. Ysleta del Sur Pueblo is using an analog, 800 MHz conventional system.
6. The City of Wichita Falls is using a digital, 800 MHz trunked system.
7. The City of Lubbock is using an analog, non-P25, 800 MHz trunked system.
8. The City of San Angelo is using an analog, non-P25, 800 MHz trunked system.

9. The City of Waco is using an analog, 800 MHz trunked system.
10. Bell County is using an analog, 800 MHz trunked system.
11. The City of Midland is using an analog, 800 MHz trunked system.
12. Lee County is using an analog, 800 MHz trunked system.
13. Caldwell County is using an analog, 800 MHz trunked system.
14. The City of Arlington is using an analog, 800 MHz trunked system.
15. The City of Fort Worth is using an analog, 800 MHz trunked system.
16. The City of Irving is using an analog, 800 MHz trunked system.
17. The City of Denton is using an analog, 800 MHz trunked system.
18. The City of Plano is using an analog, 800 MHz trunked system.
19. The City of Mesquite is using an analog, 800 MHz trunked system.
20. The City of Abilene is using an analog, 800 MHz trunked system.
21. The City of Corpus Christi is using an analog, 800 MHz trunked system.
22. The City of Richardson is using an analog, 800 MHz trunked system.
23. The Cities of Bedford, Euless, Colleyville, Southlake, Keller, and Grapevine have a coalition using an analog, 800 MHz trunked system
24. Collin County is using an analog, 800 MHz trunked system
25. Denton County is using an analog, 800 MHz trunked system
26. The City of Lewisville is using an analog, 800 MHz trunked system
27. The City of Carrollton is using an analog, 800 MHz trunked system
28. The City of Garland is using an analog, 800 MHz trunked system
29. Johnson County is installing a non-P25 analog VHF trunked system
30. The City of Rockwall is using a non-P25 analog UHF trunked system

Examples of other conventional, single and multi-site systems across the state include but are not limited to:

1. Texas Department of Transportation with more than 300 repeaters and 15,000 users.
2. Texas Department of Public Safety with more than 100 repeaters and 10,000 users.
3. Texas Department of Criminal Justice with 125 sites and 18,000 users.
4. Texas Parks and Wildlife with 118 sites and 3000 users.
5. Texas Youth Commission with 15 campuses and 2,500 users.
6. Texas Forest Service with 60 sites with 6,000 users.
7. City of Dallas with more than 20,000 users.

4.2.3 Continued Support of Legacy Systems & Developing Interfaces Among Disparate Systems While Migrating to Newer Technologies

(Criteria 5.2, 5.2.1)

Supporting existing legacy systems while migrating to new, standards-based systems will be a challenge. Strategies entail migrating to dual mode subscriber equipment that will work on both legacy systems and new, standards-based systems. During this

transition, every effort will be made to tie existing legacy infrastructure into the new standards-based, P25 systems to help ensure smooth transitions. The initiatives listed below will help ensure continued operability and interoperability during this multi-year transition.

1. Improve coverage to existing systems where necessary by incorporating multi-casting and/or receiver voting, based on site coverage studies.
2. Improve regional mutual aid communications infrastructure where necessary utilizing the Texas Interoperability Channel Plan.
3. Use patching and gateway device technologies to connect disparate systems and incorporate them into the new statewide communications architecture, while they are migrated to a P25 Standards-Based solution.
4. Design regional systems that will integrate multi-jurisdictional and multi-disciplinary service areas, and be interoperable with adjacent regions.
5. Leverage existing state infrastructure assets where practical.
6. Incorporate and promote the use of newer technologies that will allow tying legacy systems into newer P25 switches where possible.
7. Stress to vendors the importance of backward-compatibility, while moving forward with the P25 Standards-Based solution for voice communications.
8. Urge immediate vendor development of software-defined, cognitive portable and mobile subscriber units, backward-compatible to existing analog and digital RF land-mobile technologies in the VHF, UHF, 700 MHz, 800 MHz, and 900 MHz bands, wide-band and narrow band, as well as forward-compatibility with the P25 suite of standards.

The following illustration, Figure 9, demonstrates the leveraging of existing architecture that can be utilized as a backbone infrastructure to prepare for migration onto a common standards based operating system.

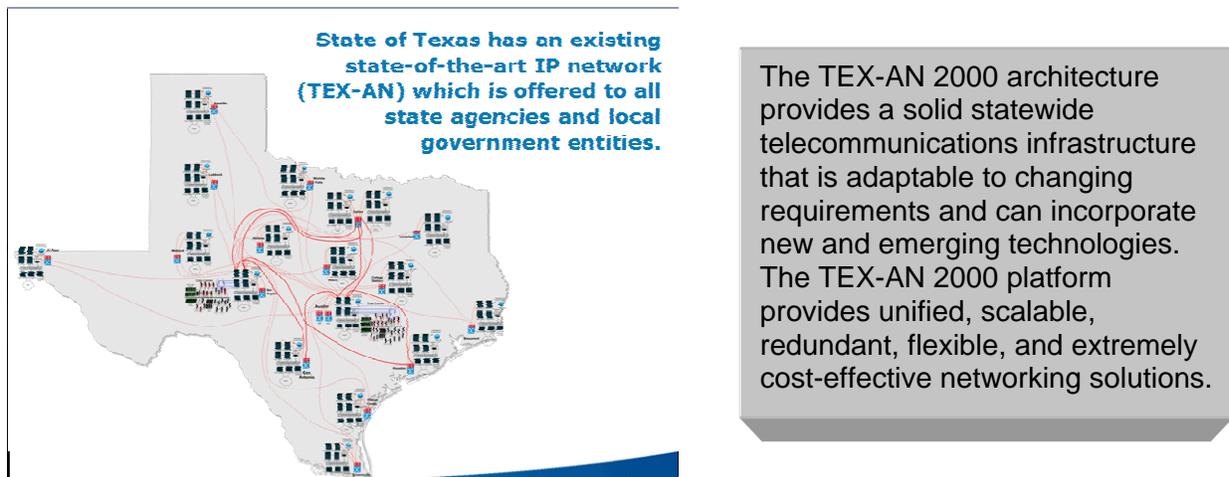


Figure 9 - TEX-AN 2000 IP Network

4.3 Standard Operating Procedures

4.3.1 Current Local, Regional, and State Operating Procedures that Support Interoperability

(Criteria 6.1)

In 2005, all 24 state planning regions were directed to assess regional communications interoperability and submit a Regional Interoperability Plan for approval by the Texas Office of Homeland Security and the Technical Advisory Group.

City, county, and inter-jurisdictional emergency management programs were required to update their Emergency Management Plans, including Annex B-Communications, to be consistent with NIMS and the National Response Plan, the Texas Interoperability Channel Plan and MOU, and current state planning standards for various emergency functions. Copies of all local plans and annexes are submitted to the Governor's Division of Emergency Management, which reviews them for compliance. Having a current local plan approved by the state is a requirement for receiving federal or state homeland security or emergency management grants. State Agencies were directed to work with each region to achieve and ensure communications interoperability.¹² Most local government communications operations are guided by this combination of plans, the communications annexes to those plans, and local and regional communications interoperability operating procedures. However, some UASI areas and densely populated cities and counties have structured Standard Operating Procedures for Communications Interoperability.

The Harris County Regional Radio System has "*The Book of Knowledge*" which includes the SOP for emergency communications. Per the SOP, interoperability with the VHF federal agency (Houston) system is tested weekly on every Thursday shift, along with interoperability with other agencies and systems.

Three UASI areas have participated in the SAFECOM Tactical Interoperability Communications Plan (TICP) and have implemented and tested their plans. Each Urban Area TICP outlines a Standard Operating Procedure which includes NIMS requirements.

The Governor's Division of Emergency Management maintains the State of Texas Emergency Management Plan, including its warning and communications annexes and other specialized state plans.

¹² Texas Radio Communications Interoperability Plan,
<http://www.txdps.state.tx.us/dem/documents/texasradiocomminteroperabilityplan.doc>

Standard procedures for *Emergency Communications Operations* are specifically addressed in the Department of Public Safety Texas Highway Patrol Division Manual. DPS requires communications personnel to train quarterly on these emergency procedures. Most other state agencies have similar documented procedures.

The State is sponsoring a communications interoperability exercise in each of the 24 regions of the state to test equipment and procedures. These exercises require demonstration of interoperable communication procedures and capabilities between multiple agencies during a simulated emergency. Eight exercises have been planned, conducted, and evaluated by an independent contractor; the exercise program will continue until the summer of 2008. It should also be noted that the State Administrative Agency, which administers homeland security grants, tests interoperable communications capabilities during its audit and compliance inspections.

4.3.2 The Process to Develop, Manage, Maintain, Upgrade, & Communicate SOPs

(Criteria 6.2)

The TxRC SOP and Governance Working Groups will draft a regional template for integrated state and local agency standard operating procedures for interoperable communications which each region and state agency can adapt to specific regional requirements and capabilities or provide an appropriate document. The SAFECOM *Writing Guide for Standard Operating Procedures* and NIMS communications requirements will be used as the basis of the template. The target date to have the template approved is June 2008. The template will then be posted on the TxRC website at <http://txrc.region49.org/>. Regional and state agencies will be required to participate in a regional SOP or provide other applicable documentation by December 2008.

Each Regional SOP will name a lead agency that will be responsible for the management, maintenance, and upgrade of the SOP. SOP's will be revised when major changes are needed due to enhancements or other changes in the communications environment. SOPs will be made available to appropriate individuals for training purposes and to influence interoperability efforts. Each lead agency will provide the appropriate COG, the Emergency Management Coordinator of each County within the region, the TxRC, and Emergency Management Council with electronic copies of the Interoperable Communications SOP for review on an annual basis. Each COG and/or County Emergency Management Coordinator will provide all regional public safety agencies and personnel copies of the SOP and provide on-going access to the SOP's for training purposes.

4.3.3 Agencies Developing and Complying with SOPs

(Criteria 6.3)

The TxRC Governance and SOP Working Groups providing input and creating the template will include, but not be limited to: City and County Emergency Management Coordinators, local and tribal law enforcement, fire departments, volunteer fire departments, EMS organizations, UASI representatives, trauma centers; Texas DPS; Texas DOT; and Texas Military Forces. Each COG will identify the state and local agencies within the region to adapt the SOP to regional requirements. The SOP will follow the guidelines established by NIMS for Incident Command, specifically, all state and local public safety agencies and all agencies responding to an incident with a region will be expected to comply with the Regional SOP.

4.3.4 NIMS Compliant SOPs

(Criteria 6.4)

Governor Perry signed Executive Order RP40¹³ on February 23, 2005, which states the following

“it is necessary and desirable that all Federal, State, local, and tribal emergency agencies and personnel coordinate their efforts to effectively and efficiently provide the highest levels of incident management; and

to facilitate the most efficient and effective incident management, it is critical that Federal, State, local, and tribal organizations utilize standardized terminology, standardized organizational structures, interoperable communications, consolidated action plans, unified command structures, uniform personnel qualification standards, uniform standards for planning, training, and exercising, comprehensive resource management, and designated incident facilities during emergencies or disasters; and

the N.I.M.S. standardized procedures for managing personnel, communications, facilities and resources will improve the State's ability to utilize federal funding to enhance local and state agency readiness, maintain first responder safety, and streamline incident management processes; and

The National Incident Management System (N.I.M.S.) is hereby declared the State standard for incident management.”

The State Administrative Agency requires agencies to certify compliance with NIMS to be eligible for federal grant funding. (Also see Section 5.5 NIMS Compliance.)

¹³ Executive Order RP40, (<http://www.governor.state.tx.us/divisions/press/exorders/rp40>)

4.4 Training and Exercise Plan

Statewide Training and Exercise Programs

(Criteria 7.1, 7.2, 7.3)

Practical and regular training and drills are essential at both the basic and in-service levels to accustom users with operational requirements during disaster situations. Such training is ineffective if it is restricted to “push this button to talk on Talk Group A.” The setup of the communications training needs should be driven by the incident command system procedures, and a sound chain of command for communications must be established and practiced.

Texas plans to implement a statewide training program for interoperable communications. This effort will include a combination of:

- (1) Incorporating interoperable communications in standardized training for emergency responders provided by public safety organizations. The Texas Commission on Fire Protection establishes fire service standards and testing and certification requirements. TEEEX Fire Services (a component of Texas A&M University), the Northeast Texas Fire/EMS Training Academy, and various colleges offer firefighter training programs, as well as emergency medical services training and public works response training. The Texas Commission on Law Enforcement Standards and Education (TCLEOSE) establishes training standards for law enforcement personnel and the Texas Department of State Health Services establishes training requirements for EMS personnel. Many local departments or districts provide basic classroom training to meet police, fire, and EMS training requirements.
- (2) Providing stand alone single discipline and multi-discipline interoperable communications training courses through existing state and regional training academies and organizations. Most of the state’s planning regions and some major cities have training academies that already provide both general and specialized training programs in courses such as Intermediate Incident Command (ICS-300) and Advanced Incident Command (ICS-400) and Homeland Security table-top exercises.
- (3) Providing a basic multi-disciplinary interoperable communications course on-line that can be accessed by first responders, the large number of volunteer public safety personnel in the State, as well as industry and non-governmental organizations who find it difficult to participate in face-to-face training courses.
- (4) If necessary, adding interoperable communications courses to the extensive emergency preparedness, response, and recovery curriculum offered statewide by the Governor’s Division of Emergency Management at no cost to local

government, tribal, and state agency personnel, and members of volunteer groups active in disasters

GDEM is also conducting regional exercises to test regional plans and interoperable communications equipment and identify needed improvements in plans, procedures, equipment, and training. These exercises include responders from state, local, tribal and Federal agencies. Eight regions have exercised their plans and equipment to date, and additional exercises are planned for the fall of 2007 and early 2008. After-Action Reports are produced for each exercise and participating agencies are responsible for developing and implementing Improvement Plans to resolve deficiencies

Texas has a number of specialized communications teams and will be developing more.

- (1) The Texas Highway Patrol Division of DPS has three emergency response teams, called Communications Emergency Operations Teams (CEOT), with each team consisting of six members. These teams are strategically placed throughout the state. Members of CEOT are required to complete 40 hours of *basic communications operations* training and participate quarterly in *emergency communications field operations training* (with interoperable communications equipment). Most other state public safety agencies have similar programs.
- (2) The Texas Forest Service (TFS) has several Communications Unit Leaders who completed the National Wildfire Coordinating Group (NWCG) Communications Unit Leader Training (24-hour S-358 course) and then participated in actual incident and exercises to complete the accompanying field task requirements which demonstrate proficiency in the subject and to gain experience. The TFS is expected to add the COM-L training to the curriculum available at future Wildfire and Incident Management Academies. This would not only allow a person to take the training but to “shadow” someone in that position, as the academies operate as if the participants were responding to a Type II incident with all of the key ICS positions filled.
- (3) Additionally, TFS received a grant to organize and train 5 regional incident management teams staffed by local and regional volunteers in the last year and that effort is nearing completion. TFS is expected to receive funding to organize and train another three teams. TFS intends to staff each team with qualified communications personnel who are experienced in multi-level, multi-agency operations.

4.5 Usage

The system that works best in an emergency is the one that is used on a daily basis. Users will follow their instincts when confronted with a stressful situation, and those instincts are honed by daily use and exercise of the communications system.

Construction of a mutual aid system on an ad-hoc basis does not provide the instinctive reliability as that realized by daily use.¹⁴

(Criteria 8.1)

Most major regional systems provide both primary communications capability and seamless interoperability within the region. However, there are users who are unfamiliar with all of the capabilities of their individual radios or dispatch consoles. The tool to be used for providing a statewide database for existing radio systems is CASM. As the communications assessment information becomes available via CASM, programs will be developed to provide users with "how-to" guides for specific radio equipment. Along with equipment investments, vendors will be encouraged to provide electronic copies of detailed training materials and programs for mass distribution and local customization.

Regular usage of interoperable communications procedures and equipment will be required and made uncomplicated by providing templates for simple drills that exercise capabilities, e.g. console patches, gateways, etc. Communications personnel will be expected to voice-test calling channels with subscribers in the field regularly. Remote enabling/disabling of mutual aid repeaters as well as simple console patches (for example, 8TAC-91 patched to a law enforcement sector channel) likewise will be practiced regularly.

Communications personnel training curricula will be modified to include interoperability training modules, so that new dispatchers are schooled in these fundamental procedures prior to assuming their duties on live systems. SOP's will be updated to reflect the training for primary and back-up communication unit leaders. First responders likewise will be provided detailed instruction on radio interoperability as well as regular hands-on "refresh" training.

As regional SOP's are developed, practitioners will have access to them via a web site. Clear-cut processes will be implemented to test and exercise SOP's on a routine and cost-efficient basis.

¹⁴ Emergency Response Council "Nationwide Plan for Interoperable Communications"
<http://www.nga.org/Files/pdf/07ERCINTEROPPLAN.PDF>

5 Strategy

The long-term goal of Texas is to reach the optimal level of interoperability through a “high degree of leadership, planning, and collaboration among areas with commitment to and investment in sustainability of systems and documentation” as stated in the SAFECOM Interoperability Continuum in Figure 10.

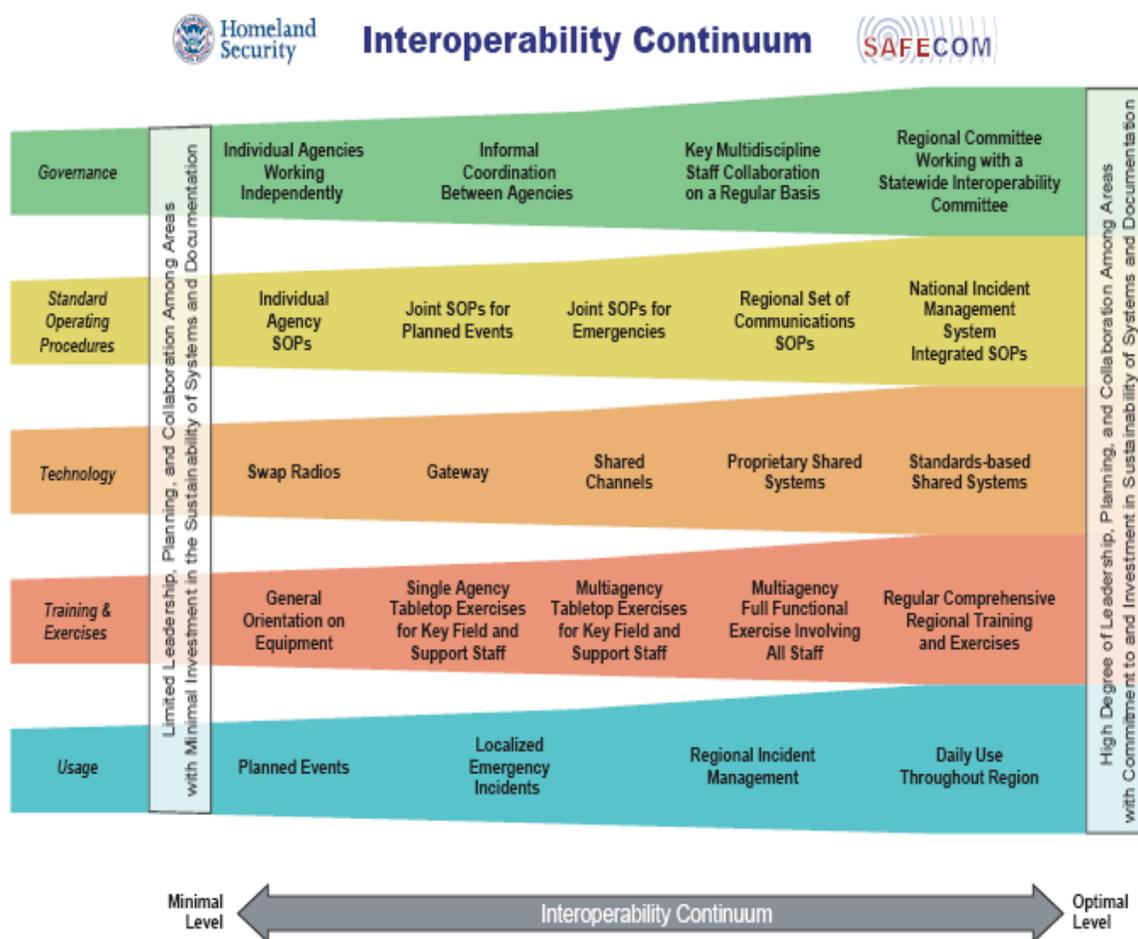


Figure 10 - SAFECOM Interoperability Continuum

Texas first responders identified five major problems with public safety communications. Please see **Current Communications Interoperability Environment, Problems & Possible Solutions**, in Section 2.1.3, for complete details on specific communications gaps in interoperability. A short summary of problems and solutions follows:

- Lack of training and education on current interoperability capabilities and structure — this directly relates to two elements of the Interoperability Continuum: Standard Operating Procedures (SOPs) and Training & Exercises
 - Solution: provide regional, NIMS integrated SOPs to practitioners along with regular comprehensive regional training and exercises.

- No available channels in specific radio band in many major urban and rural areas — this falls under the Governance and Technology elements of the Continuum
 - Solution: regional collaboration on shared use of radio frequencies, teaming with public safety organizations to gain additional spectrum for public safety, and upgrading systems to spectrum efficient solutions

- No operability in parts of Texas — this also falls under Governance
 - Solution: where geographically unable to provide communications infrastructure, expand regional collaboration in the use of radio communications vans or other type of portable communications devices; or, if geographically able, provide communications infrastructure -- and identify funding for solutions

- Aged equipment — this problem falls under the Technology element of the Interoperability Continuum
 - Solution: provide a migration plan to replace and upgrade equipment and identify sources for maintenance and repairs

- Minimum interoperability — this is linked to both the SOP and Usage elements of the SAFECOM Continuum
 - Solution: ensure, where applicable, SOPs are available to both dispatch and field practitioners and include operations of radio patches and gateways; make use of interoperability equipment on a daily basis.

5.1 Interoperability

(Criteria 2.1)

During the Focus Groups Sessions the future vision of regional and statewide public safety interoperability was discussed. The TxRC captured this information and created Vision and Mission Statements which were modified and approved by the participants at the Strategic Planning Session.

VISION STATEMENT

By January 2015, provide all public safety and critical infrastructure responders at all levels of government, including local, county, special districts, tribal, state, and federal, with the highest level of real-time direct interoperable voice and data radio communications utilizing Standards-Based Systems and incorporating the 700 MHz public safety frequencies.

In order to achieve the vision of Standards-based Systems by 2015, the Texas SCIP must establish specific technology solutions for communications interoperability between public safety agencies.

Texas has adopted the “Project 25 Standards” as the technology solution and long-term interoperability goal for voice public safety agency communications.

Standards

Land Mobile Radio (LMR) Systems

When procuring equipment for communication system development and expansion, a standards-based approach should be used to begin migration to multi-jurisdictional and multi-disciplinary interoperability. Specifically, all new digital voice systems should be compliant with the Project 25 (P25) suite of standards. This recommendation is intended for government-owned or –leased digital land mobile public safety radio equipment. Its purpose is to make sure that such equipment or systems are capable of interoperating with other digital emergency response land mobile equipment or systems. It is not intended to apply to commercial services that offer other types of interoperability solutions. Further, it does not exclude any application if the application demonstrates that the system or equipment being proposed will lead to enhanced interoperability.

With input from the user community, these standards have been developed to allow for backward compatibility with existing digital and analog systems and to provide for interoperability in future systems. The FCC has chosen the P25 suite of standards for voice and low-to-moderate speed data interoperability in the new nationwide 700 MHz frequency band and the Integrated Wireless Network (IWN) of the U.S. Homeland Security, Justice, and Treasury Departments has chosen the P25 suite of standards for their new radio equipment. The U.S. Department of Defense has also endorsed P25 for new LMR (Land Mobile Radio) systems.

This guidance does not preclude funding of non-P25 equipment when there are compelling reasons for using other solutions. However, the first priority of federal funding (subject to the statutory authority of the grantor agency or the objectives of the grant program if the applicant is seeking Federal grant funding) for improving public safety communications is to provide basic, operable communications within a department with safety as the overriding consideration. Funding requests by agencies to replace or add radio equipment to an existing non-P25 system (i.e., procurement of new portables on an existing analog system) will be considered if there is an explanation as to how their radio selection will allow for improving interoperability or eventual migration to interoperable systems. Absent these compelling reasons, SAFECOM intends that P25 equipment will be preferred for LMR systems to which the standard applies.

Beginning in FY 2007 grant applicants purchasing P25 equipment must obtain documented evidence from the manufacturer that the equipment has been tested to and passed all of the applicable, published, normative P25 compliance assessment test procedures for performance, conformance, and interoperability as defined in the “Grant Guidance – Project 25 Explanatory Addenda,” which can be found at www.safecomprogram.gov/SAFECOM/grant/default.htm.

Applicable test procedures include tests of all mandatory features and standard options installed in the product contemplated for purchase. This documentation shall be in the form of a Supplier's Declaration of Compliance (SDoC) prepared in accordance with ISO/IEC 17050-1. Further, the relevant compliance assessment test reports which form the basis for the SDoC shall be prepared in accordance with the NIST publication: “Procedures and General Requirements for Compliance Assessment of Project 25 Land Mobile Radio Equipment.”

Data-Related Information Sharing Systems

To support homeland security, emergency responses, and justice information sharing, grant applicants should use the latest NIEM specifications and guidelines on the use of XML, as follows:

- Use NIEM 1.0 or later for information sharing in production systems. NIEM 1.0 (beta) was released in June 2006; the full production version is scheduled for October 2006.*
- Until the production release of NIEM 1.0, the latest NIEM beta specifications and guidance should be used only for pilots and prototype systems.*

Additional information about the required use of NIEM specifications and guidelines is available at <http://www.niem.gov>. If there is any question or comment about the use of NIEM specifications and guidelines, please submit it to information@niem.gov.

Further, any systems, developmental activities, or services procured with grant funding involving information relating to emergency response, including the exchange of incident management or alerts, should comply with the OASIS EDXL standards. Compliance should include the Common Alerting Protocol (CAP), version 1.1 or latest version, and the EDXL Distribution Element (DE), version 1.0 or latest version. More information on these standards can be found at <http://www.oasis-open.org>.

This guidance does not preclude funding of non-NIEM or non-OASIS EDXL-compliant systems, when there are compelling reasons for using other solutions. Absent such compelling reasons, the NIEM and OASIS EDXL standards identified above are the preferred standards.

Functional Requirements

When planning for the development of communications systems and looking to ensure both operability and interoperability, emergency responders should employ a standards-based network of networks approach. When procuring voice and data communications equipment, emergency responders should seek equipment that supports specific functional requirements, or equipment capabilities. A list of functional requirements for various components of voice and data communications systems is included in Appendix A. These requirements outline the minimum capabilities that equipment should have for effective interoperable procurement selections¹⁵.

¹⁵ Recommended Federal Grant Guidance, Emergency Response Communications and Interoperability Grants, (Fiscal Year (FY) 2007, www.safecom.gov).

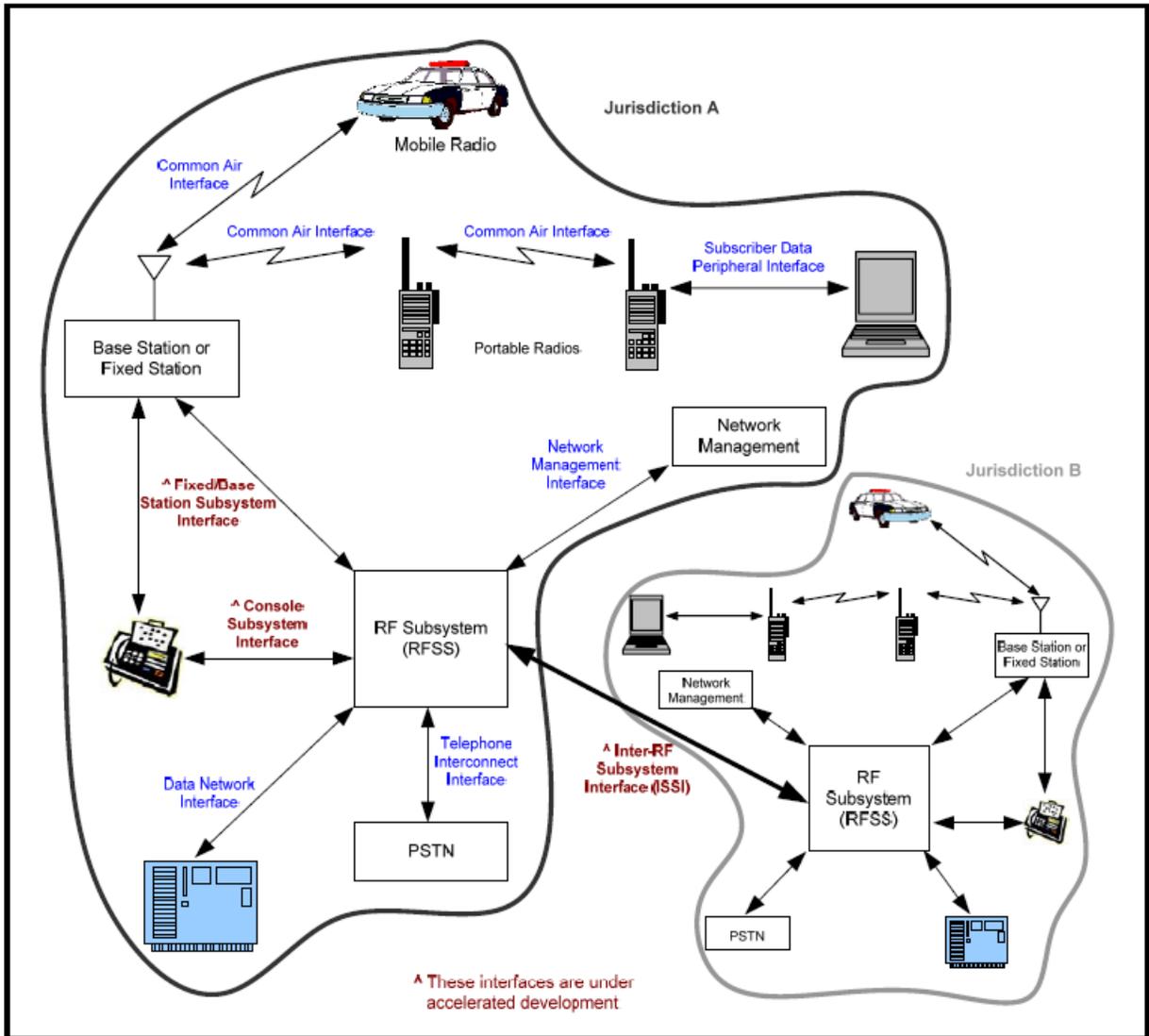


Figure 11 - Project 25 Connectivity and Interoperability

5.2 Mission

The group referenced the five elements of the SAFECOM Interoperability Continuum to design the Mission Statement. The Working Groups will assist each region in identifying where they are on the Continuum and provide assistance to reach the next steps along each lane to achieve statewide interoperability.

MISSION STATEMENT: Achieve the optimal level of voice and data communications interoperability, including growth, sustainability and documentation of systems, through a high degree of leadership, planning and collaboration with commitment to and investment in:

- Building a Governance Structure of Regional Committees Working with a Statewide Interoperability Committee;
- Developing Standard Operating Procedures where the National Incident Management System is Integrated into the SOP's;
- Expanding and/or Implementing Technology for Regional Shared Systems;
- Requiring Training and Exercises that are Regular comprehensive and Regional;
- Encouraging Daily Use of interoperable communications systems throughout the regions.

*Regional shared systems are the optimal solution to interoperability. Standards-Based shared systems promote competitive procurement and a wide selection of products to meet specific user needs. With proper planning of the talk group architecture, interoperability is provided as a byproduct of system design, creating an optimal technology solution.*¹⁶ Equipment acquisition decisions should be in support of long-term interoperability by building upon or accelerating long-term strategies and efforts.

5.3 Goals and Objectives

(Criteria 2.1)

The SCIP goals were approved at the Strategic Planning Session. Because of the importance of each individual goal, the practitioners decided not to prioritize one goal over another. Given that the first goal listed involves stakeholders, the definition of SCIP stakeholders is: individuals, groups, or organizations that are actively involved in the project, are directly affected by its outcome, or can influence its outcome. A stakeholder has an interest in the project based on expectation of value or benefit to be received. Table 7 specifically identifies the Texas SCIP Stakeholders.

¹⁶ SAFECOM Continuum; www.safecom.gov.

Table 7 - SCIP Stakeholders

Stakeholder	Involvement, Value/Benefit or Influence
Texas Radio Coalition	Primary involvement stakeholders actively involved representing governmental communications users, with primary ability to influence the outcome.
Texas Homeland Security Office & Texas Governors Division of Emergency Management	Primary supporting stakeholders and champions, with direct ability to influence the outcome.
Governor	Supporting stakeholder and champion, with direct ability to influence the outcome.
Texas Legislators	Supporting stakeholders, with direct ability to influence the outcome.
First-Responder Professional Associations	Supporting stakeholders representing primary beneficiaries, with the ability to be actively involved and to influence the outcome. Includes organizations such as the Sheriffs' Association of Texas, Texas APCO, Texas Fire Chiefs Association, Texas Police Chiefs Association, Texas Emergency Management Associations, Texas Emergency Medical Associations, etc.
Texas First-Responders	Primary benefiting stakeholders, directly affected by the outcome.

Goal 1: Establish statewide voice and data interoperability as a high priority for all stakeholders.

Objective: Educate key local, tribal, state and federal policy makers regarding the need for voice and data interoperable communications. Emphasize the need to raise the general public’s awareness level of the critical and urgent need for communications interoperability. This will drive the creation of appropriate legislation to support the likely sources of funding.

Goal 2: Achieve voice and data interoperability by institutionalizing collaborative approaches across the state based upon common priorities and consensus at the regional level.

Objective: Achieve incremental progress on a regionalized basis through a Governance structure which encourages transparency, accountability, and collaboration through Education, Leadership, Legislation and outcome-based strategic planning.

Goal 3: Achieve close to 100% state-wide coverage for both voice and data communications interoperable networks of all public safety agencies.

Objective: Over the long term, build a statewide interoperable communications system by maximizing the use of existing networks, shared systems and Standards-based communications purchases.

Goal 4: Facilitate integrated Standard Operating Procedures and Training Programs to enhance effective use of voice and data interoperable communications systems.

Objective: (1) Design, implement and track an integrated, state, local, tribal, federal and non-governmental agency, training program with integrated SOP's. (2) Ensure critical infrastructure and first responders have completed an Integrated Training Program and have access to current integrated Standard Operating Procedures.

Goal 5: Develop a funding plan that will generate the funding resources necessary to acquire and sustain statewide voice and data communications interoperability.

Objective: Identify all funding sources available for voice and data interoperable communications and develop a timeline with associated costs to migrate to a technology environment that provides state, local, regional, and tribal entities with the level of interoperability that is defined in the Statewide Communications Interoperability Plan.

The SCIP goals and objectives are consistent with the Texas Homeland Security Strategic Plan as well as the Texas Emergency Management Plan, the Texas Department of Public Safety Agency Strategic Plan, and the Urban Area Tactical Interoperable Communications Plans.

5.4 Strategic Initiatives

The Texas *SCIP prioritized strategic initiatives* to achieve interoperability are:

1. Ensure operability.
2. Provide interoperable solutions.
3. Upgrade and expand regional shared systems.

The TxRC will engage each element of the SAFECOM Interoperability Continuum, while prioritizing time, efforts and available funding to achieve realistic solutions. This will be accomplished by:

- Encouraging regional planning and informed technology acquisitions for all communications grant packages.

- *Identifying solutions which involve a “system of systems” approach that incorporates existing technologies and allows for the development of new technologies and functionality in the future;*¹⁷
- Recommending open architecture, non-proprietary, spectrum efficient, standards-based regional systems.
- Requiring new voice and data systems to meet the SAFECOM Statement of Requirements.
- Ensuring that equipment to be purchased is compliant with one or more of the criteria items listed here:
 - Can be incorporated into the longer-term statewide goal of standards-based shared system architecture.
 - Provides essential intra-agency operability it needs in compliance with NIMS and/or OSHA.
 - Equipment will serve specific interoperability needs such as designated interoperability/ mutual aid infrastructure (NPSPAC or shared Texas Interoperability channels.)
 - Equipment will serve specific interoperability needs such as patches, gateways or switches; multi-casting and/or receiver voting.
 - Equipment will serve Strategic Technology Reserve requirements.
 - Equipment is necessary for communication tower replacement and/or maintenance.
 - Equipment is IP based interoperable data equipment/system.
- Identifying shared and like systems that are standards-based and promote and encourage the collaboration and integration of these systems to begin the forming of the Statewide Standards-based system.
- Providing specifications for voice and data systems reliability, redundancy and replacement.
- Developing a common database that will be shared for all standards-based systems in the State.
- Prioritizing system connections both by region and statewide implementing the connections that respond to the greatest threat first.
- Producing a technical migration plan that can be used by local, regional and state entities to assure that a standards-based shared system can be reached within a reasonable timeframe.
- Developing a detailed process for frequency coordination, radio interference and conflict mediation.
- Assisting with the development of regional SOP's for communications interoperability.

¹⁷ “How does SAFECOM address the needs of emergency response agencies?”
<http://www.safecomprogram.gov/SAFECOM/about/faq/>

- Assisting with the development of joint training packages and regular regional exercises.

5.4.1 Regional & Statewide Communications Interoperability Projects

An overview of regional, urban area and state agencies “needs for interoperability” projects are provided here, and in Section 7 – Funding, Tables 11, 12 and 13. These projects are not prioritized or listed in any specific order. As available interoperability funding is identified, regions/agencies will be required to submit applications. Projects that will be prioritized for funding are those that best address the criteria of the funding program as well as the three Strategic Initiatives shown in Section 5.4 and the Short- and Long-term Initiatives listed in Section 6.3.

Region-wide

Many regions across the state have identified the same communications operability concerns; in some areas these concerns are at a critical level. Although these concerns are statewide, they will be addressed within each region, as they are prioritized within the region. The operability concerns are:

- Aged and decaying towers with unreliable antenna systems.
- The lack of mutual aid transmitters within their region.
- Subscriber radios for incident management.

Regional

There are 24 Planning Regions/COGs in Texas. Each region identified interoperability needs to be addressed within the next three years. A sampling of the projects includes:

- Installation of additional repeater sites, tower installations, reprogramming of radio equipment, upgrade of existing VHF repeaters, VoIP Consoles, 700 MHz- 4.9 GHz backhaul network. Overlay of existing 800 MHz systems with WAIS and VHF systems in region. Interconnection with adjoining Regional Systems.
- VHF Repeaters for 3 counties.
- Purchase of six portable units to be utilized in existing communication trailers; provide redundant dispatch capability from county to county.
- Implement regional VHF/800/700 standards-based P25 infrastructure providing mobile coverage to 17 county area; Leveraged with existing P25 switch and border initiative regions.
- Implement solution for tri-county area to support frequent mutual aid operations between VHF/700/800 systems.
- 3 year sustainment program to include Non-Proprietary Inspections, Preventive and Regular maintenance of existing Communication System to include radio

communication hardware & towers to attain minimum of gateway/patch level of interoperability.

- Installation of 5 repeater sites in Phase 1 VHF plan, VOIP Consoles and 4.9 GHz backhaul network. VHF/UHF/700/800 Calling Channels overlay for region. Installation of remote receivers, voted receiver and backup generators. P25 Subscriber units.

The 24 Regions are listed with their interoperability needs in Section 7, Table 11 – Regional Needs and Estimated Costs FY2008 – FY2010.

Border Communications

An “overwhelming presence of law enforcement officers will deter those who smuggle drugs and people, including potential terrorists...It’s the organized smuggling activities related to human trafficking that presents the national security threat” -- Steve McCraw,
Texas Homeland Security Director.¹⁸

Figure 12 shows the specific counties along the international border included in the Border Communications Interoperability Plan and the Texas Border Security Operations Center in Austin. The counties in yellow share the border with Mexico, the counties in green are one county inland from the border.

¹⁸ San Antonio Express News, August 12, 2007.

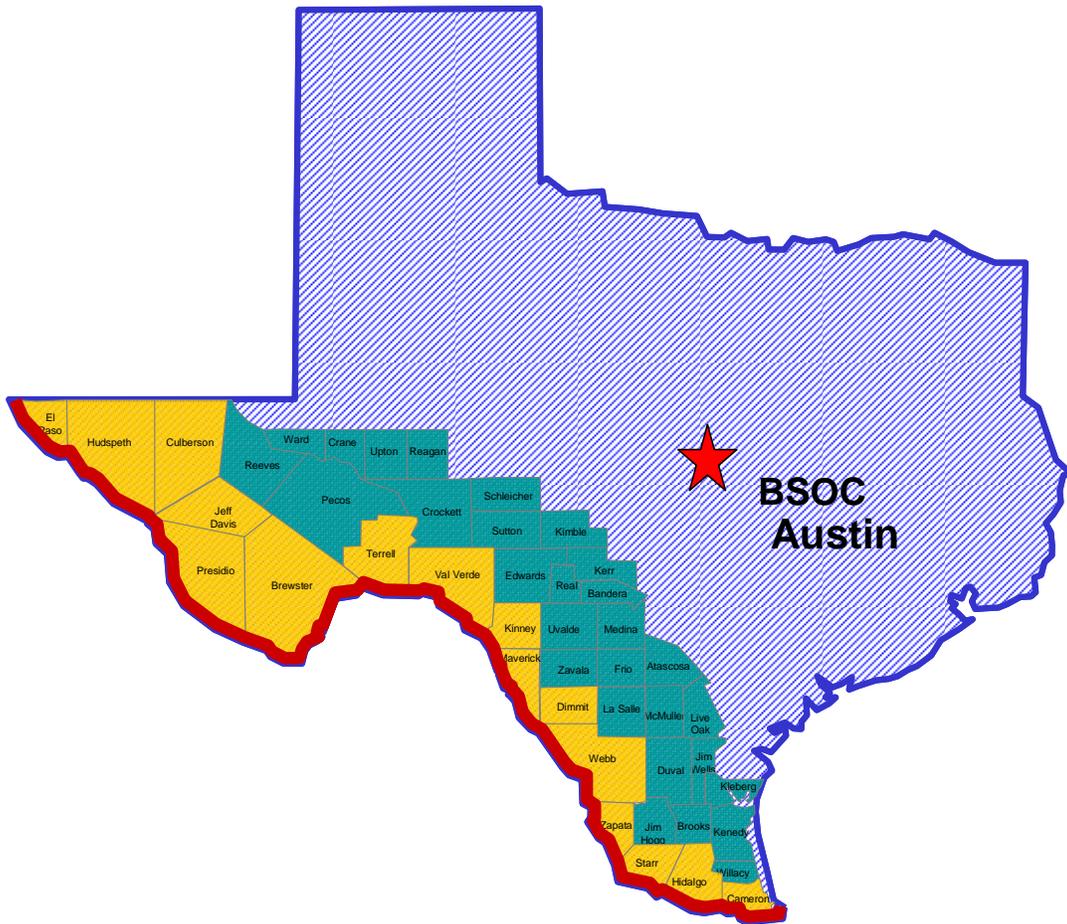


Figure 12 - Texas Border Counties

The immediate and critical need is for reliable communications operability from El Paso to Brownsville. The Middle Rio Grande Development Council (MRGDC) is in the process of constructing infrastructure for regional VHF trunked Project 25 communications in three border counties and six adjacent counties. By partnering with the MRGDC, this regional communications system will be expanded to provide communications along the entire international border. Existing state, local, tribal and federal agency and non-governmental organization communications facilities and infrastructure will be utilized where possible. This system will be the primary communications for most local and some state public safety agencies along the border, and provide interoperability for all public safety agencies responsible for securing the border.

Technology such as ground-based and/or mobile sensors, thermal imagery, remote cameras and radars to aid in the detection and classification of the border violations, and active tracking and surveillance of violators are also needed. This technology would provide critical information to border patrol agents, sector command centers, and

sheriffs departments to dispatch the right personnel and resources necessary to respond to the scene and bring entries to the appropriate law enforcement resolution.

Houston Urban Area

The City of Houston has published a RFP (request for proposal) for a new 700 MHz interoperable public safety radio system. This system will be integrated with the existing Harris County/H-GAC Regional Radio System. The two systems will provide capacity, coverage and signal strength needed for the Houston area. The Harris County/H-GAC Regional Radio System surrounds Houston and provides interoperability to more than 500 agencies and 33,000 users. Harris County is currently upgrading the regional system to Standards-based P25, and also needs to implement additional sites to increase capacity and coverage. With the implementation of the City of Houston system, Houston and Harris County will partner in providing standards-based interoperable communications throughout the multi-county region.

Dallas/Fort Worth/Arlington Urban Area

The City of Dallas plans to upgrade an analog trunked 800 MHz communications system to include 700 MHz, which will provide interoperability to the Dallas public safety agencies as well as public works agencies. This system will serve a population of 1.25-million persons and provide communications for approximately 3,500 first responders and about 4,000 support and public works personnel.

The goal for the UASI area is to have seamless interoperability among Metroplex systems, such as the Dallas and Fort Worth systems. A multi-phased approach is being considered, due to the high cost of implementing new systems in the UASI area. The project currently being evaluated is the installation of a 700 MHz P25 system overlay of the Region (3-6 channels) for agencies to roam outside their jurisdictional boundaries. This system would utilize existing computer hardware to allow multiple systems to connect for interoperability and economic purposes. Using new technologies that will allow interfacing older technologies to the newer standards based infrastructure will ease the migration to a “System of Standards-Based Systems.” Until this is achieved, the use of gateways and console patches will continue, unless there are shared channels on common systems.

Dallas recently installed a network of wireless video surveillance cameras. It is expected that the coverage will be expanded to more areas in the Dallas/Arlington/Fort Worth UASI when funding is identified.

El Paso Urban Area

El Paso is in the process of upgrading to a standards-based interoperable communications system. The El Paso strategic plan for interoperable communications is comprised of six stages. Stage I addresses the upgrade of communications infrastructure to Standards-Based P25 technology. This will provide interoperability

and coverage for the UASI area (City of El Paso and County of El Paso). This portion of the plan includes interoperable communications in both 800 MHz and VHF frequencies. Stages 2 through 6 provide for the build-out of interoperable communications coverage in Region 8's six counties, and linking the El Paso system to the Texas Border Communications project.

Over the next five years, El Paso plans to implement Stage 1 of its strategic plan. This will include both VHF and 800 MHz P25 sites and infrastructure to provide the city and county adequate coverage and capacity, licenses for existing subscribers to 5,500 with growth for 10,000 users, integration with the 9-1-1 Dispatch Center consoles, and implementation for the foundation of the Regional P25 Radio System.

The 6 Stages of the El Paso UASI/Region-08 P25 Plan covers 6 Counties:

- Stage I (El Paso County) is made up of 7 Phases.
- Stage I (El Paso County) is a five year plan.
- Stages II – VI has identified subscriber needs and not the infrastructure as this will be a collaboration with the Border Initiative.

San Antonio Urban Area

San Antonio Area has a comprehensive enhancement strategy. They intend to enhance their existing 800MHz coverage area by consolidating several non-simulcast sites into new simulcast sites. This will improve coverage, especially in the rapidly growing southern areas of the County due to Toyota, but will also add capacity and flexibility; they will be able to re-utilize frequencies at other existing sites and be able to build-out several new sites in adjoining counties based on population growth. They also intend to migrate their infrastructure to more recent technology that will allow them to make the transition to P25 quicker and easier over the next several years. In addition, they plan to improve system interoperability by creating 700MHz interoperability overlays and establish switch-to-switch connections with several public safety and critical infrastructure agencies (LCRA, VIA Transit, Corpus Christi / Nueces County, AEP, etc.) locally and regionally. These overlays and connections will leverage existing 800MHz and 900MHz coverage areas, existing infrastructure and resources throughout multiple regions but especially along major evacuation routes, logistical support corridors and between regional medical centers.

Specifically, they intend to:

- Acquire an IP-based, P25 switch to provide added redundancy to their existing system and to create a platform to gradually upgrade system infrastructure towards the P25 suite of standards. This switch will make the planned switch-to-switch connections easier and more seamless. In fact, through the connection with LCRA, they will also have seamless connectivity and interoperability with other systems already connected to LCRA to include the Austin / Travis County

Regional Radio System and the Montgomery County Hospital District Radio System.

- Expand on existing partnerships with other agencies locally and regionally and develop new partnerships with regional critical infrastructure providers such as AEP and TXU to leverage their expansive systems into additional interoperability capabilities. Partnering with AEP and establishing connectivity between switches could potentially “open up” and make more accessible most of South Texas.
- Migrate existing transmitters and other infrastructure at the sites to the next version which is capable of supporting multiple bands and protocols to include 700MHz and P25.
- Deploy a 700MHz Interoperability Overlay using the existing 800MHz and 900MHz coverage areas of the San Antonio / Bexar County and LCRA Radio Systems. This will provide seamless interoperability across more than 37,000 square miles to include the IH-10 Evacuation corridor. Part of this initiative is dependent on funding LCRA’s 700MHz Interoperability Overlay project also identified in the SCIP.
- Deploy 700MHz Interoperability Corridors between San Antonio and Corpus Christi and between San Antonio and Laredo to better support coastal evacuations and other logistical support operations. By establishing and fostering a partnership with AEP who maintains a huge system throughout South Texas, we will be able to potentially use their infrastructure to support key 700MHz nodes that would provide interoperability along the corridors. This strategy compliments what we plan to do with LCRA.
- Acquire two to four 700MHz Mobile Interoperability Sites / Trailers with on-board, dedicated, multi-band, portable radio caches that could be easily deployed anywhere within the AACOG or LCRA regions to support tactical interoperability. These sites could also be deployed on an as needed basis to augment the 700MHz Interoperability Corridors if additional coverage is required.

In addition, placing Texas shared interoperability channel infrastructure in the rural areas adjacent to San Antonio will provide both operability and interoperability for local, regional, state, and federal agencies.

Lower Colorado River Authority

- Implementation of 700 MHz overlay to existing LCRA system. Install two redundant master switches with conventional gateway, ISSI interface, IP gateway, and console. This equipment will allow for a seamless integration into existing regional systems, as well as the agencies’ existing conventional systems for interoperability.
- 700 MHz channel equipment installation at 46 existing sites that will consist of three RF channels and accessories to provide approximately 37,000 square miles of RF coverage that consist of all or part of 54 counties in central Texas.

Brazos River Authority

- Replace current infrastructure to meet gateway/patch interoperable VHF communications requirements for Authority lake rangers (licensed peace officers).
 - Replace all old repeaters, base stations, and consoles with P25 compliant equipment.
 - Add a base station, tower, antenna, and associated cabling equipment to the Central Office facility.
 - Add ACU-1000 gateways for connection between our VHF and various mutual-aid frequencies.
- Purchase and install Mobile Data Terminal communication systems at Possum Kingdom Lake, Lake Granbury and Lake Limestone for specialized law enforcement data and voice capabilities.
 - Purchase and installation includes laptop computers, radios, power supplies, towers, antennas, mounting brackets for LE vehicles, and associated cabling.

Texas Department of Transportation

- Complete conversion from Low-Band to VHF High-Band, subscriber radios statewide, and two Districts that still need High-Band infrastructure and subscriber radios. This includes towers, switch, infrastructure, and subscriber units for TxDOT.
- Radio system for the Dallas District: 700 MHz, P25, trunked radio system with capacity that all state agencies can use, and expansion capability that would allow participation by other agencies for growth into a Dallas regional system if desired. Phase 2 would involve reoccurring cost of connectivity for linking of sites to switch.

Texas Forest Service

The Forest Service must have interoperable communications on both VHF and 700/800 MHz frequencies to coordinate wild-land firefighting efforts. The immediate needs are for a cache of 50 P25 portable radios.

Texas Alcoholic Beverage Commission (TABC)

1. Replacement of 120 VHF High-Band Portable two-way radios to meet FCC narrow band requirements, that also would be P25 Digital Capable for interoperability with state, county and local law enforcement agencies statewide.
2. Replacement of 250 VHF High-Band mobile two-way radios to meet FCC narrow band requirements, that also would be P25 Digital Capable for interoperability with state, county and local law enforcement agencies statewide.

Texas Department of Public Safety

To address the Department's immediate and critical communications interoperability issues, DPS needs 3 interface switches to create an infrastructure to network existing resources and provide sufficient capacity to allow local and regional radio systems to interface. These switches will also provide redundancy in the event one or more become disabled. The first switch would create a network along the Texas/Mexico border and the gulf coast region. The remaining switches will expand the network to all areas of the state. To connect with other state, local and regional agencies a gateway device is needed.

Additionally, procurement and installation of a master site switch will provide optimal interoperability and begin the infrastructure for an all state agency trunked hybrid system utilizing 700 MHz where feasible.

Texas Military Forces

TXMF will continue to serve as the lead agency for all military support from both State and Federal military forces, required within the Texas area of operations in accordance with Annex W (Military Support) to the *State of Texas Emergency Management Plan*. TXMF will host Joint/Inter-Agency Command Posts involved with the impacted area. To assure success, the TXMF requires additional redundancy, reliability and modernization of its interoperable communications to support National Guard Task Force(s) and other critical interagency command posts and emergency response forces outlined in Annex N (Direction and Control) to the *State Plan* and in the Governor's initiatives on prevention of terrorists from exploiting the Texas-Mexico border.

Strategy:

- Modernize Network Infrastructure that hosts deployable satellite packages. Since TXMF interoperable communications equipment was largely obtained from federal funds for base support for the data network, required modernization of the data network that supports the deployable packages has been delayed; the network is in dire need of infrastructure modernization to continue to be able to support state needs during disasters. No state funds are budgeted to support this capability. This modernization includes upgrading telecomm equipment and finalizing a Continuity of Operations Plan (COOP) to employ a fully redundant data network.
- Add Deployable Satellite Packages. Current Interoperable communications and satellite packages support the deployed National Guard Task Force(s) and other critical inter-agency command posts outlined in Annex N (Direction and Control) to the State Emergency Management Plan. Additional systems allow support of the entire National Guard Task Force and joint/interagency command posts to facilitate interoperability with other response agencies in voice, data, and radio communications while providing reach back communications to National Guard and Department of Defense infrastructure. TXMF will further develop stationing, staffing plans and MOUs for interoperable communication packages.
- Add Interoperable P25 Radios at tactical level. Assure complete adherence to

Texas Interoperability Channel Plan for all VHF, UHF, 700 and 800 radios and allow National Guard emergency response forces to interoperate with all agencies in the incident area.

- Refine SOPs. Provide input for state communication SOPs, telephone and email directories, and common operating reporting templates and share points and assist interagency partners with this function.
- Build redundancy and expand deployable HF Stations with Email. Integrate the Texas State Guard into interoperable communications training to develop a pool of trained augmentees. Expanding Texas State Guard role in MARS/RACES Email via HF PMBO. Install two HF PMBO Email gateways on assigned military HF frequencies. Expanding TXMF HF Email stations at selected fixed sites.
- Train and Exercise all personnel and equipment. Conduct on-going sustainment training to install, operate, and maintain all interoperable packages. Train and equip TXMF Agency Reps for Disaster District Committees. Participate in all inter-agency local and state communication exercises.
- Refine and robust the WEBEOC network. Further refine the capability for coordination between GDEM/SOC, TXMF JOC and the National Guard Task Force. Build two levels of WEBEOC server, data, and telecomm redundancy so it never fails.

TXMF equipment requirements:

- 430 P25 Land Mobile Radios (700 MHz)
- 4 Incident Command Control System (ICCS) satellite package
- 32 Notebook Computer for satellite packages
- 42 Cisco 7941g VOIP Phones for satellite packages
- 15 Diesel 10kw Generators, trailer mounted for satellite packages
- 15 Global Star sat phones
- 4 support trucks
- Host Network modernization/stabilization (router, firewall, etc)
- 250 data communications and vehicle tracking systems
- 20 HF Radio Motorola Micom 3F / B&W Antenna / Laptop / Power
- Satellite Service – Backhaul, Stabilization, Support

As the Governor's major force provider, the TXMF plays a crucial role in large numbers of personnel and equipment while enabling and enhancing the States Incident Command and Multi-Agency Coordination Systems through interoperable communication capabilities. TXMF has the personnel, facilities, and training to install, operate, and maintain multiple types of proven communications packages on short notice wherever it is needed. Reliable interoperable communications assures successful and professional execution of State plans.

5.4.1.1 Interoperable Communications with the States of Arkansas, Louisiana, Oklahoma and New Mexico

(Criteria 2.2)

Texas has close working relationships with all bordering states and shares a variety of different programs. Because of this environment the individual agencies on each side of the borders have developed and shared city and county communications systems for years.

In the emergence of a national disaster event, communications with adjacent states will be conducted under the Emergency Management Assistance Compact (EMAC). EMAC was signed into law and adopted by individual states in 1996. EMAC is a national Governor's interstate mutual aid compact that facilitates the sharing of resources, personnel and equipment across state lines during times of disaster and emergency.

EMAC provides administrative oversight and support staff and formal business protocols; solves problems upfront with provisions in the Compact: reimbursement, licensure, liability; provides continuity of operations with standard operating procedures and integrates into existing command and control structures; provides continual improvements with a five year Strategic Plan, critiques, training, exercises and meetings. EMAC Operations Systems manage events.

EMAC's step-by-step activation process is:

1. Governor issues state of emergency
2. EMAC is activated
3. State assesses needs for resources
4. A-Team (in-house or from other state) helps to find resources and determine costs and availability
5. States complete negotiation of costs
6. States complete EMAC REQ-A Form
7. Resources are sent to Requesting State from Assisting States (mobilized)
8. Resources are sent back to home state (demobilized)
9. Assisting State sends Requesting State Reimbursement Package (after internal audit)
10. Requesting State Reimburses Assisting State¹⁹

EMAC is the mutual aid agreement. The actual communications will be coordinated through the Governor's Office of Emergency Management and achieved with state and regional Communications vans and trailers, and a radio cache and satellite phones to be distributed at the scene from the Strategic Technology Reserve.

¹⁹ EMAC Overview, DMIS SIG August 2006, <http://www.emforum.org/DMIS/DMIS-SIG/Presentations/060802EMAC.ppt#256,1,Slide1>

The El Paso Regional Strategic Plan will also strengthen existing connectivity to the State of New Mexico. El Paso is linked to the City of Las Cruces, New Mexico's analog 800 MHz radio system via a base station located at the City's 3 Hills Tower Site back to the District 911 Dispatch Center which utilizes the City of El Paso's analog Public Safety 800 MHz Radio System. The Far West Texas and Southern New Mexico Regional Advisory Council on Trauma connects three of the six Region 08 Texas counties to the entire State of New Mexico's UHF radio network back to the District 9-1-1 Dispatch Center/City of El Paso Radio System.

The plan identifies current coordinated efforts with New Mexico's Office of Emergency Management, Mr. Tom Townsend, OEM, Deputy Chief Stephen Lopez and New Mexico State University, to mesh the New Mexico statewide P25 VHF System to the City of El Paso's proposed P25 800/VHF Radio Master Site. This Regional Master Site will incorporate P25 800 MHz, VHF, UHF and 700 MHz capabilities. The initial design will provide P25 800 MHz and VHF functionality. The plan will promote a user friendly and cost effective "Talk Group" functionality for the Region and the neighboring State of New Mexico.

5.4.1.2 Interoperable Communications with Mexico

(Criteria 2.2)

The State Department is currently finalizing a communications interoperability plan/agreement with Mexico, which will include the U. S. / Mexico border from Brownsville, Texas to San Diego, California. The plan includes microwave links to the Border Patrol Sector Headquarters. Any agencies operating along the Border will have access to communications via the microwave link.

Several local-border jurisdictions, such as Brownsville, Del Rio, Eagle Pass, and El Paso, have informal agreements between fire departments to provide mutual aid on fire and hazardous materials incidents. These agreements typically are to provide operational assistance when and if called to assist by the other party.

5.4.1.3 Communications Interoperability with Transit Systems, Intercity Bus Service Providers, Passenger rail operations, & Ports

(Criteria 2.6)

In most cases, the urban areas with major transit and bus service companies have provided these organizations with interoperable equipment or have established interfaces with the organization's communications systems. When discussing the interoperability concerns with the transit and bus service companies, training and exercises topped the list. The revised training and exercise program instructions will include transit and bus organizations in all regional programs.

The Port of Houston

The Port of Houston is made up of the Port of Houston Authority and the 150-plus private industrial companies along the Houston Ship Channel. The Port of Houston Authority is on the Harris County Regional Radio System. The Port Dispatch Center is tied directly into the regional system. The Port dispatch has three operator positions, giving dispatcher direct interoperability with more than 512 different Federal, State and Local agencies. Harris County Information Technology won a Best of Texas Award for this collaboration.

The Port has a new P25 site which will be integrated into the Regional Radio System when the conversion to digital technology of all regional users and infrastructure is complete. The Port presently has over 250 radios on the regional system with a plan for hundreds more. The U.S. Coast Guard and U.S. Navy have radios in the port area as well, and are able to communicate directly through the Regional system with the Port Authority, or on Marine channels through consoles at the dispatch center.

The Port, along with the City of Houston and Harris County, participated in the Department of Justice's High Risk Metropolitan Area Interoperability Assistance Project, which identified and implemented "quick fix" interoperability solutions in 25 U.S. cities in 2005-2006. The Port Dispatch Center consoles now are capable of direct communications with the FBI and other federal agencies via a two-channel VHF repeater system. This interoperability solution covers the Houston Metropolitan and Port areas. Functionality is tested weekly by the FBI, the Harris County Sheriff's Department, the City of Houston Police Department, and the Port of Houston Authority Police Department to promote familiarity with the capability. The Port Authority also plans to build out a data network to share streaming video with the EOC and local law enforcement.

5.4.2 Data Interoperability *(Criteria 2.3)*

Mobile data is used to provide, enhance, or supplement communications between different agencies, or provide access to shared information. Mobile Data interoperability may be linked with (1) Common Mobile Client Applications or (2) Database Sharing.

Methods of Enabling Mobile Data Interoperability: Mobile Data Interoperability does not require using the same wireless data infrastructure. Nevertheless, the use of the same infrastructure can make interoperability implementation easier since the applications only need to be concerned about communication using one wireless network protocol. In recent years, Internet Protocol (IP) has become an industry standard for network layer communications over wireless data infrastructures. Practically all leased wireless data services use or offer IP for data communications.

Current Data Capabilities

Local & Regional Data Capabilities: Many private radio systems and most regional radio systems currently have some data capability. This ranges from integrated voice and data on a voice radio system to mobile data operating on 800 and 900 MHz frequencies and mesh broadband systems. Applications include text messaging, mapping and database searches, and access to TLETS (Texas Law Enforcement Telecommunications System) and NCIC (National Crime Information Center).

Department of Public Safety: The State Legislature recently authorized funding for laptops/data terminals in all DPS Highway Patrol units. This network will provide officers with text messaging capability for coordination of operations across multiple counties. It will also provide direct mobile access to TLETS. TLETS provides access to a variety of local, state, and federal criminal data base systems, e.g. NCIC.

SAFECOM Recommendations

Public Safety responders [should] have the capability to transmit and receive all information (voice/data/video) necessary to maximize their effectiveness²⁰ Figure 13 illustrates the “System of Systems” architecture for mobile data as recommended by SAFECOM.

²⁰ Improving Public Safety Wireless communications and Interoperability, March 17, 2004, David Boyd, Dereck Orr. SAFECOM@dhs.gov

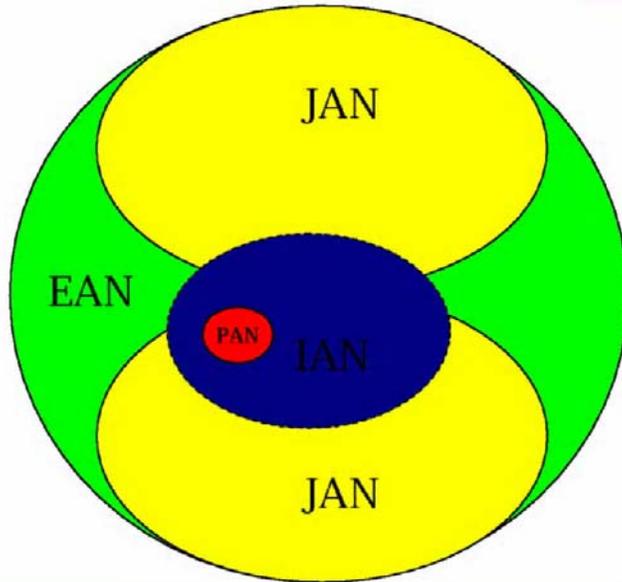


SAFECOM

SAFECOM advocates the creation of a System of Systems architecture solution for interoperability.

- The System of Systems involves interaction between the:**
- Personal Area Network (PAN)
 - Incident Area Network (IAN)
 - Jurisdiction Area Network (JAN)
 - Extended Area Network (EAN)

- System Capabilities**
- Practitioners seamlessly move between Jurisdictional Area Networks
 - Practitioners join and leave networks as needed
 - Allows for the creation and Growth of Temporary Networks
 - System can recognize, register, authorize, and grant interoperable communications with the new resources



The System of Systems architecture builds from Personal Networks to Extended networks, and puts an emphasis on the individual public safety practitioner

Different communications systems seamlessly integrate to form the various networks

Figure 13 - System of Systems Architecture Solution

XML (eXtensible Markup Language) — a universal language to transport data from system to system: XML is the universal language for data description. What this means is that data from any database or application can be described in one universal format. XML allows the structure and meaning of data to be defined through simple but carefully defined syntax rules, thereby providing a common framework for cross-platform or cross-system data exchange. XML can act as a universal translator among all disparate information systems. XML finally makes it possible to share data easily by providing a translation layer at each agency system... Most major software vendors fully support the general XML standard, and major database vendors and their database applications provide software development tools to assist homeland security technical staff to develop and use XML more efficiently and productively within agency applications. The general XML standard is designed to be independent of vendor,

*operating system, source application, destination application, storage medium (database), and/or transport protocol.*²¹

NIEM, the National Information Exchange Model, is a partnership of the U.S. Department of Justice and the Department of Homeland Security. It is designed to develop, disseminate and support enterprise-wide information exchange standards and processes that can enable jurisdictions to effectively share critical information in emergency situations, as well as support the day-to-day operations of agencies throughout the nation.

NIEM enables information sharing, focusing on information exchanged among organizations as part of their current or intended business practices. The NIEM exchange development methodology results in a common semantic understanding among participating organizations and data formatted in a semantically consistent manner. NIEM will standardize content (actual data exchange standards), provide tools, and managed processes.

*NIEM builds on the demonstrated success of the Global Justice XML Data Model (GJXDM). Stakeholders from relevant communities work together to define critical exchanges, leveraging the successful work of the GJXDM.*²²

(Criteria 2.3) – Strategic Plan for Data Interoperability

Texas is awaiting the establishment of the Public Safety Spectrum Trust (PSST) to finalize our development of a statewide strategy for data interoperability. The PSST is being created as part of a public-private partnership by the FCC to build out a nationwide interoperable public safety broadband data system.

Texas is also investigating both the “System of Systems” solution for interoperability and the NIEM/Global XML Information Exchange Model. Our objective is to provide a plan where regional areas with financial investments in proprietary data networks can output information to a global data warehouse where the information can be transported into a statewide central model. When a data interoperability standard is established, the TxRC Technology Working Group will provide a migration strategy to that standard. The target date to complete the Strategic Plan for Data Interoperability is January 2010. The current recommendation of the Technology Working Group is that all new data systems should be IP based.

Data Exchange and Information Sharing

²¹ “Building Exchange Content Using the Global Justice XML Data Model: A User Guide for Practitioners and Developers”; U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Assistance; June 2005.

²² NIEM (National Information Exchange Model) Bridging Information systems; <http://www.niem.gov/>

Texas Data Exchange (TDEx) Texas is currently implementing a system for sharing of critical intelligence and information between local, state, and federal law enforcement agencies, which benefits first responders through the State. TDEx is a comprehensive information sharing portal that allows criminal justice agencies to quickly access law enforcement records management systems throughout much of the State and retrieve records in response to queries. Figure 14 identifies agencies and counties throughout the State that are currently signed-on and using TDEx.

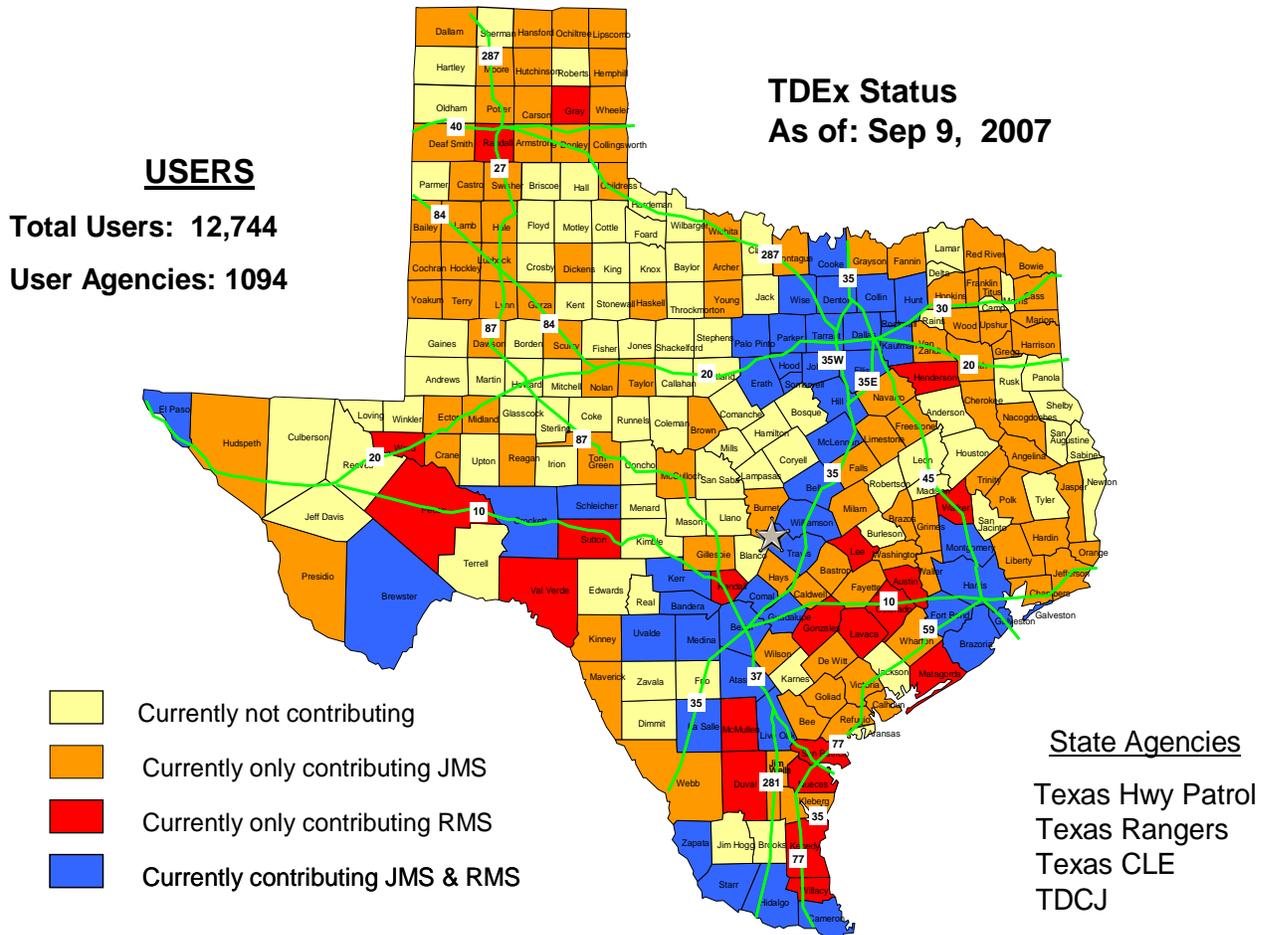


Figure 14 - TDEx Status for Texas Counties

Table 8 shows the types and quantity of records that exist in the system and have been accessed through September 2007. Texas is in the process of implementing N-DEx, the National Sharing of Criminal Justice Data. Texas will be one of the first 13 states to be brought online in February 2008. TDEx will provide future connectivity to N-DEx.

Table 8 - TDEx Access Data Record

Record Type	September 2007 Record Count
Incident	22,110,516
Bookings	26,232,349
Citations	6,360,728
Photos	3,565,632
Searchable Words	428,914,790
Searchable Narratives	6.7M
System Queries	336,118
User Accounts Issued	12,744

The N-DEx Vision is to share complete, accurate, timely and useful criminal justice information across jurisdictional boundaries and to provide new investigative tools that enhance the Nation’s ability to fight crime and terrorism. Texas has been working with the FBI to implement N-DEx since March 2007 and will be fully NIEM 2.0 compliant on the interface in accordance with the N-DEx specifications.

Once N-DEx is up and running agencies will be able to access N-DEx data via a web portal in the same fashion they access TDEx today. N-DEx will:

- Provide National Information Sharing of Criminal Justice Data
- Link Regional and State Systems
- Enable Virtual Regional Information Sharing Capability

5.4.3 Redundancies in Communications

(Criteria 2.4)

Texas has established two ways, soon to be three ways of communicating if a catastrophic loss of communications should occur: (1) the Radio Amateur Civil Emergency Service, (2) the Texas Regional Response Network, and (3) a Strategic Technology Reserve. In addition to state efforts to provide redundancy, the urban areas and most regional communications systems have stocks of replacement parts, back-up generators, alternate working sites, and sites and/or communications on wheels.

Radio Amateur Civil Emergency Service

On April 5, 2007, the Governor’s Division of Emergency Management officially endorsed the Radio Amateur Civil Emergency Service as a back-up to established

state communications systems in emergency or disaster situations. Texas has more than 600 RACES Certified Radio Operators. The authority for this action is:

- Federal Communications Commission Rules and Regulations, Part 97.
- Texas Disaster Act of 1975, V.T.C.A. Government Code Title 4, Chapter 418.
- Executive Order of the Governor.
- State of Texas Emergency Management Plan.
- State of Texas Radio Amateur Civil Emergency Services Plan.

The Federal Communications Commission (FCC) has authorized emergency management organizations to officially organize and employ radio amateurs to supplement non-governmental organizations, state, local, tribal and federal government communications systems in emergencies or disaster operations.

The Governor's Division of Emergency Management has appointed a State RACES Radio Officer responsible for organizing and directing the State RACES program and for providing guidance to local governments to establish and operate local RACES programs.²³ Local RACES personnel are trained and exercised along with state, regional and local public safety responders. Additional training for RACES officers includes detailed communications techniques and protocols.

Texas Regional Response Network (TRRN)

The Governor's Division of Emergency Management and the Texas Forest Service have developed a comprehensive database of equipment, resources and locations to aid in emergency response and planning. The system allows local governments, emergency response organizations, and other authorized users to access and use a secure internet-based mutual aid resource database and user system to:

- Enter data on fire, law enforcement, search and rescue, public works, and other state, tribal and local emergency resources. This data can be entered for local use only or identified as mutual aid resources available to other jurisdictions.
- Search for resources by category, type, county, Council of Government, Disaster.
- District, or from a user selected location.
- Display search results on an interactive map.
- Provide points of contact information for mutual aid resources requests.

The TRRN system can be accessed at two websites. The operational system is located at <http://www.trrn.state.tx.us> and is hosted at a secured AT & T server complex.

The TRRN was adopted as the Statewide Mutual Aid Database in November 2004. All jurisdictions seeking emergency management or homeland security grants must be

²³ State of Texas, Radio Amateur Civil Emergency Service (RACES) Plan, April 15, 2007.

registered participants in TRRN. Jurisdictions must enter data on all equipment within their community that is available for mutual aid assistance to other jurisdictions during response. Additional information on Texas NIMS and TRRN requirements can be found at http://www.txregionalcouncil.org/ep/NIMS_letter_062705.pdf.

Strategic Technology Reserve (STR)

Texas has an existing Strategic Technology Reserve of communications vans, trailers and radio caches positioned regionally throughout Texas. Plus, each DPS Regional Liaison Officer has satellite phones and cellular phones with WPS (Wireless Priority Service) which will provide public safety priority service during an emergency.

As the designated state agency first responder, DPS will be responsible for the purchase, maintenance and use of the STR equipment. Mobile packages include an array of basic radio transceivers enabling coverage in a multitude of bands in both analog, and P-25 digital, modes. Radios will be linked, when appropriate, with an IP based mixing technology providing the most effective currently available method of combining signals and a means to disseminate the radio traffic to distant listeners over IP. Once operational, packages will be regularly deployed to provide opportunities for the user community to become proficient in the techniques required for effective use of mixed channels and for decision-makers to become aware of how effective interoperable communications modifies information flow during events. The packages will also enable a far greater amount of information to flow to and from Incident Command sites as digital data greatly reduces voice interaction. The addition of an IP-based interoperable communications system to the DPS statewide network and the caching of radios and repeaters will enable that network to support local communities in periods of overload or local infrastructure failure. The current list of STR equipment to be purchased or contracted includes:

- Command/Communications Trailers
- Primary Towing Vehicles
- Portable Radios P25 with Trunking
- Cellular on Wheels
- Trunking Site on Wheels
- Laptop Computers for each Command Trailer
- Suitcase Digital Repeaters with Trunking
- IP Gateway Devices
- FRS Radios
- Portable Generators
- Cargo Trailers
- Portable Gateway Devices
- Video Downlink for Helicopters
- Satellite Telephones and Radios
- HF Radio Equipment

Those who will most benefit from the STR are communities that have been ravaged by tornadoes or hurricanes, and families driven to roof-tops to escape rampaging floodwaters, and the first responders who brave the fire and water to rescue us.

5.5 National Incident Management System (NIMS) Compliance

(Criteria 2.5 & 6.4)

On February 23, 2005, Governor Rick Perry issued Executive Order RP 40 adopting the National Incident Management System as the statewide system to be used for emergency prevention, preparedness, response, recovery, and mitigation activities, as well as in support of all actions taken to assist local entities.

The State of Texas through the Governor's Division of Emergency Management tracks NIMS compliance and maintains a list of jurisdictions that are in compliance and therefore eligible to receive federal funding.

The National Preparedness Guidelines require that, *"A continuous flow of critical information is maintained as needed among multi-jurisdictional and multi-disciplinary emergency responders, command posts, agencies, and governmental officials for the duration of the emergency response operation in compliance with the NIMS."*²⁴ As emergency incidents unfold and escalate, requiring the involvement of more and more agencies and disciplines, effective communications planning becomes the most important tool for incident command and control.

Going forward, the controlling local, regional, or state emergency response agency will be required to produce a completed NIMS ICS-205 Incident Radio Communications Plan form for all pre-planned events involving multiple jurisdictions or multiple emergency response agencies. The completed form likewise will be required for unplanned multi-jurisdictional, multi-discipline incidents of significant duration.

Successful use of the ICS-205 requires careful pre-planning for local incident management communications and identification of radio channels and/or talk groups to be used for the duration of the incident or event. When completed, the form should be distributed as soon as possible to all responding agencies.

The blank ICS-205 form may be found online at http://www.nimsonline.com/nfes_ics/NFES_ICS-205.doc.

²⁴ National Preparedness Guidelines, September 2007, page 6.

INCIDENT RADIO COMMUNICATIONS PLAN		1. Incident Name		2. Date/ Time Prepared		3. Operational Period Date/Time	
4. Base Radio Channel Utilization							
Mode: W=Wideband Analog, N=Narrowband Analog, D=Digital, M=Mixed							
Channel	Function	Frequency	Tone	Mode	Assignment	Remarks	
1		RX:					
		TX:					
2		RX:					
		TX:					
3		RX:					
		TX:					
4		RX:					
		TX:					
5		RX:					
		TX:					
6		RX:					
		TX:					
7		RX:					
		TX:					
8		RX:					
		TX:					
9		RX:					
		TX:					
10		RX:					
		TX:					
11		RX:					
		TX:					
12		RX:					
		TX:					
13		RX:					
		TX:					
14		RX:					
		TX:					
15		RX:					
		TX:					
16		RX:					
		TX:					
5. Prepared by (Communications Unit)							

ICS 205

NFES 1330

Figure 15 - ICS 205 Incident Radio Communications Plan

5.6 Review and Update Process

(Criteria 2.7)

The first Strategic Planning Session was well attended by both elected officials and public safety. Representatives of numerous levels of state, local and federal government gathered to improve interoperable communications for Texas public safety responders. Organizations represented include: the U.S. Senate and U.S. Congress, county judges, state and regional homeland security offices, city councils, sheriffs, police, fire departments, EMS organizations, transportation systems, utilities, and various state agencies.

The established 27 focus groups will meet annually to discuss accomplishments and re-evaluate and make recommendations to the statewide plan, specifically the performance to goals and strategic initiatives. These groups will also scrutinize

operational requirements and current concerns. The operational requirements and concerns will be developed into regional initiatives and prioritized. Focus group delegates will attend the 2nd Annual Strategic Planning Session where the recommendations and regional initiatives will be discussed, approved and prioritized. The TxRC will update the Statewide Plan and send to the Executive Committee for approval.

Throughout the year, at various public safety conferences the TxRC will provide multiple opportunities for review of and inter-active discussions on the Texas SCIP. All recommendations will be analyzed by the TxRC before forwarding with a recommendation to the Executive Committee.

At any time, any one of the 27 focus groups may submit a request for a re-evaluation of the Texas SCIP or take exception to a specific requirement. If more than half of the focus groups agree, focus group sessions will be scheduled within 90 days and follow the annual review and update procedure.

6 Implementation

6.1 Point of Contact for Plan Implementation

(Criteria 10.6)

The implementation POC will be the Texas Interoperability Coordinator (TIC). Until the TIC is on-the-job, Jim Harrison with the Governor's Office will be the interim POC with the TxRC assisting in an advisory capacity.

6.2 Plans for Educating Policy Makers & Practitioners

(Criteria 3.2 and 10.3)

The development of an Outreach Program to enlist the support of both practitioners and policy makers and provide current information on interoperability efforts is important for continued growth. The Outreach Program will:

- Educate the Texas Legislators with direct ability to influence the outcome, on the critical and ongoing need for communications interoperability and statewide efforts to address the issue.
 - By developing an outreach and education strategy.
 - By preparing and providing a wide range of educational materials for stakeholders and decision makers.
- Facilitate mechanisms through which stakeholders can actively participate in the statewide dialog

- Sponsor communications and interoperability forums where officials can learn about current challenges and plans, provide input into the process, or learn how to get involved.
- Routinely post and update interoperability information on the SCIP web-site.
- Identify and execute additional outreach mechanisms that reach stakeholder audiences.

To officially *kick-off* the interoperability efforts, a press conference will be scheduled upon the completion of the Texas SCIP with announcements sent to state, tribal, federal, non-governmental and local policy makers. The press conference and announcements will brief all on the current condition of public safety communications interoperability in Texas and the work being done to provide the residents the best possible services and the response teams the best training and equipment. All will be invited to stay current on activities by visiting the TxRC web-site at <http://txrc.region49.org/>.

The TxRC web-site will be further developed with suggestions, recommendations and requirements for regional and statewide interoperability based on the SAFECOM Continuum and the Texas SCIP. Practitioners will be able to access:

- Recommended technology migration strategies.
- Templates and instructions on developing regional-integrated Standard Operating Procedures which include interoperable communications.
- Funding information.
- Resources available for assistance.

Policy makers will be able to access:

- Major achievements and challenges.
- Performance to goals.
- Projects funded.
- A high level timeline with major milestones achieved in the quest for interoperability.

An announcement and link to the Texas SCIP site will be placed on web-sites of state and local agencies, non-governmental agencies, public safety organizations and elsewhere.

The Outreach Program will be a priority for the Texas Interoperability Coordinator, with the education of stakeholders ranked highest. Within the first two years much of the Outreach Program should be well established; champions and funding identified; forums organized and the website enhanced.

6.3 Short-term & Long-term Initiatives

(Criteria 10.1, 10.2, 10.3 & 10.4)

These initiatives are the result of a collaborative process to identify action items to overcome the communications operability and interoperability gaps. The initiatives are listed here as prioritized at the Statewide Strategic Planning Session. Each initiative is linked back to one or more of the five interoperability elements identified in the SAFECOM Continuum and a SCIP Goal. The tasks to be performed, roles and responsibilities and performance measures are also shown.

Short Term Initiatives:

Initiative #1 / SC-Governance : Identify new and existing sources of funding in federal grants; state, county and local budgets, taxes, bonds, motor vehicle license fees, traffic violation fines, road taxes and elsewhere for interoperable communications equipment, infrastructure, backhaul, upgrades, ongoing maintenance and call center expenses.

Linked to Goal #5: Develop a funding plan that will generate the funding resources necessary to acquire and sustain statewide voice and data communications interoperability.

Assigned to: Funding Working Group

Tasks: Develop a funding mechanism to fund interoperable communications equipment, upgrades and back-haul expenses and on-going maintenance.

Estimated Short-term cost: N/A – service to be provided by the Funding Working Group.

Performance Measures: Develop and implement a plan by April 2008.

Initiative #2 / SC-Technology: Provide operability throughout the state.

Linked to Goal #3: Achieve close to 100 percent state-wide coverage for both voice and data communications interoperable networks of all public safety agencies.

Assigned to: Technology & Funding Working Groups

Tasks: Identify radio communications operability gaps through user surveys and CASM data analysis. Prioritize funding for operability.

Estimated Short-term cost: Costs are unknown at this time. Costs are dependent on CASM entry and individual agency efforts.

Performance Measures: Identify gaps by September 2010 and implement solutions by January 2013.

Initiative #3 / SC-Technology: Leverage existing investments in Regional Interoperability Systems and infrastructure when developing and networking statewide interoperability systems.

Linked to Goal #3: Achieve close to 100 percent statewide coverage for both voice and data communications interoperable networks of all public safety agencies.

Assigned to: Technology Working Group

Tasks: Where they do not currently exist, form regional interoperability working groups to build new or expand existing regional communications systems. Identify, post, and keep accurate Regional Interoperability Working Groups information and meeting schedules on the TxRC web-site. Capitalize on the existing regional communications systems for long-term interoperability.

Estimated Short-term cost: Short term costs will be absorbed by individual participating agencies.

Performance Measures: Provide access to system design and migration developments through the TxRC web-site by March 2009 and continue to update at least quarterly.

Initiative #4 / SC-Governance: Secure consistent funding for on-going development, capital replacement, and maintenance costs.

Linked to Goal #1: Establish statewide voice and data interoperability as a high priority for all stakeholders.

Assigned to: Executive Committee & Funding Working Group

Tasks: Schedule regular monthly meetings to educate key federal, state, regional, local and tribal policy makers regarding the need for interoperable communications.

Estimated Short-term cost: TBD

Performance Measures: Implementation date: March 2008 meet with state level stakeholders monthly.

Initiative #5 / SC- Usage: Promote state legislation that enforces timely and cost-efficient execution of strategic plan initiatives which support state-wide communications and interoperability.

Linked to Goal #2: Achieve voice and data interoperability by institutionalizing collaborative approaches across the state based upon common priorities and consensus at the regional level.

Assigned to: Executive Working Group & Funding Working Group

Tasks: Identify and enlist a legislative champion-sponsor to legislate on-going funding for development, capital replacement, and maintenance costs of interoperable communications.

Estimated Short-term cost: TBD

Performance Measures: Proposed legislative action to be drafted by March 2008. Begin meeting with legislators by May 2008. Have legislation adopted within two years.

Initiative #6 / SC-Training & Exercises: Evaluate existing state-local-tribal-federal-non-governmental training programs and schedules, and draft a proposal for

improving responder efficiency and effectiveness through integrated-coordinated (including federal and tribal if appropriate) frequent and routine user-friendly training programs utilizing existing responder and dispatch equipment with mandated evaluations and certifications.

Linked to Goal #4: Facilitate integrated Standard Operating Procedures and Training Programs to enhance effective use of voice and data interoperable communications systems.

Assigned to: TxRC SOP & Training and Exercise Working Group.

Tasks: Identify concerns and recommendations for training and exercise programs; develop templates for SOP's and drills, that can be incorporated into and augment the State's existing training and exercise program. Identify regional Communications Unit Leaders and provide necessary training.

Estimated Short-term cost: TBD

Performance Measures: Deliver and discuss plans with Governors Department of Emergency Management by March 2008 and GDEM implementation of plans within two years.

Initiative #7/ SC-Technology: Establish and mandate the technology standard for the Texas Statewide Communication Interoperability Plan and provide a migration path.

Linked to Goal #3: Achieve close to 100 percent state-wide coverage for both voice and data communications interoperable networks of public safety agencies.

Assigned to: Technology Working Group.

Tasks: The technology recommendation of the Working Group, for future radio interoperability has been discussed, and approved by the TxRC. (1) Name the SCIP technology standard. (2) Establish a minimum level for new communications equipment purchases in accordance with SCIP. (3) Work with designated agents to develop regional migration plans to achieve interoperable communications.

Estimated Short-term cost: To be determined by capabilities assessment.

Performance Measures: Have documentation for all tasks on the TxRC web-site by March 2009, to be regulated through SAA Grant Guidance.

Initiative #8 / SC-Standard Operating Procedures: Promote the need for additional State and Federal Mutual Aid Interoperability Channels in the 800 MHz and VHF frequency bands. Fund infrastructure for implementation of all mutual aid channels (800 MHz, 700 MHz, VHF, UHF).

Linked to Goal #4: Facilitate integrated Standard Operating Procedures and Training Programs to enhance effective use of voice and data interoperable communications systems.

Assigned to: Governance and SOP/Training & Exercise Working Groups

Tasks: (1) Through regional collaboration, identify best placement and use of mutual aid interoperability infrastructure; identify and implement channels if any are deemed available. (2) Develop a plan to solicit support for additional mutual aid communications channels and distribute to state and national associations such as APCO, IACP, etc.

Estimated Short-term cost: TBD

Performance Measures: Identify and implement by December 2010.

Initiative #9 / SC-Usage: Validate agency radio communications capabilities and survey results utilizing CASM. Develop a plan to routinely update CASM.

Linked to Goal #2: Achieve voice and data interoperability by institutionalizing collaborative approaches across the state based upon common priorities and consensus at the regional level.

Assigned to: Capabilities Working Group.

Tasks: Identify and establish a CASM Liaison Agent to work with the public safety agencies on the data entry requirement. Develop a validation process and timeline for data entry.

Estimated Short-term cost: TBD

Performance Measures: Have 80% of statewide communications assets entered into CASM by December 2008.

Top Long Term Initiatives:

Initiative #1 / SC Technology: Migrate the radio assets within the state to ensure standards-based, shared systems operating with or within 700 MHz.

Linked to Goal #3: Achieve close to 100% state-wide coverage for both voice and data communications interoperable networks of public safety agencies.

Assigned to: Technology Working Group

Tasks: Define a “System of Systems” evolution through the development of regional systems migration plans which ensure standards-based, shared systems operating with or within 700 MHz.

Performance Measures: Produce an implementation plan by September 2011.

Initiative #2 / SC Usage: Provide permanent multiple-band monitoring and patching capabilities for all designated mutual aid / interoperability channels for immediate use at all call centers.

Linked to Goal # 2: Achieve voice and data interoperability by institutionalizing collaborative approaches across the state based upon common priorities and consensus at the regional level.

Assigned to: Executive Committee and Governance Working Group

Tasks: Develop a governance structure to facilitate shared equipment and infrastructure between regional and statewide partners.

Performance Measures: Produce an implementation plan by September 2014.

Initiative #3 / SC-Governance: Implement an IP interface between regional interoperable communications systems and the statewide IP based system.

Linked to Goal #1: Establish statewide voice and data interoperability as a high priority for all stakeholders.

Assigned to: Governance Working Group

Tasks: Meet with GDEM to draft an IP interface plan.

Performance Measures: Meet and discuss possibilities with GDEM by January 2012

Initiative #4 / SC- Training & Exercises: Provide on-line training programs with testing and certifications.

Linked to Goal #4: Facilitate integrated Standard Operating Procedures and Training Programs to enhance effective use of voice and data interoperable communications systems.

Assigned to: SOP, Training, and Exercise Working Group

Tasks: Meet with the GDEM Training Programs Unit to plan and develop requirements for on-line training and certifications.

Performance Measures: Have on-line training available by January 2012.

6.4 Eligibility for State and Federal Grant Funds

(Criteria 5.2.2)

In order to be eligible for state and federal grant funding for any communications equipment in FY2008 and future years, applicants must comply with the following:

1. When procuring equipment for communication system development and expansion, a standards-based approach should be used to begin migration to multi-jurisdictional and multi-disciplinary interoperability. *Specifically, all new digital voice systems should be compliant with the Project 25 (P25) suite of standards... This guidance does not preclude funding of non-P25 equipment when there are compelling reasons for using other solutions.*²⁵
2. Grant requests must support at least one of the five goals or initiatives presented within this SCIP.
3. Applicants must be able to clearly define how the project or equipment purchase improves interoperable communications on a multi-discipline and multi-jurisdictional basis.
4. Applicants must be National Incident Management System (NIMS) compliant. For more information please visit <http://www.fema.gov/nims>.

²⁵ Recommended Federal Grant Guidance, Emergency Response Communications and Interoperability Grants, (Fiscal Year [FY] 2007), <http://www.safecomprogram.gov>.

5. Applicants must have started entering current information on communications assets into CASM prior to acquisition of new grant funded equipment, and complete within six months.
6. Applicants must be named on a Regional Integrated Communications SOP within twelve months of funding request.
7. Applicants must comply with all training requirements of this SCIP.
8. Applicants must comply with all technical requirements of this SCIP.
9. Applicants must be able to provide the required matching funds as outlined in the applicable grant guidance.
10. Applicants must meet state interoperable channel requirements for new dispatch consoles and mobile and portable radios.

6.5 Critical Success factors

(Criteria 10.7)

The essential factors to the success of this Statewide Communications Interoperability Plan are the responsibility of the State Legislature and plainly stated in the following initiatives:

- Governance - to "promote state legislation that enforces timely and cost-efficient execution of strategic plan initiatives which support state-wide communications and interoperability."
- Funding - to "identify new and existing sources of funding in budgets, taxes, bonds, motor vehicle license fees, traffic violation fines, road taxes and/or elsewhere for interoperable communications equipment, infrastructure, backhaul, upgrades, ongoing maintenance and call center expenses" and to establish "consistent funding for on-going development, capital replacement, and maintenance costs."

Additional success factors include:

- The agreement and commitment of public safety agencies to plan collaboratively with neighbor agencies before buying communications equipment.
 - Invest in shared regional communications infrastructure.
 - At every opportunity, seek commitments from partners to improve and test interoperability resources, operations, policies and economic options.
- Design connections and systems based on what is now in place and what users need.
 - Individual systems need stand-alone value, serve ability – one system leaving does not affect the rest of the system, and sub-systems need multiple connection possibilities.
 - System capability needs to be able to dial up or dial down for any given incident.
- Having talented people and agility across the continuum.

- Train in operational contexts, and provide continuous feedback to build flexible people and teams.
- Multi-agency, multi-jurisdiction command communications.
 - Predict circumstances and identify roles that need to talk to one another.
 - Determine Who, When, How Much & How Often
 - Planned methods to effectively and efficiently share information between people and agencies.
 - Knowing how those connections will be managed.
 - ◆ In day-to-day use for common events.
 - ◆ In an unusual incident.
 - ◆ In a disaster beyond the capabilities of local resources.

6.6 Identifying, Developing, & Overseeing Operational Requirements, SOPs, Training, Technical Solutions, & Short- and Long term Funding Sources

(Criteria 10.5)

Comprehensive plans for identifying and developing SOPs are currently being established by various working groups. These templates will be fully developed and confirmed by the TxRC Steering Committee and approved by the Executive Committee by June 2008.

The Technology Working Group is providing high level P25 and IP migration plans for agencies and systems. The TxRC plans to contract with a Communications Engineer to assist with the development of regional system designs and work with the Texas Interoperability Coordinator on implementation of projects.

The short-term funding plan is to prioritize PSIC and DHS funds for immediate and critical interoperability needs. Our goal is to have state legislation established within two years that will provide funding specifically for public safety interoperability. The detailed funding program is addressed in Section 7. The Working Groups will be overseeing individual SCIP requirements, e.g. SOPs and training; entities not meeting the established SCIP requirements will not be eligible for interoperable communications grant funding.

The 2008 Focus Group sessions will be centered on the review of all SCIP operational requirements, as will be the 2nd Strategic Planning Session. Prior to these group sessions, and before submitting SOPs, training, technology migration timelines and detailed funding plans to the Executive Committee, the TxRC Steering Committee will review, evaluate and modify documentation as required, then vote to approve and send forward, or vote to send back to the Working Group for additional information.

7 Funding

State, tribal, federal and local governments make the most of available funding through infrastructure sharing for radio towers and facilities and shared channels. Regions and local government are sharing deployable communications vehicles or equipment sets that can be used to provide emergency communications in areas of the state where it is unfeasible to install permanent communications infrastructure.

However, additional funding sources must be developed. As stated in the first Governance initiative, the Executive Committee and Funding Working Group will *actively “promote state legislation that enforces timely and cost-efficient execution of strategic plan initiatives which support statewide communications and interoperability.”*

(Criteria 9.1, 9.2)

The Public Safety Wireless Network Program published a “Funding Strategy Best Practices Report”. Included in this report are several descriptions of successful programs developed and implemented by public safety agencies. One program implemented a funding strategy for emergency communications with a \$1.25 surcharge on all Department of Motor Vehicles transactions. This is providing the state with \$15-million per year for on-going communications expenses.²⁶

Work has begun to educate the leadership of the 2009 Texas Legislature on the critical need for establishing a sustained funding mechanism for operations and maintenance, as well as identifying an entity or group to oversee the management and funding of the network linking the P25 radio systems together. This body will also be responsible for providing the necessary leased lines and data circuits to the participating agencies and for the recurring funding costs.

In addition to seeking the establishment of a recurring funding mechanism from the State Legislature, the Funding Working Group has identified various grants as anticipated sources of funding, as displayed in Tables 9 and 10. Information on these funding sources will be placed on the TxRC web site for use by public safety agencies and, where appropriate, actively pursued by the Funding Working Group as future sources of short- or long-term funding. Research to identify future sources of funding programs will be an ongoing endeavor of the TxRC.

²⁶ INTEROPERABILITY INNOVATION: STATE BEST PRACTICES & MODELS FOR FIRST RESPONDER COMMUNICATIONS; First Response Coalition, March 2007.
http://www.firstresponsecoalition.org/docs/FRC_State_Interoperability_Report_030707_FINAL.pdf

Table 9 - Anticipated Funding Sources & Funding for SCIP Implementation

Texas SCIP Anticipated Funding Sources & Funding for FY 2008, 2009, 2010						
<i>Distributions are dependent upon available funding</i>						
Sources of Anticipated Funding		Award	2008	2009	2010	— Total — 3 Year Identified Project Funding
PSIC Grant		\$65,069,247	\$43,577,652	\$0	\$0	\$43,577,652
	Strategic Technology Reserve	\$5,039,518	\$5,039,518			\$5,039,518
SHSP (25%)		\$34,400,000	\$8,600,000	\$8,600,000	\$8,600,000	\$25,800,000
LETPP (25%)		\$24,560,000	\$6,140,000	\$6,140,000	\$6,140,000	\$18,420,000
Urban Area (25%)	Houston Area	\$25,000,000				\$0
	Dallas/Fort Worth/Arlington Area	\$20,950,000				\$0
	El Paso Area	\$5,840,000				\$0
	San Antonio Area	\$6,750,000				\$0
Texas Legislature				\$60,000,000	\$60,000,000	\$120,000,000
TOTAL			\$0	\$0	\$0	\$212,837,170
<div style="border: 1px solid black; padding: 5px;"> <p>Note: Only 25% of award is typically allotted for interoperable communications due to other critical needs for equipment and training to hazardous materials, IEDs and other situations. PSIC Grant is less pre-designated Tier I UASI funds, and M&A.</p> </div>						

Urban Area Anticipated Funding and Sources are included in Table 12. "Urban Area Needs and Estimated Costs".

Table 10 - Possible Additional Sources of Funding

ADDITIONAL Sources of Possible Funding for Texas Public Safety Interoperable Communications				
<i>Distributions are dependent upon available funding</i>				
Sources of Possible Funding	2008	2009	2010	— Total — 3 Year Identified Project Funding
DHS: Transit Security* (1% of avg.)	\$9,000	\$9,000	\$9,000	\$27,000
DHS: Port Security* (1%)	\$105,000	\$105,000	\$105,000	\$315,000
DHS: Intercity Bus Security* (.5%)	\$1,500	\$1,500	\$1,500	\$4,500
DHS: Buffer Zone Protection* (25%)	\$1,625,000	\$1,625,000	\$1,625,000	\$4,875,000
Assistance to Firefighters Grant**	\$1,000,000	\$1,000,000	\$1,000,000	\$3,000,000
DOJ				\$0
Byrne** (when available)	\$0			\$0
JAG*	\$20,000	\$20,000	\$20,000	\$60,000
COPs** (when available)	\$0			\$0
DOT*				\$0
SAFETEA-LU Program	\$150,000	\$300,000	\$500,000	\$950,000
State-funded Border Security Initiative	\$13,719,205	\$13,719,205		\$27,438,410
Texas Forest Service (towers)	\$100,000	\$100,000	\$100,000	\$300,000
Total				\$36,969,910

Legend: (%) and the \$\$ show n in that catagory identifies the percentage of funding that is typically used and/or a new goal from this grant for interoperable communications.
 *These are possible sources of funding w ith specific allocations to Texas and specific requirements. \$\$ show n are goals for Texas SCIP.
 **These are possible sources of funding w ith no specific allocations to states or agencies. Applications are very competitive. \$\$ show n are goals for Texas SCIP.

The information provided from CASM, after the initial communications data is entered, will be used to help identify ongoing back-haul and connectivity costs plus anticipated costs for resources and equipment. The Funding Working Group will use this information to develop a formal plan to provide dedicated funding streams. The initial comprehensive funding strategy will be developed from Tables 9 through 14.

Tables 11 through 14 identify interoperability needs for the next three years by region, urban area, and state agency as well as anticipated and possible sources of funding. The “needs” and “funding sources” will be revised frequently as circumstances change. These projects are not prioritized or listed in any specific order. As available interoperability funding is identified, regions/agencies will be required to submit applications. Projects that will be prioritized for funding are those that best address the

criteria of the funding program as well as the three Strategic Initiatives shown in Section 5.4 and the Short- and Long-term Initiatives listed in Section 6.3.

Table 11 - Regional Needs and Estimated Cost FY 2008 - FY 2010

Regional Needs and Estimated Costs FY 2008 - FY 2010		
Region / Agency	Identified Interoperability Needs	Estimated Cost to Meet Needs
<i>Distributions are dependent upon available funding</i>		
COG's / REGIONAL SYSTEMS		
Regionwide	COG Mutual Aid / Operability- 254 transmitters [1/county] @ \$50K ea. + 2540 subscribers units @ \$2K ea.)	\$17,780,000
Regionwide	COG Tower Replacement: 144 towers / 280' high @ \$150K ea. [2/yr/COG]	\$21,600,000
Regionwide	System Engineering Assistance: Leveraging existing equipment/systems, evaluation and/or design and project management of state and regional communications systems.	\$900,000
Borderwide (El Paso to Brownsville)	Tx/Mex Border Communications Operability/Interoperability Initiative: Project 25 Communications infrastructure along the Mexico Border.	\$70,000,000
AACOG	Installation of additional repeater sites, tower installations, reprogramming of radio equipment, upgrade of existing VHF repeaters, VoIP Consoles, 700 Mhz- 4.9 GHz backhaul network. Overlay of existing 800 Mhz systems with WAIS and VHF systems in region. Interconnection with adjoining Regional Systems.	\$7,932,000
ARKTEX	Installation of additional repeater sites, tower installations, reprogramming of radio equipment, upgrade of existing VHF repeaters, VoIP Consoles. Upgrade nine existing county communications systems to P-25. Interoperability planning to be accomplished by partnering w/ NCCOGG, DETCOG and ETCOG (and future participating COGs) using various radio systems. Upgrade existing towers for repeater operation. Fund a statewide radio system training program.	
BVCOG	Upgrade and connect two existing systems as Stage 1 of Regional Standards-based Project 25 System	\$29,000,000
CAPCOG	Capital Area Council of Governments - Upgrade and expand regional radio communication systems to P25 standards, especially focusing in the counties outside of Travis;	\$12,000,000
CTCOG	250' Radio Tower in Copperas Cove; Open Sky data frequencies for Bell County; Bell County Tower Site in Troy, TX; and Killeen ISD Radio upgrades.	
CBCOG	Phase 1- Upgrade seven existing county communications systems to P-25. Upgrade 22 PSAP to a single talk group reserved for dispatch. Expansion and linking of 3800 user public safety communication systems to include a 4 channel trunked system in Portland and Aransas County. Upgrades to EDACS system in Kingsville. Mobile data, wireless IP network	\$8,375,992
CVCOG	Add standards-based P25 Infrastructure and upgrade existing systems to improve interoperability. Implement regional UCALL/VCALL /7CAL/8CALL to improve regional and interregional mobile coverage.	\$2,553,000
DETCOG	Infrastructure enhancement through installation of towers with gateway and low band antennae to remedy current commo gaps and extend current commo range using multiple gateways. Infrastructure enhancement will provide Level 6 potential through utilization of voice over IP as well as future WiFi access nodes.	

ETCOG	East Texas Medical Center's system covers 15 counties supporting 250 agencies and 7000 users. ETMC is in the process of upgrading from analog to P25 digital to tie back into the Harris County P25 System.	\$11,000,000
GCRPC	VHF Repeaters for 3 counties	\$300,000
HOTCOG	Purchase of six portable units to be utilized in existing communication trailers. Three year project to provide redundant dispatch capability from county to county. By adding additional tandems to PSAP (Year 1=\$17,00, years 2 & 3 \$12,000)	\$113,000
HGAC	Implement level 6 standards based, P25 compliant system in the 13 counties of H-GAC. H-GAC is also part of the multi cog proposal which is designed to include: HGAC, NCTCOG, BVCOG, SETRPC, ETCOG, DETCOG and HOTCOG.	\$37,500,000
LRGVDC	Phase 1 - upgrade and connect existing system using Standards-based P25 System. Phase 2 - Continue upgrade to provide for transmission of mobile data and video.	\$4,000,000
MRGDC	Next phase of MRGDC P25 infrastructure covering 9 counties, 51 agencies in the border area; critical need for microwave links; includes consoles, control stations, and IR site.	\$2,000,000
NORTEX	Member of 6 COG Group to; provide P-25 subscriber radios and implmentation of calling channels at all tower locations in region. Upgrade existing towers for repeater operation. Fund a statewide radio system training program	
NCTCOG	Multi-Region, Standards-Based Shared Systems Level 6 Overlay. \$19M for each of the three years. Potential involvement include HGAC, NCTCOG, BVCOG, SETRPC, ETCOG, ARK-TEX, DETCOG and HOTCOG. A non-proprietary system that will serve more than 500 cities and counties in the coverage area.	\$57,000,000
PRPC	Installation of 5 repeater sites in Phase 1 Pancom VHF plan, VOIP Consoles and 4.9 GHz backhaul network. VHF/UHF/700/800 Calling Channels overlay for region. Installation of remote receivers, voted receiver and backup generators. P25 Subscriber units.	\$9,968,290
PBRPC	Implement regional VHF/800/700 standards-based P25 infrastructure providing mobile coverage to 17 county area; Leveraged with existing P25 city of Odessa switch, border initiative regions	\$8,300,000
RGCOG	A three year-four phase UASI Regional P25 Radio System. Increase to full capacity - 800 Mhz. P25 System, add licenses for 8000 subscribers, update 911 Dispatch Centers, add additional sites for increased coverage.	\$17,700,000
SETRPC	Multi-jurisdictional-multi-region Interoperability plan to be accomplished by adding 61 repeaters, 2 towers, 2 controllers and various radios and mobile data terminals. Will combine disparate systems used by 13 jurisdiction into one regional system.	\$5,758,000
SPAG	A multi-agency-multi-Regional proposal to migrate existing VHF users to Standards based P25 system. Estimate of 57 repeaters to be replaced prior to 2013. Will partner with five other Councils of Government to ensure that all six regions will have interoperability (PRPC, PBRPC, CVCOG, WCTCOG and NCTCOG)	\$25,000,000
STDC	3 year Sustainment Program to include Non-Proprietary Inspections, Preventive and Regular maintenance of existing Communication System to include radio communication hardware & towers to attain minimum of level four interoperability.	\$300,000
TEXOMA	Implement solution for tri-county area to support frequent mutual aid operations between VHF/700/800 systems. TCOG has no 700/800 users but operations with NCTCOG/UASI area users makes capability a necessity	\$2,900,000
WCTCOG	Member of 6 COG Group to; provide P-25 subscriber radios and implmentation of calling channels at all tower locations in region. Upgrade existing towers for repeater operation. Fund a statewide radio system training program	\$4,000,000
Statewide	Connectivity and Back-haul expenses. This cost is not yet available. Regional Systems Requirements for eligibility TBD by special TxRC Working Group	\$3,000,000
Statewide	SOPs Management, Training & Exercises	\$3,000,000
Total Regional Needs and Estimated Cost FY 2008 - FY 2010		\$361,980,282

Distributions are dependent upon available funding

Table 12 - Urban Area Needs and Estimated Cost FY 2008 – FY 2010

Urban Area Needs, Estimated Costs and Identified Funding and Sources FY 2008 - FY 2010				
Region / Agency	Identified Interoperability Needs	Estimated Cost to Meet Needs	2008 - 2010 Identified Funding & Sources	
URBAN AREAS				
Houston			\$44,500,000	UASI, PSIC Designated funding
Houston, City	700 MHz public safety interoperable communications system.	\$150,000,000	\$79,000,000	GO Bonds, City funds, In-kind
Harris Co	Upgrade and build capacity of regional radio system.	\$20,000,000	\$300,000	General Fund
Dallas/Fort Worth/ Arlington		\$0	\$31,425,000	UASI
Dallas	City of Dallas 700 MHz public safety interoperable communications system.	\$70,000,000		
Fort Worth	City of Fort Worth 700 MHz public safety interoperable communications system.	\$70,000,000		
Metroplex	700 MHz interoperability infrastructure overlay.	\$10,000,000		
El Paso	Stage 1 of Regional 800 MHz & VHF Standards-based Project 25 System Build-out covering City of El Paso and County of El Paso.	\$22,855,000	\$8,760,000	UASI
San Antonio, Bexar Co.	P25 Switch and connectivity to VIA, LCRA, Corpus Christi and AEP / TXU (\$5.8M); 700MHz Overlay (\$10M); IH-37, 700MHz Interoperability Corridors (\$4M) 700MHz Mobile Interoperability Sites (\$2.4M).	\$22,200,000	\$10,125,000	UASI
Total Urban Area Needs, Costs and Funding Sources FY 2008 - FY 2010		\$365,055,000	\$174,110,000	

Distributions are dependent upon available funding

Table 13 - State Agency Needs and Estimated Cost FY2008 –FY2010

State Agency Needs and Estimated Costs FY 2008 - FY 2010		
Region / Agency	Identified Interoperability Needs	Estimated Cost to Meet Needs
STATE AGENCIES		
DPS	3 IP-based interface switches to network all DPS facilities and provide interoperability with regional systems; 1 gateway to provide interoperability with other states agencies and systems; 1 master switch for an IP-based hybrid trunked statewide radio network.	\$9,000,000
TxDOT	(1) Complete conversion from Lowband to VHF Highband. Projected cost 3.3 Million dollars for subscriber radios statewide and 2 Districts that still need Highband Infrastructure and subscriber radios. (2) Radio system for the Dallas District. 700MHz, P-25, Trunked radio system with capacity that all state agencies can use and expansion capability that would allow participation by other agencies for growth into a Dallas regional system if desired. Phase 1 projected cost, 15.8 Million dollars for initial phase of construction. This includes towers, switch, infrastructure and subscriber units for TxDOT. Phase 2 would involve occurring cost of connectivity for linking of sites to switch. Cost 4.5 Million dollars.	\$23,600,000
Texas Forest Service	qty 50 P25 portable radios	\$150,000
TP&W	Upgrade equipment to meet narrow-band requirements and P25; equipment shelters; microwave for back-haul.	\$4,600,000
TABC	(1) Replacement of one hundred-twenty (120) V.H.F. High Band Portable (Hand Held) 2-Way Radios to meet Federal narrow band requirements that are P25 Digital Capable for interoperability with State, County and Local Law Enforcement agencies statewide. Cost: \$300,000. (2) Replacement of two hundred-fifty (250) V.H.F. High Band Mobile 2-Way Radios to meet Federal narrow band requirement that are P25 Digital Capable for interoperability with State, County and Local Law Enforcement agencies statewide. Cost: \$765,250.	\$1,065,250
Texas Military Forces	Interoperable comms & satellite packages to support the Joint/Inter-Agency TFs and CPs (Annex N to State Plan); P25 radio tactical level interoperability; host network infrastructure modernization.	\$7,300,000
TDCJ	30 Facilities - Hand held radios to be supplied to key personnel for emergency use; P25 compliant equipment to replace infrastructure and radios for TDCJ facilities located in the valley and on the border of Mexico - 6 Facilities.	\$4,700,000
LCRA	Implementation of 700 MHz. overlay to existing LCRA system. Install 2 redundant switches plus with conventional gateway, ISSI interface, IP gateway, and console for a seamless intergration into existing regional systems as well as agencies existing conventional systems for interoperability.700 MHZ channel equipment installation at 46 existing sites that will consist of 3 RF channels and accessories to provide approximately 37,000 square miles of RF coverage that consist of all or part of 54 counties in central Texas.	\$13,550,000
Brazos River Authroity	Replace current infrastructure to meet current VHF requirements for LE; purchase MDT systems at Possum Kingdom Lake, Lake Granbury & Lake Limestone for specialized LE.	\$2,700,000
Total State Agencies Interoperability Needs and Estimated Cost FY 2008 - FY 2010		\$66,665,250

Distributions are dependent upon available funding

Table 14 - Total SCIP Project / Budget Summary FY 2008 – FY 2010.

SCIP NEEDS / FUNDING SUMMARY FY 2008 - FY 2010			
	Interoperability Needs Summary	Estimated Cost to Meet Needs	2008 - 2010 Anticipated Funding & Sources
	Total Regional Needs and Estimated Cost FY 2008 - FY 2010	\$361,980,282	
	Total Urban Area Needs and Estimated Cost FY 2008 - FY 2011	\$365,055,000	
	Total State Agencies Needs and Estimated Cost FY 2008 - FY 2012	\$66,665,250	
	Funding Summary	<i>Distributions are dependent upon available funding</i>	
	SCIP Anticipated Funding		\$212,837,170
	SCIP Additional Possible Funding		\$36,969,910
	Urban Areas Identified Funding		\$174,110,000
	Total Texas SCIP Interoperability Needs / Funding Summary FY 2008 - FY 2010	\$793,700,532	\$423,917,080

The critical interoperability needs will be evaluated in relationship to the SCIP initiatives and goals, prioritized and implemented as funding is appropriated. This data can, and will be, updated frequently.

8 Conclusion & Next Steps

More than 23.5 million persons call Texas home. They live in communities ranging in population from fewer than 100 to more than 3,000,000. Texans believe that if you are one of the 67 citizens of Loving County or if you live in the major metropolitan area of Houston, the public safety agencies serving you should have similar training and be able to provide similar services.

At the recent Strategic Planning Session, more than 130 Texans, representing more than 5,000 public safety agencies and 1,460 jurisdictions, prioritized the next steps to achieve interoperability for all public safety agencies throughout Texas as follows:

1. Ensure operability.
2. Provide interoperable solutions.
3. Upgrade and expand regional shared systems.

Also, high on the list of prioritized initiatives is training and exercises, and coordination of multiple agencies. The TxRC and state agencies will be assisting the regions as they revise or create regional *user-friendly* SOP's and training programs. The new Training and Exercise programs will be evaluated and modified as needed. Training instructors will schedule programs for each region.

Over the next three years, the priorities of this Statewide Communications Interoperability Plan will be to improve interoperability among local, tribal, state and Federal entities through partnerships which:

1. Build a Governance structure which addresses the needs of the urban areas, Critical Infrastructure and Key Resources, local and state agencies, as well as those of the Emergency Services Districts, Tribal Nations and Volunteer Fire Departments and in the rural areas.
2. Mandates the provision of Standard Operating Procedures that include interoperable communications activities:
 - A. Be included in realistic regional SOPs which provides for the integrated activities of state, local and Federal responders.
 - B. That are easily accessed and studied by all state, federal, tribal, non-governmental and local emergency responders.
 - C. That incorporate NIMS requirements in disaster management and incident command operations.
3. Prioritizes and builds-out (1) operability and interoperability simultaneously, (2) interoperability within existing systems, and (3) regional systems into standards-

based interoperable systems, all while meeting current and future needs. This will be accomplished:

- A. By providing operability and interoperability where needed with the installation of shared Texas Interoperability Channels.
 - B. By ensuring all state and federally funded communications equipment purchases:
 - 1) Is required by the agency to be NIMS and OSHA compliant;
 - 2) Serve specific interoperability needs such as designated interoperability/ mutual aid infrastructure (shared Texas Interoperability channels), patches, gateways or switches; or
 - 3) Serve Strategic Technology Reserve requirements; or
 - 4) Meet the SAFECOM Project 25 “Compliance Assessment Requirements” found at <http://www.safecomprogram.gov/NR/rdonlyres/F40FA131-4193-4F85-856C-B735A1547168/0/GRANTGUIDANCEPROJECT25EXPLANATORYADDENDAv2.pdf>.
- 4. Provides and requires Interoperable Communications training, along with any and all emergency response and disaster management training, and exercises, at the regional level. This training is to be made available to all responders through various means such as classroom training, table-top drills, on-line and/or distributed workbooks, etc.
 - 5. Encourages regular usage of interoperable communications equipment with drills to exercise individual public safety agency and regional disaster management operational requirements for gateways and console patches.
 - 6. Designs interoperable communications systems to serve as the primary communications system for public safety agency operations within a region.

Next Steps - Taking the Plan to the Street

- 1. Call the first meeting of the Executive Committee.
- 2. Assist in hiring a full-time Texas Interoperability Coordinator.
- 3. Develop an Outreach Program to provide interoperability information to Texas emergency responders, elected officials, and other stakeholders.
 - A. Circulate the SCIP. Review and discuss the SCIP with individual agencies, at association meeting, at conferences and seminars, etc.
 - 1) Point out the benefits.
 - 2) Point out the requirements.
 - 3) Point out CASM.
- 4. Fully develop the Governance Charter and Agreement
- 5. Fully develop the Funding Plan.
 - A. Identify political champions.
- 6. Fully develop the SOP documents and Training & Exercise Programs.

- A. Request recommendations from state, federal, tribal, non-governmental and local agencies.
- B. Identify operational protocol initiatives.
- 7. Fully develop migration strategies and templates.
 - A. Provide regions with migration plans suitable to specific needs.
- 8. Develop a long-term strategy to maintain the Texas Interoperability effort.

The premise of interoperable communications is based on regional collaboration. The planning and execution of tasks to achieve optimal statewide interoperability will be a direct result of State Legislative support and all public safety agencies and organizations, including volunteer fire departments, EMS organizations, tribal governments, local-state-and federal law enforcement and fire services, and numerous other governmental and organizations working together with one purpose — to provide first responders with real-time direct and seamless interoperable voice and data communications capability by 2015.

Appendix A Participating Agencies and Points of Contact

The following list identifies those who attended the ICTAP workshop on September 11-12, however many representatives of different disciplines across the state participated via the survey and regional workshops.

CATEGORY	TITLE and AGENCY	REGION	NAME	ADDRESS	E-MAIL ADDRESS
Governor's Office	Homeland Security Governmental Affairs Coordinator, Office of the Governor	State	Harrison, Jim	Office of the Governor, 1100 San Jacinto Avenue, Austin, TX 78701	jharrison@governor.state.tx.us
State and Local Elected Officials	City of Austin, City Councilman	Region 12, CAPCOG	Martinez, Mike	City Hall, 301 W. 2 nd St. 2 nd Floor, Austin, TX 70701	Mike.Martinez@ci.austin.tx.us
State and Local Emergency Medical Services	Communications Director, East Texas Medical Center	Region 6, ETCOG	Haislet, Jeff	ETMC – EMS, 352 S. Glenwood, Tyler, TX 75702	jhaislet@etmc.org
State and Local Health Officials	Radio Systems Manager, Montgomery Co Health Dept, City of Conroe	Region 16, HGAC	Evans, Justin	299 George Strake Blvd., Conroe, TX 77304	jevans@mchd-tx.org
State and Local Fire Response Services	Assistant State Fire Marshal, Texas Dept. of Insurance	Statewide	Bishop, Richard	State Fire Marshal's Office, PO Box 149221, MC-112-FM, Austin, TX 78714-9221	richard.bishop@tdi.state.tx.us
State and Local Fire Response Services	City of Arlington, 620 W Division, Arlington, TX 78610	Region 4, NCTCOG	Eads, Gerard		Gerard.Eads@arlingtontx.gov
State and Local Fire Response Services	City of Keller	Region 4, NCTCOG	King, Kelly B.		kking@kellerfd.com
State and Local Fire Response Services	Communication Specialist, Austin Fire Department	Region 12, CAPCOG	Wilks, Gary	Austin Fire Department, 4201 Ed Bluestein Blvd., Austin, TX 78723	gary.wilks@ci.austin.tx.us
State and Local Fire Response Services	Division Manager, Houston Fire Dept.	Region 16, HGAC	Newman, Stanley (Wayne)	1205 Dart St., Houston, TX, 77007	wayne.newman@cityofhouston.net
State and Local Fire Response Services	FAO Technical Services, San Antonio Fire Department	Region 18, AACOG	Andreas, Dwight	115 Auditorium Circle, San Antonio, TX 78205	dwight.andreas@sanantonio.gov
State and Local Fire Response Services	Firefighter, San Antonio Fire Department	Region 18, AACOG	Davenport, William	San Antonio Fire Department, 115 Auditorium Circle, San Antonio, TX 78205	wdavenport@sanantonio.gov

State and Local Fire Response Services	Midland County/ Greenwood VFD	Region 9, PBRPC	Ligon, Lee	6301 S. County Road 1065, Midland, TX 79706	ligonle@gmail.com
State and Local Law Enforcement	Captain Game Warden/Division Inspector, Tx Parks and Wildlife	Statewide	Teeler, Gary	TPWD, 4200 Smith School Rd, Austin, TX 78744	gary.teeler@tpwd.state.tx.us
State and Local Law Enforcement	Chief Deputy, Uvalde County Sheriff's Office	Region 24, MRGDC	Medina, Raul	121 E. Nopal St., Uvalde, TX 78801	rmedina@leo.gov
State and Local Law Enforcement	Chief of Police, City of West Orange	Region 15, SETRPC	Stelly, Michael	West Orange PD, 2700 Austin Ave., West Orange, TX 77630	mstelly@cityofwestorange.com
State and Local Law Enforcement	Communications Manager, El Paso Police Department	Region 8, RGCOG	Kozak, Mary	911 North Raynor, El Paso, TX 79903- 4136	MaryK@elpasotexas.gov
State and Local Law Enforcement	Department of Public Safety	Statewide	Bearden, Brad	PO Box 4087, Austin, TX 78773	brad.bearden@txdps.state.tx.us
State and Local Law Enforcement	Department of Public Safety	Statewide	Early, Todd		todd.early@txdps.state.tx.us
State and Local Law Enforcement	Kerrville Police Dept.	Region 18, AACOG	Wendling, Jeffrey L.	429 Sidney Baker, Kerrville, TX 78028	jeffreyw@kerrville.org
State and Local Law Enforcement	Lieutenant, City of Houston Police Dept.	Region 16, H-GAC	Casko, Steve	8300 Mykawa Rd., Houston, TX 77048	stephen.casko@cityofhouston.net
State and Local Law Enforcement	Lieutenant, Montgomery County Sheriff's Office	Region 16, HGAC	Park, David	#1 Criminal Justice Dr Conroe, Texas 77301	david.park@mctx.org
State and Local Law Enforcement	Lt., Bellville Police Dept.	Region 16, HGAC	Blakey, David	City of Bellville Police Dept., 20 S. Harris St., Bellville, TX 77418	david.blakey@sbcglobal.net
State and Local Law Enforcement	Program Director, Texas Dept. of Public Safety	Statewide	Pletcher, Robert	DPS, 5805 N. Lamar Blvd., Austin, TX 78751	robert.pletcher@txdps.state.tx.us
State and Local Law Enforcement	Sergeant Investigator, Alice Police Department	Region 20, CBCOG	Valadez, Raul David	415 E. Main St., Alice, TX 78332- 4968	cid417@cityofalice.org
State and Local Law Enforcement	Sergeant, Midland County Sheriff's Office	Region 9, PBRPC	McDaniel, B. John	PO Box 11287, Midland, TX 79702	bjohn_mcdaniel@co.midland.tx.us
State and Local Law Enforcement	Sheriff, Refugio County	Region 20, CBCOG	Petropoulos, Earl	Refugio County Sheriff's Office, PO Box 1022, Refugio, TX 78337	earlpetropoulos@yahoo.com

State and Local Law Enforcement	Technical Services Mgr., Wichita Fall Police Dept.		Region 3, NORTEX	Vasquez, John	610 Holliday St., Wichita Falls, TX 76301	john.vasquez@wfpd.net
State and Local Emergency Management	GDEM/SAA Lamar Blvd. 78752	5805 N. Austin, TX	Statewide	Enriquez, Oswald	Governor's Division of Emergency Management, 5805 N. Lamar Blvd., Austin, TX 78752	oswald.enriquez@txdpx.state.tx.us
State and Local Emergency Management	GDEM/SAA Lamar Blvd. 78752	5805 N. Austin, TX	Statewide	Urtado, Joe	5805 N. Lamar Blvd., Austin, TX 78752	Joe.urtado@txdps.state.tx.us
State and Local Emergency Management	GDEM/SAA Lamar Blvd. 78752	5805 N. Austin, TX	Statewide	Wilson, Kenneth	Texas DPS, 5805 N. Lamar, Austin, TX 78752	kenneth.wilson@txdps.state.tx.us
State and Local Emergency Management	City of Arlington		Region 4, NCTCOG	Patterson, Ben		Ben.patterson@arlingtontx.gov
State and Local Emergency Management	Emergency Management Coordinator, Hidalgo County		Region 21, LRGVDC	Pena, Tony	PO Box 1356, Edinburg TX 78539	tony.pena@co.hidalgo.tx.us
State and Local Emergency Management	GDEM/SAA Lamar Blvd. 78752	5805 N. Austin, TX	Statewide	Sheffield, Mike	5805 N. Lamar, Austin, TX 78752	mike.sheffield@txdps.state.tx.us
State and Local Emergency Management	GDEM/SAA Lamar Blvd. 78752	5805 N. Austin, TX	Statewide	Hood, Cindy	Texas DPS, 5805 N. Lamar Blvd., Austin, TX 78752	cindy.hood@txdps.state.tx.us
State and Local Emergency Management	GDEM/SAA Lamar Blvd. 78752	5805 N. Austin, TX	Statewide	Phillips, Jeanette	5805 N. Lamar Blvd Austin, TX 78752	jeanette.phillips@txdps.state.tx.us
State and Local Homeland Security Offices	Mayor's Office of Homeland Security, Houston Police Dept.		Region 16, HGAC	Macha, Michael	Mayor's Office of Homeland Security 900 Bagby, MOPSHS, Houston, Texas 77002	michael.macha@cityofhouston.net
State and Local Transportation Agencies	Network Specialist III, Texas Dept. of Transportation		Statewide	Brewer, Joe	TXDOT, Attn. TRF- TM (CP 51), 125 E. 11th St., Austin, TX 78701	jbrew1@dot.state.tx.us
State and Local Transportation Agencies	Network Specialist III, Texas Dept. of Transportation		Statewide	Gilbert, Paul	TXDOT, 125 E. 11th St., Austin, TX 78701	pgilbert@dot.state.tx.us
Military Organizations	Adj. General's Dept., Texas Military Forces		Statewide	Ray, Jim	2200 W. 35th St., Austin, TX	jim.ray.jr@us.army.mil
Military Organizations	Adj. General's Dept., Texas Military Forces		Statewide	Rodriguez, Frank Jr.	Texas National Guard, 2200 W. 35th St., Austin, TX	frank.rodriguez@tx.nbg.army.mil
Military Organizations	Adj. General's Dept., Texas Military Forces J6/CIO		Statewide	Bruno, Janice	TXMF, 2200 W. 35th St., Austin, TX 78703	janice.elaine.bruno@us.army.mil

Military Organizations	Adj. General's Dept., Texas Military Forces	Statewide	Bell, Micah	Texas National Guard, 2200 W. 35th St., Austin, TX	micah.bell@us.army. mil
Military Organizations	Adj. General's Dept., Texas Military Forces	Statewide	Zitta, Stephen	2200 W. 35th St., #33, Austin, TX	stephen.zitta@tx.ngb. army.mil
Military Organizations	Adj. General's Dept., Texas Military Forces	Statewide	Kaufman, Ronald	TXMF, 2200 W. 35th St., Bldg. 66, Austin, TX 78703	ronald.kaufmann1@u s.army.mil
Military Organizations	Adj. General's Dept., Texas Military Forces	Statewide	Peluso, Victor	Texas Air National Guard, Camp Mabry, Austin, TX	victor.j.peluso@ng.ar my.mil
Federal Agencies	Regional Communications Coordinator, NCS/DHS	Federal	Burney, Michael	National Communications Systems / DHS, 10841 FM 1565, Terrell, TX 75160	Michael.burney@ass ociates.dhs.gov
Federal Agencies	Trainer, FEMA	Federal	Rutherford, Larry		larry.rutherford@ngc. com
UASI – San Antonio	Communications Supervisor, San Antonio Fire Department	Region 18, AACOG	Tymrak, T. J.	San Antonio Fire Department, 214 W. Nueva, Room 218, San Antonio, TX 78207	ttymrak@sanantonio. gov
UASI - Houston	Deputy Director, Radio Communication Services, City of Houston	Region 16, HGAC	Sorley, Tom	City of Houston, 611 Walker St., Ste. 936, Houston, TX 77002	tom.sorley@cityofhou ston.net
UASI – El Paso	Detective, El Paso Police Department	Region 8, RGCOG	Castillo, Patricia		castillop@elpasotexa s.gov
UASI - Dallas	Dir. of Community Service and Communications, NCTCOG	Region 4, NCTCOG	Keithley, Fred	North Central Texas COG, 616 Six Flags Dr., Arlington, TX 76011	fkeithley@nctcog.org
UASI – San Antonio	Public Safety Comm Manager, Bexar County Sheriff's Office	Region 18, AACOG	Adelman, Robert M.	Bexar County Sheriff's Office, 203 W. Nueva, Suite 309, San Antonio, TX 78207	radelman@bexar.org
UASI – Dallas	Radio Services Manager, City of Fort Worth	Region 4, NCTCOG	Bottorf, Mark	City of Fort Worth, 1000 Throckmorton, Fort Worth, TX 76102	mark.bottorf@fortwort hgov.org
UASI – El Paso	Regional Services Manager, Rio Grande Council of Governments	Region 8, RGCOG	Quintanilla, Marisa	Rio Grande Council of Governments, 1100 N. Stanton, Ste. 610, El Paso, Texas 79902	marisaq@riocog.org
UASI - Houston	Sr. Systems Technologist, Harris County	Region 16, HGAC	Chaney, John	Harris County Information Technology, 2500 Texas Ave., Houston, TX	john_chaney@co.harr is.tx.us

UASI - Dallas	Wireless Architect, City of Dallas	Region 4, NCTCOG	Scrivner, Dan	City of Dallas, 3131 Dawson, Dallas, TX 75226	j.scrivner@dallascityhall.com
Critical Infrastructure	LCRA	Multi-Region	Havins, Jimmy Don - P.E.		jhavins@lcra.org
Critical Infrastructure	LCRA	Multi-Region	Silva, Saul		Saul.silva.@lcra.org
Critical Infrastructure	Brazos River Authority (BRA)	Multi-Region	Spiewak, Daryl	BRA, 4600 Cobbs Dr., Waco, TX 76710	daryls@brazos.org
Other Non-government Organizations, Such as the Red Cross and Utility Companies	LCRA	Multi-Region	Ervin, Jason		jervin@lcra.org
Other Non-government Organizations, Such as the Red Cross and Utility Companies	LCRA	Multi-Region	Gibbons, Mike		mgibbons@lcra.org
Other Organizations	Assistant Director, Lower Rio Grande Valley Development Council	Region 21, LRGVDC	Cruz, Manuel	Lower Rio Grande Valley Development Council, 311 N. 15th St., McAllen, TX 78501	mcruz@lrgvdc.org, m.cruzer113@hotmail.com
Other Organizations	Bell County Communications	Region 23, CTCOG	Blowers, William	708 West Ave. O, Belton, TX 76513	william.blowers@co.bell.tx.us
Other Organizations	Bell County Communications	Region 23, CTCOG	Cross, Dalton	708 W. Ave. O, Belton, TX 76655	dalton.cross@co.bell.tx.us
Other Organizations	Business Analyst, City of Austin	Region 12, CAPCOG	Guerrero, Arletha		arletha.guerrero@ci.austin.tx.us
Other Organizations	Chief Information Officer, City of Austin	Region 12, CAPCOG	Collins, Pete	625 E. 10th St., Suite 900, Austin, TX 78701	pete.collins@ci.austin.tx.us
Other Organizations	City of Austin Consultant		Heydinger, Ted		news@capitaltech.us
Other Organizations	City of College Station	Region 13, BVCOG	Hare, Mike	310 Krenek Tap Rd, College Station, TX 77840	mhare@cstx.gov
Other Organizations	City of El Paso	Region 8, RGCOG	Johnson, Chris		johnsonca@elpasotexas.gov
Other Organizations	City of Lockhart	Region 12, CAPCOG	Slaughter, Aaron	201 W. Market St., Lockhart, TX 78644	aslaughter@lockhart-tx.org
Other Organizations	City of San Angelo	Region 10, CVCOG	Perry, Ron		ronald.perry@sanangelotexas.us
Other Organizations	Communications Manager, City of Beaumont	Region 15, SETRPC	Standridge, Tommy	City of Beaumont, 620 Marina Dr., Beaumont, TX 77703	tstandridge@ci.beaumont.tx.us

Other Organizations	Dir., Homeland Security, Permian Basin Regional Planning Council	Region 9, PBRPC	Welch, Barney	Permian Basin Regional Planning Comm., PO Box 60660, Midland, TX 79711	bwelch@pbrpc.org
Other Organizations	Director of Homeland Security, Nortex Regional Planning Commission	Region 3, NORTEX	Kilgo, Mary	4309 Jacksboro Hwy, Suite 200, Wichita Falls, TX 76302	mkilgo@nortexrpc.org
Other Organizations	Director of Regional Services, Heart of Texas Council of Governments	Region 11, HOTCOG	Sullivan, Erica	Heart of Texas Council of Governments, 1514 S. New Road, Waco, TX 76711	erica.sullivan@hot.cog.tx.us
Other Organizations	Director, Homeland Security, Capital Area Council of Governments	Region 12, CAPCOG	Schaefer, Ed	Capital Area Council of Governments, 6800 Burleson Rd., Austin, TX	eschaefer@capcog.org
Other Organizations	Division Chief, Harris County	Region 16, HGAC	Dodson, David	2500 Texas, Houston TX 77002	david.dodson@itc.hctx.net
Other Organizations	Emergency Operations Planner, South Plains Assoc. of Governments	Region 2, SPAG	Murillo, Tommy	South Plains Assoc. of Governments, 1323 58th St., Lubbock, TX 79452	tmurillo@spag.org
Other Organizations	Fire Marshal / Emergency Management Coordinator, Parker County	Region 4, NCTCOG	Scott, Shawn	215 Trinity St, Weatherford, TX 76086	shawn.scott@parkercountytx.com
Other Organizations	Harris County/CIO	Region 16, HGAC	Jennings, Steve		steve_jennings@co.harris.tx.us
Other Organizations	Homeland Security Coordinator, Coastal Bend Council of Governments	Region 20, CBCOG	Thomas, Robert "RJ"	Coastal Bend Council of Governments, 2910 Leopard St., Corpus Christi, TX 78469	rj@cbcogem.org
Other Organizations	Homeland Security Dir., Middle Rio Grande Development Council	Region 24, MRGDC	Anderson, Forrest	307 W. Nopal St., Carrizo Springs, TX 78834	Forrest.Anderson@mrfdc.org
Other Organizations	Homeland Security Director, Alamo Area Council of Governments	Region 18, AACOG	McFarland, Don	Alamo Area Council of Governments, 8700 Tesoro Dr., San Antonio, TX	dmcfarland@aacog.com
Other Organizations	Houston-Galveston Area COG	Region 16, H-GAC	Brown, Heather	H-GAC, 3555 Timmons Ln, Ste 120, Houston, TX 77027	heather.brown@h-gac.com
Other Organizations	Inspector, Office of Audit and Inspection, DPS	Statewide	Duke, Karen		Karen.Duke@txdps.state.tx.us

Other Organizations	ITS Project Manager, City of Fort Worth	Region 4, NCTCOG	Jennings, Bryan	City of Fort Worth, 1000 Throckmorton St., Fort Worth, TX 76102	bryan.jennings@fortworthgov.org
Other Organizations	Major, Texas Parks and Wildlife Department	Statewide	Correa, Rolly	3615 South General Bruce Drive, Temple, TX 76504	rolly.correa@tpwd.state.tx.us
Other Organizations	Operations Manager, Galveston Co Emergency Communication District	Region 16, HGAC	Wilkins, Jack	1353 FM 646 W, Suite 101, Galveston, TX	jackw@galco911.org
Other Organizations	Operations Supervisor, City of Waco	Region 11, HOTCOG	Blare, Larry	P.O. Box 2570 Waco, TX 76702	larrybl@ci.waco.tx.us
Other Organizations	Public Services Dept. Director, Houston Galveston Area Council	Region 16, H-GAC	Vick, Deidre	HG-AC, PO Box 22777, Houston, TX 77227	dvick@h-gac.com
Other Organizations	Radio Communications Manager, City of Laredo	Region 19, STDC	Pruneda, Juan	1101 Garden St., Laredo, TX 78040-2403	jpruneda@ci.laredo.tx.us
Other Organizations	Radio Technician V, City of Austin Wireless Office	Region 12, CAPCOG	Farries, David	City of Austin Wireless Office, 1006 Smith Road, Austin, TX 78721	david.farries@ci.austin.tx.us
Other Organizations	Regional Radio System Master Site Supervisor, City of Austin	Region 12, CAPCOG	Pena, Mike	City of Austin Wireless Office, 1006 Smith Rd., Austin, TX 78721	mike.pena@ci.austin.tx.us
Other Organizations	Senior Telecommunications Specialist, City of El Paso	Region 8, RGCOG	Mendez, Frank	City of El Paso, Public Safety Technology Division, 8600 Montana Ave., Suite C, El Paso, TX 79925	mendezf@elpasotexas.gov
Other Organizations	Senior Telecommunications Technician, City of El Paso	Region 8, RGCOG	Natividad, Emilio	City of El Paso, Public Safety Technology Division, 8600 Montana Ave., Suite C, El Paso, TX 79925	natividadex@elpasotexas.gov
Other Organizations	Sheriff's Association		Sutherland, Carol		carolsutherland@SATX.rr.com
Other Organizations	Sheriff's Association of Texas		Peters, Joe		joe@txsheriffs.org
Other Organizations	TCEQ		Crunk, Kelly		kcrunk@tceq.state.tx.us
Other Organizations	Technical Services Manager, City of Austin Wireless Office	Region 12, CAPCOG	Boys, Mark	City of Austin Wireless Office, 1006 Smith Road, Austin, TX 78721	mark.boys@ci.austin.tx.us

Other Organizations	Telecommunications Coordinator, MRGDC	Region 24, MRGDC	Condry, Spade	Middle Rio Grande Development Council, 216 W. Main St., Uvalde, TX	spade@911planning.com
Other Organizations	Telecommunications Specialist, DHS/FEMA		Petty, Ronald	800 North Loop 288, Denton, TX 76209	ron.petty@dhs.gov
Other Organizations	Texas AandM University	Region 13, BVCOG	Parr, Lance	Mail Stop 1174, College Station, TX 77843-1174	l-parr@tamu.edu
Other Organizations	Texas Association of Regional Councils	Statewide	Ada, Michael S.	TARC, 701 Brazos, Ste. 780, Austin, TX	mada@txregionalcouncil.org
Other Organizations	Texas Parks and Wildlife	Statewide	Lange, Shawn		shawn.lange@tpwd.state.tx.us
Other Organizations	Williamson County Emergency Communications	Region 12, CAPCOG	Oldham, Gary		goldham@wilco.org
Other Organizations	Wireless Comm Services Manager	Region 12, CAPCOG	Simpson, Mike	City of Austin Wireless Office, 1006 Smith Road, Austin, TX 78721	mike.simpson@ci.austin.tx.us
Other Organizations	Wireless Comm Tech Services Manager, City of Austin	Region 12, CAPCOG	Allen, Gary	City of Austin Wireless Office, 1006 Smith Road, Austin, TX 78721	gary.allen@ci.austin.tx.us
Other Organizations	Wireless Manager, Travis County Emergency Services	Region 12, CAPCOG	Brotherton, Chuck	Travis County Emergency Services, PO Box 1748, Austin, TX 78767	charles.brotherton@co.travis.tx.us
Regional Planning Committee Chairperson for 700 and 800 MHz	Public Safety Technology Manager, City of El Paso	Region 8, RGCOG	Guinn, Bonnie	City of El Paso, 8600 Montana, Ste. C, El Paso, TX 79925	guinnv@elpasotexas.gov
Regional Planning Committee Chairpersons for 700 and 800 MHz	Radio System Engineer, City of Bryan	Region 13, BVCOG	Mayworm, Ron	PO Box 1000, Bryan, TX 77805	rmayworm@bryantx.gov

Appendix B Glossary of Terms

Analog	A signal that may vary continuously over a specific range of values.
Band	The spectrum between two defined limited frequencies. For example, the Ultra High Frequency (UHF) is located from 300 MHz to 3,000 MHz in the radio frequency spectrum.
Bandwidth	The range within a band of frequencies; a measure of the amount of information that can flow through a given point at any given time.
Channel	A single unidirectional or bidirectional path for transmitting or receiving, or both, of electrical or electromagnetic signals.
Communications interoperability	The ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when needed, and as authorized.
Communications system	A collection of individual communication networks, transmission systems, relay stations, tributary stations, and data terminal equipment usually capable of interconnection and interoperation to form an integrated whole. The components of a communications system serve a common purpose, are technically compatible, use common procedures, respond to controls, and operate in unison.
Coverage	The geographic area included within the range of a wireless radio system.
Digital	Voice communication normally occurs as an analog signal; that is, a signal with a voltage level that continuously varies. Digital signals occur as the presence or absence of electronic pulses, often representing only one of two values: a zero (0) or a one (1). Voice transmissions may be sent over digital radio systems by sampling voice characteristics and then converting the sampled information to ones and zeros.
First responders	Individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers, as well as emergency management, public health, clinical care, public works, and other skilled support (such as equipment operators) that provide immediate support services during prevention, response, and recovery operations.
Frequency	The number of cycles or events of a periodic process in a unit of time.
Frequency bands	Where land mobile radio systems operate in the United States, including: High HF 25-29.99 MHz Low VHF 30-50 MHz High VHF 150-174 MHz Low UHF 450-470 MHz UHF TV Sharing 470- 512 MHz 700 MHz 764-776/794-806 MHz 800 MHz 806-869 MHz
Grant	Funding made available to local agencies from State and Federal government agencies, as well as from private sources, such as foundations. Grants usually require the submission of a formal application to justify one's funding request.
Hertz	Abbreviation for cycles per second.
Infrastructure	The hardware and software needed to complete and maintain the radio communications system.
Interference	Extraneous energy, from natural or man-made sources, that impeded the reception of desired signals.
Jurisdiction	The territory within which power or authority can be exercised.
Local revenue fund:	Funding obtained by local governments through local taxes (e.g. sales tax, property tax), user fees, and other user charges, as well as through the issuing of debt instruments, such as bonds.
Mutual aid	The mutual aid mode describes major events with large numbers of agencies involved, including agencies from remote locations. Mutual aid communications are not usually well planned or rehearsed. The communications must allow the individual agencies to carry out their missions at the event, but follow the command and control structure appropriate to coordinate the many agencies involved with the event.
Mutual aid channel	A radio channel specifically allocated for use during emergency mutual aid scenarios.
Narrow-banding	Generally, narrowband describes telecommunication that carries voice information in a narrow band of frequencies. For state and local public safety, narrow-banding typically refers

	to the process of reducing the useable bandwidth of a public safety channel from 25 kHz to 12.5 kHz. The FCC issued the migration of Private Land Mobile Radio systems using frequencies in the 150-174 MHz and 421-512 MHz bands to narrowband technology. These rules set deadlines on applications for new wideband systems, modifications of existing wideband systems, manufacture and importation of 25 kHz equipment, the requirement for public safety to migrate to 12.5 kHz systems by January 2018.
Receiver	The portion of a radio device that converts the radio waves into audible signals.
Refarming	An administrative process being conducted by the FCC to reallocate channel bandwidths and, as a result, promote spectrum efficiency.
Repeater	In digital transmission, equipment that receives a pulse train, amplifies it, retimes it, and then reconstructs the signal for retransmission; in fiber optics, a device that decodes a low-power light signal, converts it to electrical energy, and then retransmits it via an LED or laser source. Also called a “regenerative repeater”.
Spectrum	The region of the electromagnetic spectrum in which radio transmission and detection techniques may be used.
Spectrum efficiency	The ability to optimize the amount of information sent through a given amount of bandwidth.
Steering committee	A group of usually officials charged with proposing policy for a project.
Supplemental responders	Responders who provide support to first responders during incidents requiring special assistance. Supplemental responders include: <ul style="list-style-type: none"> • Emergency Management: Public protection, central command and control of public safety agencies during emergencies • Environmental Health/Hazardous Materials specialists: environmental health personnel • Homeland Security and Defense units • Search and Rescue teams • Transportation personnel
Transmitter	The portion of a radio device that sends out the radio signal.
Trunked radio system	A system that integrates multiple channel pairs into a single system. When a user wants to transmit a message, the trunked system automatically selects a currently unused channel pair and assigns it to the user, decreasing the probability of having to wait for a free channel for a given channel loading.

Appendix C Additional References and Resources

APCO – Association of Public-Safety Communications Officials, <http://www.apcointl.org/>

Building Exchange Content Using the Global Justice XML Data Model: A User Guide for Practitioners and Developers, June 2005. <http://it.ojp.gov/documents/GJXDMUserGuide.pdf>

Communications Technologies (CommTech), National Institute of Justice,
<http://www.ojp.usdoj.gov/nij/topics/technology/communication/welcome.htm>

Guidance on Aligning Strategies with the National Preparedness Goal, July 22, 2005,
http://www.ojp.usdoj.gov/odp/docs/StrategyGuidance_22JUL2005.pdf

Law Enforcement Tech Guide for Communications Interoperability; SAFECOM / COPS. 2006 SEARCH Group.

National Incident Management System (NIMS),
<http://www.fema.gov/emergency/nims/index.shtm>

National Institute of Standards and Technology, www.nist.gov

National Response Plan, http://www.dhs.gov/xprepresp/committees/editorial_0566.shtm

NIEM (National Information Exchange Model) Bridging Information systems;
<http://www.niem.gov/>

Office of the Governor, Rick Perry, <http://www.governor.state.tx.us/>

SAFECOM, www.safecomprogram.gov

SEARCH, The National Consortium for Justice Information and Statistics;
<http://www.search.org/programs/safety/issue-briefs.asp>

Tactical Interoperability Communications Scorecards,
http://www.dhs.gov/xprepresp/gc_1167770109789.shtm

UASI Tactical Interoperable Communications Plans, (secure documents, must contact POC for information)

Plans, training programs and numerous documents provided through various state and local agencies.

Appendix D SCIP Distribution List

Governor's Office	Homeland Security Governmental Affairs Coordinator, Office of the Governor	State	Jim Harrison	Office of the Governor 1100 San Jacinto Avenue, Austin, TX 78701	jharrison@governor.state.tx.us
State and Local Emergency Medical Services	Vice President/COO, East Texas Medical Center EMS	Region 6	Tony Myers	ETMC – EMS, 352 S. Glenwood Blvd., Tyler, TX 75702	tmyers@etmc.org
State and Local Fire Response Services	Fire Chief, San Antonio	Region 18	Charles N. Hood	116 Auditorium Cir., San Antonio, Texas 78205	charles.n.hood@sanantonio.gov
State Law Enforcement	Director, Texas Department of Public Safety (DPS)	State	Col. Thomas A. Davis, Jr.	Texas DPS 5805 North Lamar Blvd. Austin, Texas 78752-4422	ADMIN.compact@txdps.state.tx.us
Local Law Enforcement	Sheriff, Hidalgo County	Region 21	Lupe Trevino	711 El Cibolo Road Edinburg, Tx 78540	sherifftrvino@hidalgo.org
State and Local Homeland Security Offices	Director, Homeland Security, State of Texas	State	McCraw, Steve	GDEM, PO Box 4087, Austin, TX 78773	smccraw@governor.state.tx.us
State and Local Transportation Agencies	Executive Director, Texas Department of Transportation	State	Amadeo Saenz	125 E. 11 th Street, Austin, TX 78701	asaenz@dot.state.tx.us
Urban Area Security Initiative	CIO, Harris County, Texas	Region 16	Jennings, Steve	406 Caroline, 4 th Floor, Houston, TX 77002	steve_jennings@co.harris.tx.us
Critical Infrastructure	Executive Manager of Corporate Services & CIO, Lower Colorado River Authority	Multi-Regional	Christopher Kennedy	3700 Lake Austin Blvd., Austin, TX 78703	ckennedy@lra.org
Other Organizations	Chief Information Officer, City of Austin	Region 12	Pete Collins	625 E. 10th St., Suite 900, Austin, TX 78701	pete.collins@ci.austin.tx.us

Appendix E SCIP Working Groups Members List

WORKING GROUP	NAME	AFFILIATION	TITLE & AGENCY
Governance Group: Draft the Governance documents including the charter/mission statement, organization chart, rules and responsibilities, schedules and authority.	Brotherton, Chuck - - Chair	Urban, Capital Area -- Region 12, CAPCOG	Wireless Manager, Travis County Emergency Services
	Haislet, Jeff -- Co- chair	Rural, Non-Governmental, Medical -- Region 6, ETCOG	Communications Director, East Texas Medical Center
	Chaney, John	UASI Tier 1 -- Region 16, HGAC	Sr. Systems Technologist, Harris County
	Heydinger, Ted	Urban, Capital Area -- Region 12, CAPCOG	City of Austin Consultant
	Mayworm, Ron	Small Urban -- Region 13, BVCOG	Radio System Engineer, City of Bryan
	Peters, Joe	Statewide	Director, Border Research & Technology Center, Sheriff's Association of Texas
	Quintanilla, Marisa	UASI Tier 2 -- Region 8, RGCOCG	Regional Services Manager, Rio Grande Council of Governments
	Simpson, Mike	Urban, Capital Area -- Region 12, CAPCOG	Wireless Comm Services Manager
Capabilities Assessment Group: Define the assessment scope, process and tools to gather the data; identify and engage the appropriate stakeholders; select a mechanism for capturing the data; manage outreach and support stakeholders encouraging their participation.	Chaney, John -- Chair	UASI Tier 1 -- Region 16, HGAC	Sr. Systems Technologist, Harris County
	Schaefer, Ed -- Co- chair	Urban, Capital Area -- Region 12, CAPCOG	Director, Homeland Security, Capital Area Council of Governments
	Wiatrek, Robin	Urban, Capital Area -- Region 12, CAPCOG	Regional Homeland Security Coordinator, Capital Area Council of Governments
Strategic Planning Group: Plan and facilitate Focus Group sessions; Develop a strategic initiative from "hot topics" generated from the survey and Focus Group sessions; Plan and facilitate Strategic Planning Session; Propose long-term vision for interoperability; identify key strategic initiatives for improving statewide interoperability.	Simpson, Mike -- Chair	Urban, Capital Area -- Region 12, CAPCOG	Wireless Comm Services Manager
	Mayworm, Ron -- Co-chair	Small Urban -- Region 13, BVCOG	Radio System Engineer, City of Bryan
	Bruno, Janice	Statewide, Military	Colonel, J6/CIO, Texas Military Forces
	Chaney, John	UASI Tier 1 -- Region 16, HGAC	Sr. Systems Technologist, Harris County
	Keithley, Fred	UASI Tier 2 -- Region 4, NCTCOG	Dir. of Community Service & Communications, NCTCOG
	McFarland, Don	UASI Tier 2 -- Region 18, AACOG	Homeland Security Director, Alamo Area Council of Governments
	Scrivner, Dan	UASI Tier 2 -- Region 4, NCTCOG	Wireless Architect, City of Dallas

WORKING GROUP	NAME	AFFILIATION	TITLE & AGENCY
Strategic Planning Group (cont'd):	Vick, Deidre	UASI Tier 1 -- Region 16, H-GAC	Public Services Dept. Director, Houston Galveston Area Council
Technology Group: Identify current systems technology and shared systems; identify available spectrum; research and identify new technologies that will promote and enhance interoperability; plan how to address data interoperability; develop interfaces among disparate systems; identify how to execute strategic initiatives; research use of evolving technologies and 700 MHz; suggest ways to improve spectrum efficiency.	Chaney, John -- Chair	UASI Tier 1 -- Region 16, HGAC	Sr. Systems Technologist, Harris County
	Ervin, Jason -- Co-chair	Critical Infrastructure, Water, Power	LCRA
	Adelman, Robert M.	UASI Tier 2 -- Region 18, AACOG	Public Safety Comm Manager, Bexar County Sheriff's Office
	Andreas, Dwight	UASI Tier 2, Fire -- Region 18, AACOG	FAO Technical Services, San Antonio Fire Department
	Bell, Micah	Statewide, Military	Emergency Communications Manager, TX National Guard
	Bottorf, Mark	UASI Tier 2 -- Region 4, NCTCOG	Radio Services Manager, City of Fort Worth
	Brewer, Joe	Statewide, Transportation	Network Specialist III, Texas Dept. of Transportation
	Crunk, Kelly	Statewide -- Texas Commission on Environmental Quality	TCEQ
	Davenport, William	UASI Tier 2, Fire --Region 18, AACOG	Firefighter, San Antonio Fire Department
	Dodson, David	UASI Tier 1 -- Region 16, HGAC	Division Chief, Harris County
	Eads, Gerard	UASI Tier 2 -- Region 4, NCTCOG	Arlington
	Evans, Justin	UASI Tier 1 -- Region 16, HGAC	Radio Systems Manager, Montgomery Co Health Dept, City of Conroe
	Farries, David	Urban, Capital Area -- Region 12, CAPCOG	Radio Technician V, City of Austin Wireless Office
	Gilbert, Paul	Statewide, Transportation	Network Specialist III, Texas Dept. of Transportation
	Guinn, Bonnie	UASI Tier 2 -- Region 8, RGCOG	Public Safety Technology Manager, City of El Paso
	Haislet, Jeff	Rural, Medical -- Region 6, ETCOG	Communications Director, East Texas Medical Center
	Hare, Mike	Small Urban -- Region 13, BVCOG	City of College Station
Jennings, Steve	UASI Tier 1 -- Region 16, HGAC	Harris County/CIO	
Lange, Shawn	Statewide, Law Enforcement	Texas Parks & Wildlife	

WORKING GROUP	NAME	AFFILIATION	TITLE & AGENCY
Technology Group (cont'd):	Ligon, Lee	Rural, Non-Governmental, Fire -- Region 9, PBRPC	Midland County / Greenwood VFD
	Mayworm, Ron	Small Urban -- Region 13, BVCOG	Radio System Engineer, City of Bryan
	McDaniel, B. John	Rural, Law Enforcement -- Region 9, PBRPC	Sergeant, Midland County Sheriff's Office
	Mendez, Frank	UASI Tier 2 -- Region 8, RGCOG	Senior Telecommunications Specialist, City of El Paso
	Natividad, Emilio	UASI Tier 2 -- Region 8, RGCOG	Senior Telecommunications Technician, City of El Paso
	Newman, Stanley (Wayne)	UASI Tier 1 -- Region 16, HGAC	Division Manager, Houston Fire Dept.
	Park, David	UASI Tier 1 -- Region 16, HGAC	Lieutenant, Montgomery County Sheriff's Office
	Pena, Mike	Urban, Capital Area -- Region 12, CAPCOG	Regional Radio System Master Site Supervisor, City of Austin
	Pena, Tony	Rural -- Region 21, LRGVDC	Emergency Management Coordinator, Hidalgo County
	Phillips, Jeanette	Statewide	Grant Coordinator, TXDPS GDEM SAA
	Pletcher, Robert	Statewide	Program Director, Texas Dept. of Public Safety
	Pruneda, Juan	Rural -- Region 19, STDC	Radio Communications Manager, City of Laredo
	Scott, Shawn	Rural, Fire, Emergency Management -- Region 4, NCTCOG	Fire Marshal / Emergency Management Coordinator, Parker County
	Scrivner, Dan	UASI Tier 2 -- Region 4, NCTCOG	Wireless Architect, City of Dallas
	Silva, Saul	Critical Infrastructure, Water, Power	LCRA
	Sorley, Tom	UASI Tier 1 -- Region 16, HGAC	Deputy Director, Radio Communication Services, City of Houston
	Standridge, Tommy	Small Urban -- Region 15, SETRPC	Communications Manager, City of Beaumont
	Stang, Dan	Statewide	
	Tymrak, T. J.	UASI Tier 2, Fire --Region 18, AACOG	Communications Supervisor, San Antonio Fire Department
	Vick, Deidre	UASI Tier 1 -- Region 16, H-GAC	Public Services Dept. Director, Houston Galveston Area Council

WORKING GROUP	NAME	AFFILIATION	TITLE & AGENCY
Technology Group (cont'd):	Wendling, Jeffrey L.	Rural, Law Enforcement -- Region 18, AACOG	Kerrville Police Dept.
	Wilks, Gary	Urban, Fire -- Region 12 , CAPCOG	Communication Specialist, Austin Fire Department
Implementation Group: Develop a concrete implementation plan to address: migration, continuity of operations as new technologies are acquired; Back-up plans; Research and Recommend an Implementation Manager.	Haislet, Jeff -- Chair	Rural, Non-governmental, Medical -- Region 6, ETCOG	Communications Director, East Texas Medical Center
	Sorley, Tom -- Co-chair	UASI Tier 1 -- Region 16, HGAC	Deputy Director, Radio Communication Services, City of Houston
	Chaney, John	UASI Tier 1 -- Region 16, HGAC	Sr. Systems Technologist, Harris County
	Pena, Mike	Urban, Capital Area -- Region 12, CAPCOG	Regional Radio System Master Site Supervisor, City of Austin
Evaluation Group: Identify performance measures to track progress and success; describe critical success factors for implementation of the plan.	Adelman, Robert M. -- Chair	UASI Tier 2 -- Region 18, AACOG	Public Safety Comm Manager, Bexar County Sheriff's Office
	McDaniel, B. John - Co-chair	Rural, Law Enforcement -- Region 9, PBRPC	Sergeant, Midland County Sheriff's Office
	Ervin, Jason	Critical Infrastructure, Water, Power	LCRA
Standard Operating Procedures, Training, and Exercises Group: Assess current SOPs; review for conformance with NIMS; assist with revision; develop a process to manage SOPs statewide; Identify and evaluate existing training programs; develop a statewide training and exercises program; create a process to track required training and certification.	McFarland, Don -- Chair	UASI Tier 2 -- Region 18, AACOG	Homeland Security Director, Alamo Area Council of Governments
	Anderson, Forrest -- Co-chair	Rural -- Region 24, MRGDC	Homeland Security Dir., Middle Rio Grande Development Council
	Bell, Micah	Statewide, Military	Emergency Communications Manager, TX National Guard
	Early, Todd	Statewide	DPS
	Kilgo, Mary	Small Urban -- Region 3, NORTEX	Director of Homeland Security, Nortex Regional Planning Commission
	Rodriguez, Frank Jr.	Statewide, Military	Colonel, Cmdr. 1st Armor Battalion, Texas National Guard
	Vasquez, John	Small Urban, Law Enforcement -- Region 3, NORTEX	Technical Services Mgr., Wichita Falls Police Dept.

WORKING GROUP	NAME	AFFILIATION	TITLE & AGENCY
Funding Group: Identify/develop and promote sustainment funding programs; develop a funding roadmap.	Peters, Joe -- Chair	Statewide	Director, Border Research & Technology Center, Sheriff's Association of Texas
	Jernigan, D'Wayne -- Co-chair	Rural, Law Enforcement -- Border Region	Sheriff, Valverde County Sheriff's Office
	Haislet, Jeff	Rural, Non-governmental, Medical -- Region 6, ETCOG	Communications Director, East Texas Medical Center
	Harrison, Jim	State, Governor's Office	Homeland Security Governmental Affairs Coordinator, Office of the Governor
	Keithley, Fred	UASI Tier 2 -- Region 4, NCTCOG	Dir. of Community Service & Communications, NCTCOG

Appendix F SCIP Evaluation Criteria Matrix

SCIP EVALUATION CRITERIA MATRIX		
10%	1. Background and Preliminary Steps	Criteria Location Section
1%	1.1 Provide an overview and background information on the state and its regions. Include geographic and demographic information.	2.1
2%	1.2 List all agencies and organizations that participated in developing the plan. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.)	Appendix A
2%	1.3. Identify the point of contact. DHS expects that each state will have a full time interoperability coordinator. The coordinator should not represent or be affiliated with any one particular discipline and should not have to balance the coordinator duties with other responsibilities.	2.3
1%	1.4. Describe the communications and interoperability environment of the current emergency response effort.	2.1.4
2%	1.5. Include a problem definition and possible solutions that addresses the challenges identified in achieving interoperability within the SAFECOM Interoperability Continuum.	2.1.5
1%	1.6 Identify any Tactical Interoperability Communications Plans in the state.	2.1.3
1%	1.7 Set the scope and timeframe of the plan.	2.4
15%	2. Strategy	Criteria Location Section
5%	2.1 Describe the strategic vision, goals, and objectives for improving emergency response interagency wireless communications statewide, including how they connect with existing plans within the state.	5.1, 5.3
2%	2.2. Provide a strategic plan for coordination with neighboring states. If applicable, include a plan for coordination with neighboring countries.	5.4.1.1
2%	2.3 Provide a strategic plan for addressing data interoperability in addition to voice interoperability.	5.4.2
2%	2.4 Describe a strategy for addressing catastrophic loss of communication assets by developing redundancies in the communications interoperability plan.	5.4.3
1%	2.5. Describe how the plan is, or will become, compliant with the National Incident Management System (NIMS) and the National Response Plan.	5.5 & 4.3.4 & 2.1.1
2%	2.6. Describe a strategy for addressing communications interoperability with the safety and security elements of the major transit systems, intercity bus service providers, ports, and passenger rail operations within the state.	5.4.1.3
1%	2.7 Describe the process for periodic review and revision of the state plan.	5.6
5%	3. Methodology	Criteria Location Section
2%	3.1. Describe the method by which multi-jurisdictional, multi-disciplinary input was provided from all regions of the state. For an example of a methodology that ensures input from all regions, see the Statewide Communication Interoperability Plan, or SCIP, methodology developed by SAFECOM.	3

1%	3.2 Define the process for continuing to have local input and for building local support of the plan.	6.2
1%	3.3 Define how the TICPs were incorporated into the statewide plan.	3
1%	3.4. Describe the strategy for implementing all components of the statewide plan.	3.1
20%	4. Governance	Criteria Location Section
3%	4.1 Identify the executive or legislative authority for the governing body of the interoperability effort.	4.1
5%	4.2 Provide an overview of the governance structure that will oversee development and implementation of the plan. Illustrate how it is representative of all of the relevant emergency response disciplines and regions in the state.	4.1
4%	4.3 Provide the charter for the governing body, and use the charter to state the principles, roles, responsibilities, and processes.	4.1
4%	4.4 Identify the members of the governing body and any of its committees. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.)	4.1
1%	4.5 Provide a meeting schedule for the governing body.	4.1
3%	4.6. Describe multi-jurisdictional, multi-disciplinary agreements needed for decision-making and for sharing resources.	4.1.1
10%	5. Technology	Criteria Location Section
3%	5.1 Include a statewide capabilities assessment (or a plan for one) which includes, critical communications equipment and related interoperability issues. At a minimum this should include types of radio systems, data and incident management systems, the manufacturer, and frequency assignments for each major emergency responder organization within the state. Ultimately more detailed information will be required to complete the documentation of a migration strategy. States may use the Communications Asset Survey and Mapping (CASM) tool to conduct this assessment.	4.2.1 & 4.2.2
3%	5.2 Describe plans for continuing support of legacy systems, and developing interfaces among disparate systems, while migrating to newer technologies.	4.2.3
2%	5.2.1 Describe the migration plan for moving from existing technologies to newly procured technologies.	4.2.3
2%	5.2.2 Describe the process that will be used to ensure that new purchases comply with the statewide plan, while generally allowing existing equipment to serve out its useful life.	6.4
15%	6. Standard Operating Procedures (SOPs)	Criteria Location Section
5%	6.1 Include an assessment of current local, regional, and state operating procedures which support interoperability.	4.3.1
5%	6.2. Define the process by which the state, regions, and localities will develop, manage, maintain, upgrade, and communicate standard operating procedures (SOPs), as appropriate.	4.3.2
2%	6.3. Identify the agencies included in the development of the SOPs, and the agencies expected to comply with the SOPs.	4.3.3
3%	6.4. Demonstrate how the SOPs are NIMS-compliant in terms of the Incident Command System (ICS) and preparedness.	5.5 & 4.3.4
5%	7. Training and Exercises	Criteria Location Section

3%	7.1. Define the process by which the state will develop, manage, maintain and upgrade, or coordinate as appropriate, a statewide training and exercises program.	4.4
1%	7.2. Describe the process for offering and requiring training and exercises, as well as any certification that will be needed.	4.4
1%	7.3. Explain how the process ensures that training is cross-disciplinary.	4.4
5%	8. Usage	Criteria Location Section
5%	8.1. Describe the plan for ensuring regular usage of the relevant equipment and the SOPs needed to improve interoperability.	4.5
5%	9. Funding	Criteria Location Section
3%	9.1. Identify committed sources of funding, or the process for identifying and securing short- and long-term funding.	7
2%	9.2. Include a plan for the development of a comprehensive funding strategy. The plan should include a process for identifying ongoing funding sources, anticipated costs, and resources needed for project management and leveraging active projects.	7
10%	10. Implementation	Criteria Location Section
2%	10.1 Describe the prioritized action plan with short- and long-term goals for achieving the objectives.	6.3
1%	10.2. Describe the performance measures that will allow policy makers to track the progress and success of initiatives.	6.3
1%	10.3. Describe the plan for educating policy makers and practitioners on interoperability goals and initiatives.	6.2
2%	10.4. Describe the roles and opportunities for involvement of all local, state, and tribal agencies in the implementation of the statewide plan.	6.3
1%	10.5. Establish a plan for identifying, developing, and overseeing operational requirements, SOPs, training, technical solutions, and short- and long-term funding sources.	6.6
1%	10.6. Identify a POC responsible for implementing the plan.	6.1
2%	10.7. Describe critical success factors for implementation of the plan.	6.5
	11. PSIC Requirements	Criteria Location Section
	11.1 Describe how public safety agencies will plan and coordinate, acquire, deploy and train an interoperable communications equipment, software and systems that: 1) utilize reallocated public safety - the public safety spectrum in the 700 MHz frequency band; 2) enable interoperability with communication systems that can utilize reallocated public safety spectrum for radio communications; or 3) otherwise improve or advance the interoperability of public safety communications system that utilize other public safety spectrum bands	3.2
	11.2 Describe how a strategic technology reserve (STR) will be established and implemented to pre-position or secure interoperable communications in advance for immediate deployment in an emergency or major disaster.	3.2
	11.3 Describe how local and tribal government entities' interoperable communications needs have been included in the planning process and how their needs are being addressed.	3.2

	11.4. Describe how authorized non-governmental organizations' interoperable communications needs have been included in the planning process and how their needs are being addressed (if applicable).	3.2
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