THE IMMINENT STORM 2006: VULNERABLE EMERGENCY COMMUNICATIONS IN EIGHT HURRICANE PRONE STATES

FIRST RESPONSE COALITION

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EXECUTIVE SUMMARY

The First Response Coalition (FRC), a 501(c)(3) non-profit organization formed to educate the public about the need for increased funding for first responders, undertook this first-of-its-kind review to evaluate the post-Katrina status of communications interoperability in eight Gulf Coast and Atlantic hurricane zone states (Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Texas). Hurricane forecasters predict the 2006 season, just 42 days away as of this paper's publication, has the potential to be as active and dangerous as the tragic 2005 period. The FRC assessed communications interoperability capabilities in the hurricane zone states, and examined the extent to which federal, state and local governments are coordinating their efforts to achieve communications interoperability. ***After performing a broad cursory overview of the publicly available literature and data, the FRC concluded that many hurricane zone states remain dangerously unprepared for another disaster, despite the widespread media attention on communications interoperability after the 2005 hurricane season. Insufficient funding and a lack of coordination at all levels of government plague efforts to establish meaningful communications interoperability. It should be emphasized that the following information does not represent an exhaustive analysis of state emergency communications capabilities. Rather, the broad overview is intended to stimulate discussion on communications interoperability and inform the public policy dialog.***

Assuming there are plans in place for statewide interoperability, many states are woefully behind in implementing effective solutions for first responder communications. This leads to a potentially dangerous scenario for first responders, who could face the same communications challenges that were present during Hurricane Katrina and 9/11. Despite numerous tragedies and national attention to interoperability problems, many first responders in the hurricane states are no closer to achieving interoperability.

TABLE 1:
INTEROPERABILITY IN EIGHT HURRICANE ZONE STATES*

STATE	SUMMARY OF EFFORTS TOWARDS INTEROPERABILITY
Alabama	• Largely uncoordinated; efforts have only yielded basic interoperability solutions. • State-level efforts are not being mirrored at the local level due to cost concerns. • State agencies arriving into locally affected areas unable to communicate directly with local first responders.
Florida	• Statewide system links together only state agencies. • Local departments still rely upon their own, unique radio systems. • Cost concerns for many communities may prohibit them from upgrading to the statewide system. • State agencies arriving into locally affected areas unable to communicate directly with local first responders.

* Information on state interoperability as reported by federal and state reports; national, state, and local media sources, federal and state agencies, and first response groups.

STATE	SUMMARY OF EFFORTS TOWARDS INTEROPERABILITY
Georgia	• Georgia's planned "statewide" capabilities are only expected to provide coverage throughout 80% of the state. • Statewide system not expected to be complete until the end of 2006- *after hurricane season*- assuming the project adheres to its established timeline.
Louisiana	• State-level efforts are not being mirrored at the local level due to cost concerns. • Inter-agency squabbles have impeded progress. • State agencies arriving into locally affected areas unable to communicate directly with local first responders.
Mississippi	• Adequate funds lacking at the local level prevent basic equipment upgrades. • Many emergency responders have no communications interoperability whatsoever.
North Carolina	• Questions about reliability and cost have resulted in most local governments opting out of the statewide VIPER system.
South Carolina	• Has established a robust, statewide emergency communications network, but it is available only to state agencies, or those local communities that have the financial resources to upgrade to the statewide system.
Texas	• Moving towards statewide interoperability, but many communities do not have the funds to upgrade and connect to the statewide system.

There is no comprehensive method to efficiently track interoperability funds once they are disbursed by the federal government. Most of the federal funds supplied to the states are disbursed in block grants, which are notoriously difficult to track. Various public sources, from media stories to Congressional Research service reports, have identified a range of federal funding for interoperability between $200 million and $5 billion. There are also questions about how long it takes federal funds to be spent at the local level. In 2002, the time to distribute federal money ranges from 91 days in one state and 305 days in another. At present, there is no mechanism for tracking how interoperability efforts are financed locally, how federal funds are spent once distributed to states and localities, or how effectively those funds are used.

Given the disparate levels of action designed to achieve communications interoperability in the hurricane zone states, the FRC identified several key recommendations that could accelerate the process of helping first responders communicate more effectively.

- ***The Department of Homeland Security's SAFECOM program must expeditiously complete the "National Interoperability Baseline Survey."***
- ***The Federal government should collaborate with state and local agencies to coordinate and implement regional emergency communications interoperability.***
- ***The Federal government, states and localities must do a better job of tracking the disbursement and allocation of grant monies.***
- ***If the nation is to make serious progress in achieving interoperability, there must be improvements in the ability to coordinate spending and the transparency of federal grants.***

- ***Finally, there must be both coordination and cooperation between agencies and at various levels of government.***

The FRC believes direct action must be taken now to coordinate interoperability activities at all levels of government before the next hurricane or other disaster strikes.

INTRODUCTION

In the nearly five years since 9/11, when the first responder communications crisis was catapulted onto the national scene, the nation has been continuously reminded that first responders still cannot reliably communicate with each other during an emergency. Last year, the United States experienced an above-average hurricane season that included the back-to-back catastrophes of Hurricanes Katrina and Rita. Once again, the shortcomings in public safety communications were laid bare as local first responders were unable to effectively communicate. The diverse and uncoordinated radio systems in use by federal, state, and other emergency resources from across the nation were not interoperable.

After 9/11, the federal government called on states to upgrade their emergency plans and communications networks so that first responders would be better prepared for future catastrophes. National leaders stressed their commitment to interoperability. Federal funds were promised to fix the communications crisis.[1] Despite efforts to streamline the federal interoperability grant process and speed up disbursement, funds were too often caught in a "middleman muddle" between federal, state and local governments. Similar calls for interoperability solutions were made after Hurricane Katrina, yet as the one year anniversary approaches, many first responders along the Gulf Coast still have antiquated communications equipment.

While the much-needed funds are being supplied to the states faster than they have been in the past, they are, unfortunately, becoming nearly impossible to track. As a result, it is more difficult to assess where capabilities in first responder communication systems exist and vulnerabilities remain.

There is considerable variation in first responder communications interoperability from state to state. Some states are well on their way to providing statewide interoperable communications while others are only just beginning. Less than 150 miles separates Mobile, Alabama from New Orleans, Louisiana, but the disparity among the first responder communications systems and individual planning in that small distance serves as an example of the challenges faced in implementing regional communications interoperability.

The coming hurricane season could again produce dangerous storms. Are the Gulf Coast and Atlantic hurricane zone states ready? The FRC undertook an investigation of

[1] See: "America's First Responders and the Federal Budget: A Study of Rhetoric Versus Reality," and "A Failure to Communicate: A Stock-take of Government Inaction to Address Communications Interoperability Failures Following Hurricane Katrina." http://www.firstresponsecoalition.org/resources.shtml

publicly available resources, including literature and data from the federal government and the states, to determine the extent of communications interoperability in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Texas. The troubling findings show that while interoperability has received greater attention, federal funding is still uncoordinated and some states have not taken the necessary steps to prepare their emergency responders for what could be another deadly hurricane season.

2006 HURRICANE SEASON PREDICTIONS

The predictions for 2006 are calling for storms just as strong as last year. According to top U.S. hurricane expert Max Mayfield, director of the National Hurricane Center in Miami, "I think everybody is going to say we're going to have an above average season here…"[2] As can be seen in Table 2, most early predictions echo his words.

TABLE 2:
2006 PREDICTIONS[3]

RESEARCHER	NAMED STORMS	HURRICANES	MAJOR HURRICANES
Philip Klotzbach & William Gray (Columbia State University)	17	9	5
Weather 2000, Inc.	15-22	8-13	4-7
University College, London	10.5-18.7	5.2-10.4	1.8-5.2
James Elsner (Florida State University)	7.2-12	n/a	n/a

The 2005 hurricane season produced twenty-eight named storms and fifteen hurricanes.[4] Seven hurricanes were considered major[5] and of those six struck the United States.[6] Hurricanes Katrina, Rita and other major storms devastated the Gulf Coast and emergency response efforts were hindered by a lack of communications interoperability and coordination.

Initially, 2005 was predicted to be an active but not historical year for hurricanes. The National Oceanic & Atmospheric Administration forecast twelve to fifteen (12-15) tropical storms with seven to nine (7-9) becoming hurricanes and three to five (3-5) of

[2] "Upcoming hurricane season likely strong, but not like record 2005" USA Today March 30, 2006. http://www.usatoday.com/weather/hurricane/2006-03-30-hurricane-forecast_x.htm.; Miranda Leitsinger "Expert Forecasts Rough Hurricane Season" washingtonpost.com March 31, 200.6 http://www.washingtonpost.com/wp-dyn/content/article/2006/03/31/AR2006033100229.html.

[3] Robert P. King "Hurricane Season: Ill Winds Afoot," Palm Beach Post March 26, 2006: 1A; "Forecasters Predict Busy Hurricane Season," CNN.com April 4, 2006. http://www.cnn.com/2006/WEATHER/04/04/hurricane.predictions.reut/index.html

[4] "Hurricanes" National Oceanic & Atmospheric Administration April 9, 2006. <http://hurricanes.noaa.gov/>.

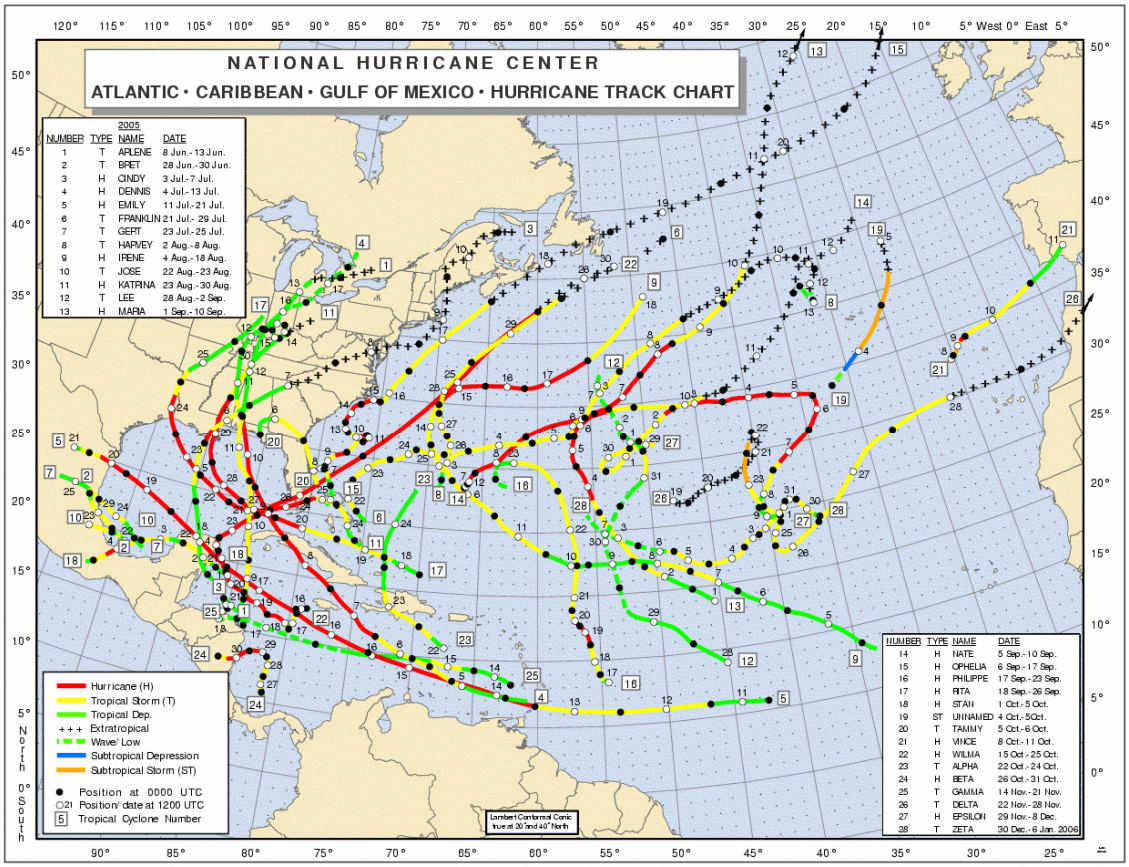
[5] A major hurricane is defined by the National Hurricane Center as being a Category 3 storm (winds 111-130 mph) or higher. "Hurricane Basics," National Hurricane Center April 9, 2006. <http://www.nhc.noaa.gov/HAW2/english/basics.shtml>; "Saffir-Simpson Scale," National Hurricane Center April 9, 2006 <http://www.nhc.noaa.gov/aboutsshs.shtml>.

[6] "Hurricanes" NOAA

them major.[7] In reality, the Atlantic spawned almost double the prediction. It was not until August 5, halfway through the season, when leading hurricane researcher William Grey updated his forecast to predict 20 storms for the year.[8] As the season progressed, the most severe storms, beginning with Katrina in late August 2005, began pounding the Gulf Coast.

If 2006 parallels, or even approaches, the levels of the 2005 season, the Gulf Coast and Southeastern states should be preparing for a significant number of storms. Figure 1 shows the number of hurricanes and tropical storms that affected states in the Gulf Coast and Southeastern states in 2005.

FIGURE 1:
HURRICANE ACTIVITY DURING THE 2005 HURRICANE SEASON[9]



Based upon the figures for what is considered an average hurricane season of nine to ten named storms,[10] it is clear that 2006 has the potential to be a very dangerous season. If

[7] "NOAA Issues 2005 Hurricane Season Outlook" May 16, 2005. http://www.noaanews.noaa.gov/stories2005/s2438.htm

[8] "US Team Sees Busy Hurricane Season, No Record," Global Surf News, April 5, 2006. http://www.globalsurfnews.com/news.asp?Id_news=21108

[9] "2005 Atlantic Hurricane Season," National Hurricane Center, April 11, 2006. <http://www.nhc.noaa.gov/2005atlan.shtml>.

first responders continue to lack communications interoperability, many of the same types of coordination problems experienced in 2005 will again plague emergency personnel during this year's hurricanes.

LESSONS STILL UNLEARNED

Thomas Kean, co-chairman of the 9/11 Commission, sums up interoperability progress, or the lack thereof, succinctly: "On September 11, people died because police officers couldn't talk to firemen. And Katrina was a reenactment of the same problem."[11] Although there has been some progress in advancing toward the goal of full interoperability, such as increased funding and expanded spectrum availability, for the most part first responders are still struggling with the same patchwork quilt of systems that existed in 2001. While basic operability was the primary problem among first responders in Katrina's aftermath due to lack of power, downed lines and towers, agencies offering aid still could not communicate with local public safety departments even when systems were slowly brought back on line.

After 9/11, there was a stated commitment by the federal government to improve interoperability among first responders and the funding floodgates were opened. Since 2001 over $11 billion has been given to the states for improving response capabilities.[12] The Department of Homeland Security has disbursed more than $1.5 billion to cities and states for communications equipment, but after more than four years it has not had much effect.[13] Gulf Coast and Atlantic hurricane states have disparate levels of interoperability ranging from functional systems to newly-appointed commissions just beginning to investigate communications interoperability. Prior to Katrina, Louisiana had received $19 million in federal funds to upgrade its emergency communications networks. Most of the funds were used to upgrade the state police radio system and as a result the state's cities and parishes were still using older incompatible systems when the hurricane struck.[14] Why did some first responders receive new technologies, while others were left behind?

Achieving communications interoperability is a complex task and will require a great deal of coordination. SAFECOM, the agency within the Department of Homeland Security charged with leading interoperability efforts, has initiated a landmark effort to obtain a statistical baseline measurement of public safety communications interoperability in the United States. A working group comprised of public safety practitioners from law enforcement, fire and emergency medical services, along with

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[10] King.
[11] Joby Warrick, "Crisis Communications Remain Flawed; Despite Promises to Fix Systems, First Responders Were Still Isolated After Katrina," Washington Post December 10, 2005: A06.
[12] Testimony Before the Little Hoover Commission, State of California, Statement of William O. Jenkins, Jr., Director, Homeland Security and Justice Issues "Emergency Preparedness and Response – Some Issues and Challenges Associated with Major Emergency Standards," GAO February 23, 2006, p.2.
[13] Jennifer C. Kerr, "Katrina stirs debate for single rescue communication system; A fix is still years away to develop a seamless way for police and firefighters to communicate," Miami Herald October 17, 2005:A6.
[14] Warrick.

elected and appointed officials, is assisting SAFECOM to design and implement this assessment, known as the National Interoperability Baseline Survey. The survey will help to:

- identify where interoperability improvements need to be made;
- identify steps that can be taken to achieve specific interoperability objectives;
- direct funding for public safety communications;
- focus interoperability improvement efforts; and
- establish a baseline against which progress can be measured moving forward.

While the survey data will be useful in identifying key interoperability questions and answers, the process is taking precious time – a luxury first responders and the communities they protect do not have. Work began on survey methodology in January 2005, and when the project was announced in September 2005, it was estimated the survey would be completed in six months.[15] Now, the findings are not scheduled to be released until late 2006.[16] While studies like these are critically important, first responders have waited long enough to receive the resources they require, and every day the 2006 hurricane season draws closer.

There are two issues that currently impede progress toward full communications interoperability. One is the fact that **despite the availability of federal funds supplied for improvements there is no way of knowing how much has been specifically marked for interoperability improvements. Most of the funds supplied to the states are disbursed in block grants which makes it difficult to track the money. A *Mobile Technology Radio* article cited between $2.5 and $5 billion appropriated in 2004 for purchasing digital interoperable radios.[17] *USA Today* reported that since 2003 the Justice Department awarded $241 million to states and localities for interoperability and $1.5 billion in Homeland Security Department grants were used for compatible public safety radio networks.[18] A June 2005 Congressional Research Service report identified $200 million spent specifically for interoperability by the federal government and $5.4 billion provided to states for emergency preparedness, which could include interoperability.[19] These disparities showcase the need for better monitoring of federal disbursements designated for interoperability.**

The second issue is the question of what happens to the funding after being received by the states. The Office for Domestic Preparedness (ODP) in the Department of Homeland Security has been managing first responder grants since 2002. It requires states to

[15] Lipowicz, Alice, "Feds to Screen First Responder Radios for Interoperability," Washington Technology, September 22, 2005. http://www.washingtontechnology.com/news/1_1/daily_news/27019-1.html
[16] Harlin McEwen, "Safecom Landmark National Interoperability Baseline Survey Begins in 2006," The Police Chief, March 2006. http://policechiefmagazine.org/magazine/index.cfm?fuseaction=display&article_id=840&issue_id=32006
[17] Luna, http://mrtmag.com/mag/radio_unclogging_grant_pipeline/index.html.
[18] Paul Davidson, "Compatible Radio Systems Would Cost Billions," USA Today, December 28, 2005. http://www.usatoday.com/money/industries/technology/2005-12-28-radio-systems_x.htm
[19] Congressional Research Service, "Public Safety Communications: Policy, Proposals, Legislation, and Progress," June 8, 2005. http://www.fas.org/sgp/crs/homesec/RL32594.pdf

distribute 80% of funds received to counties and municipalities. State governments are allowed to keep the remaining 20%. Also, states are now required to make the sub-grants within a specific amount of time. **In 2002 there were no time requirements for disbursing funds to local authorities and, as can be expected, the amount of time states took in distributing federal funds varied greatly, from 91 days in one state to 305 in another.[20] ODP then set guidelines requiring certification that funds had been transferred.**

The certification process was added in an effort to speed up the transfer of funds to local governments. In 2002, states that failed to submit the proper documentation regarding the grants could be awarded funds initially but were restricted from drawing on them until grant documentation was provided. In this first year of funding the time it took states to satisfy the criteria ranged from one (1) month to twenty-one (21).[21] Since then ODP has relaxed the standards for certification, drawing down and transferring funds in an effort to direct the money into the hands of the local governments more quickly. For fiscal year 2003, states that received grants had to certify that sub-grants were made within 45 days.[22] This was raised to 60 days for 2004 grants.[23]

Once funds are allocated local jurisdictions must decide how to spend them. Sometimes this can be the most difficult part. Many localities have immediate needs and cannot take the time to coordinate with neighboring towns or with the state. Also, each state may impose different requirements on local governments. Legislatures in many states are part-time and only meet during certain times of the year. If one of the requirements for purchasing equipment is approval by the state legislature, counties and towns may have to wait months for the state legislature to meet before being allowed to spend the grant money.[24] There are also instances where coordination between state and local entities is sought, but delays result as negotiations take place between layers of bureaucracy. For example, one project in San Diego had technology to upgrade communications ready in 30 days but it took federal, state and local officials over two years to agree to the plan.[25]

The most troublesome element of reviewing interoperability progress at state and local levels is that there is no comprehensive method to discern how localities finance their interoperability efforts, use federal funds, or assess the effectiveness of

[20] Testimony Before the Subcommittee Emergency Preparedness Science, and Technology, Committee on Homeland Security, House of Representatives, Statement of William O. Jenkins, Jr., Director, Homeland Security and Justice, "Homeland Security – Management of First Responder Grant Programs and Efforts to Improve Accountability Continue.," GAO April 12, 2005 p. 8-9.
[21] GAO April 12, 2005 p. 9.
[22] Testimony Before the Subcommittee on Economic Development, Public Building and Emergency Management, House Committee on Transportation and Infrastructure, Statement of William O. Jenkins, Jr., Director, Homeland Security and Justice Issues, "Emergency Preparedness – Federal Funds for First Responders," GAO May 13, 2004 p. 6.
[23] GAO May 13, 2004 p. 6.
[24] GAO May 13, 2004 p. 6.
[25] Kerr.

how the funds are spent.[26] If serious progress in implementing interoperability is to be made, coordination at all levels of government is needed and the transparency of federal interoperability grants must be improved.

HURRICANE-PRONE STATES LARGELY UNPREPARED

The FRC has undertaken this first-of-its-kind review to determine what efforts hurricane-prone states have made towards achieving emergency communications interoperability. **The FRC's research revealed that in spite of the widespread media attention the communications crisis received after the disastrous 2005 hurricane season, most public safety agencies in the Gulf remain unable to effectively communicate with one another both during "routine" emergencies and major disasters.**

To determine each hurricane zone state's capabilities with respect to emergency communications interoperability, the FRC relied on the Association of Public-Safety Communications Official's (APCO's) "Six Levels of Interoperability." The interoperability matrix is outlined in Table 3.

TABLE 3:
THE "SIX LEVELS OF INTEROPERABILITY"[27]

LEVEL	METHOD	DESCRIPTION	FIT
1	Swap Radios	One agency or department provides extras of its own radios to another agency working a common emergency scene.	Simple, Short-Term Solutions
2	Talk-around	Multiple radios talk directly to each other in conventional mode using compatible subscribers.	
3	Mutual Aid Channels	Channels designated for use only in mutual aid interoperability situations, usually with restrictions and guidelines governing usage. Requires dedicated spectrum and infrastructure to deliver communications and interoperability.	
4	Gateway (Console Patch)	Uses specialized boxes to enable the connection of two otherwise incompatible communication systems.	Short-Term System Modification
5	System-specific Roaming	Like roaming within a cellular system - user can maintain communication even if traveling outside of coverage area of home system, but only if agreements are in place to do so. Enables users to talk on similarly-configured equipment from the same vendor.	Full-Featured, Wide Area

[26] U.S. General Accounting Office, Testimony Before the Little Hoover Commission, State of California, Statement of William O. Jenkins, Jr., Director, Homeland Security and Justice Issues "Emergency Preparedness and Response – Some Issues and Challenges Associated with Major Emergency Standards Washington, D.C. February 23, 2006, 13.

[27] Texas Association of Regional Councils, "Interoperability" PowerPoint Presentation March 11, 2004. April 10, 2006. <http://www.txregionalcouncil.org/ep/training/tarc_interop_031104.ppt#368,1,Interoperability>.

LEVEL	METHOD	DESCRIPTION	FIT
6	Standards-Based Shared Systems	The most robust form of interoperability. It relies upon the strength of standards to outline communications technology development so that all equipment talks using the same protocols.	Best Long-Term Solution

At "Level 1" interoperability, one agency or department simply provides an additional number of its own radios to another department working a common emergency scene. While this is a relatively simple solution, it is both short-term and time consuming. Moreover, "it is impractical for every agency to have extra radios on hand for each member of every other possible agency that could appear on-scene, especially for larger scale events."[28]

"Level 6" interoperability is defined as different systems operating on a standards-based, shared infrastructure with users working on both their home system and a shared network. "Level 6" systems are useful in emergencies of all scale, and because they are deployed across a wide area, the achievement of seamless coverage is more economical because participating agencies share the costs.

Borrowing from this scheme, the FRC has undertaken a cursory review of available literature to determine which states' communications systems are best prepared to enable the safe and effective delivery of emergency services during the 2006 hurricane season.

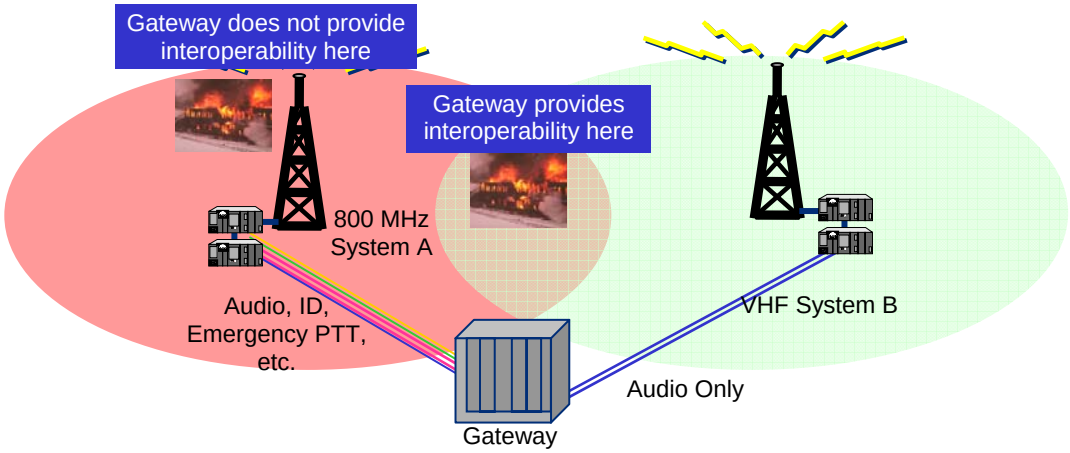
It should be emphasized that the following information does not represent an exhaustive analysis of state emergency communications capabilities. Rather, the broad overview of publicly available information about state interoperability efforts is intended to stimulate thoughtful discussion that informs the public policy dialog.

Texas

Texas has committed to achieve statewide Level 4 radio interoperability within the first responder community through the reliance upon "gateway patches."[29] Gateways are a basic method to get disparate systems to talk to each other by patching audio from one network to another. At this level of interoperability, *once the patch has been established*, emergency responders at all levels will have the ability to communicate with each other via radio anywhere in the state using their own equipment on designated channels. Figure 3, on the following page, illustrates a standard gateway communications interoperability system.

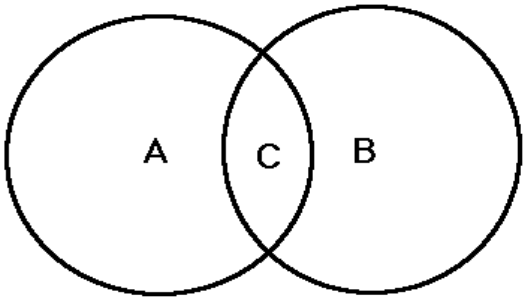
[28] "Texas Radio Communications Interoperability Plan," Ark-Tex Council of Governments 3. <http://www.atcog.org/Tx%20Radio%20Communications%20Interoperability%20Plan.doc>.
[29] Ark-Tex Council 3.

FIGURE 3:
"GATEWAYS" AND LEVEL-4 INTEROPERABILITY[30]



However, "gateway patches" are considered only a temporary solution to connecting otherwise incompatible communication systems. "A key limitation of gateways is that their operation is limited to where overlapping coverage exists for the two networks that you are trying to connect."[31] The Venn diagram in Figure 4 illustrates this limitation.

FIGURE 4:
VENN DIAGRAM OF GATEWAY SYSTEMS



Assuming "A" and "B" are distinct radio communications systems- an 800 MHz system and a VHF system, for example- gateways only enable interoperability in area "C," where there exists overlapping coverage. As a result, the location of the emergency is a significant limiting factor for gateways. If an emergency occurs outside area "C," where overlapping coverage does not exist, then the responding emergency personnel will not be able to communicate with one another.

Conclusion: Texas's commitment to achieve emergency communications interoperability throughout the state by 2007 is commendable.[32] However, as the name implies, patches are a temporary fix and not a long-term solution. Moreover, should Texas actually

[30] Texas Association of Regional Councils, "Interoperability" PowerPoint Presentation March 11, 2004. <http://www.txregionalcouncil.org/ep/training/tarc_interop_031104.ppt#368,1,Interoperability>.
[31] Ark-Tex Council 3.
[32] State of Texas, Office of the Governor, "Border Security Plan for Texas." April 12, 2006 <http://www.governor.state.tx.us/priorities/other/border/border_security/>

achieve statewide, Level-4 interoperability, many communities may not have the funding to upgrade and connect to the statewide system. As a result, during the 2006 hurricane season, communications interoperability will still be out of reach for many local first responders.

Louisiana

According to the State Police, "The State of Louisiana presently operates a statewide analog wireless communication system which was installed in 1996 for voice communication. This system is presently used by approximately 70 agencies with 10,000 subscriber users."[33] This system is severely outdated. Motorola, who manufactured the system, no longer makes replacement parts or provides system upgrades. The company will discontinue offering technical support for the system by the end of the year, as well.[34]

Although the aging system is cause for concern, it nonetheless allows state agencies to communicate with one another. However, the communications systems of *local* public safety departments in Louisiana are not interoperable with the state. For example, the parishes of Jefferson, New Orleans, Plaquemines and St. Bernard currently operate on four completely separate radio systems. Jefferson Parish has two Motorola parish-wide 800 MHz trunked systems, one mix-mode and one analog. Orleans also has 1 MA-COM parish-wide 800 MHz mixed mode trunked system. Plaquemines has a single VHF radio system and a conventional 800 MHz system that operates on the State's 800MHz. St. Bernard's Parish operates a combination of UHF and VHF conventional radio systems.[35] As a result, emergency responders at the local level are unable to communicate with those at the state level, and vice versa.

Since 1999, the State of Louisiana has received $135,065,086 in total awards from the Department of Homeland Security's (DHS) Office of Domestic Preparedness. Of this, $106,873,872 has been allocated for equipment purchases, but only $48,213,765 (45%) has actually been expended. Of the $135,065,086 received from DHS, interoperability expenditures total $15,906,999, or just 12% of the total awards received.[36]

On January 26, 2006, Gov. Kathleen Blanco created a Statewide Interoperable Communication System Executive Committee to pursue a comprehensive interoperable communications system that supports voice, data and imagery communications between

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[33] "Louisiana Totally Interoperable Environment (LATIE)" Lousiana State Police. <http://www.lsp.org/interoperability.html>.

[34] Penny Brown Roberts, "Crisis mandate remains unmet," The Baton Rogue Advocate, April 9, 2006. April 10, 2006 <http://www.2theadvocate.com/news/2602596.html>.

[35] PowerPoint Presentation, "Region 1 Public Safety Radio System;" Louisiana State Police. April 10, 2006 <http://www.lsp.org/interoperability/pdf/RegionOnePresentation.pdf>.

[36] "Statewide Police Explain Interoperability Funding Distribution," Louisiana State Police News Release December 14, 2005. <http://www.dps.state.la.us/lspnewsr.nsf/3b262a4d369b006a86256c7600520240/cf023833c5d97a14862570d7007f2d3e?OpenDocument>.

all emergency service personnel.[37] As the Governor noted in her press release announcing the creation of the Executive Committee, "Communication is critical to direct emergency response. You can't coordinate if you can't communicate."[38] But recent reports suggest that turf battles and political infighting are delaying progress towards interoperability. Indeed, the committee has yet to hold a single meeting.[39]

Conclusion: In short, Louisiana's pursuit of communications interoperability is, like many states, disjointed and uncoordinated. Considering the state's experience with recent natural disasters, one would hope to see Louisiana emerging as a model for implementing a comprehensive communications system. Unfortunately, state-level efforts are not being mirrored at the local level due to cost concerns, and inter-agency squabbles have impeded progress.

Mississippi

In 2005, the Mississippi state Senate passed a bill directing the state's Wireless Communication Commission to implement a statewide wireless system "to ensure critical personnel have effective communications services available in emergency situations."[40] The Commission meets monthly and has held 13 meetings since last June. A review of the Commission's meeting minutes reveals that the largest concern about achieving interoperability is not one of technology, but one of cost.

There are approximately 40 different existing radio systems in use across the state, and it is unknown how many are compatible with one another. Some members of the Commission have expressed concerns that because the existing capabilities are unknown it would be foolish to spend money towards interoperability without first having identified the extent of the need. Currently, the Commission does not know what is being planned or what is being spent around the state to achieve communications interoperability.[41]

Conclusion: Like Louisiana, one would hope to see Mississippi emerging as a model for implementing a comprehensive communications system, considering the State's experience with the 2005 hurricane season. However, based upon the "Six Levels of Interoperability" matrix and the apparent lack of quantifiable movement towards statewide emergency communications interoperability, it is anticipated that emergency communications interoperability in Mississippi does not currently exceed Level-3. As is the case in most other states, sufficient funds are often lacking at the local level.

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[37] "State improving interoperability among first responders," Office of the Governor of the State of Louisiana Press Release, February 2, 2006. <http://www.gov.state.la.us/index.cfm?md=newsroom&tmp=detail&articleID=1642>.
[38] Ibid.
[39] Roberts.
[40] Mississippi Wireless Communication Commission. 2006. <http://www.wcc.ms.gov/mwcc/wireless.nsf/webpages/wccmeetings_wcchome?OpenDocument>
[41] "Meeting Minutes" Mississippi Wireless Communication Commission. July 7, 2005. April 10, 2006: <http://www.wcc.ms.gov/mwcc/wireless.nsf/webpageedit/wccmeetings_mtg_07_07_2005_minutes/$FILE/wccminutes_07_07_2005.pdf?OpenElement>.

Consequently, emergency communications interoperability is compromised, with many emergency responders having no communications interoperability whatsoever.

Alabama

Alabama does not have an interoperable communications network. Rather, the Alabama Emergency Management Agency (AEMA) has an amount of preprogrammed radios that are activated during disasters for certain groups.[42] While this Level-1 arrangement offers the advantages of being able to work across frequency bands, reduced costs and simplicity, these advantages are far outweighed by the drawbacks. Such an arrangement is impractical for large-scale events. The delay associated with swapping radios represents critical time that could, and should, be spent saving lives and property.

Were the extent of Alabama's interoperability efforts confined to simply swapping radios, the State would attain just Level-1 interoperability. Although the state has not been able to secure sufficient funding to build a statewide interoperable network, AEMA uses bridging technology (i.e., "gateway patches") to achieve limited interoperability. AEMA maintains mobile communications vans that can serve as command centers and are capable of becoming communications posts that can handle Internet, video, and Voice Over Internet Protocol, or VoIP.[43]

The costs associated with establishing a limited Level-4 "gateway" system such as this are considered "moderate," and such systems have the ability to link different system types. However, significant pre-planning is required on each system to avoid channel crowding.[44] Therefore, while a degree of interoperability is certainly possible, limitations such as these may make this type of arrangement inappropriate for emergency response, when time is of the essence.

Conclusion: Alabama's pursuit of communications interoperability is largely uncoordinated and the efforts have only yielded basic interoperability solutions. State-level efforts are not being mirrored at the local level due to cost concerns. Consequently, state agencies arriving into locally effected areas may be unable to communicate directly with local first responders, compromising the ability to communicate and, by extension, a safe and effective emergency response.

Georgia

The State Office of Homeland Security/Georgia Emergency Management Agency has asked Georgia Tech to help implement a statewide interoperable radio communications system. The $8 million project, funded through the federal Department of Homeland Security's Law Enforcement Terrorism Prevention Program, will rely upon VoIP technology and software in 911 dispatch centers. "Internet networking components and a

[42] U.S. House of Representatives, A Failure of Initiative: The Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, Washington, D.C. Government Printing Office February 15, 2006, 165.
[43] Patience Wait, "Alabama's Comm Center Can Pick Up and Go" Government Computer News September 19, 2005. April 10, 2006 <http://www.gcn.com/print/24_28/37032-1.html>.
[44] Texas Association of Regional Councils "Interoperability."

type of voice over Internet protocol (VoIP) software will be installed in selected 911 dispatch centers throughout the state. This will allow radio calls from law [enforcement] officials and first responders to be routed over the state's private Internet Protocol (IP) network… designed to carry voice, data and video traffic."[45]

Conclusion: While Georgia's new system capabilities represent the potential for Level-4 interoperability, it is expected to provide coverage throughout only 80% of the state, leaving 20% of the state, and a potentially significant number of citizens, without the benefit of interoperability. Moreover, the system is not expected to be complete until the end of 2006[46]- *after hurricane season*- assuming the project adheres to its established timeline.

Florida

Florida began preparing a statewide communication system for state agencies and law enforcement after Hurricane Andrew in 1992. Florida's current Interoperability Strategy takes a two-pronged approach. The first element of the strategy "provides network connections between dispatch centers and installing an interoperability tool to connect users on any radio system to any other radio system on the network." [47] This Level-4 network "enables first responders on disparate radio systems and frequencies to communicate with each other as connected talk groups without requiring the replacement of local systems."[48]

The second thrust of Florida's plan is to "build out nine mutual aid channels throughout the state. Mutual aid channels provide radio service to first responders outside the range of their local system or when they need to communicate with users not on their local system. The mutual aid build-out will substantially increase their geographic coverage, ensuring that wherever they go, Florida's first responders will have radio communication capability."[49] Level-3 communications interoperability solutions such as this are in addition to the two 800 MHz channels already provided by the Statewide Law Enforcement Radio System (SLERS).[50]

Florida's SLERS system is a Level-4 interoperability solution – an 800 MHz trunked system which can allow multiple users to share a small number of channels. According to the SLERS website, "The goal of the Statewide Law Enforcement Radio System (SLERS) project is to provide State law enforcement officers with a shared 800MHz

[45] T.J. Becker, "Georgia Launches New Communication System," Georgia Institute of Technology, February 28, 2006.; April 10, 2006: <http://www.gatech.edu/news-room/release.php?id=878>.
[46] T.J. Becker, "Crisis Talk: Georgia Tech Helps Implement Statewide Interoperable Communications System," Georgia Institute of Technology February 28, 2006. April 10, 2006 <http://gtresearchnews.gatech.edu/newsrelease/emergency-radio.htm>.
[47] "Project Strategy and Background, What the Need is and How the Strategy Was Established." Florida Enterprise Information Technology Services. April 10, 2006 <http://eits.myflorida.com/io/strategy.htm>.
[48] "Project Strategy and Background."
[49] "Project Strategy and Background."
[50] "Project Strategy and Background."

radio system. This digital system serves over 6,500 users with 14,000 radios in patrol cars, boats, motorcycles, and aircraft wherever they are in the state."[51]

Through SLERS, 98% of the state, and up to 25 miles offshore, is covered by the system. In 2004, Hurricanes Bonnie and Charley destroyed communications capabilities throughout much of the affected area, but **the SLERS system proved resilient, keeping communications open among 14 state agencies and the State Emergency Operations Center.**

Conclusion: The drawback to Florida's SLERS system is that it is a state law enforcement network, linking together only state agencies. Local departments still rely upon their own, unique radio communications systems. Cost concerns for many communities may prohibit them from upgrading to the statewide system. As a result, state agencies arriving into locally effected areas may be unable to communicate directly with local first responders, compromising the ability to communicate and, by extension, an effective emergency response.

South Carolina

Just as Florida recognized the need for statewide interoperability after Hurricane Andrew, Hurricane Hugo revealed South Carolina's need "for a more robust radio communications system that would provide agency interoperability and statewide coverage." In addition to addressing interoperability and coverage issues, South Carolina faced the added challenge of a significant number of state and local government radio systems that were as much as 25 years old.[52] The state found its answer in Palmetto 800, a Level-4 interoperability solution.[53]

According to the South Carolina Division of the State Chief Information Officer, over 350 different agencies representing state government, federal government, local government, law enforcement agencies, fire services, EMS services and power utilities in South Carolina, North Carolina and Georgia currently participate in the shared statewide 800 MHz radio system. The system currently has nearly 20,000 users, and over 94 percent of South Carolina's population is serviced by sheriff's departments with access to the statewide 800 MHz radio system. By 2007, the "goal is to have 25,000 system users, to construct a completely redundant conventional 800 MHz system (70% is already completed), and to convert from a mobile coverage system to a handheld coverage system." [54]

Conclusion: South Carolina should be commended for the progress it has made towards providing effective and reliable communications for emergency responders. The only

[51] "Statewide Law Enforcement Radio System." Florida Enterprise Information Technology Services. <http://eits.myflorida.com/slers/ >.
[52] "Palmetto 800." National Association of State Chief Information Officers; <http://www.nascio.org/scoring/files/Communications-SC-Palmetto.doc>.
[53] "Palmetto 800 Network Selects Radio IP Software," TMCNet May 3, 2004. <http://www.tmcnet.com/usubmit/2004/may/1037760.htm>.
[54] "Palmetto 800."

downside with the South Carolina system appears to be that encountered by most states that have implemented a state-wide system – the cost to local communities. While South Carolina appears to have established a robust, statewide emergency communications network, it is available only to state agencies, or those local communities that have the financial resources to upgrade to the Palmetto 800 system.

North Carolina

North Carolina's statewide 800MHz system, when completed in 2010, will be available to all public agencies. Short for "Voice Interoperability Plan for Emergency Responders," the VIPER system will link all those who have a) signed onto it, b) have purchased the necessary equipment, and c) have been trained on how to use it.

Before VIPER, it is estimated that state/local agencies had invested $270 million in 800 MHz technology. However, even though VIPER is an 800MHz system, much of the previously invested-in technology is not compatible with VIPER. So while the VIPER concept may look good on paper, many local governments have objected to the system as being less reliable than their existing systems.

Moreover, at a cost of $190 million- estimated to be between $2,000–4,000 per radio, *not including maintenance and training*- the system is simply cost-prohibitive for many communities who don't have the tax base to support such a large investment. As such, some local governments have refused to upgrade to the VIPER system only to have the state respond by denying localities Homeland Security grant monies.[55]

Conclusion: Questions about reliability and cost have resulted in most local governments opting out of the VIPER system altogether. Consequently, what could have been a Level 4 interoperability state is, in many localities, effectively reduced to Level 1. As Person County Manager Steve Carpenter put it, "If outside folks come in, we have provisions to give them spare radios. If we go somewhere and help, we'll get into that then."[56]

CONCLUSION

With some states far less prepared than others for the upcoming hurricane season, the FRC has major concerns that first responders will again face interoperability problems while attempting to confront hurricane emergencies. While Florida and South Carolina have made important steps towards ensuring that emergency responders have the resources they need to communicate with each other and coordinate a safe and effective emergency response, other states remain far behind these leaders. For example, it is not known precisely how far Mississippi has evolved towards interoperability. It appears that they are only now making efforts towards undertaking a stock-take of existing communications abilities. It is particularly disheartening to learn that although Louisiana appears to have committed itself to effective emergency communications, political infighting and turf battles may have impeded efforts aimed at helping first responders.

[55] Ray Gronberg, "Tuning in to Homeland Security; State Calls Shots on Grants, Pushes Communication System," The Herald Sun, Durham, NC, September 21, 2005: A1.
[56] "Communication Crucial in Disaster," The Herald Sun, Durham, NC, September 22, 2005: A6

Emergency communications interoperability cannot be achieved overnight. Not only must there be an assessment of existing capabilities and an agreed-upon course of action, there must also be coordination at all levels of government and cooperation between the many different stakeholders. Once a plan for "fixing the radios" has been devised, adequate funding must be provided to advance towards true interoperability.

The FRC recommends the following:

1. **The Department of Homeland Security's SAFECOM program must expeditiously complete the "National Interoperability Baseline Survey,"** which was scheduled to be completed by the end of 2005. This important survey will quantify the current state of public safety communications interoperability across the nation by identifying where gaps exist and how agencies can most effectively allocate resources.
2. **The Federal government should collaborate with state and local agencies to coordinate and implement regional emergency communications interoperability starting today,** and providing additional targeted assistance once the "National Interoperability Baseline Survey" is complete.
3. **The Federal government, states and localities must do a better job of tracking the disbursement and allocation of grant monies.** The wide range of publicly reported figures on federal interoperability funding, from $200 million to $5 billion, demonstrate the need for better monitoring and allocation of grants.
4. **If the nation is to make serious progress in achieving interoperability, there must be improvements in the ability to coordinate spending and the transparency of federal grants.** There is currently no way of knowing how localities finance their efforts, use federal funds, or assess the effectiveness of how the funds are spent.[57]
5. **Finally, there must be both coordination and cooperation between agencies and at various levels of government.** Reports of political in-fighting and turf tussles are discouraging and only further delay resolution of the communications crisis.

It has been nearly 5 years since 9/11 and nearly 9 months since Hurricanes Katrina and Rita destroyed countless communities along the Gulf. The start of the 2006 hurricane season is a mere 42 days away. The country does not need another national tragedy to highlight again that when emergency responders are unable to talk to each other, communities and those that protect them are in danger. Solving the emergency communications crisis must become a national priority followed by meaningful action.

[57] U.S. General Accounting Office, Testimony Before the Little Hoover Commission, State of California, Statement of William O. Jenkins, Jr., Director, Homeland Security and Justice Issues "Emergency Preparedness and Response – Some Issues and Challenges Associated with Major Emergency Standards Washington, D.C. February 23, 2006, 13.