

The Evolution of Public Safety Radio Communications in Mississippi



*Prepared in conjunction with the Department of Homeland Security's
Office of Emergency Communications*

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Executive Summary

In April 2005, the State of Mississippi committed to the building of a statewide interoperable public safety radio system, now known as the Mississippi Wireless Information Network (MSWIN),¹ to promote an all-inclusive approach to emergency communications. In planning for MSWIN, Governor Haley Barbour signed legislation creating the Mississippi Wireless Communication Commission (WCC), the entity responsible for overseeing and maintaining effective public safety emergency communications in the State of Mississippi.² Four months later, Hurricane Katrina hit the Gulf Coast causing mass communications failures and damage to critical infrastructure throughout Mississippi. Communications challenges between responders from various agencies hindered critical information exchange and public safety disaster response.

Although a true consensus definition does not exist, interoperability allows for multi-jurisdictional, multi-disciplinary communications (i.e., voice and data exchange) among responder communities before, during, and after emergencies and disasters. This means having access to the right people and information, at the right time, and using computer-aided dispatch and radio systems that support Federal, state, and local communications during various types of emergencies. MSWIN provides reliable redundant communications for the State of Mississippi's first responders. Built as a robust architecture to withstand extreme conditions and support communications during all phases of the disaster cycle, MSWIN is a Project 25 (P25) 700 MHz land mobile radio (LMR) public safety communication system designed to provide 97% mobile area coverage statewide via multiple sites. Designed to allow any manufacturer's P25 compliant radios to operate, MSWIN is the only statewide interoperable emergency communication voice and data network in Mississippi available for use by both state and local public safety entities.³

Over the ten years since Hurricane Katrina, the WCC has worked extensively with local public safety entities to transform emergency communications from the numerous disparate and incompatible local or regional systems towards one singular statewide system. MSWIN user Sheriff Lance Humphreys of Yalobusha County stated that he "cannot remember life before MSWIN and would not want to go back." Recent incidents such as the 2015 Delta State Campus shooting and 2014 Winston County tornados further highlight the continued need for MSWIN's all-incident, all-hazards, and all-threats communications capabilities.

In an effort to identify how Federal, state, and local public safety officials have benefited from changes to the State of Mississippi's communications system, the Mississippi WCC, in conjunction with the Department of Homeland Security's (DHS) Office of Emergency Communications (OEC), collected data through cross-sectional interviews to capture both pre- and post-MSWIN experiences. Analyses conducted within this paper also aim to consolidate findings on greater cooperation and resource sharing, such as challenges funding equipment purchases and expanding membership base.

Findings from the cross-sectional interviews show that public safety and state entities increasingly collaborate on wireless communications interoperability and system development in Mississippi

¹ WCC Website, <http://www.wcc.ms.gov/Pages/MSWIN.aspx>

² Miss. Code Ann. § 25-53-171

³ WCC Website, <http://www.wcc.ms.gov/Pages/MSWIN.aspx>

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since the deployment of MSWIN. State officials and the public safety community should focus on the sustainment of critical efforts supporting MSWIN, such as continuing to prioritize effective means of collaboration, identifying additional funding sources, and maintaining statewide governance supporting public safety communications and the system. Supporting these efforts enables agencies to more efficiently increase interoperability, provide additional services, reduce long-term costs, and enhance public safety.

I. Introduction

The Mississippi Wireless Communication Commission (WCC), in conjunction with the Department of Homeland Security's (DHS) Office of Emergency Communications (OEC), conducted research to document the evolution of public safety communications in Mississippi since Hurricane Katrina. The *MSWIN Premier Public Safety Radio Communications White Paper* was developed in a manner that is applicable and useful to current MSWIN users, potential MSWIN users, elected officials, policy makers, and the public safety community at large. This paper illustrates how Federal, state, and local MSWIN users benefit from not only the ability to cooperate and communicate, but also from the cost effectiveness of using a consolidated communications network. This comprehensive document highlights best practices, communications capabilities, and provides greater insight into potential avenues for cooperation and resource sharing. As such, this paper highlights select Mississippi incidents utilizing MSWIN response, including the recent Delta State shooting and Winston County tornados, to highlight the various benefits and challenges implementing the statewide public safety radio system.

Data Gathering Approach

The research team selected a cross-section of public safety officials in Mississippi involved in various incidents from before and after MSWIN was deployed. Six participants were selected



based on their contribution to, and participation in, MSWIN along with their involvement in recent Mississippi incidents requiring interagency response. The team interviewed study participants using a written guide on a number of topics, including Mississippi's pre-MSWIN systems, the impetus for MSWIN, system adoption and implementation, measures of success, funding mechanisms, and future challenges. In addition, the team interviewed four members of the WCC staff on historical and technical information related to the MSWIN system, the organization and structure of the WCC, and MSWIN governance. The 10 individuals interviewed are identified in Appendix A.⁴ OEC staff reviewed and analyzed the resulting qualitative data, pulling best practices and lessons learned from current MSWIN users on MSWIN capabilities, incident response, information sharing, multi-jurisdictional coordination, funding, and governance.

Visual 1: Mississippi counties interviewed

⁴ Mississippi map, https://upload.wikimedia.org/wikipedia/commons/thumb/c/c0/USA_Mississippi_location_map.svg/2000px-USA_Mississippi_location_map.svg.png

History and Background

Historically, individual public safety agencies across the United States were responsible for developing and maintaining their own communication systems. As a result, a patchwork of systems emerged organically at the local levels that were often incompatible with one another. Beginning in the late 1960's, and bolstered by the introduction of 9-1-1 in 1968, consolidated emergency service dispatch centers began to emerge across the country. This natural progression shifted from individual to shared radio frequencies. Nevertheless, jurisdictions along the same border did not always share communication capabilities. Local jurisdictions within Mississippi were no different. For instance, local Cleveland Police Chief Buster Bingham recalled keeping two radios in his patrol vehicle to communicate with neighboring agencies.

Before the September 11, 2001, New York City terrorist attacks (9/11), much of the public assumed emergency response agencies across the nation could effectively talk to each other during large-scale disasters. These tragic events highlighted the need for improved public safety interoperable communications systems due to the public safety community's inability to communicate effectively during response efforts, increasing loss of life and property. Operating on disparate radio systems, first responders were unable to communicate, resulting in a lack of situational awareness. Following 9/11, nationwide attempts were made to bridge the communications gap; however, the response to Hurricane Katrina on August 29, 2005, emphasized to both the public and public officials how much work really remained. Lack of communications interoperability required emergency responders in Mississippi to overcome communication barriers through creative means, with varying degrees of success. Medical personnel tracked patient movements on post-it notes, while police and fire teams were limited to face-to-face communication. Satellite radios, where available, were not interoperable across agencies, disciplines, or teams. Despite efforts to improve emergency communications interoperability, it is still a critical nationwide issue. Many emergency responders cannot talk within their own agencies, let alone with other jurisdictions, due to varying frequencies and incompatible technologies.

In recognition of these challenges, the development of statewide public safety communications systems, such as MSWIN, fill many of the communications gaps exposed by catastrophic incidents requiring highly coordinated response (i.e., 9/11, Hurricane Katrina) and open the door to a wide range of benefits for interoperable communications. Key benefits of MSWIN include the following:

- Special Event Talk Groups and conventional mutual aid channels provide direct cross-discipline and cross-agency communications;
- Agencies save time by eliminating the additional step of contacting dispatch;
- Agencies are no longer burdened with the responsibility and associated costs of building and maintaining radio communication infrastructure; and
- Agencies save money through a consolidation of resources and coordination of incident response ahead of arriving on the scene.

II. Mississippi Emergency Communications Landscape

Emergency Communications Prior to the WCC and MSWIN

Although a statewide emergency communications radio system did not exist in Mississippi prior to Hurricane Katrina, planning for MSWIN began two years before the storm struck the Gulf Coast. In 2003, Mississippi Governor Ronnie Musgrove issued Executive Order 874⁵ creating the Mississippi Statewide Interoperability Executive Committee (SIEC) to provide recommendations on public safety wireless communications interoperability and shared systems development. The Executive Order was an effort to simplify the variety of emergency communications platforms in Mississippi and improve first responder situational awareness.

Emergency communications representatives gathered information to establish a statewide plan for assessing and instituting interoperability throughout Mississippi, addressing both short- and long-term solutions. The committee was comprised of 19 representatives, including 9 appointed voting members and at least 10 advisory members. Non-voting advisory members from the legislature and public safety served on sub-committees and offered in-depth perspectives. The body acted as a resource for interoperability information in the state and examined the needs and capabilities of each county in hopes of leveraging existing technical and infrastructure resources. The SIEC did not, however, possess the authority to implement new solutions or requirements based on findings.

In its attempt to assess and institute interoperability across the state, the SIEC found that many public safety and emergency response entities had their own communication platforms. Some departments were on high-band, some were on low-band, and some were in the process of converting to an 800 MHz trunked system. As a result, most state and local agencies had no direct means of communicating within or across agencies during emergencies or day-to-day operations. This finding would later be critical to the future deployment and expansion of the WCC MSWIN system.

Some areas of Mississippi developed patchwork regional systems to overcome communications barriers. For example, all Forrest County agencies operated on an 800 MHz trunked system. This system offered greater interoperability than most counties. Over time, outside agencies (Lamar County, Perry County, Jones County, Mississippi Highway Patrol) were granted access to the trunked system after a number of multi-jurisdictional incidents occurred. According to Jim Hennessey, Telecommunications Supervisor with the Forrest County Emergency Management District, “if you frequented the county and had access to our equipment, then we made sure to share our information.” Nevertheless, those informal relationships evolved over long periods of time and only after numerous ineffective incident responses.

The SIEC identified communications failures prior to Hurricane Katrina, but did not have the authority to make necessary statewide changes. To address this and other challenges, Governor Haley Barbour signed legislation creating the WCC in 2005 which provided the WCC authority to implement a statewide public safety radio communications system, building upon SIEC efforts, and granting the governing body authority to govern the system.⁶ Many of the WCC’s appointed

⁵ Executive Order No. 874, http://mdah.state.ms.us/arrec/digital_archives/musgrove/pdfs/29074.pdf

⁶ Miss. Code Ann. § 25-53-171

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16 members transferred from the SIEC for continuity and knowledge retention. The crucial differences between the two statewide governance structures are the WCC's ability to implement a statewide system for state and local first responders, establish policies and standards, use public resources for operations, and commission Memorandum of Understandings with localities to meet unique user needs.

When Hurricane Katrina reached Mississippi four months after the creation of the WCC, the older, disparate communications systems were already at the end of their lifecycle. Some of the systems on the coast were completely wiped out by the storm. As a result, Bill Buffington, Technical Director of the WCC, said the coordination of MSWIN post-Katrina was a "reverse perfect storm." In other words, Hurricane Katrina came at a time when Mississippi's systems already needed to be replaced, thereby creating conditions that necessitated their replacement. As a result of the storm, the WCC received necessary funding and backing of leadership to replace, upgrade, and create an interoperable system in the State of Mississippi.

The MSWIN System

Vicki Helfrich, Executive Officer at the WCC, and Tom Lariviere, Chair of the WCC, specified that the "MSWIN's state-of-the art Project 25 Phase II 700 MHz Land Mobile Radio public safety communication network provides reliable, redundant voice and data mobile coverage to 97% of the state's geographic area. The system has the capacity to support 128,000 users and is monitored 24 hours a day, 365 days a year by the WCC. The network includes 144 towers furnished with equipment shelters, emergency power systems, network equipment, redundant site controllers, and dual battery backup recovery systems." The WCC maintains the MSWIN infrastructure and is bound by legislation to ensure its upkeep. This is an added benefit of the system according to Buddy King, Director of Winston County Emergency Management. "There are no maintenance requirements [at the subscriber level] for infrastructure – we just need to buy the radios." The WCC provides infrastructure maintenance and upgrades, which relieves the local agencies from that burden, allowing them to focus their efforts on providing public safety.

Current MSWIN users include over 400 local entities, 40 state agencies, and 20 federal entities, totaling over 23,000 users. Additionally, a number of non-governmental organizations currently utilize MSWIN, including hospitals, electric power associations, and railroad police. According to Sheriff Humphreys, Yalobusha County, "the main takeaway is that everyone in Mississippi needs to be on the MSWIN system for interoperability. It's a proven system and it is worth the investment." Partnerships and additional users increase the level of interoperability MSWIN provides. Respondents unanimously agreed that this greater level of interoperability as a result of collaboration is one of MSWIN's most attractive benefits.

"I would not go back to high band radios. In some areas of Yalobusha County, you simply cannot talk. I have not found a place in Mississippi where my MSWIN handheld radio does not work...[even though] some places do not have service with any carrier. That's why the MSWIN system is so important."

Sheriff Lance Humphreys, Yalobusha
County

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One of MSWIN’s notable capabilities is the ability to set up and then assign a Special Event Talk Group with other users before, during, or after an incident for uninterrupted communications. For situations requiring a multiagency response, particularly between both state and local officials, the WCC has created 40 state and regional Special Event Talk Groups. The WCC requires the Special Event Talk Groups to be programmed into every radio which utilizes the MSWIN system. This is considered a WCC best practice because it makes certain all responders have access to the same information. The WCC monitors usage of the interoperability Talk Groups, allowing Federal agencies, state agencies, and local government jurisdictions and associated emergency response to coordinate during interagency operations and on-incident communications.

MSWIN is a platform for interoperable communications for all-hazards incidents, planned events, and day-to-day use. The WCC maintains a cache of radios, making it a scalable system that can adapt to large and complex incidents in a short period of time. However, many users view the day-to-day use of MSWIN as its true benefit. The routine practice of communicating across jurisdictions and agencies allows everyone to be as effective as possible under all conditions. An additional benefit is that MSWIN is a catalyst for users from different agencies to build relationships. As a result, when infrequent, large-scale incidents occur, those individuals involved in response on the system are already acquainted.

Examples of MSWIN System Impact on Incident Response	
Dr. Damon Darsey, University of Mississippi Medical Center, Mississippi Center for Emergency Services, Medical Director	“MSWIN changed how we communicate with non-medical responders or non-professionals. The mortality rate in Mississippi is between #1 and #3 for medical emergencies. By talking directly with those on the ground about the incident and what they are seeing, we can launch assets more efficiently and rapidly to help.”
William T. “Buddy” King, Winston County Emergency Management, Director	“Most recently we [the WCC] issued radios to responsible entities in a local air show. The equipment was well utilized and facilitated universal and timely distribution of information and decision making associated with a public event to ensure public safety, crowd control, and event management... This was the first special event in which we used MSWIN, and it was a very successful application.”
Lance Humphreys, Yalobusha County Sheriff’s Office, Sheriff	“In 2014, a child went missing. I called [the WCC] to get a Special Events Talk Group to coordinate with the Army National Guard Helicopter, police, and fire from Tupelo County to find the child. An elderly lady also went missing, and we found her within one minute using the Special Events Talk Group to communicate with the same helicopter. We were able to find her so quickly due to that coordination.”

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Uninhibited information sharing increases situational awareness and allows entities to coordinate resources and responders earlier. Prior to MSWIN, advanced communication ahead of on-scene arrival was highly unlikely. Chief Tom Lariviere Chair of the WCC, recalls an ice storm in northern Mississippi where local entities set up a Special Event Talk Group to coordinate. As a result of direct communications among the responders, the region avoided duplications of effort, and did not send multiple state, county, and city sand trucks to the same site. “They communicated in advance and utilized resources, which is a significant change and benefit. It’s hard to put a price tag on those everyday opportunities for resource sharing and money saving.”

Another user benefit of the MSWIN system is how it cuts down on response time. Mississippi MED-COM, a University of Mississippi Medical Center dispatch and communications center for emergency response agencies, hospitals, and first responders, relies on MSWIN to communicate amongst its member agencies. Dr. Damon Darsey, Medical Director of the Mississippi Center for Emergency Services, has seen a significant positive impact on emergency medical response efficiency since the adoption of MSWIN. “If a patient needs blood, we start the transfusion on the helicopter. [Since joining MSWIN] for the first time, we were able to communicate to have matching blood at the landing pad waiting for us to continue the transfusion.” Previously, emergency response was a local issue with the local hospital and limited resources. MED-COM, with the help of MSWIN, connects responders and local resources to the regional or state level through the visualization and management of limited Mississippi resources.

The ability to communicate across state lines is crucial during large evacuations, law enforcements activities, and makes the activation of interstate mutual aid agreements more seamless. Through RF or system patches, MSWIN also provides for interstate coordination and interoperable communications. WCC staff has secured patches and common talk groups with Louisiana, Arkansas, and Baldwin County, Alabama which allows for communications from Texas to Florida and into Arkansas. The WCC is in process of securing the same type of interstate coordination with Tennessee. These patches are used to conduct contraflow evacuation exercises with neighboring states, facilitate prisoner transportation in real-world operations, and conduct mutual response to natural or man-made disasters or events.

Perhaps the greatest benefit of the statewide MSWIN system is agency-to-agency communications. In the following section (Section IV: Case Studies), the team examined two of the larger, more recent high-profile incidents in Mississippi (the Mississippi Delta State Shooting and Winston County tornados), which highlight MSWIN agency-to-agency interoperability during multi-jurisdictional incident response.

III. Case Studies

2014 Winston County Tornado Case Study

On April 28, 2014, a tornado touched down in northeastern Leake County, Mississippi. As the tornado approached Winston County, it strengthened to an EF4 tornado killing 10 people and destroying over 600 homes and other structures, including the Winston Medical Center. Prior to the tornado, Winston County had received 6 MSWIN radios from the WCC to test in the local area before joining the system. Winston County Emergency Management chose to utilize the MSWIN radios in response to the disaster. The first call for assistance went over the state common Talk

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Group requesting task forces and search and rescue. Mr. King “credits the rapid response [to the tornado] to MSWIN. Within an hour, two additional task forces had responded.” A total of 8 state agencies and 8 local agencies were involved in the response.

On day two of the response, it was clear there was a communication gap between the various levels of law enforcement. The agencies were on different frequencies, and there were not enough MSWIN radios to allow everyone to communicate in the field. Winston County Emergency Management requested a cache of 50 radios from the WCC along with the assignment of a Special Events Talk Group. Law enforcement personnel from various jurisdictions and agencies used the MSWIN radios to communicate among one another and to direct EMS and other emergency services when necessary. The deployment of the radios “allowed for seamless communications between various responding agencies.”

“I had an appreciation for the capabilities of the MSWIN system prior to the disaster itself. To actually place this system into service during our disaster affirmed my county’s commitment to converting our communications system to a statewide system.”

Buddy King, Winston County
Emergency Management

The use of a Special Events Talk Group improved incident and emergency response, increasing cooperation amongst state and local MSWIN users in the weeks following the tornado.

Responders felt confident in MSWIN technology and the ability to talk from agency-to-agency. With MSWIN, responders do not need to have access to other agencies frequencies. Entities may contact the WCC to assign a Special Events Talk Group, which only takes a few minutes. Operations managers can then ask dispatch to direct responders to the Talk Group for continuous communication during multi-jurisdictional incident response.

Mr. King described the Winston County emergency communications radio system prior to joining MSWIN as “antiquated and poorly maintained.” The sheer number and variety of systems and equipment led to communication roadblocks, making the system unreliable, undependable, and ineffective. For instance, Mr. King stated, “The county government struggled to identify revenue sources to either maintain or improve its communication system, while at the time being up against a federal mandate to limit bandwidth.” Operating a public safety radio system became very difficult and costly at the local level, making the statewide MSWIN system a more attractive option for Winston County. Local leadership viewed MSWIN as an opportunity to move on from their locally controlled legacy systems, and migrate to a newer, more sophisticated, and more interoperable statewide system. Localities no longer maintain towers and other infrastructure, and are only obligated to purchase MSWIN compatible radios.

Mr. King stated the price of equipment “is especially difficult for rural emergency services where revenue is limited by population and personal economic status.” However, despite the higher radio costs, there are few advantages to maintaining the local emergency communications system.

2015 Delta State University Campus Shooting

On September 14, 2015, a fatal shooting occurred on Delta State University's campus in Cleveland, Mississippi, the only area within Bolivar County on the MSWIN system. Chief Buster Bingham of the Cleveland Police Department was the public voice in the hours and days following the active shooter incident. According to Chief Bingham, Bolivar County had held countywide meetings to discuss upgrading all systems to MSWIN prior to the shooting. Delta State University was not on the MSWIN system, but was in the process of joining the system when the incident occurred, and had ordered radios that had not yet arrived. The majority of the response to the incident was conducted by outside agencies, and Delta State University's inability to communicate with those players only reinforced the need to join the MSWIN system.

The Cleveland Police Department was one of the first units on scene within two minutes of the initial call. The Delta State incident was the first time the department fully utilized the MSWIN system. Chief Bingham said, "The response was tremendous. Within 45 minutes, we had around 250 to 300 officers on the scene from all over Mississippi." Instantly and without any intervention, MSWIN allowed numerous agencies and disciplines with compatible technology to talk to each other.

As mutual aid units arrived, the Cleveland Police Department contacted the WCC to assign a Special Event Talk Group to coordinate response. Responders arriving at the scene could use their MSWIN compatible radio to get immediate access to the latest information or direction from operation managers. For example, when the Delta State shooting occurred, former United States Speaker of the House John Boehner was in Jackson for an event. The University of Mississippi Medical Center (UMMC) and MED-COM worked closely with the Federal Bureau of Investigation and Department of Public Safety to augment the Speaker's protective detail. When the shooting occurred, the Department of Public Safety and the Federal Bureau of Investigation contacted MED-COM for emergency medical response. Using MSWIN, UMMC and MED-COM identified additional medical and security resources to replace Speaker Boehner's detail and coordinated emergency medical response for the shooting. The Special Event Talk Group allowed for the coordination of multiple jurisdictions and geographically dispersed investigations.

The number of responders who arrived on scene after the Delta State shooting made coordination more difficult and use of the MSWIN system more crucial. The biggest communications challenge during the multi-jurisdictional incident response was identifying responders, including Delta State emergency responders, without MSWIN radios and ensuring they had access to the same information. To address communications challenges, officers not on MSWIN were partnered with responders with MSWIN capabilities. This tactic relieved some interoperability issues, but in after action meetings responders complained about a lack of situational awareness. Chief Bingham believes "if every local agency bought into the MSWIN system, then that challenge would be completely eradicated."

"At first I was one of the locals strongly against it, but now that I understand and see how it operates, I strongly believe every agency in Mississippi should get on MSWIN."

Chief Buster Bingham,
Cleveland Police Department

IV. Conclusion

The following table lists the key benefits of the WCC and MSWIN from the interviews and identifies the type of benefit that applies to each finding.

Key WCC/MSWIN Benefits	Incident Response	Coordination	Information Sharing	Funding	Governance
Legislation establishing authority to implement a statewide system for state and local first responders, create policies and standards, use public resources for operations, and commission Memorandum of Understandings to meet user needs					X
Strong sponsorship from highest possible level to formalize governance structures and authority					X
Balanced representation across various stakeholders					X
Scalable system that can adapt to both large and complex incidents quickly	X	X			
Eliminates the additional step of contacting dispatch to communicate with other agencies	X	X	X		
Special Event Talk Groups and conventional mutual aid channels provide direct cross-discipline and cross-agency communication	X	X	X		
All responders have access to the same information	X	X	X		
Coordination of incident response ahead of time	X	X			
Partnerships increase levels of interoperability	X	X	X		X
Builds relationships between users	X	X	X		X
Ability to communicate across state lines through RF or system patches		X			X
State and local government no longer burdened with the responsibility and associated costs of building and maintaining multiple radio communication systems				X	
Consolidation of resources ahead of time				X	X

Today's emergency communications environment necessitates the need for every first responder to have the tools to address both public and first responder risk. Due to the evolution of emergency communications technologies, public safety is moving towards more interdependent systems. As such, Mississippi made the choice to coordinate state and local efforts to achieve reliable and

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interoperable emergency radio communications across jurisdictions and disciplines utilizing the MSWIN system.

The table above highlights the benefits that necessitate the sustainment of both the WCC and MSWIN. Findings show it is necessary to have robust governance structures in place using an all-inclusive approach with inputs from central state leadership, stakeholders, and partners, including non-traditional disciplines, for sustainment of a statewide interoperability public safety radio system.

The WCC's enabling legislation granted members the power to make decisions and establish the policies and procedures, with input from subject matter experts and local agencies, necessary to successfully roll out the MSWIN system in 2013. As the emergency communications ecosystem evolves going forward, the WCC's ability to employ any powers necessary to accomplish their mission will be crucial to the continued success and adoption of MSWIN. The user-focused governance structure ensures the WCC provides solutions with stakeholder input for an all-incident, all-hazards, all-threats communications network that users can feel confident in, allowing them to focus on their job as first responders.

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Appendix A

The Mississippi Wireless Communication Commission and Department of Homeland Security's Office of Emergency Communications gratefully acknowledge the public safety professionals who contributed their time, experiences, and expertise for the preparation of this white paper:

- Chief Buster Bingham, Cleveland, Mississippi Police Department;
- Mr. Marty Burgess, Technical Director, University of Mississippi Medical Center;
- Dr. Damon Darsey, M.D., University of Mississippi Medical Center;
- Director Jim Hennessey, Forrest County Emergency Management District;
- Sheriff Lance Humphreys, Yalobusha County Sheriff's Office;
- Director Buddy King, Winston County Emergency Management District;
- Chief Tom Lariviere, Chair, Mississippi Wireless Communication Commission;
- Ms. Vicki Helfrich, Executive Officer, Mississippi Wireless Communication Commission;
- Mr. Bill Buffington, Technical Director, Mississippi Wireless Communication Commission; and
- Mr. Dent Guynes, System Technician, Mississippi Wireless Communication Commission.