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STATE OF MISSISSIPPI CRISIS COMMUNICATIONS: EXAMINING MSWIN
PREPAREDNESS

A Thesis

Presented in partial fulfillment of requirements for the degree of Master of Arts

in the School of Journalism

The University of Mississippi

Michael Knox Graham

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ABSTRACT

This research examines the Mississippi Wireless Information Network (MSWIN) and its level of preparedness to avert the communication problems for the State of Mississippi that were seen during Hurricane Katrina in 2005, in the event of a similar crisis. It explores the technical workings of the network and the makeup of the Mississippi Wireless Communication Commission (WCC) who oversees MSWIN. It also takes a look at similar networks in Louisiana and Arkansas to compare and contrast those to what is in Mississippi. Primary interviews with the WCC, State of Mississippi officials, and others on the Mississippi Gulf Coast paint a picture of the current status of MSWIN and sentiment around the state on its existence. Funding, barriers-to-entry, and the public-private partnership that make it work are part of the research.

DEDICATION

This thesis is dedicated to the first responders across the State of Mississippi that keep all Mississippians safe daily and the victims of Hurricane Katrina that were lost.

ACKNOWLEDGEMENTS

Thank you to Dr. Mike Edmonds who pushed me to complete my thesis and mentored me along the way. I thank my family for their continued support in furthering my education and Hannah Varner for remaining patient with me throughout the course of the thesis.

A special thank you goes out to Professor Cynthia Joyce for her guidance throughout the entire process and seeing the thesis to its end and also Dr. Nancy Dupont and Professor Alysia Steele for their wisdom in the progression of the thesis.

Lastly, a big thank you goes out to each of the individuals who agreed to be interviewed during the course of the research—especially the staff of the Mississippi Wireless Communication Commission who spent a large amount of time helping me understand the intricacies of the Mississippi Wireless Information Network.

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STATEMENT OF THE PROBLEM

Hurricane Katrina was one of the worst natural disasters in the history of the United States as ranked by costs in dollars and lives lost.¹ When it made landfall on the morning of Monday, August 29, 2005, near the Mississippi and Louisiana border it was a Category 3 hurricane with maximum winds estimated at 120 miles per hour (mph).² As it pushed its way north through Mississippi it was still categorized as a hurricane as far north as Meridian, MS, which is over 150 miles off the Mississippi Gulf Coast.³

According to the National Oceanic and Atmospheric Administration (NOAA), nationally Hurricane Katrina was responsible for 1,833 deaths with a damage cost of \$108 billion.⁴ Mississippi accounted for 238 of those fatalities.⁵

Thoughts of Hurricane Camille, which battered the Mississippi Gulf Coast in 1969, have long been at the forefront of Mississippians' minds as a benchmark of hurricane destruction. While Hurricane Camille outranks Hurricane Katrina as a Category 5 hurricane when it made landfall, it only killed about one-tenth of the people.⁶ Hurricane Katrina's most destructive winds reached almost 30 miles from its center—three times the radius of Hurricane Camille's

¹ "Hurricane Katrina - A Look Back 10 Years Later." *National Weather Service*. N.p., 17 Aug. 2015. Web. 1 June 2016.

² Ibid

³ *Katrina Ten Years After: Recovery, Rebuilding, and Renewal*. Rep. Jackson: Office of Governor Phil Bryant, 2015. Print.

⁴ "Hurricane Katrina - A Look Back 10 Years Later." *National Weather Service*. N.p., 17 Aug. 2015. Web. 1 June 2016.

⁵ *Katrina Ten Years After: Recovery, Rebuilding, and Renewal*. Rep. Jackson: Office of Governor Phil Bryant, 2015. Print.

⁶ "Hurricanes in History." *Hurricanes in History*. National Hurricane Center, n.d. Web. 04 June 2016.

most damaging winds.⁷ All 82 Mississippi counties were declared federal disaster areas and 74 counties received full federal assistance.⁸

The swath of Mississippians who were affected in Hurricane Katrina's wake is just one of countless reasons that citizens from all over the state have their own tales of just how the storm affected them. Many of the Gulf Coast residents lost everything, but thousands of others were also touched by the power of the storm. Eight out of every 10 people living in Mississippi lost electricity when Hurricane Katrina hit and hundreds of thousands of homes were damaged.⁹

Over 5,000 rescues were performed in Mississippi.¹⁰ The State Emergency Operations Center housed a missing person hotline in the days after Hurricane Katrina and it received more than 11,000 phone calls from 40 different countries.¹¹

When the final count was tallied, over 60,000 homes were destroyed in the state, which left over 100,000 Mississippians without a place to live.¹² That equated to a little over three percent of the state's population becoming homeless in the span of 24 hours.

Hurricane Katrina didn't discriminate on what it destroyed and what it spared as it pushed through Mississippi. Private homes, government buildings, and infrastructure all sustained major damage, especially in the three coastal counties of Hancock, Harrison, and Jackson. State and local governments had difficulties in the immediate hours and days after landfall with how to communicate effectively with each other.

⁷ Katrina Ten Years After: Recovery, Rebuilding, and Renewal. Rep. Jackson: Office of Governor Phil Bryant, 2015. Print.

⁸ "Mississippi Marks Eight Years of Recovery since Hurricane Katrina." *Mississippi's 64th Governor Phil Bryant RSS*. Office of Governor Phil Bryant, 29 Aug. 2013. Web. 04 June 2016.

⁹ Katrina Ten Years After: Recovery, Rebuilding, and Renewal. Rep. Jackson: Office of Governor Phil Bryant, 2015. Print.

¹⁰ Ibid

¹¹ Ibid

¹² Ibid

Even before the storm hit, the Mississippi Emergency Management Agency (MEMA) was preparing for potential landfall and communicating daily with local, county emergency directors.¹³ On August 23, 2005, six days before landfall, MEMA began publishing daily situation reports and two days later held an executive planning meeting to prepare for Hurricane Katrina.¹⁴ The next day Gov. Haley Barbour signed a State of Emergency order and a briefing was held for all state agencies and Federal Emergency Management Agency (FEMA) liaisons.¹⁵ With the State Emergency Operations Center (SEOC) activating on August 26, 2005, it was the first use of a joint-federal unified command in a major disaster.¹⁶

As Hurricane Katrina's 120 mph winds pummeled the Mississippi Gulf Coast, much of the infrastructure in the immediate vicinity of the coastline was destroyed and the communications infrastructure wasn't immune. This includes landlines, cell phones towers, and county emergency communication radio towers. Around 2,000 cellular towers were knocked out by the storm nationally.¹⁷

The communication situation immediately following Hurricane Katrina in Mississippi was summed up by Robert Latham, MEMA Executive Director in 2005, in the United States House of Representatives 2006 final report detailing preparation and response for Hurricane Katrina.

¹³ Ibid

¹⁴ Ibid

¹⁵ Ibid

¹⁶ Ibid

¹⁷ Testimony, Dr. Peter Fonash, Deputy Manager, National Communications System, before the House Committee on Homeland Security, Oct. 26, 2005.

In the report he stated, “the entire communications infrastructure of the state’s Gulf Coast was destroyed by Hurricane Katrina, systems elsewhere across the state were inoperable, and those systems that were working were overloaded, resulting in delays processing local governments’ requests for assistance.”¹⁸

Latham further explained in 2016 the severity of the problem saying, “When we got to Harrison County on Tuesday afternoon we didn’t know how bad it was in Hancock County. We didn’t have any communications from [them]. Other than early on Monday morning we had gotten a report that the roof of the Hancock County Emergency Operations Center (EOC) had collapsed. I had already pulled MEMA staffers out and sent them to the Stennis Space Center in the preliminary, because it was safer. We thought that everyone had perished in that EOC, but we came to find out that nobody did.

“I would write questions that I needed answers to on a notecard and put somebody in a car, send them to Hancock County, and say, “I need answers to this.” That’s how we were communicating.”¹⁹

Brian Adam, the Hancock County EMA Director in 2005, who is still in that position today, said it was about four days until their local, terrestrial emergency radio system used by the county was repaired enough to start using it again in some capacity. Additionally, it was about a week before he could use a cell phone in the area. The only means of communication they had was a ham radio that a local radio station operator had brought to the EOC office before the storm hit because he was going to ride the storm out with them.²⁰

¹⁸ A Failure of Initiative: Final Report of the Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina. Rep. Washington D.C.: U.S. House of Representatives, 2006. Print.

¹⁹ "Robert Latham Interview." Personal interview. 1 Aug. 2016.

²⁰ "Brian Adam Interview." Telephone interview. 31 Aug. 2016.

“In about 40 or 50 mph winds he climbed up the tower [on top of the office] to straighten up the antenna for the ham radio and that was the only communication we had,” Adam stated. “It was some time before he was able to contact someone from the state—maybe a day or so. It was a little while.”²¹

Joe Spraggins, the former Harrison County EMA Director in 2005, echoed much of the same sentiments. He was able to use his cell phone to text shortly after the storm moved through but that didn’t last long.

“The landlines went down in the storm and our cell phones towers were extremely saturated, but they only [worked for] about 8 hours,” he said. “The cell phones basically stopped working because the towers died. Some towers had generators but they ran out of fuel.”²²

There was one system that Harrison County utilized with success although it wasn’t as practical. It involved them having to travel a distance, which was tough immediately after the storm.

“One system that never failed us is the Defense Systems Network. The military had communications with each other that were not on regular telephone lines—it’s fiber optics. You could call base-to-base only though,” Spraggins said. “So we could go to the Air Guard Base or Kessler Air Force Base and utilize that telephone to call the Guard Base in Jackson and we could get patched through to another land line if they had the capability. As far as I know, it never went down.”²³

²¹ Ibid

²² "Joe Spraggins Interview." Telephone interview. 15 Aug. 2016.

²³ Ibid

In the only other oceanfront county in Mississippi, Jackson County, Butch Loper, local EMA Director in 2005, remembered not being able to communicate outside of Jackson County post-landfall.

“The only thing we could get outside of Jackson County very successfully was ham radio. Cell phones were dead.”²⁴

He explained their local push-to-talk radios, that were subscription-based only, were effective for their employees in the county but that was only a fraction of the people working inside their borders.

“If the other person didn’t have that [subscription] you couldn’t talk to them,” he said.²⁵

The local, terrestrial emergency radio system in Jackson County went into failsafe-mode because of the damage sustained to the towers and a couple of generators going out.

“You had everybody in the world talking on one channel,” Loper stated explaining that failsafe-mode caused that to happen.²⁶

Local *Sun Herald* newspaper reporter in 2005, Melissa Scallan, remembers the communication crisis also affected the media’s ability to get information and plan logistics.

“Our news team would meet every afternoon in person to decide what we were going to do the next day,” Scallan said. “Because the phone service was not good, the landlines were down, and we didn’t have electricity to charge cell phones—the service was spotty.

“I was able to actually talk to my family on Thursday by cell phone. There wasn’t social media at the time so all we had was the phones,” she stated. It took four days after landfall before Scallan was able to speak by phone to her family to let them know she was safe.

²⁴ "Butch Loper Interview." Telephone interview. 15 Aug. 2016.

²⁵ Ibid

²⁶ Ibid

Stories like these weren't only a problem in Mississippi though. The State of Louisiana suffered the exact same fate when it came to communication systems breaking down. In the *Times Picayune* Gov. Kathleen Blanco said, "The big problem [in managing disaster response] was that the communications network was down. The day after the storm, cell phones, blackberries, and landlines were useless at the moment when coordination among many branches of government was critical."²⁷

The federal government was in agreement two months after the storm hit when Paul McHale, the Assistant Secretary of Defense for Homeland Defense, testified to the United States Congress on October 27, 2005, and said, "The magnitude of the storm was such that the local communications system wasn't simply degraded; it was, at least for a period of time, destroyed."²⁸

At a very macro-level view, the crisis communications problem for the State of Mississippi was two-fold immediately after Hurricane Katrina swept through the state. The first was the lack of ability to communicate with each other, between state agencies and first responders, and secondly it was how to communicate with persons affected that were suffering their own problems all over the state.

It's easy to forget the extent of damage that happened above the lower-three counties, but they weren't the only ones in bad situations. Had there been a perfect communication plan from the State of Mississippi, there were still people everywhere that wouldn't have been able to receive it. Power was out to 80 percent of the state, coastal cell phones towers were failing, and social media was in its infancy.

²⁷ Maggi, L. (2005, September 12). Lack of communication proved crippling: Rescue, safety, recovery efforts were hindered. *Times-Picayune* (New Orleans), p. A10.

²⁸ Hurricane Katrina: Preparedness and Response by the Department of Defense, the Coast Guard, and the National Guard of Louisiana, Mississippi, and Alabama (2005) (testimony of Paul McHale). Print.

Twitter didn't launch until March 2006 and, as mentioned, Facebook wasn't open to the general public until September 2006.²⁹³⁰ So the lack of arguably two of the most useful social media networks during any crisis did not exist to the vast majority of the public when Hurricane Katrina hit. The State of Mississippi obviously couldn't control that, but it's a cruel circumstance that two of the dominant social networks in the world launched just one year after landfall.

Furthermore, in October 2005, Director of the Office of Homeland Security Kenneth Moran testified to Congress that over 100 commercial radio stations were forced off the air due to Hurricane Katrina damages.³¹

Ironically, just four months before Hurricane Katrina made landfall in August 2005, the State of Mississippi committed to build a brand new statewide interoperable public safety radio system, which is now known as the Mississippi Wireless Information Network (MSWIN).³² Mississippi Gov. Haley Barbour signed legislation in April 2005, to create the Mississippi Wireless Communication Commission (WCC) to oversee public safety emergency communications, which included MSWIN.³³ At its core, MSWIN is a public safety communication system with a collection of 144 towers sites across Mississippi that provides users coverage within 97 percent of the state's border.³⁴ Users on MSWIN can talk to each other by radio statewide on a common platform regardless of their municipality, agency, or location.

The idea to try and remedy what ultimately occurred with communication systems on the Gulf Coast due to Hurricane Katrina had been put into motion by the State of Mississippi, but it

²⁹ Arrington, Michael. "Facebook Just Launched Open Registrations." Tech Crunch. N.p., 26 Sept. 2006. Web. 04 June 2016.

³⁰ Bilton, Nick. *Hatching Twitter.*, Chapter II, Section Twitter, Pages 61-64

³¹ Testimony, Kenneth Moran, Director, Office of Homeland Security, Federal Communications Commission, before the House Committee on Homeland Security, Oct. 26, 2005.

³² *The Evolution of Public Safety Radio Communications in Mississippi.* Rep. Jackson: Mississippi Wireless Communication Commission, 2016. Print.

³³ Ibid

³⁴ "MSWIN." Mississippi Wireless Communication Commission, n.d. Web. 27 Sept. 2016.

would be years before it was operational. The WCC had only one organizational meeting before Hurricane Katrina hit the Gulf Coast, and MSWIN wasn't operational until 2009, according to Bill Buffington, WCC Technical Director.³⁵ MSWIN wouldn't become operational statewide until 2013.³⁶

Buffington remembers back to 2005 when he was explaining the need for a MSWIN-type system in Mississippi saying, "In the private sector, I was trying to convince leadership types, starting at the county level, of the need for a universal emergency communications system. Everything was fragmented. What Katrina did do is it made leadership, at all levels, aware of the lack of emergency communications."³⁷ Buffington went on to say, "The Katrina experience demonstrated for the leadership that they needed a consolidated, universal platform. So that any agency, state or local, can do their business and keep up with one another in the event of an emergency. MSWIN was tasked with creating a concept of what kind of technology can work, in the public safety realm, for all responding-type agencies."³⁸

To recap the difficulties on the Mississippi Gulf Coast, some satellite phones didn't work because the dishes were blown off roofs, cell phone towers were blown over or damaged, cell phone towers that weren't damaged lost power and only had a few days of fuel for the generators, telephone lines were down, the Internet was down, cell phones couldn't be charged because the power was down, and it didn't matter because many of the towers that were up were overloaded from capacity or dead within hours. Furthermore, first responders coming into the area didn't have a centralized emergency communication system they were all singularly able to use to communicate with each other anyway.

³⁵ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

³⁶ Ibid

³⁷ Ibid

³⁸ Ibid

These are a few of the ways that various people explained why they were stuck in time, cut off from what would have been helpful information or logistically moving lifesaving pieces of the recovery puzzle into place.

Fast forwarding to present day, the MSWIN system has been tasked and billed as a remedy for many of the problems that occurred in 2005. For destructive storms, it sounds like a silver bullet for numerous emergency-related communications problems.

But in Mississippi, MSWIN does have its detractors. Locals not wanting the state to control their communications, high costs of equipment, the scare of potential user fees, and more are factors described by local municipalities in this research as to they were or are hesitant to join the system. What does that mean for their citizens?

This thesis and its subsequent research will dive into MSWIN and attempt to uncover the intricacies that are facilitating or hindering its overall mission. For those that are already on MSWIN it looks at the training, or lack thereof, for users. What do supporters and detractors have to say about the system? What are the barriers to entry that make municipalities hesitant to join? Is state-funding a problem for MSWIN operations? What vendor(s) upkeep the system and how were they chosen? How does the MSWIN system compare to others across the country that have been implemented, or not implemented, since Hurricane Katrina? This thesis will attempt to answers these questions.

LITERATURE REVIEW

"Any time we have an emergency situation or disaster, communication is always our weakest link, especially when it comes to speaking across county lines and up to the state," said Warren County New Jersey Public Safety Director Frank Wheatley, who was in charge answering 911 calls and organizing emergency responses. "This is when that type of communication is so important in terms of incident command and interoperability. Being able to communicate across all lines and barriers is paramount."³⁹

This sounds almost identical to Hurricane Katrina reports that were published in its aftermath. Wheatley was referencing the biggest problem state and local officials have in New Jersey when an emergency situation occurs. Hurricane Sandy was another case study in emergency communications for the nation.

The purpose of this literature review is to focus on the communication failures and successes from Hurricane Sandy in New Jersey and Hurricane Gustav in Louisiana to provide context for what occurred in Mississippi with Hurricane Katrina in 2005.

Hurricane Sandy

Hurricane Sandy made landfall on October 29, 2012, near Atlantic City, N.J., with winds around 80 mph.⁴⁰ In total, at least 149 people were killed from the storm including 81 from the United States.⁴¹ Much like Hurricane Katrina, the winds from Hurricane Sandy reached

³⁹ Bultman, Matthew. "Emergency Radios given to Counties, Addressing 'weakest Link' in Disaster Situations." Lehigh Valley Live. N.p., 8 Sept. 2013. Web. 4 Oct. 2016.

⁴⁰ Sharp, Tim. "Superstorm Sandy: Facts About the Frankenstorm." LiveScience. TechMedia Network, 27 Nov. 2012. Web. 04 Oct. 2016.

⁴¹ Ibid

extremely far from the center of the storm causing a huge swath of destruction. Hurricane force winds extended up to 175 miles from its core. On the night that it hit, a full moon caused high tides to be 20 percent higher than normal, which caused immense flooding in subway tunnels and covered many electrical systems.⁴²

The day after landfall 7.9 million businesses and households were without electrical power.⁴³ Just like Hurricane Katrina, the infrastructure had major failures that caused trouble for many citizens.

“The data we received soon after the storm indicated that approximately 25 percent of cell sites and cable services in the affected 10-state area were not operational,” said FCC Chairman Julius Genachowski in February 2013. “Of course those figures were much greater in hard-hit areas of New York and New Jersey.”⁴⁴ Genachowski was giving remarks at a Hurricane Sandy Field Hearing where communication experts had gathered.

“In addition to illustrating the essential role of communications services, this unprecedented storm also revealed challenges that require a national dialogue on how to ensure the resiliency of communications networks – and action to address communications outages and the need for resilient communications networks,” he went on to say.⁴⁵

In regards to the power outages and cell phone towers, the *New York Times* reported in February 2013, “Many towers had no power and their backup battery systems were soon exhausted. Carriers used generators for power, but eventually those required more fuel — another limited resource.”⁴⁶

⁴² Ibid

⁴³ "Hurricane Sandy Fast Facts." *CNN*. Cable News Network, 3 Oct. 2015. Web. 04 Oct. 2016.

⁴⁴ Genachowski, Julius. Superstorm Sandy Field Hearing. New York, NY. 5 Feb. 2013. Speech.

⁴⁵ Ibid

⁴⁶ Chen, Brian X. "F.C.C. Seeks Ways to Keep Phones Alive in a Storm." *New York Times*, 5 Feb. 2013. Web. 4 Oct. 2016.

The vast power outages had knocked out cell phone service for all of the big networks in the Northeast, the article stated. The same mistakes of not having enough fuel for generators for some cell phone towers was also seen seven years earlier during Hurricane Katrina causing operable towers to fail during crucial times.

Much of the ire of the news media and government officials in the months after Hurricane Sandy was focused on the cell phone companies and their networks being inoperable after the storm. While there were certainly problems during Hurricane Katrina with cell phone coverage, there were also across-the-board problems of citizens, government officials, and emergency responders not being able to communicate.

“It was easy to contact government officials using radio devices but impossible to contact a phone carrier,” said Jack Schnirman, city manager of Long Beach, N.Y., after wireless service went down in his city. “The lack of communication and response from service providers was extremely disconcerting.”⁴⁷

The *New York City Hurricane Sandy After Action Report* summed up the situation with cell phone networks saying:

The 14-foot storm surge at the Battery and the inundation of Lower Manhattan badly damaged Verizon’s major telephone infrastructure hubs, called central offices (COs), and high winds and water brought down overhead lines across residential sections of the City. Power outages exacerbated poor service as cellular towers, which are dependent on commercial power and are not required to have backup power, shut down, leaving many parts of the five boroughs without landline, wireless, or internet services for several days. In places where network sites did remain fully operable, some users could not receive service due to overload conditions from a high volume of call traffic.⁴⁸

Once again, this was déjà vu of seven years earlier on the Mississippi Gulf Coast with Hurricane Katrina.

⁴⁷ Ibid

⁴⁸ *New York City Hurricane Sandy After Action Report*. Rep. New York City: New York City Mayor's Office, 2013. Print.

Less than 10 days after Hurricane Sandy made landfall, it was already apparent that the public-safety communications had fared better than the cell phone networks. *Urgent Communications* reported, “Early indications from state departments of transportation indicate that public-safety agencies in the affected area have been able to maintain communications in the aftermath of Sandy, according to William Brownlow, telecommunications manager for the American Association of State Highway and Transportation Officials (AASHTO).”⁴⁹

Brownlow said during the interview that, “The general takeaway from this is that public safety’s requirements are not the same as commercial providers—the need for backup generators is absolutely crucial.”⁵⁰ He attributed the public-safety communication systems remaining intact, from input he received from New York and New Hampshire, because the tower sites had been hardened to withstand such conditions and had generators as backup.

This was one distinct difference from Hurricane Katrina in that major population areas during Hurricane Sandy, like New York City, public-safety communications remained operable for the most part.⁵¹ This allowed officers to respond to calls more efficiently, and in certain instances, where time was of the essence for citizens. “They [officers] start responding to these areas as the calls came in, they were in police cars where the water was up to the tire. They’d go into a building to get somebody out, and as soon as they came out, the water was up to the window of the car,” said Charles Dowd, a deputy chief for the New York Police Department during an interview with *Urgent Communications*.⁵²

⁴⁹ Jackson, Donny. “Public-safety Communications Fare Better than Commercial Networks after Superstorm Sandy.” *Urgent Communications*, 6 Nov. 2012. Web. 4 Oct. 2016.

⁵⁰ *Ibid*

⁵¹ Jackson, Donny. “NYPD’s Dowd: Sandy ‘came in like a Tsunami!’” *Urgent Communications*, 13 Nov. 2012. Web. 4 Oct. 2016.

⁵² *Ibid*

"Both the police and fire systems stayed up 100 percent of the time," he said. "We lost a couple of receiver sites temporarily, but those were receiver sites mixed with another receiver site, so there was no degradation in the system. We did not lose a single frequency on the police or fire side the entire time."⁵³

Congressman Donald Payne, Jr., representing New Jersey's 10th district, reiterated that communication between first responders was much improved during Hurricane Sandy from what it was during the 9/11 attacks in New York City.

"In the years since 9/11, the Federal government – along with state and local governments–has made significant investments toward achieving interoperability," Payne said during a 2013 Subcommittee Hearing on Emergency Preparedness, Response, and Communications.⁵⁴

"During the Hurricane Sandy response, we saw improvement in cross-discipline communication. Police officers were able to communicate with firefighters across New York and with officials in New Jersey closing airports," Payne stated. "However, cross-jurisdiction communications challenges were evident. Specifically, emergency officials that came to provide mutual aid could not communicate with local first responders on their own radios."⁵⁵ In essence, they couldn't communicate if they were from out of the region like many emergency responders were when they came to Mississippi from out of state to assist with Hurricane Katrina. If each state is working as a silo on becoming interoperable on their own system, that doesn't necessarily account for responders coming in from out of state. Mississippi has combated that to a degree

⁵³ Ibid

⁵⁴ *Opening Statement of Ranking Member Donald M. Payne, Jr.* Publication. United States Congress, SUBCOMMITTEE ON EMERGENCY PREPAREDNESS, RESPONSE, AND COMMUNICATIONS, 18 Nov. 2014. Web. 5 Oct. 2016.

⁵⁵ Ibid

with the P-25 radios they have chosen to use on MSWIN. If any emergency responder has this grade of radio they can connect to the network. This will be discussed later in the thesis.

Hurricane Gustav

Hurricane Gustav made landfall as a Category 2 hurricane near Cocodrie, LA, with winds near 105 mph on September 1, 2008, almost three years to the day after Hurricane Katrina. During its lifespan, the Hurricane Gustav is credited with 153 deaths in total throughout the Caribbean and mainland United States. Baton Rouge was one of the hardest hit areas of Louisiana, lying just north of Cocodrie. The town was shut down for several days and it took almost four months to clean up debris from the storm.⁵⁶

The city of New Orleans didn't see the type of impact from Hurricane Gustav as it did from Hurricane Katrina, but there was still flooding and wind damage in the city. Taking no chances this time, New Orleans Mayor Ray Nagin ordered a mandatory evacuation of the entire city two days before landfall on August 30. New Orleans residents, along with many others from southern Louisiana that left their homes, constituted the largest evacuation in the state's history with 1.9 million people fleeing the oncoming storm.⁵⁷

The largest hindrance to communication during the immediate hours and days after Hurricane Gustav was the Louisiana power grid owned and run by Entergy Corp. failed in a large way. More than 828,000 homes and businesses lost power during the storm, and in New Orleans only one of 14 transmission lines connecting the city to the rest of the state's power grid was left functioning.⁵⁸ *The Times-Picayune* reported that Baton Rouge was without power for a week.

⁵⁶ "2008-Hurricane Gustav." *Hurricane Science*. N.p., n.d. Web. 5 Oct. 2016.

⁵⁷ Ibid

⁵⁸ Mowbray, Rebecca. "Some Blame Grid, Not Gustav, for Power Outages." *Nola.com*. The Times-Picayune, 4 Oct. 2008. Web. 5 Oct. 2016.

“We are concerned that so much of the power for southeast Louisiana was dependent on just a few lines. It showed how vulnerable the system is,” former Louisiana Gov. Bobby Jindal said. “Clearly we need more redundancy in the state.”⁵⁹

The Louisiana Energy and Power Authority, an association of 18 towns that ran their own utilities, came down even harder on Entergy stating in October 2008, “Entergy has one of the weakest designed transmission systems in the country in terms of redundancy, although it is in an area where everyone should plan for hurricanes.”⁶⁰

Because of widespread power outages, some cell phone towers and Internet connections inevitably went down in parts of Louisiana, but compared to Hurricane Katrina three years earlier, the effects on citizens and emergency responders was much less.⁶¹ Two primary cables that powered AT&T Inc. customers in New Orleans went down during the height of the storm delaying the ability to make calls until the next afternoon.⁶²

Only one day after the storm, AT&T said that most of their cell towers in the area hit by the storm were working. Verizon Wireless also stated that less than one percent of their cell towers in areas hit were offline, mainly due to power outages. T-Mobile USA echoed the same sentiments attributing small network disruptions to power outages in the state.⁶³ This is contrast to the aftermath of Hurricane Katrina and played a part in many citizens and first responders not having at least one of the major problems they experienced in 2005 in Mississippi.

⁵⁹ Ibid

⁶⁰ Ibid

⁶¹ Svensson, Peter. "Gustav Brings down Cell, Internet Service." *USA Today*. Gannett, 02 Sept. 2008. Web. 05 Oct. 2016.

⁶² Quillen, Kimberly. "Phone, Internet Service Nearly Back after Gustav." *Nola.com*. The Times-Picayune, 5 Sept. 2008. Web. 5 Oct. 2016.

⁶³ Svensson, Peter. "Gustav Brings down Cell, Internet Service." *USA Today*. Gannett, 02 Sept. 2008. Web. 05 Oct. 2016.

AT&T and Verizon were successful in using a combination of battery and generator power to keep switching stations that routed cell phones calls up and running while much of the state's power grid was down. AT&T estimated they were using around 85,000 gallons of diesel fuel a day to run wireless cell sites, central offices, and remote terminals.⁶⁴

A spokesman for the Louisiana State Police, State Trooper Joseph Piglia, said communication among the Louisiana agencies was fluid, according to *The Times-Picayune*. The paper also reported, "Another key improvement to the New Orleans Police Department response came in the area of radio communications. Police radio traffic and dispatches broke down in Katrina, leaving officers operating in isolated pockets, without orders or coordination. But few problems with communications emerged during Gustav."⁶⁵

New Orleans public safety agencies created a joint information center where they were able to brief the public regularly during Hurricane Gustav.⁶⁶

The most important factor in communication successes for Louisiana, other than the severity of the storm not being as bad, was the creation of the Louisiana Wireless Network (LWIN) in 2006. It is described as very similar in nature to MSWIN.

In 2012, the FCC described the LWIN as follows during a docket hearing, "In 2006, Louisiana created a Statewide Interoperability Executive Committee (SIEC) to establish and administer a statewide shared communication system to help protect life and property in the state, which is particularly vulnerable to potentially disastrous weather events. The SIEC is comprised of twenty voting members, fifteen of whom are representatives of local and first

⁶⁴ Quillen, Kimberly. "Phone, Internet Service Nearly Back after Gustav." *Nola.com*. The Times-Picayune, 5 Sept. 2008. Web. 5 Oct. 2016.

⁶⁵ McCarthy, Brendan. "Katrina Lessons Help Police Handle Hurricane Gustav." *NOLA.com*. The Times-Picayune, 5 Sept. 2008. Web. 5 Oct. 2016.

⁶⁶ Ibid

responder associations. The SIEC provides governance and oversees the development and maintenance of the Louisiana Wireless Network.”⁶⁷ This member structure will be discussed more later in the thesis where the LWIN and MSWIN are compared.

The docket transcript explains the success LWIN had with Hurricane Gustav saying, “LWIN has enabled Louisiana to achieve a high level of interoperability among participating jurisdictions. In anticipation of 2008’s Hurricane Gustav, for example, Louisiana used LWIN to support evacuation of almost its entire coastline, and the LWIN system accommodated over six million separate push-to-talk communications during a 10-day period.”⁶⁸

LWIN helped to facilitate the largest evacuation in the history of the state of Louisiana, as mentioned earlier.

While it’s not entirely possible to compare their subsequent communication failures and successes apples-to-apples due to varying degrees of damage caused, it’s apparent that some failures seen during Hurricane Katrina were replayed again during both Hurricane Sandy and Hurricane Gustav. On the other side of the coin, Louisiana’s creation of the LWIN seemingly proved invaluable to moving human lives out of the way of another oncoming storm only three years later.

⁶⁷ United States. Federal Communications Commission. *Federal Communications Commission DA 12-1643*. Washington D.C.: FCC, 2012. Print.

⁶⁸ Ibid

METHODOLOGY

The method of research that will be used in this thesis is qualitative in nature and will mainly be accomplished through primary source interviews. Individuals will be interviewed from the Mississippi Wireless Communications Commission, Mississippi Emergency Management Agency, Mississippi Gulf Coast local emergency management agency directors from past and present, and also representatives from the cellular networks of C Spire and AT&T. Furthermore, other third party individuals like telecommunications Professor Jon Peha of Carnegie Mellon University will be interviewed. Peha has also served as the FCC's Chief Technology Officer from 2008-2010 and been a White House technology policy advisor.

These people have direct knowledge and/or experience from 2005 when Hurricane Katrina hit. Some of them also have current knowledge and/or experience as to what solutions are or are not in place. For some, they will have both traits, having been there 11 years ago and still being in a relevant position.

The individuals listed below and others will be interviewed about their experiences and/or knowledge relating to MSWIN and Hurricane Katrina's communication crisis for this thesis:

- Robert Latham—Former MEMA Director during Hurricane Katrina
- Lee Smithson—Current MEMA Director
- Vicki Helfrich—Mississippi Wireless Communications Commission Executive Director
- Bill Buffington—Mississippi Wireless Communications Commission Technical Director
- Butch Loper—Former Jackson County Emergency Management Agency Director
- Earl Eathridge—Current Jackson County Emergency Management Agency Director

- Rupert Lacy—Current Harrison County Emergency Management Agency Director
- Joe Spraggins—Former Harrison County Emergency Management Agency Director
- Brian Adam—Former and current Hancock County Emergency Management Agency Director
- C Spire—Multiple former and current senior level directors
- AT&T Mississippi—Bill Harris, AT&T executive director of external and regulatory affairs
- Jon Peha—Telecommunications Professor at Carnegie Mellon University and former FCC Chief Technology Officer
- Penny Rubow, Arkansas Wireless Information Network Program Director
- Travis Johnson, Louisiana Interoperability Program Manager

Additionally, to compare MSWIN to other statewide emergency network systems in place around the country, interviews and case study research has been done, as seen in the literature review. Two of the case studies were Hurricane Sandy in New Jersey and Hurricane Gustav in Louisiana. There is also a section of the research that will focus solely on other statewide networks around the country to see what is out there, outside of case study analysis.

HOW DOES THE MSWIN WORK?

MSWIN is a public safety communication system with a collection of 144 tower sites across Mississippi that provides users coverage within 97 percent of the state's border.⁶⁹ Users on MSWIN can talk to each other by radio statewide on a common platform regardless of their municipality, agency, or location. According to WCC Executive Director Vicki Helfrich, the system has the capacity to support 128,000 users and is monitored 24 hours a day, 365 days a year by the WCC. [Each tower site is] furnished with equipment shelters, emergency power systems, network equipment, redundant site controllers, and dual battery backup recovery systems.

In regards to the actual technical portion of the network, WCC Technical Director Bill Buffington explained, "The backbone of this whole system is a microwave, multi-loop configuration. So we don't depend on the public switch telephone network. That's because of lessons we learned during Hurricane Katrina. Not only do we not rely on cellphones anymore, but we don't use landlines either. We have a self-contained network."⁷⁰ The network is completely terrestrial and uses no satellites. A terrestrial network "uses land-based antennas and antenna systems for two-way radios, cellular telephones, personal communication systems (PCS), and microwave applications."⁷¹

⁶⁹ "MSWIN." Mississippi Wireless Communication Commission, n.d. Web. 27 Sept. 2016.

⁷⁰ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

⁷¹ "Terrestrial Radio and Satellite Radio Services Information." *Engineering 360*. IEEE GlobalSpec, n.d. Web. 18 Oct. 2016.

The network is not only used during emergencies. The WCC has created 40 Special Event Talk Groups that are used frequently for any number of cross-jurisdictional events.⁷² The WCC requires these 40 channels to be programmed into every MSWIN-capable radio in the state. An example of a non-emergency use of the network would be a local police officer escorting a football team five counties away for a Friday night football game and the WCC assigns them one of the 40 channels during non-emergency times to let them use it to communicate across jurisdictional lines for a matter of convenience and practicality.⁷³

MEMA also uses the MSWIN quite regularly during non-emergency times. Current MEMA Director Lee Smithson said, “We use MSWIN a lot for our own internal communications. That’s what we use on a daily basis to communicate with our people out in the field. On any given day, we have around 100 people in the field, depending on what’s going on. So that is our primary method of communications, at the tactical level, in the agency.”⁷⁴

In the past, first responders like police or fire departments that were one county over from each other might not have been able to talk to each other because each county used a separate, terrestrial radio system that their respective county set up and maintained. This caused a silo-effect among many neighboring agencies. So conceivably there could be multiple jurisdictions responding to an emergency yet they could only talk amongst their own departments. Cleveland Police Chief Buster Bingham kept multiple radios in his patrol car to be able to communicate with neighboring agencies before his department joined the MSWIN.⁷⁵

⁷² The Evolution of Public Safety Radio Communications in Mississippi. Rep. Jackson: Mississippi Wireless Communication Commission, 2016. Print.

⁷³ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

⁷⁴ "Lee Smithson Interview." Personal interview. 2 Aug. 2016.

⁷⁵ Ibid

This type of problem was seen during and immediately after Hurricane Katrina because, for the most part in the midst of the massive disaster, local responders couldn't speak to each other unless they were from the same county. Robert Latham, MEMA Director in 2005, said, "Across the coast, and across the entire state in fact, it was a patchwork of systems."⁷⁶

Latham said there was only thing in place in 2005 to overcome that problem. "We bought a system called an ACU 1000 [after the 9/11 attacks], which was a device that you could hook up to any radio system and would allow it to talk to any other radio system. We bought one for every county. The problem was that some counties put them in a closet and never installed them," he said.⁷⁷

The towers of each local, terrestrial system for each county were knocked down in large part and cell phones towers had the same issues. "So we had done everything that we thought we could do, in terms of communications," Latham said. "I don't know if we ever could have imagined a total collapse of the system state-wide. But that's what we had. A total collapse of the system, because we lost all of our towers."⁷⁸

⁷⁶ "Robert Latham Interview." Personal interview. 1 Aug. 2016.

⁷⁷ Ibid

⁷⁸ Ibid

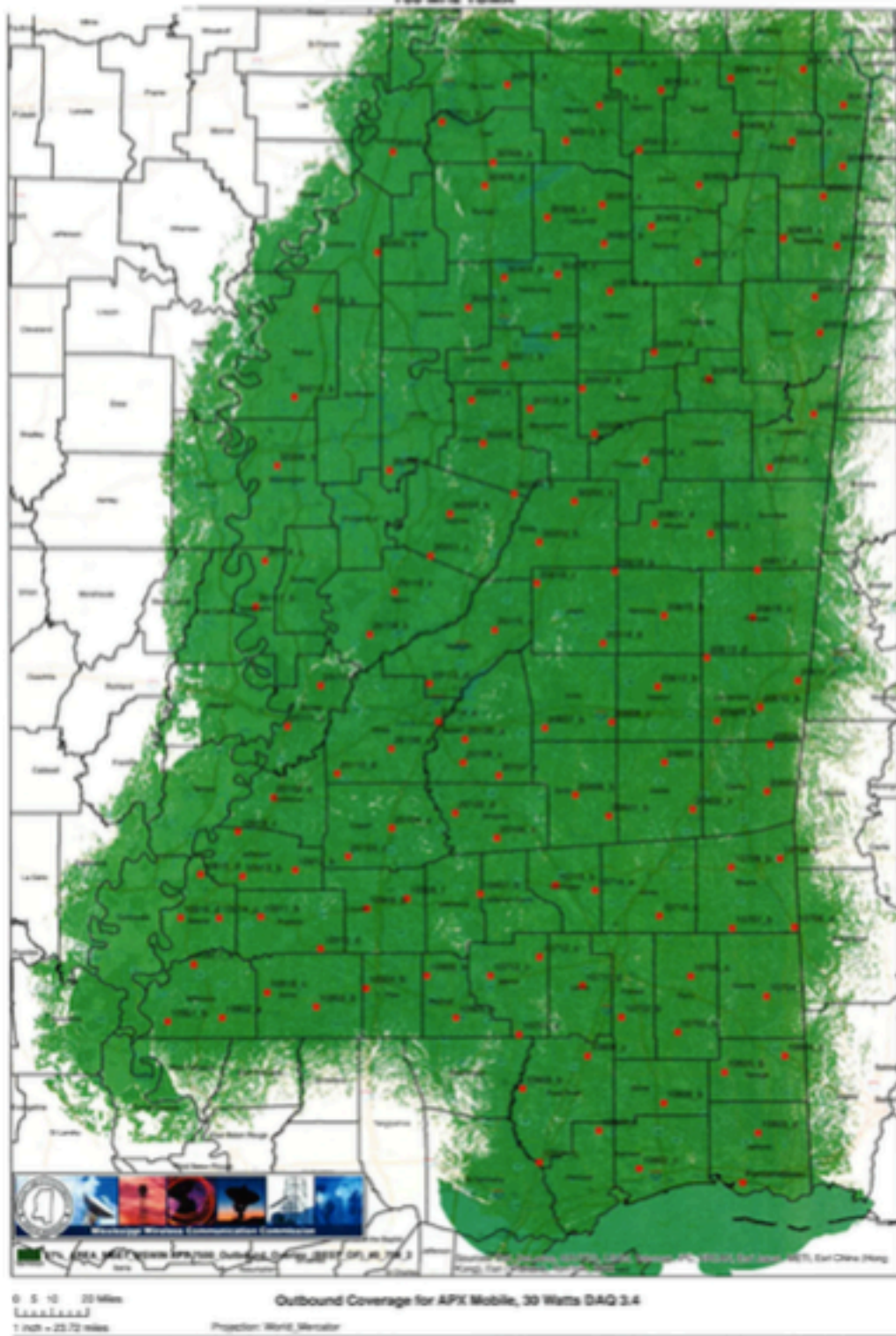


Figure 1. MSWIN Coverage Map

MSWIN TOWERS AND RADIOS

To prevent such a “total collapse of the system” again, the WCC has set parameters for all 144 towers that they are in charge of maintaining. In fact, the WCC is bound by legislation to upkeep the MSWIN infrastructure.⁷⁹ Each of the towers is “hardened” to make them stronger than an average tower to prevent them from sustaining damage during bad weather. The tower sites are fortified to withstand emergency weather situations, have emergency power, and are off the ground, according to WCC. 165 mph is the wind-load that they are built to withstand. The wind-loads change as you move away from the coast. “The one thing Katrina taught us is that you can never say never with certainty, but they should survive if another Katrina-type event occurred,” said Buffington.⁸⁰ As a measuring stick, hurricanes become classified as Category 5 when their wind speed reaches 157 mph.

“There is no place in the state where one tower site stands by itself. Everything is overlapped,” Buffington explained. “So you may not be able to speak from this specific spot, but maybe you move a quarter mile and that works. Everything is overlapped, redundant, and very survivable. Everything has back-up power, generators and an uninterruptable power supply (UPS). Basically a battery that is inverted to AC power.”⁸¹

It was documented that some cellular network generators on the Mississippi Gulf Coast ran out of fuel to power them rendering them useless, even though they were still standing. To overcome that problem he explained, “We don’t move generators like your phone carriers. Every

⁷⁹ The Evolution of Public Safety Radio Communications in Mississippi. Rep. Jackson: Mississippi Wireless Communication Commission, 2016. Print.

⁸⁰ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

⁸¹ Ibid

MSWIN site is hardened and has back-up power along with 1,000 gallons of propane, which we've seen last for more than three weeks. The second line of power after the power grid is the UPS which starts the generator that is powered by propane. All of the propane is lifted [vertically] to protect it from flooding as well.”⁸²

Connecting to the towers are the 30,000 individual radios that are around the state right now—each having their own radio I.D. Buffington expounded saying, “There are around 40 state agencies, 20 federal agencies, and over 400 local entities [on MSWIN]. Every county is different, so that's why we say over 400 local entities.”⁸³

He explained that the WCC decided early in the process of building out the MSWIN that the radios would be standard-based and they wouldn't try to integrate with existing radio systems that locals already had. The main logic behind that was there was no standard-based system where all the radios had to be set to a certain standard of technology or capability.⁸⁴ Arguably, not having those standards is what created the silo-effect that created problems for all of the local radio networks.

The WCC decided to go with a universal, standards-based system that was uniform across the board. “The biggest public safety organization in the country is APCO: American Police Officer Communications Organization,” Buffington described. “They have their own engineering people, and through the years there has been an evolution of technologies. And the latest and greatest is P-25 (Phase-25). The whole concept of a P-25 system is that it should not be vendor-specific for the equipment.”⁸⁵

⁸² Ibid

⁸³ Ibid

⁸⁴ Ibid

⁸⁵ Ibid

This means that hardware like radios and console systems can be built and sold by numerous companies, yet still all communicate seamlessly. Today, MSWIN has seven P-25 vendors that they have tested and cleared to be used on the network.⁸⁶ Local agencies across the state can buy from any of the vendors as they see fit to get onto the MSWIN system. “It is non-proprietary and open-standard, which means that we are not tied to one vendor for our equipment,” Buffington said.⁸⁷

Radios also fall into two categories: mobile and portable. Mobile radios are classified as anything that is mounted or installed in a vehicle. Portable radios can be carried by hand or placed on one’s body and taken into the field. The WCC says mobile radios have a 97 percent coverage around Mississippi, as compared to portable radios that have 93 percent coverage. The places in the state where coverage isn’t available usually due to the terrain like river bottoms or low-lying areas. Both of the radios operate on a 700 MHz public safety spectrum.⁸⁸



Figure 2. Motorola P25 Radio

⁸⁶ Ibid

⁸⁷ Ibid

⁸⁸ The Evolution of Public Safety Radio Communications in Mississippi. Rep. Jackson: Mississippi Wireless Communication Commission, 2016. Print.

EXAMPLES OF MSWIN USE IN EMERGENCY SITUATIONS

MSWIN reached the statewide coverage it has now in 2013, and since that time there have been several emergency responses that have been coordinating using it. The tornado outbreak on April 28, 2014, across Mississippi killed over a dozen people.⁸⁹ One of the hardest hit areas was Winston County, where the Winston County Medical Center was destroyed, along with hundreds of homes.⁹⁰

Prior to the tornado hitting Winston County, their EMA staffers were given six MSWIN radios to test out the system before they joined it.⁹¹ The first call from them for help, manpower, and resources came on those MSWIN radios. In total, 16 agencies responded to the call, with eight from the state and eight locally.⁹²

“I had an appreciation for the capabilities of the MSWIN system prior to the disaster itself,” Buddy King, Winston County EMA Director said. “To actually place this system into service during our disaster affirmed my county’s commitment to converting our communications system to a statewide system.”⁹³

According to the WCC, the silo-effect of different agencies coming into the area was present on the day after the storms with many of them not being able to communicate. Winston County EMA requested 50 more MSWIN radios to be dispersed throughout the area to help coordinate efforts and it was granted.

⁸⁹ Ibid

⁹⁰ Ibid

⁹¹ Ibid

⁹² Ibid

⁹³ Ibid

The WCC assigned a Special Events Talk Group channel to responders in the region and they were able to use it to plan relief efforts and whatever else was needed at the time.

About a year later on September 14, 2015, a professor killed another professor on the campus of Delta State University (DSU) in Cleveland, MS.⁹⁴ The Cleveland Police Department was on the scene of the shooting within two minutes and Chief Buster Bingham sent out a call on his MSWIN radio over the “state common channel” which is monitored by MEMA since the university wasn’t on the system. DSU had actually ordered MSWIN radios that hadn’t arrived yet when the shooting occurred.⁹⁵ At the time, the City of Cleveland was the only municipality in Bolivar County to be on MSWIN. Helfrich said, “They were one of the entities that showed up at the commission and wanted to just do their own thing. We fought those people for two years.”⁹⁶ Eventually, they indeed joined the network.

“Basically, he gets on the radio, and all these state responders hear. They're able to communicate because they're using a special event channel and he said within five minutes they had multiple agencies on campus,” described Helfrich. “Bolivar County wasn't on the system. So, they had to partner them with people that had MSWIN radios.”⁹⁷

“The response was tremendous. Within 45 minutes, we had around 250 to 300 officers on the scene from all over Mississippi,” said Bingham.⁹⁸

⁹⁴ Fanta, Ashley. "Delta State University Professor Shot to Death." CNN. Cable News Network, 15 Sept. 2015. Web. 19 Oct. 2016.

⁹⁵ The Evolution of Public Safety Radio Communications in Mississippi. Rep. Jackson: Mississippi Wireless Communication Commission, 2016. Print.

⁹⁶ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

⁹⁷ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

⁹⁸ The Evolution of Public Safety Radio Communications in Mississippi. Rep. Jackson: Mississippi Wireless Communication Commission, 2016. Print.

MSWIN LACK OF TRAINING

Even with municipalities from every county in Mississippi on MSWIN there isn't a unified training program from the WCC or the State of Mississippi to train them on how to actually use the system effectively. To put it plainly, Helfrich said, "We've been dependent on agencies and entities to perform their own training, and it's not really occurring like it needs to."⁹⁹

With all of the capabilities of MSWIN, ultimately in the face of an emergency it falls to each of the 30,000 individuals who have radios around the state to know how to properly operate their equipment. Each radio is much more complex than a simple push-to-talk style radio from decades past. Buffington explained some examples of new radio features stating, "You have a man-down button. Not necessarily on all of them. You have things like if you have a radio, and if in the case if it's a fireman's radio, if it doesn't move for some programmable set period of time, it sends an alarm to his buddies in dispatch." Additionally, some radios have encryption so news media can't hear what is being said.¹⁰⁰

"These people generally know how to push a button already and talk. So long as they're operating in their world, they're okay," said Buffington. "Where it hits the wall is on these emergencies—multiple agency responses. And who declares, where do you go, which county you go to, how do you talk, who coordinates it? We need more training. And those people, even

⁹⁹ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹⁰⁰ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

when we've done training, and we have done training, but the personnel changes. You make some progress, then you lose that progress.”¹⁰¹

Rapid response emergencies arguably are one of the top reasons for the MSWIN to exist yet these situations are when there is the highest chance for a user-error due to the lack of training. This fact isn't lost on Smithson. “I'll tell you right now you are not going to find a bigger advocate of MSWIN than me,” he explained. “The problem with MSWIN was that, as we rolled it out, we did not have a really fantastic education process. If you go talk to state agencies like the Department of Public Safety, a road trooper, and you ask him about his mutual-aid channels on his radio, half of them don't know about them. They could tell you all about the Department of Public Safety channels on that radio. But if you tell them to find a mutual-aid channel to talk to MEMA or the coast they won't know how to do it. The devices will do it, but they have not been trained to know how to program them.”¹⁰²

Smithson described a real world example of where this challenge has shown up during field operations saying, “We did a search and rescue in Noxubee County when I was in the National Guard. We had one of our UH-72 helicopters that's got MSWIN radios in it. They don't have the MEMA channels programmed in there, because they're not a part of MEMA. I was talking to the area coordinator and telling her to tune her radio to one of the MEMA channels, and she tells me ‘I don't have those in my radio.’ I had to walk her through it.”¹⁰³

Additionally, he explained another user that didn't know how to operate the radio properly stating, “I talked to a state trooper not too long ago and it was the same thing.

¹⁰¹ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

¹⁰² "Lee Smithson Interview." Personal interview. 2 Aug. 2016.

¹⁰³ Ibid

He had a radio that Rankin County had given him to communicate to them, but didn't know how to communicate through MSWIN.”¹⁰⁴

When Smithson was asked where the training was going to come from he said, “That’s the \$64,000 question. Vickie Helfrich and I talked about it. She’s got guys, and I have folks. We got together in about April, and we put together a “Train the Trainer” program. Some of her people are going around the state and training agencies on the MSWIN radios and how to program them. You would be amazed at the number of people who won’t know that their radios can do these things. The issue is that it’s so caveman-easy to operate that no one ever thought a formal training would be necessary.”¹⁰⁵

Helfrich added, “So we have been in the process of developing statewide training programs. So, we've already begun a ‘Train the Trainer’ program, so we're basically having to find volunteers who will agree to be trainers for the WCC. And we're trying to finalize the training program, because we want it to be standardized.”¹⁰⁶ She explained that the lack of staff for MSWIN is a big factor in not having enough people to actually train users. She has a staff of six people and three of those are technicians for the entire statewide system.

“Training is our number one priority at this point. Trying to get a standardized training program in place,” said Helfrich. “We're finding volunteers that work for other agencies whose boss and supervisors have said that they're going to allow them to commit their time to do this. But the people that love this system, they love it and they're willing to do it. And then we also work with the Office of Emergency Communications, which is funded through Homeland Security, and they provide us technical assistance. We have asked for the assistance to perform a

¹⁰⁴ Ibid

¹⁰⁵ Ibid

¹⁰⁶ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

state-wide communications exercise. It's on our list of things to do. It was deferred. We're going to try to get it back in play this year," she said.¹⁰⁷ While supporters of MSWIN agree it's a potentially reliable system, it's unclear who will pay for the much-needed training.

"The entity that's going to pay for it is going to be the Federal Homeland Security through the Office of Emergency Communications," said Helfrich. "So we're working with them. Now, it may be that if that doesn't come through, we'll sit down with MEMA and some other folks and we'll get something put together. But the WCC alone can't do it."¹⁰⁸

¹⁰⁷ Ibid

¹⁰⁸ Ibid

BARRIERS TO ENTRY FOR MSWIN USERS

While there are users in every county in Mississippi for the MSWIN, acquiring those users isn't always easy for the WCC. There are a number of factors that perpetually keep people from wanting to join it despite the interoperability features it offers. The costs of P-25 radios, fear of a user fee, fear-mongering from other radio network competitors, and losing local control are all barriers to entry the WCC has to overcome repetitively to bring users onto the system.

"Some of the smallest counties in the state, their biggest hurdle is buying radios," Hancock County EMA Deputy Director, John Albert Evans said. "If they've been on an older system for years, you can buy an older radio for \$500 but that's just a drop in the bucket for the [newer models]. If people swap radio systems, they usually have to purchase different radios. That's not cheap."¹⁰⁹

According to the WCC, the least expensive that P-25 radios are selling currently are about \$1,000 each. Helfrich said radios can cost as much as \$7,000 each. "It depends on who you're buying it from, and what all bells and whistles you want," she said.¹¹⁰ For the mobile radios that are installed in vehicles, Buffington said those run a minimum of \$1,500 and go up from there. "Radios for MSWIN, because they are a P-25 technology, will cost a little more than an older technology," Helfrich said.¹¹¹

Current Jackson County EMA Director Earl Etheridge said, "A number of the radios in the city departments are not digital, they are analog. MSWIN is digital. We have a lot of radios

¹⁰⁹ "John Albert Evans Interview." Personal interview. 31 Aug. 2016.

¹¹⁰ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹¹¹ Ibid

in the county that are also digital. A lot of people don't want to pay the cost to go from analog to digital, like the volunteer fire departments. You're going from an \$1,800 radio to a \$3,000-plus radio. We can only afford to do so much."¹¹²

Evans, whose county just came on the MSWIN, said, "The radios that we bought, on the lower-end, you're going to spend around \$2,000 when you buy the spare battery, charger, and the lapel-microphone."¹¹³

Smithson said, "It's a big, upfront cost. So a lot of the municipalities might have to do a bond issue, or something like that to be able to afford \$2 or \$3 million dollars of a new radio system. But once you have it, it's fantastic."¹¹⁴ Even with that high upfront cost, he said that's still sometimes much lower than what some counties are paying currently. "Hinds County just same on the MSWIN just last month and it was a big, big racket. Their contract was \$1 million a month to keep the Hinds County-Jackson system up. \$12 million dollars a year to keep up the old, traditional system," he said.¹¹⁵

Additionally, local authorities fear losing local control of their emergency communication system to the state. It's not uncommon to see a news article from time-to-time how about how some state is lamenting the fact of federal over reach and control—the same logic is applied here with local and state control.¹¹⁶

"Nobody wants to be dictated to by MSWIN," Etheridge said. "We already have our own system that we paid several million dollars for. We had it before MSWIN came into existence."¹¹⁷

¹¹² "Earl Etheridge Interview." Personal interview. 16 Aug. 2016.

¹¹³ "John Albert Evans Interview." Personal interview. 31 Aug. 2016.

¹¹⁴ "Lee Smithson Interview." Personal interview. 2 Aug. 2016.

¹¹⁵ Ibid

¹¹⁶ Chummy, Cheryl. "Frustrated States Fight Federal Overreach." *Newsmax*. N.p., 01 Mar. 2014. Web. 22 Nov. 2016.

¹¹⁷ "Earl Etheridge Interview." Personal interview. 16 Aug. 2016.

Current Jackson County EMA Director Brian Adam said, “I don’t think [potential users] understand it. They think that when you join MSWIN they take over your system. That’s not true. You make a mutual agreement on what you and MSWIN want. They think MSWIN is going in there and completely taking over their system. And to be honest, that was one of the reasons for us, until we understood what it was about, why we were hesitant.”¹¹⁸

“It’s about a feeling of losing control. Normally, once we have the ability to have a conversation, they tend to understand that we don’t want control over the local system,” Helfrich explained. “We just give them all of the information and let them handle it. We don’t want to handle it for them.”¹¹⁹

Buffington expanded, “Not only is there no will, but there is no capability to run everything for everybody. The technology works like this—you tell us that you want to join and then you buy your radios. We don’t care how many you buy. We give you a bracket of radio I.D.’s and you invest in the necessary equipment that can set that up and manage it, and we’re done. You manage your dispatch and collection of radios, and we manage the network. We just want to give them the capability to talk to everyone else.”¹²⁰

In regards to the local, terrestrial networks that every county has always used, old habits die hard for some—and sometimes old contracts also. Over the course of decades, relationships between counties decision-makers and local vendors have naturally grown. These are the local companies that service the towers, receivers, and sell the equipment also. When it comes to switching over to the MSWIN, those local contractors and other interested parties don’t go quietly into the night when millions of dollars are at stake.

¹¹⁸ "Brian Adam Interview." Personal interview. 31 Aug. 2016.

¹¹⁹ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹²⁰ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

“A lot of the real money is in the county systems, for the county sheriff, the police department, and all that,” Smithson explained. “It’s in the repeaters and all of the closet stuff that allows one radio to talk to another radio. Because they are not line-of-sight. They go through a tower network, and then through a series of repeaters. It just depends on who puts the repeaters in and makes all the money. It’s a private contractor, not Motorola (who has the state contract). It’s anyone who might have a contract with a municipality.”¹²¹

“Let’s say if you’re in County XYZ, the county radio system might be a Motorola system, but it’s maintained by ‘Bill Smith Communications’. He’s got the contract, he’s keeping the system up, and he’s making his money, and we’re really talking millions of dollars,” said Smithson.¹²² One could see why misinformation and fear-mongering to prospective users from contractors could be present.

“It’s just how public safety has always done business. They have their vendors,” said Helfrich. “Usually, there are a lot of rumors that are not even true.”¹²³

Adam agrees that the familiarity with the local contractors and fear is a reason people are hesitant also. “We had a company in Hancock County that was a consultant for us and the problem we had with them was they were partial to another radio vendor, and not Motorola, whom we had,” he stated. “We really never got any good info from them. Once we got rid of them, we were able to sit down with the WCC to really get the info we needed.”¹²⁴

Smithson echoed that sentiment. “You might be the President of the County Board of Supervisors, and your nephew could own the communications company. The way the law works right now is the counties maintain their own communications systems up. When the newer

¹²¹ "Lee Smithson Interview." Personal interview. 2 Aug. 2016.

¹²² Ibid

¹²³ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹²⁴ "Brian Adam Interview." Personal interview. 31 Aug. 2016.

systems come in, then the county, or the city, will have to pony up the money to buy new radios. But only radios. So the contractor could lose out on the [maintenance] contract,” he said.¹²⁵

Millions of dollars are on the line with these maintenance contracts for networks all across the state of Mississippi, so it’s not a surprise when misinformation is spread by financially-interested parties. The WCC said they do their best to combat it when speaking to potential users.

Lastly, the fear of a user fee to be on the MSWIN at some point in the future is a big barrier-to-entry for prospective entities. “That’s been probably the biggest fear. Once you get past that, it’s control. And once you get past control, it’s the price of the equipment,” said Buffington.¹²⁶

The fear of a user fee stems from the legislation that created the WCC where it is written that a user fee is permitted to be charge by the WCC, according to Smithson. “Here’s the deal, it’s fear-mongering,” he said. “The legislature has promised that they will never enact user fees. But they haven’t taken the language out of the original bill that created the wireless commission. It was not taken out in 2012. But the Governor, the Lt. Governor, and the Speaker have all said that we will never have user fees for MSWIN. But the language is actually still in there. So, that’s fear-mongering, because we have so many of these proprietary radio systems and the vendors are out there telling the counties ‘You don’t want to do this, because one day they are going to charge you user fees.’”¹²⁷

Buffington said, “We’ve never had a fee, we have the authority to charge a fee, but we never will. People over in legislature have come out and that there will never be a local user fee

¹²⁵ "Lee Smithson Interview." Personal interview. 2 Aug. 2016.

¹²⁶ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

¹²⁷ "Lee Smithson Interview." Personal interview. 2 Aug. 2016.

for the service. Of course, that means that legislation has to fund the maintenance of MSWIN. It's still not codified, but if it was then our jobs would be easier."¹²⁸

State Senate President Pro Tempore Terry C. Burton, a Republican from Newton, went on the record in September 2014 at a WCC meeting to ease fears that a user fee would ever be assessed for MSWIN. "There is no flavor in the legislature for fees at the local level. Zero. Nada. None," he said.¹²⁹ Representative Scott DeLano, of Harrison County on the Gulf Coast, echoed the same feelings at the meeting.

Regardless, Local EMA directors on the Mississippi Gulf Coast still don't have an easy feeling. They relayed their qualms about a potential user fee. Adam stated, "In the beginning, that was one of our biggest hesitations—the user fee. The two biggest concerns for us were the user fee and what if the system goes away?"¹³⁰

Etheridge said, "Let's say some of these smaller counties that don't have a lot of money and they're relying on MSWIN, why would you put an undue burden on them? Why would we want to pay \$200 per radio? Between my office and volunteer fire departments, we probably have close to 300 radios."¹³¹ \$200 is the fee that was initially tossed around by the legislature.

Current Harrison County EMA Director Rupert Lacy said, "If you only have X amount of dollars to spend a year and now they kick that fee in there, where are you going to find your money at?"¹³²

Helfrich said they haven't been able to get the user fee language revised. "It semi-passed last year, 'No state agency can charge another state agency a fee.' It's just that the locals want a

¹²⁸ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

¹²⁹ Meeting Minutes. Jackson: MISSISSIPPI WIRELESS COMMUNICATION COMMISSION, 4 Sept. 2014. PDF.

¹³⁰ "Brian Adam Interview." Personal interview. 31 Aug. 2016.

¹³¹ "Earl Etheridge Interview." Personal interview. 16 Aug. 2016.

¹³² "Rupert Lacy Interview." Personal interview. 17 Aug. 2016.

provision stating that they won't be charged. I think they want language in the code that says local entities will not be charged a user fee."¹³³

When referring to the policy of state agencies not charging other state agencies fees, Buffington added, "Right now, it is just a policy, not a code."¹³⁴

"That scares everybody to death. I'm not going to lie about that. Here we are and we are on this MSWIN system and the next thing we know we're going to have to put into [more money] into our budget," said Lacy. "That's a heavy concern."¹³⁵

¹³³ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹³⁴ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

¹³⁵ "Rupert Lacy Interview." Personal interview. 17 Aug. 2016.

WHO ON THE MISSISSIPPI GULF COAST IS ON MSWIN?

All 82 counties in Mississippi have the capacity to be on MSWIN. That means there is tower coverage that reaches into every county in the state, and in most instances those towers overlap for redundancy. Participation on MSWIN in each of the counties varies greatly. All 82 counties, at the very least, have their local EMA that has a P-25 radio that makes them MSWIN-capable. For some counties, like Choctaw County in north Mississippi, the only MSWIN-capable radio in the whole county is the one at the local EMA. For others, like Bolivar County in the Mississippi Delta, they have over a dozen local departments and municipalities that are all on MSWIN.

The WCC has three classifications for departments or municipalities around the state. They're either on MSWIN completely, they have interoperability with MSWIN, or they have no way of communicating on MSWIN. To be completely on the network means they use the MSWIN receivers exclusively for emergency communications. Some of the entities in this category have also brought their own updated towers and integrated them into the existing MSWIN system of towers. "That's the best-case scenario for us if someone already has upgraded towers that are capable of integrating into the MSWIN network," said Buffington.¹³⁶

The entities that fall into the interoperability category are departments and municipalities that have their own local, terrestrial radio systems but they have radios that are P-25 capable and have MSWIN capability by switching to the MSWIN channels. At a minimum, the WCC pushes for interoperability if entities won't come completely on to MSWIN.

¹³⁶ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

The WCC has procurement authority for all emergency communications in the state that are over \$100,000. In the telecommunications industry that's not a lot of money. So when a county's local, terrestrial system is at the end of its life, the WCC has final approval over what the county purchases—a new local system or persuades them to come on to MSWIN. It's common that counties do want to stay with a local system for many of the reasons listed above. “The commission does compel them to, at least, buy radios with units that can change channels from theirs to the state's (MSWIN). Any new radio-related purchases by the locals within the last four or five years have to be MSWIN compatible,” said Buffington. “We require the interoperability so the radios that they purchase have the capability to operate on their system and MSWIN.”¹³⁷

The last MSWIN category is simply for entities that have no way to communicate on MSWIN. This is any department or municipality that uses their local, terrestrial system that doesn't have interoperable P-25 radios.

On the Mississippi Gulf Coast, where sooner or later another hurricane will stress communication abilities again, it's a mixture of MSWIN participation. For the lower-three counties that border the gulf, Buffington explained, “Hancock County is on [MSWIN], and they couldn't be any better. Harrison County has their own system, but most of their radios are interoperable. Jackson County has their own system, and they have radios that are interoperable.”¹³⁸

Hancock County falls into the first category of completely relying on MSWIN for their emergency communication and Harrison and Jackson counties have the interoperability with their local, terrestrial systems because some of their radios are P-25 capable. In regards to

¹³⁷ Ibid

¹³⁸ Ibid

Harrison and Jackson counties Buffington said, “We are working toward them upgrading to come on MSWIN the next time that they upgrade. I think they are both close to end-of-life, but it could take another year or so. Even though it’s near end-of-life, their radios can still operate on MSWIN. Let’s just say that their system went down today, they’ve still got MSWIN coverage. If their radios can interoperate, they still have some form of coverage.”¹³⁹

In Harrison County, all five major cities in the county, Biloxi, Gulfport, D’Iberville, Pass Christian, and Long Beach all have their police and fire departments interoperable with MSWIN. The county sheriff and fire departments also have interoperability along with their EMA.

In Jackson County, the least MSWIN-operable county on the coast, the four major cities of Pascagoula, Gautier, Moss Point, and Ocean Springs all have their fire departments MSWIN interoperable along with their EMA. None of the police departments are interoperable and neither is the county sheriff department.

In Hancock County, as Buffington said, they’re completely on MSWIN and even the Hancock County School District and the Bay St. Louis/ Waveland School District are on the network. The three counties of Pearl River, Stone, and George, which are all one county removed from the coast, have most all of their police and fire departments with MSWIN interoperability along with each of their EMAs.

¹³⁹ Ibid

MISSISSIPPI GULF COAST EMERGENCY MANAGEMENT AGENCY DETRACTORS AND SUPPORTS OF MSWIN

MSWIN has its detractors and supporters all over the state and that's no different on the Mississippi Gulf Coast. Some think it's a network that's improved their emergency communication capabilities while others would rather continue with the status quo.

It's not uncommon for the WCC and potential users to not see eye-to eye. When referring to his local, terrestrial communication system Etheridge explained, "It's meeting our needs here in the county so we have no need to join the statewide [MSWIN] system since we already have our own."¹⁴⁰ When asked what Jackson County would do in the event that local towers and receivers were damaged during another hurricane Etheridge said they would bring in portable towers to back up their system. Also, with their interoperable radios they could still switch over to the MSWIN channels to be able to communicate statewide.

He also lamented costs associated with MSWIN saying, "The citizens of this county are already paying for our local system. So why would we want to go out and pay for some other system when we're already paying for ours?"¹⁴¹ The WCC states no municipalities are paying to be on MSWIN currently with users fees and never have—the cost of the radios, which Jackson County already has many of, is the only cost to the users. The Jackson County emergency communications system was built in the 1990s.

Etheridge isn't the only one on the Mississippi Gulf Coast that has those sentiments about parts of MSWIN. Lacy, in Harrison County, has his thoughts. "The biggest part is service. We

¹⁴⁰ "Earl Etheridge Interview." Personal interview. 16 Aug. 2016.

¹⁴¹ Ibid

have technicians onboard and if we get an alarm on our system we are on it in a heartbeat. We send our tech out there and we don't have to wait two days for someone to come out of Jackson to work on the system," said Lacy.¹⁴²

He also claimed that their local, terrestrial system has more coverage in Harrison County than MSWIN does. "We have 95 percent handheld radio coverage in Harrison County. We are lucky to get 95 percent vehicle coverage with MSWIN," Lacy stated. "Hancock is in the process of changing over and they're handing over another two towers to build in some redundancy. But until everybody does that you really don't get a lot of coverage. In a life-threatening situation that's really important."¹⁴³

Feelings towards MSWIN on the Gulf Coast aren't all negative though. As mentioned, Hancock County has come completely onto the network and is pleased with the outcome. "We have some areas in the north end of the county that had some bad spots where we couldn't really get back to dispatch with. After we studied the MSWIN situation, we felt it was just the right thing to do for our county," said Adam. "Not only did it help MSWIN being able to use our towers, it helped us get better coverage in the north part of the county because of their towers."¹⁴⁴ Adam said that the number one factor for Hancock County coming onto MSWIN was "coverability."

Earlier he spoke on the hesitancy that Hancock County had at first, just like the other counties in his area, but eventually realized MSWIN was the right fit for them. "It doesn't matter what system you're on, if someone can give me a better system than what we have, and do it better, then we wouldn't hesitate to switch," he explained.¹⁴⁵

¹⁴² "Rupert Lacy Interview." Personal interview. 17 Aug. 2016.

¹⁴³ Ibid

¹⁴⁴ "Brian Adam Interview." Telephone interview. 31 Aug. 2016.

¹⁴⁵ Ibid

Now Hancock County won't only be reliant on the communication mediums they had in 2005 during Hurricane Katrina, according to Evans. "We can talk to whoever we need to, whenever we need to and keep communications going. We won't be relying on a cell phone because we have another way to talk," he said.¹⁴⁶

Summing up their move to MSWIN Adam said, "It took us a while to realize the value of MSWIN and we at this point have no regrets of going on it."¹⁴⁷

¹⁴⁶ "John Albert Evans Interview." Personal interview. 31 Aug. 2016.

¹⁴⁷ "Brian Adam Interview." Telephone interview. 31 Aug. 2016.

MSWIN FUNDING AND PUBLIC/PRIVATE PARTNERSHIP

To build out MSWIN the State of Mississippi used a number of revenue sources. “For the build, we had federal grants. We had about \$15 million in state bond funds and \$150 million to build out the initial sites. And then we had another \$50 million that came to us through the federal BTOP Program—about \$200 million in federal money total,” said Helfrich.¹⁴⁸

The WCC incurs a plethora of expenses every year that’s paid of out general fund appropriations from the Mississippi Legislature each year. Annually, MSWIN costs millions of dollars to maintain the towers and equipment to keep it running. The WCC maintains their own MSWIN towers but if an entity, like Rankin County recently for example, brings some of their own towers onto the network they still maintain them locally.

“It’s not just maintenance. Some of the towers we don't own, so we have to pay tower leases,” Helfrich said describing the costs. “Towers in the northern part of the state, we do own, but we have to pay land leases. Out of our budget request, I think we've been getting around \$10.6 million a year. Over 90 percent every year is contractual. So there’s nothing administration about it. It's tower rent, land rent, system maintenance, site maintenance, some contractual services, but there's just not a lot of fluff there. The tower leases are about \$4.5 million [annually].”¹⁴⁹

When asked if a \$10.6 million appropriation is “proper funding” to keep MSWIN operable and running as best it can Helfrich replied, “No, we need more. Our budget request is

¹⁴⁸ "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹⁴⁹ Ibid

usually right around \$12 million but we could probably live at about \$11 million, but we have to get by with \$10.6 million. When I say live at \$11 million, it's not comfortably.”¹⁵⁰

“I was over at DPS before I came over here, and maybe you don't buy cars this year, or maybe you don't buy uniforms. Maybe you don't buy a gun,” Buffington said, speaking to budgeting decisions. “But how do you not pay the electric bill? Or how do you not pay the ground rent for the property of the tower you're on? Some of the towers where we have money are leased. How do you not pay that?”¹⁵¹

Helfrich echoed, “I have \$600,000 in salaries, \$100,000 in commodities, and \$100,000 in equipment. Everything else goes to keep the system going. We haven't bought a vehicle since 2008. Travel last year we spent \$1,000 on travel. Because we don't have any money. So where we get hurt, because we can't not pay the bills to keep the system operational, we get hurt in our own technical people going to training to know what they're supposed to be doing, providing training programs for end users, that's where we cut.”¹⁵²

For the State of Mississippi fiscal year 2017, the WCC funding was cut along with most other state agencies. “This year we got cut. So we're down to \$9 million [appropriation] this year,” Helfrich explained. “We simply can't pay our bills with \$9 million. So we are at a point now that we're going to have to go to the legislature and explain. I mean your choice is to keep it on or turn it off. But providing public safety to your citizens is a function of government.”¹⁵³ The actual total funding the WCC will receive from the Mississippi Legislature is \$9.32 million.¹⁵⁴

¹⁵⁰ Ibid

¹⁵¹ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

¹⁵² "Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

¹⁵³ Ibid

¹⁵⁴ United States. Mississippi Legislature. Wireless Communications Commission. *SB 2914*. Jackson: State of Mississippi, 2016. Print.

To sum up the financial situation Helfrich said, “We're resubmitting a \$1.4 million deficit request. If we don't get a deficit request, we're going to shut it down. We don't have a choice. No one's going to keep the electricity going if we don't pay our bills. Tower companies, they don't let you just sit on their towers. When you don't pay them rent, they'll kick us off. The land lease is, the way it typically works if you don't pay them, they can take over control of your tower from you. So we're just not in a position to not pay bills.”¹⁵⁵

And the company that all of the money is going to for maintenance contracts is Motorola. They're the big player in the two-way radio telecommunications industry having an estimated 80 percent of the market as recently as 2014.¹⁵⁶ “Motorola was selected in 2007 to be the vendor to deploy the MSWIN system. The system is operated by the WCC in conjunction with Motorola as the contracted vendor for system monitoring and maintenance,” said Helfrich.¹⁵⁷

She elaborated, “A Request for Proposal (RFP) was released by the Mississippi Department of Information Technology Services (ITS), the contracting agent for the WCC, in March 2006. In November, both ITS and the WCC approved the selection of Motorola as the lowest and best vendor responding to RFP 3429 to provide a turnkey statewide wireless voice and data capable infrastructure system. The contract was executed in June 2007.”

As for the two companies who sent in bids Helfrich said, “There were two vendors that responded to the RFP – M/A - Com and Motorola. The difference in the 15-year life cycle costs was approximately \$90M.” Motorola had bid \$221 million and underbid M/A-Com by \$90 million to win the contract.

¹⁵⁵ Ibid

¹⁵⁶ Gordon, Greg. "Millions in Federal Emergency Communications Funding Lost, Diverted." McClatchy DC, 14 July 2014. Web. 03 Nov. 2016.

¹⁵⁷ “Vicki Helfrich Interview." Personal interview. 4 Aug. 2016.

The contract with Motorola is set to expire in June 2017 but the WCC says that the MSWIN project isn't finalized in regards to getting full coverage around the state, and it's likely to extend the Motorola contract to allow the state to complete the project.

COMPARING MSWIN TO WIRELESS INFORMATION NETWORKS IN REGIONAL STATES

MSWIN is not the only statewide emergency communication network in the southeast or the rest of the country. The WCC claims it's the most advanced system of its kind in the United States and only Michigan is in the process of upgraded to the level of MSWIN.¹⁵⁸ In the years following Hurricane Katrina a few other states were in the process of building out their own versions of MSWIN. Both Arkansas and Louisiana have systems that are similar in nature to MSWIN.

The Arkansas Wireless Information Network (AWIN) is very similar to MSWIN in regards to technology and how it's built out with the towers. It is a microwave-based system that uses the same P-25 radios that MSWIN users must buy from any number of vendors. Again, a microwave-based system doesn't rely on phone lines to transmit messages between users. Microwave-based systems use "line of sight" to connect tower-to-tower.¹⁵⁹

To pay for AWIN and to get it started, Penny Rubow, Arkansas Wireless Information Network Program Director said, "In 2004 we were able to work with a [Federal] Homeland Security grant, bond money, and a little bit of general revenue funds. I believe the cost was right at \$73 million to build out AWIN. A big part of that went to purchase radios."¹⁶⁰ Arkansas was able to convert an older, dated-network from decades ago into what is now known as AWIN, which kept the cost lower than what it took to completely build out MSWIN from scratch.

¹⁵⁸ "Bill Buffington Interview." Personal interview. 4 Aug. 2016.

¹⁵⁹ "Microwave Radio - Telecom Data Transmission Method." Microwave Radio. DPS Telecom, n.d. Web. 03 Nov. 2016.

¹⁶⁰ "Penny Rubow Interview." Personal interview. 1 Nov. 2016.

A portion of that \$73 million total actually went towards buying P-25 radios. “Our governor at the time required all the 75 EMA jurisdictions in Arkansas to purchase enough radios to put them in service in the system. So that means they had their own local radios but they also had radios on the AWIN system so they could communicate with their neighboring towns and counties,” said Rubow.¹⁶¹

“When we went live with the AWIN system in October 2006, we probably had 3,000 users,” she said. “In 2007, early in the year, we had some really bad weather and after that we saw more people that wanted to be on AWIN. We’ve had pretty steady growth since that point.”¹⁶² Currently AWIN has around 30,000 users, just like MSWIN, and has 132 towers around the state.¹⁶³

When AWIN first came online, not everyone was onboard with joining it. “There were a lot of people that were skeptical,” stated Rubow. “They didn’t think it would work.”¹⁶⁴ She described that many of the barriers-to-entry that the WCC deals with in regards to MSWIN are the exact same. “It’s funny how similar our barriers to entry are [with Mississippi.] We hear a lot of complaints about the cost of the radio. For a while we had a lot of concern about big brother looking over our shoulder and what we’ve tried to do is help people understand that once you’re on the system we will stay out of the way,” she explained.¹⁶⁵

AWIN doesn’t have a user fee to be on the network but each municipality or department that comes on it has some sort of non-monetary contribution they must bring to the table. Rubow stated, “What we do is whenever a new user comes on the system, depending on their level of

¹⁶¹ Ibid

¹⁶² Ibid

¹⁶³ Ibid

¹⁶⁴ Ibid

¹⁶⁵ Ibid

use, we have a matrix we use to determine a contribution level from them. It might be bringing their existing towers to the system. In other deals it might be providing some spare equipment. We have one deal where a county maintains the roads out to their two tower sites. We try to work with the user and figure out the best way to get them on the system. It's not a monetary compensation."¹⁶⁶ Because parts of Arkansas have mountainous terrain, a microwave-based "line of sight" system can be challenging so any time that a municipality can bring their own towers online with AWIN it's a big help for coverage.

Like MSWIN, these municipalities fall into three categories for AWIN: those who solely rely on the network, those who have their own local network but have interoperability with AWIN because they have P-25 radios, and lastly those who have their own local network but don't have P-25 radios who can't communicate at all on AWIN.

Like Mississippi, Arkansas has a contract with Motorola to maintain their towers and equipment. "The way our state laws are written, maintenance contracts don't have to be bid," Rubow explained. "We did bid it once before but the only response we got was for someone who wanted to handle the helpdesk answering the phones and we didn't need that, so we've just stuck with Motorola."¹⁶⁷

To help users get acclimated to using AWIN, the State of Arkansas does have training when requested—something that Mississippi doesn't currently offer directly from the WCC. "We went through a period of time when we didn't have anyone to do training and we suffered. So what we do now is that we have on-demand training. If someone comes on the system and calls and says they need training we will send someone up to do the training," said Rubow.¹⁶⁸

¹⁶⁶ Ibid

¹⁶⁷ Ibid

¹⁶⁸ Ibid

The State of Louisiana also has its own system called the Louisiana Wireless Information Network. It is claimed to be the largest statewide radio system in the country based on users, which total 84,000.¹⁶⁹ Travis Johnson, Louisiana Interoperability Program Manager, said, “LWIN is a land-mobile radio network. It covers 95 percent of the state with portable, handheld coverage. The coverage in vehicle radios is even better because those are stronger transmitters. The real benefit of the system is that there are about 84,000 users on the system. That’s actually the thing that people don’t realize off the bat. That’s why it’s useful.”¹⁷⁰

Johnson continued, “There’s 135 tower sites throughout the state and the state takes care of all of the tower site maintenance and pay for them—so all the end users have to buy is the user equipment which is P-25 radios.”¹⁷¹

Explaining the similar MSWIN-like qualities of the network he said, “What is does allow you to do, since we have shared talk groups, we can take a firefighter from one corner of the state and pair him up with a deputy from another corner of the state, and they can communicate with the normal radios they use every single day.”¹⁷² He said 70 percent of the users on LWIN are local users. In 2015, there were 12 million push-to-talk transmissions per month on LWIN.¹⁷³

The Louisiana Statewide Interoperable Executive Committee, who is tasked with overseeing LWIN, just like the WCC does in Mississippi, was created in 2008.¹⁷⁴ To build it out the State of Louisiana used a combination of funds. “There were lots of [federal] grants funding after Katrina. [The costs] were federal, state, and local because some of the infrastructure was

¹⁶⁹ "ABOUT." LWIN. Governor's Office of Homeland Security and Preparedness, n.d. Web. 03 Nov. 2016.

¹⁷⁰ "Travis Johnson Interview." Personal interview. 31 Oct. 2016.

¹⁷¹ Ibid

¹⁷² Ibid

¹⁷³ "ABOUT." LWIN. Governor's Office of Homeland Security and Preparedness, n.d. Web. 03 Nov. 2016.

¹⁷⁴ "ABOUT." *SIEC*. State of Louisiana, n.d. Web. 03 Nov. 2016.

stuff that was already paid for by the parishes. For example, a parish putting up their own infrastructure because they didn't have the coverage they needed," Johnson explained.¹⁷⁵

When Johnson was told the barriers-to-entry that the WCC has to overcome he agreed with Rubow that they're similar in Louisiana. "Those are the exact barriers-to-entry that we have here," he said. "The cost of the radios, if you are a local volunteer fire department and have five or six people and you're used to buying \$300 radios, it's two or three times that price they would pay [to be on LWIN]. That's definitely a barrier-to-entry."¹⁷⁶

The worry of user fees is not something that Louisiana has had to overcome to get people to sign up though. "As far as the user fees, we've never had user fees and it doesn't say anything about user fees in our documentation so that helps us out a little bit. The local control and the user fee issue are combined here in Louisiana," said Johnson. "Because our initial proposed legislation to create our statewide interoperability executive committee, which is like the WCC in Mississippi, what we did was that we floated it to the users and it was going to be made up of 50 percent state agencies and 50 percent local users. They came back and said 'If you want us to participate in this we're going to be the majority of users and we should have the majority on the committee' so they went back and changed the legislation."¹⁷⁷ Having the local users make up the majority of the governing body that make fiscal decisions regarding LWIN eased many of the locals' concerns.

"The way it's set up now is we have five state agencies, six are first responder associations, and the other nine are the nine Governor's Office of Homeland Security and

¹⁷⁵ "Travis Johnson Interview." Personal interview. 31 Oct. 2016.

¹⁷⁶ Ibid

¹⁷⁷ Ibid

Emergency Preparedness regions in Louisiana,” Johnson explained. “So 15 of the 20 members that would control user fees are made up of users themselves. They now run it.”¹⁷⁸

In Mississippi, the WCC is the equivalent of the SIEC in Louisiana and it has 16 members on the WCC commission. Additionally, there are also eight legislators on an advisory board for the WCC. Of the 16 commission members, 11 are executive directors of state agencies. The remaining five are from associations that have local interest at heart like the Mississippi Association of Supervisors or the Mississippi Fire Chief’s Association. The balance of the commission leans heavily toward state interest if who each member works for is the deciding factor.

Louisiana also has users that fall into the same three interoperability categories as Mississippi and Arkansas. For the users in Louisiana that aren’t able to talk on LWIN at all, the state government has a cache of radios they can disperse to local users in times of emergency.

One of the key differences in Mississippi and Arkansas versus Louisiana is that LWIN uses phone lines to facilitate the transmission of communication. “One of the challenges we had to build out the system with the speed we did and the coverage we did was that we had to use T1 lines for our backhaul,” said Johnson. “Where on the MSWIN system, they use microwave-backhaul. A microwave backhaul is much more reliable. There’s a lot more outages with the T1 backhaul.”¹⁷⁹ In the telecommunication industry, backhaul refers to everything between the cellular/microwave tower and the core that processes all the traffic—it’s everything in between.¹⁸⁰

¹⁷⁸ Ibid

¹⁷⁹ Ibid

¹⁸⁰ "Backhaul Basics, A Definition Network Experts Define Backhaul Networks." Interview. RCR Wireless News. N.p., 13 May 2014. Web. 22 Nov. 2016.

This means if the phone lines go down during a hurricane or storm then LWIN is rendered useless where the phones are down—luckily for LWIN the power grid and the phone lines are not interconnected. The phone lines supply their own power, but it's still a potential chink in the armor for LWIN. “[We rely on] a copper phone line or a fiber optic line that's buried under the ground which is subject to flooding. Your microwave system is not,” said Johnson.¹⁸¹ In regards to when the power grid goes down, each of the LWIN towers do have diesel generators as a backup power source.

The State of Louisiana does have training available to users who need it. “There's not automatic training but the Governor's Office of Homeland Security and Emergency Preparedness has the Office of Interoperability who is available to do that training for [users],” Johnson explained. “Plus we do statewide communication exercises every year. It's not specifically LWIN exercises, but we do throw situations in where if your LWIN towers isn't working what would you do.”¹⁸²

¹⁸¹ Ibid

¹⁸² Ibid

CONCLUSION

MSWIN has been fully operational since 2009 statewide and has accumulated around 30,000 users in all 82 counties in Mississippi. It's a network that has supporters and detractors. There are clearly some barriers-to-entry that are present and explained by the WCC and some of them are self-inflicted like the user fee in legislation. Doing away with the user fee legislation would cut out one of the reasons for hesitation for local municipalities. Others like the cost of radios, fear-mongering, and municipalities not wanting to give up local control is harder to combat and is something the WCC will likely always contend with.

The funding for MSWIN looms as the WCC's, and potentially the citizens of Mississippi's, biggest problem currently facing it. It equates to spending a lot of money to buy the nicest vehicle on the car lot but only allocating just the bare minimum in funds each year to keep it cranked and able to take you from one place to the other. As mentioned, this is a problem for almost every other state agency also that's faced cutbacks in the last year as revenue was slow. It's a dilemma of funding something that one might not see as essential day-to-day as roads and bridges, and it isn't a sexy political win to go back and tell constituents that you fully-funded MSWIN unless one has just had a major emergency in their district. Keeping MSWIN funded at a proper level for maintenance and training is imperative for citizens of the Mississippi Gulf Coast that will always be at a greater risk of a widespread natural disaster.

Researching the private telecommunication companies in Mississippi that provide cell phone service on the Mississippi Gulf Coast is a possibility for future research. They are 50 percent of the equation for residents when a disaster strikes and those citizens are trying to access

loved ones and potential life-saving information through social media or websites on their smart phones. Additionally, I think there is an opportunity for further research into how the State of Mississippi and other local emergency agencies use or don't use social media to reach people in times of crisis. Many people use social media as one of their only sources of news and whether or not potential life-saving information is being distributed on these channels presents an opportunity for more research.

As evidenced, the State of Mississippi wasn't the only state to have major problems during Hurricane Katrina with emergency communications—nor are they the only state to have implemented their own version of a potential solution for the next hurricane. The State of Louisiana has built out its own version of MSWIN, that admittedly, they say has potential problems with the way it's built. No system is perfect and neither is MSWIN.

The WCC claims that MSWIN is the most technologically advanced emergency interoperable communication system of any state in the nation. For the municipalities on MSWIN, the technology and infrastructure of it all across the state and on the Mississippi Gulf Coast has first responders undoubtedly more prepared for the next hurricane than in 2005. Whether one chalks that up to technology naturally improving for 11 years, to the State of Mississippi putting together a quarter billion-dollar network, or both is for each person to decide.

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**Audio files of first person interviews are in the possession of the author.

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