

Written Statement of

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Before the

UNITED STATES SENATE COMMITTEE ON COMMERCE, SCIENCE AND  
TRANSPORTATION

Hearing on

Keeping Us Safe: The Need for a Nationwide Public Safety Network

Good morning Chairman Rockefeller, Ranking member Hutchison and distinguished members of this committee. I thank you for the opportunity to speak about an extremely important subject; communications for public safety.

My name is Steve McClure. I am the Director of Emergency Medical Services for Jackson County, West Virginia and I have over 40 years of experience in the public safety sector. Jackson County Emergency Service (JCEMS) provides emergency ambulance service for the County, and also provides non-emergency transports.

As you may know, Jackson County is located in the Mid-Ohio Valley and has a very diverse topography, with an area of approximately 472 square miles and a population of nearly 30,000. Jackson county lies just north of Kanawha County and the capitol city, Charleston, and includes a level I trauma center. Employment in the area ranges from manufacturing to farming, and a major river borders the western part of the County. A major highway transects the Jackson County from north to south. All of these factors present a wide range of difficulties for public safety providers.

I am here today to specifically address an item that is at the very core of public safety communications in rural America. Effective communication between the requester of service and the dispatch center, between the dispatch center and public safety response agencies, and among the responders themselves is paramount to delivery of services. However, inherent problems in the way we communicate today must be addressed for the future of public safety communications over the next several decades.

**My paramedics can be within twenty minutes of the trauma center and unable to communicate with anyone; radios won't work, cell phones have no signal and land lines in the area can be scarce.**

Communications problems are not unique to my county or to West Virginia. From Hawaii to Florida, from Texas to Maine and all parts in between, we have the same problems. While many of these problems occur in rural and remote areas, a broken bone

still hurts the same and a heart attack can still do the same damage in rural America as well as any urban or suburban setting.

How do we solve these problems and permit public safety officials to do a more effective job? Funding to build infrastructure and sufficient spectrum to communicate are two major steps forward that will provide all Americans with the quality of emergency services they expect.

The long-term vision for public safety should be to migrate land mobile radio (LMR) systems to a robust nationwide interoperable broadband network that can meet the mission critical and day-to-day operational needs of our nation's first responders. This will not happen overnight, and indeed, may be measured by decades. But the sooner we start building and testing, the faster we will realize our goals. A converged data and voice network must be at least as reliable as existing land mobile mission critical voice networks before public safety agencies would even consider migrating their voice communications to a broadband network. The broadband network must be hardened to survive most natural and man made disasters, and flexible enough to support a variety of government and commercial applications that will enhance broadband services to all parts of this great nation, as well as America's position as a leader in broadband deployment.

With advances in technology, public safety practitioners have an increasing need to access data and video networks during all emergency incidents. These needs include:

- Law enforcement access to streaming video, surveillance networks, criminal records, automated license plate recognition, and biometric technologies including mobile fingerprint and iris identification to prevent and respond to criminal activities.
- Fire service access to building blue prints, health-monitoring sensors for fire & rescue personnel, and GPS tracking systems to enable more efficient response to fires in order to save lives.
- Emergency medical service access to telemedicine, high resolution video, and patient records to reduce the time it takes to deliver medical services at the scene of an incident such as a car crash on a highway.
- Critical infrastructure service provider access to information to coordinate responses and to restore power and telecommunications services during large-scale incidents.
- Federal government patrol, investigative and other public safety operations, including the U.S. Marshal Service, Federal Bureau of Investigations, U.S. Customs Service, Federal Emergency Management Agency, Department of Homeland Security and U.S. Secret Service Uniformed Division, Department of Interior and U.S. Park Police, and various other federal agencies access to data networks during everyday and large-scale incidents to coordinate federal assistance with State and local response and recovery operations.<sup>1</sup>

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<sup>1</sup> Department of Commerce, Federal Strategic Spectrum Plan (Mar. 2008), at 4, B137-139, B-143, available at <http://www.ntia.doc.gov/reports/2008/FederalStrategicSpectrumPlan2008.pdf>

The list above represents just a few of the applications and services that need to ride on a public safety broadband network. Unfortunately, the hard reality is that the types of applications and services that will ride on the network depends greatly on the amount of spectrum that is available for public safety broadband services. Many of the applications listed above require considerable bandwidth and speed, and the 10 megahertz (MHz) of spectrum that is already allocated to public safety will not be enough.

In 2007, the Federal Communications Commission adopted a Report & Order<sup>2</sup> approving the issuance of a single nationwide license for 10 MHz of 700 MHz public safety spectrum re-designated for broadband use to deploy a nationwide public safety-grade broadband network. This allocation only meets the basic data needs for public safety. Most, if not all, of this spectrum will be consumed by local law enforcement and fire services. The 10 MHz of spectrum is insufficient to allow for high quality voice and video applications or the ability to provide access to other government and critical infrastructure services.<sup>3</sup>

One of the most important goals for public safety is to begin using voice applications on the broadband network, but this requires a firm commitment from the commercial wireless industry to research, develop, and establish standards for the next generation of public safety communications equipment. Indeed, as Congresswoman Harman and others suggest in support of public safety, we need the federal government to help create incentives and support for device R&D as a next priority once the D block is secured for public safety and adequate funding is established for build out and sustainment of the nationwide public safety broadband network.

**I am proud to say that my Senator and your Chairman has answered public safety's call, and the public's expectation, to provide the funding and spectrum necessary with S.3756: The Public Safety Spectrum and Wireless Innovation Act of 2010.**

The Obama Administration, Congress, the Federal Communications Commission, the Department of Homeland Security, the Department of Commerce, the Department of

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(increasing Federal broadband requirements) and Department of Commerce, A Public Safety Sharing Demonstration, (June 2007), at xiv, available at <http://www.ntia.doc.gov/reports/2007/NTIAWARNReport.htm>.

<sup>2</sup> See Service Rules for the 698-746, 747-762 and 777-792 Bands; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, WT Docket No. 06-150, PS Docket No. 06-229, 23 FCC Rcd 8047 (2008) (700 MHz Second Further Notice); see also, generally, Service Rules for the 698-746, 747-762 and 777-792 Bands; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, WT Docket No. 06-150, PS Docket No. 06-229, 23 FCC Rcd 14301 (2008) (700 MHz Third Further Notice).

<sup>3</sup> New York City 700 MHz Broadband Public Safety Applications And Spectrum Requirements ([http://d-block.net/assets/pdf/NYC\\_Spectrum\\_Requirements.pdf](http://d-block.net/assets/pdf/NYC_Spectrum_Requirements.pdf)) and Spectrum Coalition, How Much Do We Need For Data ([http://d-block.net/assets/pdf/How\\_Much\\_Do\\_We\\_Need\\_For\\_Data.pdf](http://d-block.net/assets/pdf/How_Much_Do_We_Need_For_Data.pdf))

Justice, Department of Defense, and others should work with public safety to develop the appropriate spectrum and funding policy that will enable local, State, and Tribal governments to build their next generation of interoperable public safety wireless broadband networks. I understand that a series of meetings have taken place over the past month, culminating with a two-day session in Northern Virginia earlier this week. I am glad to know that the conversation includes an equal focus on rural America, and again to know that Senator Rockefeller and others will continue to emphasize that public safety networks are built based on geography, as well as population - to cover the entire jurisdiction - and so must the nationwide public safety network. Indeed, federal users will rely on those networks whether at a plane crash site, fighting a wildfire or dealing with myriad other everyday to large-scale incidents in remote areas.

The Congress should consider the following six principals in developing national policy for improving our nation's public safety communications systems.

1. Adequate spectrum must be allocated to public safety to provide the highest speed and quality for transmitting mission critical voice, video and data services throughout their jurisdiction. The propagation characteristics of the spectrum that is allocated should allow for in-building coverage and be able to transmit a signal over large geographic areas.<sup>4</sup>
2. Local public safety agencies must be able to control the amount of spectrum resources they need to ensure broadband networks are able to provide voice, video, and data services to law enforcement, fire and emergency services.<sup>5</sup>
3. State and local public safety agencies must have full control over who can access the network and what applications are authorized to operate on it.
4. Auction proceeds from the sale of reclaimed radio spectrum for commercial wireless services should be allocated to help expedite the build out and continued maintenance and operation of a nationwide wireless broadband network.<sup>6</sup>
5. State and local government should be able to use current federal grant programs such as the State Homeland Security Program (SHSP), the Urban Area Security Initiative Grant Program (UASI), the Metropolitan Medical Response System (MMRS), Emergency Management Performance Grants (EMPG), Interoperable Emergency Communications Grant Program (IECGP), Regional Catastrophic

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<sup>4</sup> 700 MHz Band Channel Propagation Model by the National Institute of Standards and Technology (NIST) <http://www.nist.gov/itl/antd/emntg/700mhz.cfm>.

<sup>5</sup> If public safety owns and operates its own network, or at a minimum holds the spectrum license in a public private joint venture network, they can exert greater control over future technical decisions that effect network performance. Additionally, ownership of the network allows public safety to exert influence over the network design and deployment to satisfy the immediate and future needs of public safety users. (New York City's 700 MHz Broadband Public Safety Applications And Spectrum Requirements White Paper)

<sup>6</sup> At least 25 megahertz of contiguous spectrum at frequencies located between 1675 megahertz and 1710 megahertz, inclusive, can be made available for immediate reallocation and auction.

Preparedness Grant Program (RCPGP), and Preparedness Grants, the Community Oriented Policing Services (COPS) Technology, Department of Justice's State, Local, and Tribal Terrorism Prevention Training and Technical Assistance National Initiative Program, and the Justice Assistance Grant (JAG) Program to assist them in building their public safety broadband networks.

6. Public-private partnership should be encouraged when possible. However, public safety agencies must have the ability to deploy dedicated wireless broadband networks in their jurisdiction if commercial providers are unable to, or unwilling to, support their mission critical needs.

In order for public safety to be successful in deploying the next generation of broadband networks, Congress must act quickly to pass S. 3756: the Public Safety Spectrum and Wireless Innovations Act of 2010. This legislation will allocate sufficient dedicated spectrum and funding resources to public safety to build out the network. Without sufficient spectrum and funding, public safety will be relegated to using commercial networks that do not meet the mission critical needs of our nation's first responders. Should Congress not enact legislation to allocate additional spectrum to public safety, the public's safety and the safety our first responders are at risk.

The goal for improving our nation's public safety communications systems should be to create a ubiquitous public safety broadband network in the 700 MHz band that meets all of public safety's needs in all geographic locations and across all jurisdictions and services.

A unique opportunity exists to change the paradigm of public safety communications where multiple frequency bands and incompatible technologies create obstacles to interoperability and perpetuate inefficiency. The ultimate goal and vision of the public safety broadband network is to learn from the mistakes of the past and plan for a future in which wireless broadband networks deployed on a common frequency band - using a common technology platform - provide public safety with the tools they need for the twenty-first century.

I can vividly recall that day in July 1969, when as a young child I watched the first moon landing and heard Neil Armstrong issue those famous words, "that's one small step for man, one giant leap for mankind." If someone could communicate those words from almost 290,000 miles away, why can't we communicate with services that are 20 miles away? Radio towers and cell towers (infrastructure) in the southern part of my county are nearly non-existent. This same problem manifests all across the country and we need to fix it. Quickly passing S. 3756 is the key to fixing this problem.

Thank you again Chairman Rockefeller, Senator Hutchison and members of this committee and I look forward to any questions you might have. I leave you with some basic questions and answers to re-emphasize the main points from perspective.

## **Why does public safety need 20 megahertz of spectrum?**

The allocation of 20 megahertz of spectrum will double the transmission speed and reduce the degradation of data especially in voice and video applications. The additional spectrum will also reduce the cost of build out of the network because less base stations will be needed to accommodate all the users and applications on the network.

The 20 MHz of spectrum will be sufficient to build equipment that will provide voice, video and data applications to first responders. Without sufficient spectrum, equipment manufacturers may not invest the money that is needed to develop new mission critical broadband communications equipment and applications. The amount of spectrum public safety can use will determine what equipment and applications will be available.

The 20 MHz of spectrum will also provide enough excess capacity on the network to allow for government and critical infrastructure<sup>7</sup> applications and also allow for commercial services to consumers, businesses, and schools and other key institutions in the most rural and underserved areas of the country.

To truly understand the broadband need of public safety we need to emphasize the key word *mobile*. So, what do we mean by *mobile*?

*Mobile* means that while traveling at 55 mph on the highway you are able to continuously access a broadband network to upload and download data. It means that if you are pursuing a suspect at 80 mph and have an in-car video camera you can upload the live video to the emergency communications center. It means that while you are responding to a fire you can download the blueprints to the burning building before you get to the scene. It means transmitting medical data to emergency medical personnel that are transporting a trauma patient and receiving a patient's vital statistics at the hospital before the ambulance ever arrives.

## **How do you solve the technological divide between public safety and commercial systems?**

Public safety has endorsed Long Term Evolution (LTE) as the standard technology for the 700 MHz broadband networks. By adopting the LTE standard prior to any deployments, public safety is working to ensure systems are interoperable. Also by adopting the LTE standard, which has been adopted by the largest commercial carriers,

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<sup>7</sup> Example of government operations include water, electric and gas meters read remotely taking advantage of the broadband wireless network and/or its backhaul infrastructure to improve accuracy and reduce labor costs. (New York City's 700 MHz Broadband Public Safety Applications And Spectrum Requirements White Paper)

public safety believes that there will be considerable cost savings in purchasing equipment that will operate on the network.

The LTE technology will also allow public safety agencies to partner with commercial carriers in their regions to build out their networks. This is critical for geographic areas of the country that are serviced by the rural cellular carriers. By partnering with public safety, the rural carriers will be able to extend their coverage area and provide greater services to the customers.

It is important that one of the goals for improving our nation's public safety communications systems is to provide funding to encourage investment in research and development (R&D) of new communications equipment and applications that can be integrated in to the public safety broadband network.

One of the most immediate R&D efforts should be to develop LTE equipment and applications that can meet the mission critical voice communications needs of public safety. To ensure competition and reduce the cost of the equipment, the Federal government should provide funding for the R&D program.

LTE technologies must be capable of providing two-way, peer-to-peer, and one-to-many transmission of mission critical voice communications services for first responders. Delay in developing the standards for these types of applications will prolong the migration of LMR systems to next generation of public safety communications technologies.

Commercial carriers are moving rapidly to develop a single standard for voice over LTE technology (VoLTE).<sup>8</sup> This standard however is being primarily developed for voice communications that are similar to existing cellular services. As these standards are developed, public safety needs to work closely with commercial partners to ensure VoLTE is going to be compatible with the voice communications applications that will be used by public safety. By building commercial equipment that can support public safety's voice communications needs the cost of purchasing equipment could be greatly reduced.

Before public safety agencies are able to migrate their LMR systems to broadband networks, they must be assured the network will be capable of providing the same level of services as their existing LMR networks. A key component of this is the availability of sufficient spectrum to provide the highest quality of voice communications to first responders.

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<sup>8</sup> GSM Association adopts carriers' framework for LTE voice: VoLTE made its debut late last year, when AT&T, Verizon and several other telecom companies and device manufacturers joined forces to help develop voice and SMS standards for LTE. The coalition of telecom and tech companies originally banded together to create joint voice and SMS standards that would avoid potential fragmentation of LTE services and thus ensure that voice-capable LTE devices could operate on different networks. (<http://www.networkworld.com/news/2010/021510-gsma-one-voice.html>)