

Written Statement of

Steve McClure
Director, Jackson County, West Virginia Emergency Medical Services

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.¹

¹ 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 & Order² 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.³

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

(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>.

² 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).

³ New York City 700 MHz Broadband Public Safety Applications And Spectrum Requirements (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)

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.⁴
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.⁵
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.⁶
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

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

⁵ 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)

⁶ 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 infrastructure⁷ 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,

⁷ 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).⁸ 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.

⁸ 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>)

UNITED STATES SENATE
COMMITTEE ON
COMMERCE, SCIENCE, AND TRANSPORTATION

TESTIMONY OF
CHIEF ROBERT L. DAVIS
SAN JOSE POLICE DEPARTMENT

PRESIDENT
MAJOR CITIES CHIEFS ASSOCIATION

SEPTEMBER 23, 2010

Good Morning Chairman Rockefeller and members of the Committee.

My name is Robert Davis and I currently serve as Chief of the San Jose Police Department. I would like to thank you for this opportunity to appear before you today to discuss one of the most critical issues facing public safety that I have witnessed in my 30-year career—the creation of a nationwide, interoperable, wireless broadband communications network for public safety.

I am here today speaking as President of the Major Cities Chiefs Association (MCC). The fifty-six U.S. cities represented in MCC are America's centers of industry, transportation, education, and commerce. Our police departments provide public safety services to roughly forty percent of America's population.

I speak today not only for the Major Cities Chiefs, but also on behalf of virtually all of my colleagues in public safety across America. For the first time in my memory, law enforcement, fire, EMS, and other emergency service organizations have come together to speak with one voice on an issue that profoundly affects the security of our homeland. The organizations leading this effort include the Major Cities Chiefs; the International Association of Chiefs of Police; the International Association of Fire Chiefs, represented by my colleague on this panel, Chief Jeff Johnson; the National Sheriffs Association; the Metropolitan Fire Chiefs; the Major County Sheriffs Association; the Association of Public Safety Communications Officials; and the National Emergency Management Association. We are also joined in this effort by the National Governors Association, the National Conference of State Legislatures, the Council of State Governments, the

National Association of Counties, the National League of Cities, the U.S. Conference of Mayors, and the International City/County Management Association, and too many others to list here today. For those familiar with government, it is indeed a rare event that you will see all of these organizations come together and unite around a single issue.

We have come here with a straight-forward, yet urgent request. Almost a decade has past since the tragic events of 9/11, and our nation needs a mission-critical grade, interoperable, public safety, wireless broadband network controlled by public safety. After much discussion during the past two years, the leadership of public safety in this country has studied this issue thoroughly and concluded that the two most important things necessary to achieve this outcome are: 1) reallocation of the 700 MHz D Block to public safety and 2) adequate funding to build and maintain a national infrastructure. Mr. Chairman, your bill, S. 3756 provides us exactly what we need to make this network a reality. We thank you for your leadership, and we urge all of your colleagues in Congress to support your bill.

Why is the D Block so important? The answer is that this slice of spectrum is both uniquely suitable and desirable for public safety use. First, 700 MHz is the ideal spectrum for nationwide emergency operations. Signals in this band can penetrate walls and windows much better than the higher-band frequencies that some have suggested should be an alternative for public safety. Second, the D Block is immediately adjacent to the existing public safety broadband allocation, thus it can provide needed additional capacity simply and elegantly without complicating network or radio handset design.

Any alternative spectrum would be less desirable, since additional components would be required which would dramatically increase costs while reducing performance. Non-adjacent spectrum blocks will not provide as much throughput capacity as the D Block, since greater efficiency is achieved through spectrum aggregation. Indeed, this is the essence of broadband.

Moreover, the D Block is critical for the accessibility of information by our nation's first responders. New technologies such as automated license plate readers, in-field biometrics, medical telemetry, automated vehicle location, and streaming video only scratch the surface of the applications that will be carried by the national public safety broadband network.

I would like to take a moment to address the notion that has been advanced by some wireless carriers that they should control the network and allow public safety to lease it. This simply *will not* work for public safety. A dropped call on a cell phone is an annoyance; in an emergency it literally can mean the difference between life and death. Public safety personnel must have coverage whenever and wherever we respond in an emergency.

In closing, the public safety organizations mentioned at the beginning of my testimony are unified in the goal of establishing for the first time a nationwide, interoperable, mission-critical, public safety broadband network. We are not motivated by profit or politics. Our only motivation is the ability to serve the public we are sworn to protect.

On behalf of these organizations, I thank you for your attention to this important issue, and I will be pleased to answer any questions from the Committee.



THE UNITED STATES CONFERENCE OF MAYORS

1620 EYE STREET, NORTHWEST
WASHINGTON, D.C. 20006
TELEPHONE (202) 293-7330
FAX (202) 293-2352
TDD (202) 293-9445
URL: www.usmayors.org/uscm

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

Statement by

The Honorable Annise D. Parker
Mayor of Houston
Chair, Committee on Criminal and Social Justice
The United States Conference of Mayors

before the
Committee on Commerce, Science, and Transportation
United States Senate

September 23, 2010

Chairman Rockefeller, Ranking Member Hutchison, members of the Committee, I am Annise D. Parker, Mayor of Houston and Chair of the United States Conference of Mayors Committee on Criminal and Social Justice. I appreciate having the opportunity to discuss why it is important to reallocate the D Block to public safety and also provide assistance to states and localities in the build-out, maintenance, and operation of a nationwide public safety communications system.

Senator Rockefeller, I want to thank you for your leadership on this issue. You listened to the strong concerns which public safety and local and state government officials had with the plan to auction off the D Block to the highest bidder for commercial applications. Your legislation, the Public Safety Spectrum and Wireless Innovations Act of 2010 (S. 3756), would ensure that our nation's first responders are able to access a broadband network capable of providing reliable high speed data and voice applications so that they can meet current and future public safety needs. Be assured that the Conference of Mayors enthusiastically supports S. 3756 and looks forward to working with you to see it enacted into law.

Senator Hutchison, I greatly appreciate your strong support for the city of Houston in Washington and for public safety agencies around the state and I look forward to working with you in support of this legislation.

The Conference strongly supports reallocating the D Block of the 700 megahertz spectrum to public safety. While we have had policy to that effect for several years, last June we expanded that policy by adopting a resolution which:

- opposes the FCC proposal in the National Broadband Plan to auction the D Block spectrum to a commercial provider;
- calls upon Congress to immediately pass legislation that prevents the FCC from undertaking an auction in 2011, and conditions further FCC action on formal Congressional approval of plans for the D Block and meeting public safety spectrum needs;
- calls upon Congress to reallocate the D Block to public safety; and
- endorses identification of alternative federal funding sources to ensure that all states and localities can afford the costs associated with transition to a nationwide network.

The D Block's Importance to Public Safety

Mayors and city council members know that the location of the D block offers a one-time opportunity to improve first responder communications and emergency response capabilities. We also know that allocating the D block to public safety would double the amount of spectrum available for first responder communications, yet remove less than two percent of the spectrum that the FCC and the Administration propose to make available for commercial use. And we know that without the D block, first responder communications will continue to lack access to the technologies commercial customers take for granted.

Commercial networks cannot guarantee first responders have priority access over other users. When lives are at stake, firefighters and police officers cannot have their calls dropped or wait to get a signal.

Most of us take for granted text messaging, sharing pictures and distributing videos via commercial wireless devices. First responders can only do this through commercial networks, which do not meet mission critical needs. First responders should be able to distribute and receive pictures, video and data in real-time from other officers, citizens and emergency dispatch systems.

Existing research and the variety of broadband applications for public safety use indicate that public safety needs at least 20 MHz of contiguous spectrum. This can only be achieved by combining the D block with the 10 MHz already allocated to public safety. Failure to reallocate the D block will force public safety to continue to rely on separate data and voice networks, limiting the kinds of applications first responders can utilize.

In disaster situations, customers clog commercial systems as they attempt to communicate with friends and loved ones, access information, and try to document the event online. This usage blocks first responders from accessing the network. To protect life and property, first responders require what is referred to as ruthless preemption, or the ability to kick commercial customers off the network. From a commercial provider standpoint, this is not an acceptable business practice. Therefore, efforts to provide priority to public safety on commercial networks will not meet public safety needs for assured access.

Reallocating the D block would give public safety officials sufficient spectrum to utilize a variety of applications while also controlling access to the network during times of emergency. Providing public safety officials with priority access to commercial networks is insufficient and jeopardizes the public's safety.

To date, public safety has been granted only small sections of spectrum over time, but never enough to consolidate communications into a single frequency band. This means that when multiple agencies respond to an event, they cannot communicate with each other because they each use radios that operate on different portions of the spectrum. Many police carry multiple radios just to ensure they can communicate with other responding agencies during emergencies. Giving public safety the D block would help end the need to utilize multiple communications systems which adds significantly to the cost and complexity of emergency communications.

The Situation in Houston

The City of Houston is the fourth largest city in the country. We have the two largest public safety agencies in the State of Texas. The Houston Police Department has over 5,300 sworn officers and the Houston Fire Department has over 4,000 sworn firefighters. There are a similar number of police, fire and EMS first responders in the other cities and counties that make up our region.

The City of Houston has 18 different large wireless projects in progress at this time. Many of these projects are hampered by a lack of available, licensed spectrum. This lack of available spectrum to license leaves the City in a position to be forced to use unlicensed and/or shared spectrum. Unlicensed spectrum leaves the City vulnerable to security issues that would be greatly minimized if a broadband public safety grade network were available. Some examples of these projects are:

- Office in the patrol car, which is intended to allow police officers to conduct all aspects of their business from the patrol car. This will require access to large reports, images, and files making broadband a critical element for successful deployment.
- Public safety video, which provides video for many locations deemed critical infrastructure or high crime hot spots.
- New records management system, which will replace a 20+ year-old system and provide wireless access to most police records and crime databases.

Further, the City is in the process of building a \$125+ million land mobile radio system on 700 MHz narrowband channels. This system utilizes all remaining 700 MHz narrowband channels in the Houston area. The useful life of this new system will be at least 15-20 years. Therefore, the City is absolutely committed to preserving the 700 MHz narrowband spectrum for land mobile radio voice systems.

Any use of these channels for dissimilar technology would put the integrity of our system in jeopardy. We believe that opening up this spectrum for broadband, even on a secondary basis, could result in devastating interference to our voice radio systems. It is critical that these systems be available for our first responders to use at all times. We have a motto for our system, “first time-every time.” This means that our first responders must be able to push their transmit button and get through the first time and every time ALWAYS. Anything less is a safety hazard and is not acceptable.

All major metropolitan areas will need at least 10 x 10 MHz of broadband. Our needs are just beginning to come to light. We already have unmet needs for broadband, and the technology is still very new. I believe that the demand for these services is just beginning to be identified. Shouldn't our first responders have access to technology at least as good as that available to our teenagers? It is imperative that we ensure our major investment into broadband technology will meet our everyday needs and our large-scale emergency needs. This can only be accomplished by pairing the D Block with the adjacent broadband spectrum already licensed to public safety.

The Public Safety Spectrum and Wireless Innovations Act of 2010

Senator Rockefeller, I have already mentioned our strong support for the Public Safety Spectrum and Wireless Innovations Act of 2010. Your bill would ensure the deployment of a nationwide public safety interoperable broadband network in the 700 MHz band in both rural and urban areas, and it would ensure that the nationwide public safety broadband network is fully interoperable on a nationwide basis.

It would reallocate and integrate the 700 MHz D block spectrum for use by public safety entities. It would authorize the FCC to auction at least 25 MHz of other portions of the spectrum and deposit the proceeds into a Public Safety Interoperable Broadband Network Construction Fund and a Public Safety Interoperable Broadband Maintenance and Operation Fund, with the first \$5.5 billion to go to the construction fund and any additional proceeds up to \$5.5 billion to go to the maintenance and operation fund.

It would also direct the FCC to establish standards for secondary use of the public safety network, allowing licensees to lease capacity on a secondary, but preemptible basis to non-public

safety governmental users, commercial users, utilities, and federal agencies. And it would require that any proceeds from those leases be deposited in the maintenance and operation fund and be used for “constructing, maintaining, improving, or purchasing equipment to be used in conjunction with the network.”

There is one area in which we would suggest some changes. While we understand the important role that states must play in the development of a nationwide interoperable broadband network, and that it’s easier for the federal government to deal with 50 states than thousands of local governments, we do hope that you will include some language that will make it possible for funding to also go directly to local agencies which are responsible for the build out, operation, and maintenance of broadband networks. You will note that seated with me at this table are local public safety officials, and that they are the ones charged with protecting our people, and who every day put their lives on the line.

Specifically we ask that you include in the bill a provision which allows grant funds to go directly to local governments or local public agencies, such as regional entities. Allowing localities to apply for grants directly will ultimately benefit the entire state and region. While it is vital that these local governments work collaboratively with their state and federal partners, allowing municipalities to become early adopters has already proven to accelerate the roll out of the nationwide interoperable public safety broadband network.

For instance, both Seattle and New York City were granted waivers allowing their public safety agencies to build interoperable broadband networks in the 700 MHz spectrum. Based on New York City’s success, New York State has applied for and received conditional approval to move forward with the construction of statewide interoperable wireless broadband networks in the public safety broadband spectrum. Washington State similarly hopes to use grants from your bill to rapidly expand the Seattle network throughout the Puget Sound region and across the State of Washington. Since the State of Oregon also applied for and received a grant request to build a 700 MHz broadband network, those in Seattle are already working with their partners in Oregon to make sure the networks work with each other seamlessly. By starting in these city centers, large rural areas of the Pacific Northwest and Mid-Atlantic may soon have access to a nationwide interoperable public safety broadband network much sooner than otherwise imaginable.

These waiver projects provide a ray of hope. It is unconscionable that nine years after September 11 and five years after Hurricane Katrina we still do not have a nationwide interoperable public safety broadband network. Your bill would move us significantly closer to the nationwide network that our first responders need to meet the challenges of the next decade. All Americans deserve to be able to live in communities that are safe and secure, and effective communications among police, fire, and other first responders are essential to this. We look forward to working with you to see the Public Safety Spectrum and Wireless Innovations Act of 2010 enacted into law this year.

**Statement of
James Arden Barnett, Jr.
Chief, Public Safety and Homeland Security Bureau
Federal Communications Commission**

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

**Before the
U.S. Senate Committee on Commerce, Science, and Transportation**

September 23, 2010

Good morning Chairman Rockefeller, Ranking Member Hutchison and Members of the Committee. Thank you for the opportunity to testify on the need for a nationwide, interoperable public safety broadband network.

The need for such a network is indisputable. We can measure in lost American lives and property the cost of not having a nationwide, interoperable public safety network, and unfortunately, each disaster in America reminds us again. This Committee showed great foresight last year when it charged the FCC with the responsibility of preparing a National Broadband Plan, including a specific direction to address “a plan for use of broadband infrastructure and services in advancing . . . public safety and homeland security.”

We approached this responsibility very seriously, and we pursued it with rigor. Our aim was to approach each potential option – somewhere in the neighborhood of 20 different network concepts – with an open mind and in consultation with all stakeholders. Our quest required literally hundreds of meetings and communications with public safety leaders and months of in-depth research with experts across the Nation, including engineers, scientists, economists, industry leaders, and federal partners. The foundation of the network must be facts and data. The three elements that, in my view, are essential are: (1) the network must be truly interoperable; (2) it must be nationwide, because if it is not, then it is not truly interoperable; and (3) the network must be feasible, not only from an engineering standpoint, but also from an economic standpoint. The Nation must be able to afford to build and operate the network, companies must have the economic incentive to provide cost effective equipment, devices and services to support it, and public safety must be able to afford to operate the network.

The standard for interoperability should be that when a first responder picks up a broadband device he or she should be able to communicate with the right people and have the right information instantaneously, no matter where they are located. However, as past experience has demonstrated, this is a very hard goal to achieve. The Chair and Vice Chair of the 9/11 Commission recently stated that “the 9/11 Commission on which we served concluded that the absence of interoperable communications capabilities among public safety organizations at the local, state and federal levels was a problem of the highest order.” To address interoperability, a number of actions are being taken. First, the Commission has formed the Emergency Response Interoperability Center to establish a technical framework to ensure interoperability. Second, the FCC, along with public safety, its federal partners and industry stakeholders are working to ensure that as the network is deployed and continues to evolve interoperability will always be job one.

Providing network coverage in rural and less densely populated portions of the country is also an imperative for true interoperability. Network deployment in rural areas needs to keep pace with the rest of the country, including our big cities. Accordingly, it is important that adequate public funding be considered to ensure that no area of the United States is left behind, with the goal of covering 99% of the country’s population.

Interoperability costs money, and we believe that the single greatest challenge to ever having a nationwide, interoperable public safety broadband network is funding, to both cover the cost of building the network and the cost of operating it.. This is why we prepared a detailed cost model for the plan, which we subsequently published in a white paper. I urge the Committee to take advantage of this research, as well as our findings on network capacity.

Based on our research, we determined that public safety should have a dedicated network, owned and controlled by public safety, and the core of this network should be the spectrum that the Congress has already dedicated to public safety. We have determined that this spectrum, with the latest engineering and cellular architecture, will perform as 160 megahertz would if you used the out-dated technology public safety is currently using. This core will meet the needs of public safety for day-to-day operations and for most emergencies.

Unfortunately, America will inevitably face not just day-to-day public safety needs but the needs caused by occasional major disasters, and accordingly the public safety network must be able to expand its capacity to deal with extreme circumstances. For that reason, the FCC recommended that public safety be able to roam over to commercial networks with priority access to provide as much as 60 additional megahertz of spectrum. This concept has the additional advantage of providing two or more back-up networks, and therefore much more resiliency and redundancy than we currently have.

Mr. Chairman and Members of the Committee, let me assure you that our top priority in this matter is the same as yours, a nationwide, interoperable public safety broadband network, and we will work with you, our federal partners, the states, the public safety community and other interested parties to achieve that goal under any circumstances.

I should note one last important point. Not only is time of the essence because of the need for us all to be prepared for the next catastrophic event, but also because more time in this regard will cost the federal government far more money. The commercial 4G broadband networks are being planned and built. The first public safety 700 megahertz

networks are being prepared for deployment as early as this year. Delaying the funding of the network actually will increase the cost of the network.

In closing, I appreciate the Committee's leadership for taking up this important issue. The costs of not being prepared are too great. The costs of not seizing this technological opportunity cannot be recovered. There are vast areas of agreement on the plan for a public safety broadband network, and I know that we can build from that agreement to develop together a smart plan going forward that meets the needs of our Nation's first responders. I look forward to working with public safety, our federal partners and you on this important endeavor. Thank you for this opportunity to talk to you.



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

**Testimony of
Chief Jeffrey D. Johnson, EFO, CFO, MIFireE
President, 2009-2010**

presented to the

**COMMITTEE ON COMMERCE, SCIENCE AND
TRANSPORTATION**

**United States Senate
September 23, 2010**

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS • 4025 FAIR RIDGE DRIVE • FAIRFAX, VA 22033-2868
(703) 273-0911 • FAX (703) 273-9363

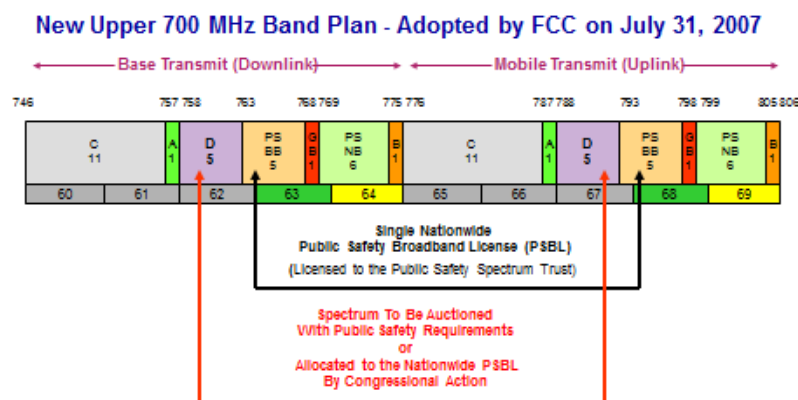
I am Jeffrey Johnson, immediate past president of the International Association of Fire Chiefs (IAFC) and a chief fire officer of the Tualatin Valley Fire and Rescue Department in Beaverton, Oregon where I served as chief of the department for 15 years. I also am currently the chairman of Oregon's Statewide Interoperability Executive Committee.

A top priority for all public safety – police, fire and EMS – is to build a nationwide, public safety, wireless, interoperable, broadband network. This urgent need is recognized in many studies such as the 9-11 Commission and Hurricane Katrina reports. Mr. Chairman, S. 3756, the legislation that you introduced, will allow public safety to realize its nationwide communications goal by providing both the spectrum and funding which is required. I am joined in my support for S. 3756 by members of the Public Safety Alliance (listed at end of testimony) which is committed to the build-out of this nationwide public safety broadband network. Our goal is supported by the seven national organizations representing state and local government as well as many of the leading telecommunications carriers and equipment manufacturers.

Over the past fifty years, the Federal Communications Commission (FCC) has allocated thin slices of spectrum to public safety as the need for more communications capability arose. Currently, 55,000 public safety agencies operate mission critical radio systems - each with their own FCC license - over 6 or more different bands. Our goal of interoperability is difficult; it is expensive. This is no criticism of the FCC; this is just the way it has always been done. After numerous major events and other significant disasters, it is clear that a new model is necessary: a national architecture for public safety wireless communications.

To achieve a nationwide, public safety, wireless, interoperable, broadband network, key elements need to be in place:

The network must have sufficient capacity. To achieve a nationwide public safety broadband network - connectivity coast to coast, border to border - 10 MHz of D Block spectrum, currently slated for FCC auction, must be added to the current 10 MHz of spectrum licensed to the Public Safety Broadband Licensee in order to build out a 20 MHz network. You can see on the spectrum chart, below, that this is the ideal spectrum. The public safety block abuts the D Block. This is perfect for public safety.



Only with this particular spectrum configuration, and none other, can public safety be assured that it will have the ability to build the network it needs now and into the future. S.3756 will accomplish this one-time opportunity to get it right.

Public safety must control the network. A single public safety licensee using a single technology operating on a network with sufficient capacity is required to handle day to day operations as well as the capability to manage major incidents. We cannot have commercial providers deciding what is or is not an emergency and what is the priority. Public safety transmissions have to go through without delay. A “no service” signal is not an acceptable element of incident command. The lives of firefighters, the lives of medics, the lives of law enforcement officers depend on this. This is our responsibility.

Public safety expects to work with others and enter into public-private partnerships. We will work with other state and local governmental agencies, federal partners, and utilities. But, public safety must have control over the operation of the network in real time. It cannot rely on commercial operators or a government agency to provide its critical governance needs. Network control will give public safety assurance that it will have full, pre-emptive priority over all of the spectrum on a when-needed basis.

The network must be mission critical at the outset. In the beginning, this system will handle only data and video. At some future time – years away – we believe there will be a transition to mission critical voice. We all need to take a long term view – to start out with sufficient spectrum so that we will have the ability to migrate to mission critical voice. This will happen when the technology is developed, public safety has confidence in it, and its cost is affordable. Here are the key elements of “mission-critical:”

- The network must be hardened to public safety requirements. This means towers must be able to withstand the elements that might disable them. Towers in hurricane-prone areas and tornado alleys must be designed accordingly. Back up electrical power must be available 24/7. Redundancy is necessary.
- The public safety mission critical voice network must have the ability to broadcast and receive “one-to-one” and “one-to-many” and the ability to broadcast and receive without the network infrastructure being operative. This is called “talk around” mode – also known as simplex. This is a command and control imperative. You know well that we operate under extremely hazardous conditions. If the network, for any reason, cannot provide connectivity, then we need the capability to communicate without the network. This means communicating in the simplex mode. This is the heart of public safety communications.
- The network must have back up capabilities in the event of network loss. We envision satellite capability for the network to be available when a tower is disabled or other crippling malfunction. Satellite can also cover remote areas that don’t have towers. Our mission is geography-oriented whereas commercial carriers are concerned with population.

Funding is important for the build-out of a public safety broadband network. State and local government budgets are challenged. The broadband network needed by public safety cannot be built without federal funding support. S. 3756 recognizes this fact. Both a Construction Fund and a Maintenance and Operation Fund will be created by this bill and authorized to a maximum of \$11 billion for both funds. These funds will provide matching grant programs at the U.S. Department of Commerce to build the network and at the FCC to operate and maintain the network. The bill will fund the Construction Fund by auctioning, at a

minimum, 25 megahertz of contiguous spectrum at frequencies located between 1675 megahertz and 1710 megahertz. These funding mechanisms are innovative and greatly appreciated.

While S. 3756 is very good as written, there are two areas which I would like to see addressed as the bill moves forward:

- First, there is reference throughout the bill for the FCC to issue state licenses. This, we believe, will hamper interoperability. Currently, seven states and the District of Columbia have been granted early deployment waivers. These states and DC have been granted FCC-approved leases by the nationwide Public Safety Broadband Licensee. Only in this manner – a single licensee - can nationwide interoperability be assured.
- Second, we have serious concerns about the flexible use of narrowband spectrum envisioned in Section 103 of the bill. This could lead to interference problems as well as reduce the needed narrowband capacity.

Mr. Chairman, the IAFC and public safety support S. 3756. This bill provides public safety with what it needs to begin the task of building out a nationwide public safety broadband network. We thank you for your personal attention to this issue and will work with you and the committee to assure prompt passage. We are more than nine years since the dreadful events of 9-11, thus we urgently need to move forward on a plan to develop the envisioned public safety broadband communications network. I am available to respond to any questions you may have.

The Public Safety Alliance

The Public Safety Alliance is a partnership with the nation's leading public safety organizations, which includes the International Association of Chiefs of Police, International Association of Fire Chiefs, National Sheriffs' Association, Major Cities Chiefs Association, Major County Sheriffs' Association, Metropolitan Fire Chiefs Association, Association of Public-Safety Communications Officials-International, National Emergency Management Association and the National Association of State EMS Officials. The partnership is operated as a program of the Association of Public-Safety Communications Officials (APCO) International.

The purpose of the Public Safety Alliance is to ensure law enforcement, fire and EMS agencies are able to use the most technologically advanced communications capability that meets the difficult, life-threatening challenges they face every day as they protect America.

The goal of the Public Safety Alliance is to raise awareness in Congress and the White House about what our Nation's law enforcement, fire, and emergency medical services need to build out a nationwide, interoperable, 4G, wireless communications network to protect America.



International Association of Chiefs of Police | International Association of Fire Chiefs
National Sheriffs' Association | Major Cities Chiefs Association
Major County Sheriffs' Association | Metropolitan Fire Chiefs Association
Association of Public-Safety Communications Officials International
National Emergency Management Association | National Association of State EMS Officials

www.psafirst.org

TESTIMONY OF DR. KENNETH J. ZDUNEK
VICE PRESIDENT AND CHIEF TECHNOLOGY OFFICER
ROBERSON AND ASSOCIATES, LLC

on

S. 3756
Public Safety Spectrum and Wireless Innovation Act

before the

Committee on Commerce, Science and Transportation

UNITED STATES SENATE
WASHINGTON, D.C.

September 23, 2010

TESTIMONY OF DR. KENNETH J. ZDUNEK
VICE PRESIDENT AND CHIEF TECHNOLOGY OFFICER
ROBERSON AND ASSOCIATES, LLC

Introduction

Good morning Chairman Rockefeller, Ranking Member Hutchison, and Members of the Committee. My name is Kenneth Zdunek, and I am Vice President and Chief Technology Officer of Roberson and Associates, LLC, a technology and management consulting firm with government and commercial customers. We provide services in the areas of RF spectrum management, RF measurements, and technology management. I also served as Vice President of Network Research at Motorola, Inc. for nine years. I am an IEEE Fellow and research faculty member in Electrical Engineering at the Illinois Institute of Technology. Thank you for inviting me today to testify regarding S. 3756, the Public Safety Spectrum and Wireless Innovation Act.

Summary

Our company was asked by T-Mobile, USA to perform a technical analysis of a shared 700 MHz D-Block commercial/public safety system, as recommended in the *National Broadband Plan*. While there is understandable frustration about the delay in creating an interoperable public safety broadband network, any decision about how to proceed may still be premature until the FCC, with guidance from the public safety community and industry, is able to fully evaluate the complex issues that implementation of such a network raises. It is important to note that the types of public safety networks proposed in the *National Broadband Plan* and in S. 3756 have much in common -- both seek to ensure the creation of a nationwide interoperable public safety broadband network introducing new levels of priority access to, and roaming on, commercial networks. The implementation and deployment of such a first responder network

integrated with commercial systems presents a unique, once-in-a-generation opportunity. In order to proceed, careful analysis of many complex technical matters implementing the long term evolution (“LTE”) platform that 700 MHz systems are expected to share is required. These analyses are critical to the creation of an effective public safety broadband network regardless of whether S. 3756 is enacted.

While we would welcome a more complete analysis of these technical issues before the FCC, our study confirms the conclusions of the FCC’s June 2010 White Paper that assessed public safety spectrum needs. Like the FCC, our study concluded that allocation of 10 megahertz of 700 MHz spectrum for broadband applications, in combination with the spectrum that public safety already holds both in the 700 MHz band and elsewhere, is sufficient to meet current and future requirements and that those needs can best be satisfied under the *National Broadband Plan*. The allocation of the D-Block for commercial purposes, combined with the convergence of commercial and public safety networks on a common LTE standard, presents a unique opportunity in the 700 MHz band to satisfy public safety needs on a combined public/private network better, and more quickly, than they could be satisfied on a stand-alone public safety network. While the goals of the *National Broadband Plan* and S. 3756 are the same, the results of our study leads me to recommend the Committee to support the *National Broadband Plan* and FCC’s thoughtful and expert proposals as the best way forward for our public safety and wireless systems to meet the growing first responder interoperability and spectrum needs of the 21st century. The remainder of my testimony summarizes our study.

Public Safety Broadband Needs and Spectrum Capacity

Our analysis strongly confirms the FCC’s June 2010 White Paper assessing public safety’s spectrum needs, which is the only recent realistic, systematic assessment of first

responders' needs conducted to date. The capacity and throughput provided by a 10 megahertz network using the 700 MHz public safety broadband spectrum with LTE technology is sufficient on a system and sector-cell basis to meet immediate public safety broadband non-voice spectrum needs for day-to-day purposes and incident scene scenarios. Multiple high-quality video streams can be provided by this 700 MHz LTE network over a wide geographic area and commercially available technologies exist to provide increased throughput at cell-edges where signal strength may be lower. Indeed, the ability to re-use frequencies in a cellular format will make more video stream capacity available if an incident occurs over a broad geographic area. The broader the geographic area, the more potential base station sites a public safety user can access. In a geographically large disaster situation, public safety entities will have more capacity because of frequency re-use, an advantage further amplified through access to commercial networks.

Operation of a first responder network which takes advantage of a more densely deployed commercial system may feature even more frequency re-use. While a public safety system featuring frequency re-use may employ hundreds of antenna sites in an urban area, a commercial system in that same urban area will employ many more transmitter sites, each sectorized to allow frequency re-use and enhanced capacity. For example, in its proposal for a 700 MHz public safety broadband system, the San Francisco Bay Area proposes the use of 203 sites. Over about the same area, T-Mobile uses more than fifteen times the number of sites – 3,649. Therefore, by partnering with a commercial system, public safety entities can take the greatest advantage of frequency re-use to dramatically expand capacity.

In instances where all of the 700 MHz spectrum is being used in a small geographic area with no opportunity for frequency re-use, additional broadband capacity is available through the 50 megahertz of 4.9 GHz public safety broadband spectrum. In particular, the 4.9 GHz band can

be a complement to the 700 MHz network, in much the same way as WiFi networks complement commercial wireless cellular networks today. Indeed, this use of the 4.9 GHz band is precisely what public safety had in mind when they urged the FCC to dedicate this spectrum for public safety operations. Sometimes, where there is a WiFi hotspot, wireless traffic connects to the WiFi network and not a cellular base station. Similarly, 4.9 GHz networks can take traffic off of the 700 MHz broadband network to provide additional wireless capacity.

In addition to using the 700 MHz spectrum currently dedicated for broadband use, other public safety 700 MHz spectrum can be rationally converted for broadband operations in the future to create an integrated voice and data network. At present, public safety has a total of 24 megahertz in the 700 MHz band. Twelve megahertz is dedicated to narrowband voice and 10 megahertz is dedicated to broadband, with a two megahertz guard band in-between the narrowband and broadband operations to avoid public safety interfering with itself. Sound spectrum stewardship suggests that portions of this 12 megahertz of narrowband voice spectrum can be transitioned, over time, to accommodate voice on the broadband network. Our study indicates that if an additional ten megahertz of today's twelve megahertz of narrowband spectrum is rationally transitioned to broadband in the future, leaving 2 megahertz for narrowband voice operations, there would still be sufficient capacity at 700 MHz to create 160 traditional narrowband voice communications channels. Therefore, a combination of the 10 megahertz of 700 MHz broadband spectrum with a portion of the currently allocated 700 MHz narrowband spectrum, as already requested by some public safety agencies, would allow a seamlessly integrated voice, data, and video public safety broadband network to be deployed, and would increase the maximum per user throughput and overall capacity achievable within the dedicated public safety network. Integrating narrowband voice capabilities on the broadband

network using the ten megahertz we recommend would also avoid the construction and deployment of two networks at 700 MHz – one for LTE broadband operations and one for narrowband voice. Even assuming funding availability, the implementation of two networks is wasteful, expensive and inefficient and undermines the goal of interoperability.

Finally with respect to public safety capacity, it is critical to recall that 700 MHz is far from the only source of spectrum for public safety narrowband voice capacity. The nearby 800 MHz band can provide 280 narrowband voice channels and the public safety spectrum in the band 450-470 MHz offers over 70 voice channels. Over time, the spectrum in the band 450-470 MHz will be required to be converted to 6.25 kHz bandwidth (narrowbanding), providing a total of almost 600 traditional narrowband voice channels. Therefore, if public safety leverages the full complement of spectrum they are allocated in multiple bands, it is evident that there is sufficient broadband and narrowband capacity for public safety operations well into the future without reallocated D-Block spectrum. Multiple bands are already being used by nearly everyone in this room and some public safety equipment manufacturers are already offering multi-band radios. Commercial wireless devices in your pocket already employ spectrum from the 800 MHz cellular bands, the 1.8/1.9 GHz personal communications service bands and the 1.7/2.1 GHz advanced wireless service bands, and will soon use commercial 700 MHz spectrum. There is no reason why public safety systems cannot leverage its spectrum holdings in the same efficient manner to create a nationwide interoperable public safety network.

Use of Commercial 700 MHz D-Block Networks by Public Safety

The *National Broadband Plan*'s proposal for a public/private partnership will provide first responders substantial technical benefits that a stand-alone public safety system cannot. Primary among these benefits is the priority access to, and roaming on, what will be higher

capacity commercial networks. As I noted, commercial networks are typically constructed with significantly more base station sites than public safety networks -- even a public safety network with a cellularized buildout. In a public/private partnership, first responders will have priority access and roaming rights on these more fully developed private networks -- not using only D-Block spectrum but potentially spectrum throughout the 700 MHz band.

The public safety network and the commercial networks at 700 MHz are all expected to use LTE technology. Critically, the packet nature of LTE allows public safety information to be prioritized over commercial traffic in a manner not possible on today's circuit-mode communications systems. LTE technology allows public safety information to be added to already-busy channels, so the concept of channel unavailability is not relevant. When priority packets are added to a data stream, they can effectively slow down other traffic and be delivered faster than lower priority users' data. The LTE architecture can also inhibit lower-priority users from transmitting during periods of high-priority congestion. This assures that access for public safety users is always available. In addition, the 15 priority classes and 9 bit rate levels of LTE allow provisioning of commercial D-Block networks so that public safety users can achieve any desired priority level.

A good way to think about this LTE feature is its similarity to highway traffic management. Using old technology, when the highway was bumper-to-bumper, no additional cars could easily use it. LTE technology has the ability to monitor access to the on-ramps to the highway *and* regulate the traffic in each lane. It can create lanes with no traffic -- for public safety -- while leaving more congested lanes for commercial use. Therefore, even on a fully utilized commercial network, capacity can always be created for priority public safety communications. Importantly, if public safety has access to a densely deployed commercial D-

Block and other 700 MHz commercial systems, it will get priority access and roaming on more highways, with more lanes, than it could with a 20 megahertz less densely deployed public safety network.

The fact that first responders could have priority access to, and roaming rights on, densely deployed networks is particularly critical in natural or man-made disasters. One of the reasons that public safety entities relied on commercial systems during the September 11 terrorist attacks is because the significantly greater number of commercial base stations available on commercial systems that remained operational. As I mentioned before, even if public safety systems adopt a cellularized infrastructure, they will not have the same number of sites as commercial systems. Priority access to, and roaming on, more densely developed commercial networks will help ensure that public safety always has a communications system on which it can rely -- even when its own more limited infrastructure is not available. The public interest is therefore not well served by simply making sure that public safety has ownership of a limited highway but by giving it access to more roads than it could own by itself. A public/private partnership will give first responders significantly more access to more densely deployed networks than they would have if they relied solely a public safety network.

Limited Interference Risks

In the past, public safety systems have experienced interference from adjacent commercial systems. First responders are still engaged in relocation of their 800 MHz band spectrum because of interference from nearby commercial operations. However, because of the projected use of LTE technology by both the commercial and public safety networks, there should be little concern about interference between the two using adjacent 700 MHz spectrum bands.

Previous interference analyses of D-Block and public safety networks in adjacent spectrum have employed the worst of the worst case scenarios whereby D-Block sites are systematically placed where signals from public safety sites are weakest and most vulnerable to interference. While examining a worse-case scenario is useful from a theoretical perspective, it does not reflect realistic system configuration. The LTE air interface has been designed for adjacent networks in adjacent bands without causing harmful interference. The best situation, as described in the *National Broadband Plan* and other sources, is for the dedicated public safety network base sites to share infrastructure and co-locate when possible with the commercial D-Block sites. Such co-location of public safety and commercial base site equipment is not uncommon today and would expedite public safety network deployment. Still, co-location is not a prerequisite to avoiding harmful interference between D-Block and public safety networks. Any issues can be addressed during system design.

Finally, analysis of the potential interference generated by user device transceivers with integral GPS receivers in the same device shows that any potentially harmful interference can be avoided with a number of well-known methods, including transmit filtering. Moreover, from an interference standpoint, there is little difference between a separate D-Block and a combined D- and public safety block. Both band edges are in the same place relative to GPS signals.

Conclusion

Taking all of the above factors into consideration, our study shows that the *National Broadband Plan* recommendation to auction the 700 MHz D-Block and share facilities between commercial and public safety users is the best way that America can achieve a nationwide interoperable broadband public safety network. The Commission's plan for allowing first responders to roam on, and have priority access to, commercial networks in the 700 MHz band is

highly desirable because of the uniform adoption of LTE technology that will enable them to benefit from cutting-edge technology. Roaming with priority access on commercial networks would best serve our country during emergencies and disasters when a less densely built standalone public safety network might otherwise become overloaded or unavailable. A commercial auction of the D-Block would unlock the value of the spectrum for the delivery of commercial mobile broadband services while supporting the concurrent development of public safety broadband capability through many of the same equipment developments, roaming, and priority access requirements identified in the Public Safety Spectrum and Wireless Innovation Act.

Thank you again for the opportunity to share my views with you today. I look forward to continuing to work with you going forward.



NEWS RELEASE

International Association of Fire Chiefs

Contact:

Ann Davison, CAE, Strategic Information Manager • 703-537-4829 • adavison@iafc.org

Johnson Testifies in Support of Public Safety Broadband Network

Fairfax, Va., September 23, 2010... Chief Jeff Johnson, IAFC President 2009-2010, testified before the U.S. Senate Committee on Commerce, Science and Transportation in support of S. 3756, the Public Safety Spectrum and Wireless Innovation Act.

This legislation was introduced by the committee's chairman, Senator John D. "Jay" Rockefeller, IV (D-WV). The bill would allocate the 10 MHz of the "D Block" in the 700 MHz band to public safety to develop a nationwide, public safety wireless broadband network using 20 MHz. The bill also would provide a mechanism to fund the construction, operation and maintenance of the broadband system.

In his testimony, Chief Johnson described key elements that are needed for a successful network:

- **The network must have sufficient capacity.** To achieve a nationwide public safety broadband network, Chief Johnson urged Congress to allocate the 10 MHz of the D Block -- which is currently slated for auction by the Federal Communications Commission -- to public safety. The D Block could then be combined with the adjacent 10 MHz that already is licensed to public safety to create a resilient 20 MHz system.
- **Public safety must control the network.** Chief Johnson explained the importance of making sure that a single public safety licensee using a single technology operating on a network with sufficient capacity is required to handle day-to-day operations as well as the capability to manage major incidents. Network control by public safety will give first responders the assurance that they will have full pre-emptive priority over all of the spectrum when it is needed.
- **The network must be mission critical at the outset.** Chief Johnson said that the public safety broadband network must be hardened to public safety's requirements and have back-up capabilities in the event of network loss. He also recommended that a future voice component of the network have "talkaround" (or "simplex") capability and be able to broadcast and receive without the network infrastructure being operative.
- **Funding is important for the build-out of a public safety broadband network.** Chief Johnson praised the provisions in S. 3756, which would create separate funds for the construction, and maintenance and operation of the new system. These funds would be authorized to a maximum of \$11 billion.

Chief Johnson concluded his testimony by reminding Congress that "[w]e are more than nine years since the dreadful events of 9-11, thus we urgently need to move forward on a plan to develop the envisioned public safety broadband communication network."

Read Chief Johnson's complete testimony at www.iafc.org/gr > Communications.

- END -

About the International Association of Fire Chiefs

The IAFC (www.iafc.org) represents the leadership of firefighters and emergency responders worldwide.