

**KEEPING US SAFE: THE NEED FOR
A NATIONWIDE PUBLIC SAFETY NETWORK**

HEARING

BEFORE THE

**COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION**

UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

SEPTEMBER 23, 2010

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ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

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KEEPING US SAFE: THE NEED FOR A NATIONWIDE PUBLIC SAFETY NETWORK

THURSDAY, SEPTEMBER 23, 2010

U.S. SENATE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Committee met, pursuant to notice, at 10:18 a.m. in room SR-253, Russell Senate Office Building, Hon. John D. Rockefeller IV, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. JOHN D. ROCKEFELLER IV, U.S. SENATOR FROM WEST VIRGINIA

The CHAIRMAN. Good morning. This hearing will come to order. There are, actually, quite a few members who will be coming. Promptness is unusual in the Senate.

[Laughter.]

The CHAIRMAN. September, as they say, is when we remember. We remember that, nine years ago, we witnessed the horror of September 11. We remember that, five years ago, we watched the devastation of Hurricane Katrina. We remember because, even with the passage of time, these wounds don't heal, and the fears and lingers remain.

At home, in West Virginia, we know tragedy very, very well. Every state does; it's not just us, alone. But, it always seems more painful in a smaller and more vulnerable state.

Just this April, the nation actually joined us in the mourning of 29 brave souls killed in the explosion of an underground mine at Upper Big Branch in southern West Virginia. The grim reality is that in every state represented in this Congress, there are emergencies exactly like that, but maybe according to the particular industry in that state. In every state, the people who respond to those emergencies are the people that this legislation is about and the spectrum needs to be for.

Nobody else can do it. You can't just sort of be a volunteer and run in and help, you have to know what you're doing. And it's hard, it's arduous, it's dangerous, people lose their lives. That's the deal. That's the way it happens.

Whether they are committed by the hand of nature, these emergencies, or the unnatural hand of terrorism, one thing rings universally true: we are eternally grateful for the bravery of our public safety officials, and we honor those whose job it is to keep us from further harm. That is why I believe that our public safety officials are owed the resources they need to do their job. And, nine years after September 11, we should be ashamed—I am—that they lack

a nationwide interoperable wireless broadband communications system, how does one actually explain that? That is yet a year away, but it's closing in on us, in terms of legislative possibilities, closing in on us very, very fast.

That is what led me to introduce the Public Safety Spectrum and Wireless Innovation Act as one of the key pieces of legislation for me, the new Chairman of this committee.

The legislation does two things: first, it allocates 10 megahertz of spectrum, known as the D Block, to public safety to support a nationwide interoperable wireless broadband network that will help keep us safe.

Second, it gives the Federal Communications Commission the authority to hold incentive auctions. This actually helps pay for the infrastructure involved in all of this. It gives the FCC the authority to hold this set of auctions, based on the voluntary return of spectrum; and these auctions, in turn, will provide funding to support the construction and maintenance of public safety's networks.

There are three ways of funding this; we can get into that later. But, the point is, we can pay for all of it. We can pay for the whole thing.

I believe that this approach is fair. I believe it's the right course. I think it's the right thing to do. I know it's the right thing to do. I am very passionate about it. I'm going to say, just before the end of this hearing, that we're going to have hearings on this. We're going to have hearings until we pass the bill. Maybe that's going to be this year; maybe that's going to be next year, but it's going to happen. I will not rest until it does happen.

I know that some people believe there are other approaches to solving these problems. I will work with anyone who seeks to make sure that our public safety officials have the resources they need to communicate, to do their jobs, to keep us safe. It's essential to have two bands of spectrum, side by side, not fractured throughout the world of spectrum. They have to be side by side.

I'm very grateful to each and every one of you for coming here, some of you from very long distances. I look forward to hearing your testimony. And, I thank you.

And I always thank our Ranking Member, Senator Kay Bailey Hutchison of Texas, who I refer to as the Vice Chair.

**STATEMENT OF HON. KAY BAILEY HUTCHISON,
U.S. SENATOR FROM TEXAS**

Senator HUTCHISON. Thank you, Mr. Chairman. That's very kind of you.

I do want to welcome all of you, because this is such an important issue, and particularly the Mayor of "the" largest city in my State: Houston.

Mayor Parker, glad that you could come.

It has been more than nine years since the tragedy of 9/11, and five years since Hurricanes Katrina and Rita caused such devastation on the Gulf Coast. More recently, Hurricane Ike and its huge storm surge reminded us that, in emergency situations, first responders and other public safety professionals need the best equipment available to ensure the preservation of life. Interoperable communications is one of those tools. And I notice my colleague

from Minnesota. The bridge collapse there was such a tragedy. I know for you that this issue is also so relevant.

We have all heard stories from first responders that have resorted to handwritten notes passed across rubble piles because they are using devices incapable of communicating with other responders or because communications networks are overwhelmed with traffic. We experienced this personally during 9/11 when the Capitol shut down because the Pentagon was hit, and we couldn't communicate unless you had a computer. And we all left our computers in our offices, so it was very difficult. So, we know that there are issues that have to be addressed.

Public safety should have the resources it needs, and I'm prepared to support a direct allocation of this particular spectrum to public safety, rather than auctioning it for commercial use, Mr. Chairman. But, I do believe there are several important questions that have to be answered in conjunction with this legislation.

From a technical standpoint, I'd like to know if the spectrum were auctioned off to a commercial user, rather than allocated to public safety directly, what would the challenges be in allowing public safety assured priority access to use the commercial network in an emergency. And would there be pluses because you do actually have the systems in place? The FCC has indicated that it believes a priority access arrangement can meet public safety needs while allowing the spectrum to be used for further innovation in the commercial wireless market that may not be possible without the private-sector investment.

I do think it would be useful for our members to know the advances in capability that the additional spectrum allocation would provide for our first responders. My understanding is that there are some critical applications a true broadband capability would provide, such as high-resolution image transmission, that will allow field personnel to communicate directly with offsite medical personnel to enhance field treatment of injuries, sort of like our battle-ground capabilities that we now have for treating injuries and saving lives on the battlefield.

So, there are technical questions that I hope our witnesses will be able to help us sort through as we go forward on something that is this important and which has big consequences.

The other thing that I would like to talk about is the funding and the funding sources. We need to make sure that we have the capability, if we're going to allocate this spectrum, to be able to have the funding to use it and to really deploy it. So, I think looking at alternatives for funding are going to be necessary for us to do our due diligence.

So, I thank you, Mr. Chairman, for holding the hearing. And I am prepared to work with you to have the right bill that enhances the public safety communications capabilities for these emergencies that we face.

Thank you.

[The prepared statement of Senator Hutchison follows:]

PREPARED STATEMENT OF HON. KAY BAILEY HUTCHISON, U.S. SENATOR FROM TEXAS

Thank you, Mr. Chairman, for holding today's hearing. I want to welcome all of our witnesses, and extend a special welcome to Annise Parker, the Mayor of Houston.

It has been more than nine years since the tragic events of 9/11 and five years since Hurricane Rita caused such devastation to the Gulf Coast. More recently, Hurricane Ike and its huge storm surge reminded us that in emergency situations, first responders and other public safety professionals need the best equipment available to ensure the preservation of life. Robust and interoperable communications is one of these tools.

Stories about responders during these, and other, emergencies resorting to hand written notes passed across rubble piles because they are using devices incapable of communicating with other responders, or because the communications networks are overwhelmed with traffic, are simply not acceptable given our technical capabilities.

We are here today to talk about this issue in a broad sense, but we are also here to discuss the future of a particular block of wireless spectrum. In particular, whether this spectrum, known as "the D Block," should be auctioned as the law currently requires. Or, whether it should be directly allocated to the public safety community to be paired with other public safety spectrum holdings to create a nationwide interoperable broadband network for public safety.

There is no question that public safety should have all of the resources it needs, including use of vital spectrum. And, I am prepared to support a direct allocation of this particular spectrum to public safety rather than auctioning it for commercial use, Mr. Chairman. But, I believe several important questions must be answered before we can enact legislation to do that.

From a technical standpoint, I would like to know if this spectrum were auctioned off to a commercial user, rather than allocated to public safety directly, what the challenges are in allowing public safety assured priority access to use the commercial network in an emergency.

The Federal Communications Commission (FCC) has indicated that it believes a priority access arrangement can meet public safety's needs while allowing this spectrum to be used to further innovation in the commercial wireless market. The FCC is represented here today, and I would like the FCC witness to address how such a framework would operate, and for our public safety witnesses to identify for us what the concerns and possible shortcomings of that approach might be.

I think it would also be useful for members to know and understand the advances in capability that this additional spectrum allocation will provide to our first responders. My understanding is that there are some critical new applications a true broadband capability will provide, such as high resolution image transmission that will allow field personnel to communicate directly with offsite medical personnel to enhance field treatment of injuries.

So, Mr. Chairman, there are several technical questions that I hope our witnesses can address to assist us as we consider legislation. But, I think we also have to consider whether particular proposals provide adequate and predictable funding to assist localities and the public safety community with the deployment and operation of the infrastructure needed to fully utilize this asset.

I have some concerns about the focus on using proceeds from future spectrum auctions to fund the deployment of the public safety network. Congress and the relevant federal agencies have struggled to develop a plan for spectrum inventory and redeployment. As a result, it is uncertain when we will have additional spectrum available for auction, or how much revenue we can expect to generate through the auctions.

Tying the availability of funds for the construction and operation of a nationwide broadband public safety network therefore carries risks. One of those risks could be that with uneven and sporadic funding, the public safety network is built first in larger communities while more rural and expensive areas to construct the network wait for additional funding. I do not believe that would be an acceptable result.

It may be that the reliance upon future auction proceeds proves to be the most practicable approach, but I believe some of the proposals I have seen close the door too quickly on alternative means of providing support to localities and public safety agencies.

For example, we have not considered ideas like revolving loans with low interest rates that would allow local governments to borrow money at low interest rates to be paid back over a number of years. That type of program has been used successfully in other contexts to generate substantial investment with more limited up front appropriations from Congress.

There are also numerous existing grant programs that support public safety communications programs, some of them authorized by this committee, and several billion dollars available through the Department of Commerce's broadband programs. I would like to know whether there is an opportunity to modify eligibility and use criteria to allow public safety to draw upon these programs.

Mr. Chairman, thank you again for holding this hearing. I believe it is time for Congress to meaningfully address the need for a nationwide public safety network for the broadband age.

Again, I am prepared to support a direct allocation of the remaining 700 MHz spectrum directly to public safety. But, I also believe that the committee has more work to do on this issue. I pledge to work with you, Mr. Chairman, to ensure we consider an appropriate piece of legislation and that the public safety community gets the resources it needs to execute its critical mission.

Thank you.

The CHAIRMAN. Thank you, Senator Hutchison.

This vast horde of Senators that I promised you has actually shown up—

[Laughter.]

The CHAIRMAN.—in the form of Senator Amy Klobuchar. The Ranking Member of the relevant subcommittee and the head of the Subcommittee are not here.

But, Amy Klobuchar, Senator from Minnesota, is here, and if she wants to say some words before—

And then we'll start with you, Mr. McClure.

**STATEMENT OF HON. AMY KLOBUCHAR,
U.S. SENATOR FROM MINNESOTA**

Senator KLOBUCHAR. Well, thank you very much, Mr. Chairman. Thank you to our witnesses.

I come here today as Chair of the 9-1-1 Caucus, along with Senator Burr, in the U.S. Senate, and also as a former prosecutor. Having seen, as Senator Hutchison mentioned, not only the bridge collapse, where, in fact, because of some changes we'd made in the metropolitan area, the communications there were actually precedent-setting, in terms of how well people were able to talk. And to think about the 57 some cars that were in that water, and that only 13 people died, tragically, many others injured, but it could have been so much worse if the emergency people hadn't been called in. I actually think it's worth looking at as a case study.

A part of why we'd improved our communications, our interoperability, in Minnesota, was stemming from an incident where a police officer was killed in St. Paul. And, literally, some of the people trying to apprehend the suspect had ten to thirteen different walkie-talkies and phones on them, and it was embarrassing for our community. And, since then, with the help of our sheriffs, on both sides of the river, particularly Pat McGowan in Hennepin County, then sheriff there, we were able to upgrade a lot of our equipment. But what we need to do is to do this on a national level, as both Senator Hutchison and Senator Rockefeller were talking about.

I have introduced a bill with Senator Burr and others to reauthorize the Federal 9-1-1 Coordination Office to manage the change from a voice-centric system to the Next Generation 9-1-1 emergency response system that's based on high-speed digital wireless networks using Internet protocol. Next Generation 9-1-1 is necessary, as you think of the changes to technology and communications, but there is also clearly more to be done with spectrum

and other things, and I look forward to hearing from all of you today.

Thank you for being here.

The CHAIRMAN. Senator Begich, can I indulge you for a moment? Every fiber in my body wants to call on you to speak.

Senator BEGICH. Don't do it.

[Laughter.]

The CHAIRMAN. That was the remaining fiber, which I was about to get to.

[Laughter.]

Senator BEGICH. It is not a problem with me. I see many witnesses, and I would prefer to hear from them right now.

The CHAIRMAN. You're a good man.

Senator HUTCHISON. You're a statesman.

The CHAIRMAN. I'd like to introduce Steve McClure from Jackson County, which is a non-urban, small, and beautiful county in West Virginia, toward the Ohio River. He's head of the EMS there. Steve McClure and I had a terrific meeting about a week ago, I guess. Maybe a little bit more than that. And we talked about some of the issues we'll be talking about here, and the question of what happens to him. And there's sort of a five-minute story, which I want you to tell, because one of the questions in all of this is, what's the difference between a commercial system and a dedicated-spectrum system?

And, without otherwise getting into your testimony, Steve McClure, I'm glad you're here.

STATEMENT OF STEVE McCLURE, DIRECTOR, JACKSON COUNTY, WEST VIRGINIA EMERGENCY MEDICAL SERVICES

Mr. McCLURE. Thank you. Good morning, Chairman Rockefeller, Ranking Member Hutchison, and distinguished members of this committee. I thank you for the opportunity to speak on the extremely important subject of public safety communications, especially in the rural areas.

As the Senator said, my name is Steve McClure, and I'm the Director of Jackson County EMS. We are a small county. I've got over 35 years of experience in fire and EMS, with dual-service providers in the large cities, and single-service providers in smaller cities.

I've submitted my written testimony and request that it be entered into the record. I also have a letter of support.

The CHAIRMAN. All testimonies are part of the record.

Mr. McCLURE. I also have a letter of support from various members of the EMS community. And, with the Chairman and Committee's approval, I'd like to request that it be added also.

The CHAIRMAN. So ordered.

Mr. McCLURE. Thank you.

I'd like to touch on and reiterate a couple of main points in my testimony and provide some real-life scenarios that emphasize the day-to-day need for public safety broadband in rural America, including Jackson County.

As you know, Jackson County is in the mid-Ohio Valley. It has a very diverse topography, covers about 472 square miles. Employment in our area ranges from manufacturing to farming. And with a major river on our western border and a major highway, Inter-

state 77, that transects our county from north to south, our public safety responders have a lot of unique situations that we have to deal with every day.

I'm here to specifically address effective communications. This is paramount in the delivery of quality services. Inherent problems in the way that we deal with our communications today have to be addressed so that we can take care of future issues in communication.

Jackson County lies just north of Kanawha County. That houses our capital city, Charleston; Charleston also has a level-1 trauma center located within its city boundaries. My paramedics can be within twenty miles of that trauma center and cannot communicate with anyone. Our land mobile radios can't communicate because of the topography, our cell phones have no service, and there are very few landlines in the area. So we can't even communicate. As I mentioned to the Senator when we talked, I have to carry two cell phones, with two different providers, to be able to communicate with my dispatch center and my crews. And this isn't even possible in all areas of my county. Lack of infrastructure with cell towers is the problem there.

These problems aren't unique to Jackson County, or to West Virginia, for that matter. From Hawaii to Florida, from Texas to Maine, every remote and rural area has these same problems. So, they're not unique to just us. The problem is, a broken bone or a heart attack doesn't differentiate between an urban area, a rural area, or a suburban area. It's still a problem, and we have to deal with it.

How are we going to solve these problems? It's important to understand that you have the ability to give rural and urban America a solution that will help public safety do a more efficient job. Funding to build the needed infrastructure and securing enough spectrum are two major steps that will provide all Americans with the services they expect and deserve.

All facets of public safety have joined together and issued a call for action to take care of this. And I'm proud to say that my Senator, and your Chairman, has stepped forward and answered this call with S. 3756, the Public Safety Spectrum and Wireless Innovation Act of 2010. Not only will S. 3756 provide for the major first steps, building the infrastructure and securing the spectrum, it will allow an unprecedented move to develop a real nationwide public safety communication network. It will allow greater technological advances in patient care. We will be able to do things that we aren't able to do in today's system. There's technology out there, right now, that we can use to triage patients, determine whether or not they need aeromedical evacuation or if they can go to a lesser level of care. This helps speed our treatment of our patients, this helps keep us within what we call our "golden hour of trauma," and it helps increase the survival rate of all of our patients. Not only will EMS benefit from this, but fire, police, and all public safety will benefit from this. It will start to bring us back together.

In conclusion, I'd like to ask you to recall a day, in July 1969. I vividly recall watching Neil Armstrong step from the lunar module and step on the Moon. And he issued those famous words, "That's one small step for man, one giant leap for mankind." And

my point is, why, in 1969, could someone communicate with us from 290,000 miles away, and today, in 2010, we can't communicate twenty miles away? I'd like to ask you to take that small step so that public safety can take a giant leap forward.

I want to thank you, Chairman Rockefeller, Senator Hutchison, and all of the members of this committee. I appreciate the work you do. And I'd be happy to answer any questions you might have.

[The prepared statement of Mr. McClure follows:]

PREPARED STATEMENT OF STEVE MCCLURE, DIRECTOR, JACKSON COUNTY,
WEST VIRGINIA EMERGENCY MEDICAL SERVICES

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 manmade 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 blueprints, 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

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 buildout 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 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

¹Department 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> (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>.

²See 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).

³New 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).

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 principles 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 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.

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.

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, 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 into 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 pro-

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)

long 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.

The CHAIRMAN. Thank you very much, Director McClure, and we will have questions.

Our next witness is The Honorable Annise Parker, who is the Mayor of the largest city in—did you say in Texas or in America?

[Laughter.]

Senator HUTCHISON. The fourth largest in America, and the largest—

The CHAIRMAN. The fourth largest in America.

Senator HUTCHISON.—in Texas.

The CHAIRMAN. Welcome.

**STATEMENT OF HON. ANNISE D. PARKER, MAYOR,
CITY OF HOUSTON; AND CHAIR, COMMITTEE ON CRIMINAL
AND SOCIAL JUSTICE, U.S. CONFERENCE OF MAYORS**

Ms. PARKER. Thank you. It's my honor to be here. I—while I am representing the City of Houston and my 2.2 million constituents, I'm actually here on behalf of the U.S. Conference of Mayors. I'm the chair of the Criminal and Social Justice Committee. And the mayors involved in that association have a strong interest in this legislation and strongly support this legislation.

To my Senator, Senator Hutchison, thank you for briefly meeting with me this morning and, as always, for your great advocacy on behalf of the State of Texas.

Senator, we do thank you for your leadership on this. We do officially support Senate Bill 3756. And I'm not going to go into the weeds on the technical side. Let me talk to you a little bit about what happens in a big city, as opposed to the rural areas.

Our city has eighteen different large wireless projects in progress. And a multitude of smaller cities, interspersed with rural areas, in a metropolitan area of, oh, five and a half million people, we are unable, currently, in the city of Houston, to communicate with the larger area represented by three counties, in which we lopped over, because we do not have an interoperable radio system. We, years ago, went in two different directions, and the smaller communities in this—in our area are forced to choose between, "Do we get

⁸GSM 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>)

on the city of Houston's radio system, or do we get on the largest county—Harris County's radio system?"

We are now spending approximately \$125 million to move toward a singular system, where we can communicate with each other, most of that being spent by the citizens of Houston, because we have realized that, rather than trying to force the larger area to come with us, we're going to have to go and link with the larger area. We are utilizing all of the remaining 700 megahertz narrowband channels in the Houston area, and that will have a useful life of perhaps 15 to 20 years. We absolutely need to secure our future and our ability to communicate with each other in this huge metropolitan area, with millions of people, in the event of an emergency. We cannot do that today without patching our systems together.

We do support your legislation. There is one area in which the U.S. Conference of Mayors would support some changes. And we believe that it's important for the Federal Government to deal with 50 states, rather than the thousands of local governments. And so, if we can make it possible to put some language in for funding to go to those local agencies that cover the broadest areas—sometimes that's at the state level and, as I indicated, sometimes it is at a regional level, where we're already grappling with this issue on a daily basis.

It is unconscionable that, nine years after September 11, and five years after Hurricane Katrina, and representing a city that is in the hurricane belt, that we cannot communicate with each other on a nationwide level, that I can't communicate first-responder-to-first-responder to my local partners in county government. And we ask you to move this legislation and support all of us.

Again, thank you for the time to be here.

[The prepared statement of Ms. Parker follows:]

PREPARED STATEMENT OF HON. ANNISE D. PARKER, MAYOR, CITY OF HOUSTON AND CHAIR, COMMITTEE ON CRIMINAL AND SOCIAL JUSTICE, U.S. CONFERENCE OF MAYORS

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 2 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 data bases.

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.

The CHAIRMAN. Thank you, Mayor Parker.

Ms. PARKER. I—sir, I do ask that—as you said, I would ask that my testimony to be entered into the record.

The CHAIRMAN. They're all in the record.

Ms. PARKER. Thank you, sir.

The CHAIRMAN. Believe me.

[Laughter.]

The CHAIRMAN. Mr. Robert Davis, who is the Chief of Police of the San Jose's Police Department and President of the Major Cities Chiefs' Association.

Welcome, sir.

**STATEMENT OF CHIEF ROBERT L. DAVIS,
SAN JOSE POLICE DEPARTMENT AND PRESIDENT,
MAJOR CITIES CHIEFS ASSOCIATION**

Mr. DAVIS. Thank you. Good morning, Chairman Rockefeller and Senator Hutchison, as well as the other members of the Committee.

My name is Rob Davis, and I currently serve as the Chief of the Police Department in America's 10th largest city, San Jose. 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 thirty-years' career, the creation of a nationwide interoperable wireless broadband communications network for public safety.

I'm here today, speaking as President of the Major Cities Chiefs' Association, MCC. The 56 U.S. cities represented at MCC are America's centers of industry, transportation, education, and commerce. Our police departments provide public safety services to roughly 40 percent of America's population. However, 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, as I know you are, it is indeed a rare event that you will see all of these organizations come together and unite around a single issue. Indeed, we have come here with a straightforward, yet urgent, request. Almost a decade has been passed since the tragic events of 9/11, as has been mentioned. And our nation needs a mission-critical grade—I'd underscore, a "mission-critical grade"—interoperable public safety wireless broadband network controlled by public safety—and I would underscore, "controlled by public safety."

After much discussion during this past two years, the leadership of public safety across this country has studied this issue thoroughly and concluded that the two most important things necessary to achieve this outcome are: one, the reallocation of the 700 megahertz D Block to public safety; and, two, adequate funding to build and maintain a national infrastructure.

Mr. Chairman, your bill, S. 3756, provides us with 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 megahertz 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. Nonadjacent 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 technology, such as automated license-plate readers, infield 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 a notion that has been advanced by some wireless carriers, that they should control the networks and allow public safety to lease it. Indeed, this goes to one of your questions, Senator Hutchison. At a forum held just this

week, some of our telecom industry partners acknowledged that their business models would not allow us access to those—to that network when we need it. It would not allow us the ability to get in there, because their business models simply wouldn't allow it. And they actually went on the record as saying that. 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, and we must control that network.

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 public safety broadband network. We are not motivated by politics, nor profits. Our only motivation is the ability to serve the public we are sworn to protect. Indeed, I should mention that, as board member of the Silicon Valley Chamber of Commerce, which leads and supports our innovative technology community, I get the importance of industry to our communities. But, as the father of my 11-year-old daughter, Mackenzie, and the father of my 5-year-old son, Zachary, I also get the need for a long-term public safety system. Indeed, our motivation is simply to do the right thing for the right reasons.

This is a historical moment for us. On behalf of my daughter, Mackenzie, and my son, Zachary, and the rest of America's children, I have to say, we can't afford to make mistakes. We have to get it right.

And so, on behalf of these organizations, I thank you for your attention to this important issue. And I also will be pleased to answer any questions that you may have.

[The prepared statement of Mr. Davis follows:]

PREPARED STATEMENT OF CHIEF ROBERT L. DAVIS, SAN JOSE POLICE DEPARTMENT
AND PRESIDENT, MAJOR CITIES CHIEFS ASSOCIATION

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 2 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 CHAIRMAN. Thank you very much, Chief Davis.

And now, as you indicated, Mr. Jeffrey Johnson, who is Chief Executive of the Western Fire Chiefs Association and former President of the International Association of Fire Chiefs.

**STATEMENT OF CHIEF JEFFREY D. JOHNSON,
EFO, CFO, MIFIREE, FORMER PRESIDENT,
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS**

Mr. JOHNSON. Thank you, Chairman Rockefeller, Ranking Member Hutchison, and esteemed Senators of this committee.

I am Jeff Johnson, and I am the past President of the International Association of Fire Chiefs, and I'm also currently the Chair of Oregon's Statewide Interoperability Executive Committee.

A top priority for all of public safety—police, fire, and EMS—is to build nationwide public safety wireless broadband network.

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 the funding which is required.

Over the past 50 years, the Federal Communications Commission has allotted thin slices of spectrum to public safety as the need for communications capability arose. Currently, 55,000 public safety agencies operate mission-critical radio system, each with their

own FCC license, over six or more different bands. Now, this is no criticism of the FCC, Senator. This is actually just the way business has been done for many years. And after numerous major events and other significant disasters, it is clear to us that a new model is necessary: a single national architecture for public safety wireless communications.

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

First, the network must have sufficient capacity. To achieve a nationwide public safety broadband network, 10 megahertz of D-block spectrum, currently slated for FCC auction, must be added to the current 10 megahertz of spectrum licensed to the public safety broadband licensee. You can see, on the spectrum chart I've attached in my testimony, that this is the ideal spectrum. The public safety block abuts the D Block. Only with this particular spectrum configuration, and none other, can public safety be assured that we will have the ability to build the network we need, now and into the future. S. 3756 will accomplish this one-time opportunity to get this right.

Second, 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 the day-to-day operations, as well as the capability to manage major incidents. We cannot have commercial providers deciding what is and what is not an emergency.

Third, 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. This will happen when the technology is developed, public safety has confidence in that technology, and the cost is affordable.

There are some key elements I think worthy of discussion, in terms of what is mission-critical:

First, the network must be hardened to public safety requirements. This means that the towers must be able to withstand the elements that might disable them. It must have reliable backup power, 24 by 7. And redundancy in the system itself is necessary.

Second, the public safety mission-critical voice network must have the ability to broadcast and receive what we call "one-to-one" communications and "one-to-many." And this system must operate in the event of a network failure, because if the network, for any reason, cannot provide connectivity, then we need the capability to communicate from device to device without the network.

And, last, the network must have backup capabilities in the event of a complete network loss. We envision a satellite-capable component for the network, to be available when the system is disabled or some other crippling malfunction. Further, in rural parts of America, it's often inefficient or ineffective to deploy radio communications via a tower-based network.

Mr. Chairman, a federal investment is important for the buildout of a public safety broadband network. The broadband network needed by public safety cannot be built without federal support. S. 3756 recognizes this reality.

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

First, there is a reference, throughout the bill, for the FCC to issue state licenses. This, we believe, will hamper operability. Currently, seven states and the District of Columbia have been granted early deployment waivers. These states and D.C. have been granted FCC-approved leases by the Nationwide Public Safety Broadband Licensee. Only in this manner, a single licensee, can nationwide operability be assured.

And, 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 International Association of Fire Chiefs and our public safety partners support S. 3756. This bill provides public safety with what it needs to begin the task of building out a nationwide broadband network. We thank you, sir, for your personal attention to this issue. And we'll work with you and the Committee the assure prompt passage. And I look forward to answering the questions of Ranking Member Hutchison and the other members of the Committee.

Thank you.

[The prepared statement of Mr. Johnson follows:]

PREPARED STATEMENT OF CHIEF JEFFREY D. JOHNSON, EFO, CFO, MIFIREE,
FORMER PRESIDENT, INTERNATIONAL ASSOCIATION OF FIRE CHIEFS

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.

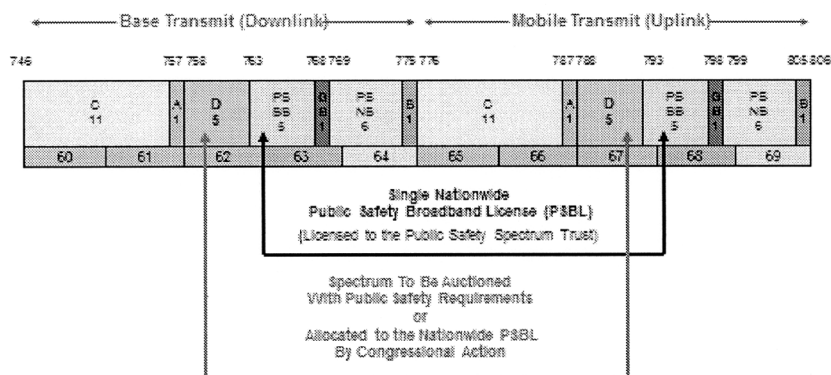
A top priority for all public safety—police, fire and EMS—is to build a nationwide, public safety, wireless, interoperable, broadband network. This urgent need is recognized in many studies such as the 9–11 Commission and Hurricane Katrina reports. Mr. Chairman, S. 3756, the legislation that you introduced, 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 six 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.

New Upper 700 MHz Band Plan - Adopted by FCC on July 31, 2007



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 D.C. 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.

The CHAIRMAN. Thank you, sir. That was a very positive statement.

Dr. Ken Zdunek? Just say I said it OK.

[Laughter.]

Dr. ZDUNEK. Perfect.

The CHAIRMAN. I've struggled with it. I lost sleep over it last night.

[Laughter.]

The CHAIRMAN. And you are the Vice President and Chief Technology Officer of Roberson & Associates, out of Chicago, Illinois. We welcome you.

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

Dr. ZDUNEK. Good morning, Chairman Rockefeller, Ranking Member Hutchison, members of the Committee. And thank you for

the opportunity to testify regarding Senate Bill 3756, the Public Safety Spectrum and Wireless Innovation Act.

I am currently CTO at Roberson & Associates, a consulting company that specializes in wireless. I also conduct National Science Foundation-sponsored research to improve mission-critical wireless communications at the Illinois Institute of Technology.

Prior to joining Roberson, my career for 33 years was at Motorola, where I architected that company's APCO-16-compliant public safety systems, developed patents on cellular roaming and cellular packet data, and led the network's research group in Motorola Labs. I share everyone's passion for providing public safety the resources that it needs for effective communications.

My testimony is based on a study our company performed for T-Mobile USA, analyzing the potential use of a shared 700-megahertz D-block commercial and public safety system as a supplement to a 10-megahertz dedicated public safety system, as recommended in the National Broadband Plan. Our study concludes that licensing the 700-megahertz D-block spectrum for commercial use is the best way to achieve the goal of having a nationwide interoperable broadband public safety network.

Our analysis considered three important factors in determining that the National Broadband Plan represented the best path:

First, we considered whether first responders would have sufficient dedicated spectrum if the D Block was used for commercial purposes. We concluded that, not only would public safety entities have sufficient spectrum, but that additional access to a densely built-out commercial network would provide significantly more coverage than a public safety system alone could provide. Commercial systems simply use many more base stations than do public safety networks. Each of those base stations provides frequency re-use, which multiplies capacity. So, a public safety network, with access to a commercial network, both using the long-term evolution, or LTE technology, which is expected to be the standard for 700 megahertz, can take advantage of frequency re-use and more capacity. This is especially important in rural areas.

In addition, first responders can obtain more broadband capacity in other ways; for example, by using the 4.9-gigahertz band dedicated for public safety use for onsite communications. This is in a similar way that we all use Wi-Fi hotspots.

Further, if integrating voice on the nationwide network is desired in the future, some of the 700-megahertz spectrum now designated for narrowband voice can be converted to voice over broadband. Any narrowband voice capacity still needed can be satisfied by spectrum allocated to public safety and other bands where there is substantial capacity, and where there'll be even more when the mandated narrowbanding, below 512 megahertz, and rebanding, at 800 megahertz, is complete.

The second factor we considered in evaluating the National Broadband Plan's proposal was the access that first responders would have to a commercial network at 700 megahertz. The LTE technology to be used provides priority access in a completely different way than today's circuit-mode systems. In a circuit-mode system, when a channel is busy, other users are blocked. LTE's Internet protocol-based packet mode is completely different. When

priority packets are imposed on a busy packet datastream, existing traffic is automatically slowed down so that the priority packets can be delivered faster. The concept of channel unavailability is not relevant. LTE can also inhibit lower-priority users from initiating transmissions at all during periods of congestion. This assures that access for public safety users is always available.

As I said earlier, since commercial systems contain many more base stations than public safety systems, first responders will have priority access to much more infrastructure and, therefore, more capacity than in a single public safety network.

The final factor we considered was the potential for radio interference to public safety networks from a commercial D-block network. Because both systems use the identical LTE technology, there is little concern about the two using adjacent 700 megahertz bands. This is exactly the situation for commercial systems. Previous analyses combined worst-case scenarios—examined worst-case scenarios that would not be used in practice.

In summary, our analysis confirms the viability of the National Broadband Plan and shows that 10 megahertz of dedicated public safety spectrum, coupled with the ability of public safety users to roam with priority and automatically on a commercial D-block network, will meet first-responder requirements for an interoperable broadband wireless network.

Again, thank you for the opportunity to appear before you today. And I'm happy to answer any questions that you may have.

[The prepared statement of Dr. Zdunek follows:]

PREPARED STATEMENT 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 2 megahertz guard band inbetween 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 10 megahertz of today's 12 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 10 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 stand-alone 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.

The CHAIRMAN. Thank you very much.

And next is Retired Admiral James Barnett, who is the Chief of Public Safety and Homeland Security at the Federal Communications Commission.

STATEMENT OF JAMES ARDEN BARNETT, JR., CHIEF, PUBLIC SAFETY AND HOMELAND SECURITY BUREAU, FEDERAL COMMUNICATIONS COMMISSION

Admiral BARNETT. Good morning, Chairman Rockefeller—
The CHAIRMAN. Who I don't think likes this bill.
[Laughter.]

Admiral BARNETT. Good morning, Chairman Rockefeller, Ranking Member Hutchison, and members of the Committee. And thank you for the opportunity to testify today.

The need for a nationwide interoperable public safety broadband network is indisputable. We can measure, in lost American lives and property, the cost of not having such a network. This committee showed great foresight, last year, when it charged the FCC with preparing a National Broadband Plan, including a specific direction to address broadband infrastructure and services in advancing public safety and homeland security.

We approached this responsibility very seriously and with rigor. The foundation of the network must be facts and data. We researched each potential option—and that was over twenty options at one point—with an open mind and with due diligence. We had hundreds of meetings and communications with public safety leaders, and performed months of indepth research with experts across the nation, including engineers, scientists, economists, industry leaders, and federal partners.

The three essential elements of network are: First, the network must be truly interoperable. Second, it must be nationwide, because if it's not, then really is not interoperable. And, third, the network must be technically and economically feasible. The nation must be able to afford to build 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.

Interoperability does not occur naturally or inevitably, but it must be central to every decision about the network. The Commission has taken a major step in forming the Emergency Response Interoperability Center to establish a technical framework to ensure interoperability.

Providing network coverage in rural portions of the country is also imperative for true interoperability. Accordingly, it's important that adequate public funding be considered to ensure that no area of the United States is left behind.

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 network deployment and operating costs. And this is why we prepared a detailed cost model.

Based on our research, we determined that public safety should have a dedicated network, owned and controlled by public safety, and that the core of this network should be the 700-megahertz broadband spectrum that the Congress has already dedicated to public safety. We have determined that this spectrum, with the latest engineering and with good cellular architecture, will perform as 160 megahertz would if you use the outdated technology that public safety is currently forced to use.

This core will meet the needs of public safety for day-to-day operations and for most emergencies. Unfortunately, America will also have other major disasters, and this network must be able to expand its capacity to overcome these disasters. For that reason, the FCC recommended that public safety be able to roam over onto 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 backup 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 this goal, no matter what Congress decides to do.

Time is a critical factor, because delay will cost the Federal Government far more money to build a network if we do delay. The commercial 4G network—4G broadband networks are being planned and built. Leveraging the commercial construction can keep our costs reasonable, but not if we delay.

In closing, I appreciate the Committee's leadership on this important issue. The cost of not being prepared is too great. The cost 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 plan, going forward—smart plan, going forward, that meets the needs of our nation's first responders. And I look forward to working with public safety, our federal partners, and with you on this important endeavor.

Thank you, sir.

[The prepared statement of Admiral Barnett follows:]

PREPARED STATEMENT OF JAMES ARDEN BARNETT, JR., CHIEF, PUBLIC SAFETY AND
HOMELAND SECURITY BUREAU, FEDERAL COMMUNICATIONS COMMISSION

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 percent 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.

The CHAIRMAN. No, I thank you. And I also retract my mildly obnoxious comment because you are quite clinically neutral.

[Laughter.]

Admiral BARNETT. Yes, sir.

The CHAIRMAN. And from the FCC, that’s a big improvement.

[Laughter.]

The CHAIRMAN. Let me start out and ask a question of Steve McClure.

A number of witnesses have referenced this, but when we had our meeting, I had never been to a meeting like that. I’d had individual meetings with individual people. But, we had the National

Guard, we had sheriffs, we had EMS, we had the emergency communications service, which, in West Virginia, is about five hundred years old. We had everybody. There were about twenty of us in a relatively small room, and there was consensus that we need to do this. It was almost like somebody had poked a wound. Everybody just came together. There was no dissension; there were just people pouring out frustration. And maybe because I was there, it was a chance to do it. But I was stunned by what you said because you talked about what I called your “five minutes.” If you go five minutes outside of Ripley, which is your state capital, so to speak, in Jackson County, you’re dead on the cell phone, you have to use your other one.

It has been suggested that a commercial auction approach to this would, in fact, satisfy your needs. And I’d like you to respond to that. You are forced, obviously, to rely on commercial carrier networks now. What are some of your problems with that, if you have them?

Mr. McCLURE. Well, I think I answered that in my testimony, that I wouldn’t feel—in my own opinion, I wouldn’t feel comfortable relying on commercial. I have to rely on two now, and I still don’t have coverage in the county. It just seems to me that, in my opinion, we would take care of ourselves better. We would look after ourselves better.

One of the honorable commissioners from Kanawha County was talking about operability versus interoperability, and I, in my personal opinion, don’t think that the commercial way is the way to go. I think public safety needs to control this and police themselves on this. That’s, personally, my opinion.

The CHAIRMAN. OK. Let me ask any and all of you. There has been a lot of debate about how much spectrum public safety needs for broadband, as I’ve indicated. The FCC staff and certain commercial interests, now somewhat more muted, maintain that public safety needs no more than 10 megahertz. I don’t think that you actually said that, but let me finish my question.

Admiral BARNETT. I’m sorry. Yes, sir.

The CHAIRMAN. But, I think they do. And I think they need to be side by side, which is what the advantage of the D Block is. And that makes a big difference. I don’t know what your statistics are in the number of calls that you’re getting and emergencies you’re responding to, but I think they’re going to grow exponentially, as will the population. And therefore, in your opinion, this reliance exclusively on commercial networks for public safety, what are the flaws that you see with that? Jackson County has answered, but I am interested in what others of you say. What are the differences between commercial and public safety networks? Are commercial networks built to withstand disaster conditions?

Anyone.

Mr. DAVIS. To your point, Mr. Chairman, that’s exactly right. They’re not mission-critical. That is to say that if you take a look at an average 911 Center, across the United States, we have redundant system built into redundant system, we have fail-safe after fail-safe, so that our 9–1–1 calls will come through and that we’re able to dispatch to our officers in the field. We control that ability to dispatch to our officers in the field. We know that if we’re

simply relying upon the commercial networks, that those towers, or whatever it is that they're building, are not going to be built to the same mission-critical grade that we will require.

Also, you're absolutely right, Mr. Chairman, in the future, so many differences are going to be taking place in public safety. We're going to be—there'll be a firefighter or a police officer who will be responding to an emergency, and they will have hand-held or a uniform-mounted camera, and streamed video will be going back to a control center, telling them what's happening, and also communicating with the officer or the firefighter about what they need to be doing. We can't afford, when we need to have these types of mission-critical applications, as they become available, coming to us and have to go to a commercial network to say, "You know, we'd like to negotiate with you on whether or not we're going to be able to do this on our system." We've got to be able to control our own destiny. It's the mission-critical building—it's the criticality of having those backup systems, that we build our systems to, and the ability to be able to control what it is that we're doing on those systems.

The CHAIRMAN. My time is expired. If somebody wants to add—

Yes, please.

Mr. JOHNSON. Thank you, Mr. Chairman. I think one of the other differences is, if you're the CEO of a private wireless carrier, your fiduciary is to generate a return for the shareholders, which means you're going to deploy your communications systems in highly dense areas. And the areas of the country and state that are more sparsely populated are not commercially feasible to put towers and infrastructure in. When we're in public safety, our obligation is to protect this entire country. Wildfires, hurricanes, and all sorts of natural disasters occur not just in dense urban areas. So, not only is mission-critical a component, but we have to have a broader view.

Further, I don't think there's a board of directors of any wireless company in America that is going to rate the goodwill of their CEO on when they gave their entire network to public safety so we could run a very demanding call that generated a lot of emergency communication traffic at a point-specific area.

Public safety has access, sir, to commercial networks now. We can buy a wireless card and use data systems today. That's not our issue. The issue is mission-criticality. The issue is control of the network so that when we need it, we can reach out and adjust it. And as the wireless carriers that attended and participated in the forum on Tuesday and Wednesday of this week said, "It is not realistic to expect public safety will ever control our networks." And it's just a flawed model.

Thank you, sir.

The CHAIRMAN. I thank you very much.

And, Senator Hutchison.

Senator HUTCHISON. Well, I think that, listening to what you're saying, you're making very good points. What I am trying to do is put the goal and the practicality together, because if we turn this over to public safety, which I want to do, there is a huge issue of

how to pay for it. Local communities and the states will be required to pay for this enormous building out of the network.

Is there a way that you could feel comfortable with mandated preemption, letting the commercial people build out the network, at their expense, and then having preemptive rights from the commercial system? If the commercial people say, "That is not a viable business model," then that's off the table.

But, assume that it's a viable option; then the question becomes, Can preemption be strong enough to give public safety what it needs?

So, I would like to ask both the Admiral, any of the public safety people, and the Mayor, who is going to be the one that's going to be finding the money to foot the bill? Obviously, there are grant possibilities at the federal level, and there could be, possibly, low-interest loans, and there might be other ways to augment and supplement local funds.

But, there's going to have to be a local component, when every mayor I know and every Governor I know says that everyone is short of money in the public sector.

So, I'd like to hear from the person who is going to have to find the money—the Mayor—and the public safety people and the FCC, to see if there is a preemption capability that would be viable enough that it could satisfy the needs of public safety, while having the investment needed to build out the systems come from the commercial sector. So, let me start with the Mayor, and then the Police Chief or the Fire Chief, and then Admiral Barnett.

Mayor?

Ms. PARKER. Senator, as I indicated earlier, we're already paying for it now. And, as you know, the City of Houston is approximately 640 square miles, with a very large urban area around us. And, years ago, we made the decision—we went 800 megahertz, the county went 700 megahertz, and literally, the smaller communities have been ponying up tax dollars to try to figure out whether they link to the two major commercial—or, rather, public networks for emergency response. And our concern is that the local communities are bearing all the costs now.

I don't have an answer for you, whether it is better to——

Senator HUTCHISON. But, will it be the same? Won't it be more to have this new band?

Ms. PARKER. No, ma'am. We're having——

Senator HUTCHISON. Or, will it be the——

Ms. PARKER.—we're—we have to do it. We don't have a choice. And we're bearing the cost now. We——

Senator HUTCHISON. And you don't think the costs would be greater.

Ms. PARKER. No, ma'am. I cannot tell you whether we can convince the commercial sector to build the towers in the areas that we need it, into the more rural pockets, where there's not the commercial applications that they might be seeking for their shareholders. But, for a U.S. Conference of Mayors standpoint, the concern is that—again, we support the bill, very strongly, but the bill envisions working with the states. And we believe that funding—we need funding help at the local level, and that's the request from the mayors.

Mr. JOHNSON. Thank you, Senator Hutchison, for the opportunity.

I think, first is, local money will continue to flow in, in some type of a match arrangement. As the Chairman of Oregon's Interoperability Council, the Oregon legislature has committed over \$400 million to build out a statewide network. What this bill will allow us to do is have an adequate spectrum platform, of which—not only to address current needs, but also to address our future needs.

If you take a retrospective look at what public safety's needs are for spectrum, we'd be looking into a chasm, because there have not been, historically, the applications and the tools that we need in the field. If you listen to AT&T, they've talked about a 5,000-percent increase in their network demand for the data side in the last three years since the introduction to the iPhone. I expect some of the things that Chief Davis talked about are going to be a very great reality in our very near future, but first we need the platform to ride on.

I'd also like to talk about—I think public safety—once we have an adequate allocation of spectrum, I think we envision some kind of a relationship with private wireless carriers, but not on the critical components, not on whether the system is built to mission-critical standards, not on whether we control the network. But, do we envision the possibility of a roaming agreement? Of course. Do we envision maybe, in rural areas, where we build out a public safety system that otherwise wouldn't be commercially viable for a wireless company to hang their equipment on our towers or share some less critical component? We think a lot of that makes sense, but first we need the spectrum that will allow us to have that kind of a discussion.

And then, last, to discuss preemption. Preemption on a network that is down does not help public safety.

[Laughter.]

Mr. JOHNSON. We need a system that is up. And the reality is, is even if a commercial carrier were to allow us preemption, they have critical calls coming back from the customers who've—they've promised services to. We have people, trapped in cars on a bridge that's collapsed into a river, that are trying to make critical 9-1-1 calls in. And even if we filled the commercial network with preemptive communication for public safety, there are still meaningful calls that need to reach dispatchers, and there's critical information that needs to reach people that need to make decisions. And if we overwhelm a single commercial system, because we haven't allocated adequate spectrum to public safety exclusively, I think we'll shut down half of a very important network.

Thank you.

Senator HUTCHISON. Thank you.

Admiral BARNETT. Senator, with regard to preemption, yes, there are ways that they can control it. As Dr. Zdunek said, this is not your father's priority system, this is Internet-based, this is LTE. But, there's a predicate to this, as well, that I want to make sure we understand. We're actually, at this point, talking about the backup systems. The core of the public safety broadband network is the 10 megahertz which will be owned and controlled by public safety. We're only talking about when those bad days—when that

capacity is completely used up. And that capacity is tremendous. As I mentioned, it act—it will act, under the new cellular architecture and the new engineering, like 160 megahertz would on the old systems. It—as a matter of fact, public safety has 20—25 times the spectrum per user as commercial interest does across the spectrum. So, it's a lot of spectrum for them to use. But, on those bad days, when they do roll up, or when they do have to roll over to commercial networks—I agree with Chief Johnson, his definitions for mission criticality, I think, are good: backup power, hardened networks, the ability to rollover to other ones. We've incorporated these things into the core network. We included those in the cost model, because we do believe the core network that they're going to use on day-to-day operations or for most major emergencies has to be hard, it has to be mission-critical. The one thing that I would say that we incorporated into our plan, that I think I hear Chief Johnson borrowing, is the ability to have backup networks. In an area like Washington, D.C., there would be, I don't know, six or seven backup networks if the public safety network failed, as it did back in March. If our system had been in place at that point, they would have simply been able to roll over to a commercial network and continue to operate.

Senator HUTCHISON. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Hutchison.

Senator Klobuchar.

Senator KLOBUCHAR. Thank you very much.

I think I'll start with you, Chief Davis. You talked about how D-block is critical for accessing information for first responders. You talked about new technologies like automated license plate information and infield biometrics video streaming. And could you talk about your understanding of the need for the full 20 megahertz of spectrum in the 700 megahertz bandwidth and why 10 megahertz won't work?

Mr. DAVIS. Yes, thank you very much. It's an excellent question. We know what we know, and we know what we don't know.

What we do know is that we are already using some very critical and innovative applications, as we speak, to try and help us. It has already been mentioned, by the good Mayor here, the budget situations that all of us are facing. Certainly, we're facing them in the City of San Jose; I've lost 8 percent of my department in the last 12 months. I have to rely upon technology to help me innovate and to multiply my forces.

Currently, we have a system in place in San Jose, where, rather than stopping somebody in the field who doesn't have identification—and we believe we need to identify them—rather than needing to take that person back to the police department, we have a system in place, where you can take their thumbprint in the field, electronically, send that over our broadband system, and have that person identified in the field. Saves us time, improves the accuracy. That is but one technology that is currently out there and available to us.

What we don't know is what's still coming. And we know that people are innovating. We're San Jose. We're the center of the technological universe, if you will.

Senator KLOBUCHAR. Well, there are a few others, you know—
Mark Warner, thinks Virginia—

Mr. DAVIS. We'd give him some credit.

Senator KLOBUCHAR.—is the center of the—

[Laughter.]

Senator KLOBUCHAR. I always claim Minnesota—

Mr. DAVIS. Yes.

Senator KLOBUCHAR.—brought you everything from the pace-
maker to the Post-it note.

Mr. DAVIS. I appreciate that.

[Laughter.]

Senator KLOBUCHAR. OK, thank you.

Mr. DAVIS. Let me paint a picture for you, if I can, because this
is where we know we're going. Let's—let me take you on a car stop
of the future.

A police officer is going to initiate a car stop. Currently, what do
they do? They need to pick up the radio, call in the license plate,
hope they got it right, approach the car, encounter the driver in the
car, ask for a driver's license, since there's sort of—this exchange
takes place. A lot of data needs to—take—

Senator KLOBUCHAR. Right.

Mr. DAVIS.—transpire, usually by hand. But, in the future, here's
what will happen: The police officer will stop the car. The camera
in the car will automatically read the license plate. The license
plate technology, reader technology, will transmit that back to the
database, to immediately begin a search. The officer will approach
the driver. He will look at the driver. The on-person camera will
take a visual of that person's face, and facial recognition technology
will kick in. He will engage the driver. He will speak. Voice rec-
ognition technology will kick in. All of these things improving and
enhancing our ability—

Senator KLOBUCHAR. So—

Mr. DAVIS.—not only to see locally, but with all of our partners
in state and federal—

Senator KLOBUCHAR. So, what you're saying is you're going to
need the—

Mr. DAVIS. We know it's coming. We know it's coming.

Senator KLOBUCHAR. I have a few more questions here.

Chief Johnson, I've heard from a number of your chiefs in Min-
nesota who are very active. And I just wanted to ask one very
quick question about 9-1-1. One of the things that we're doing
with our bill, the 9-1-1 bill; that would be of great help for fire-
fighters is to have the ability that before entering a burning build-
ing, to actually download the blueprint of that building before they
go in. And these are the kinds of things we're looking at, which
spectrum could be helpful for. Very briefly, because I have some
questions.

Mr. JOHNSON. Senator, very insightful. I think, not only the blue-
print of the building, but the closest unit to that call needs to be
dispatched, which means we need to be pushing out GPS location
of the unit just passing through the area, further. The future will
hold for us the ability to control traffic signals, rather than pushing
traffic out of the way with lights and siren. I think there are many,
many applications that will help us, both, be effective and efficient.

Senator KLOBUCHAR. Admiral, in the case of an emergency, the FCC recommends public safety have priority to roam over commercial networks. Can you talk about the risks and benefits of doing that and some of the concerns raised by some of the other members of this panel? And then you also talked about delay, and how you're concerned about delay in terms of funding if we don't move quickly.

Admiral BARNETT. Yes, ma'am. The ability to roam over onto other networks—I think, as Chief Johnson indicated, public safety is actually interested. I don't think there's actually any disagreement on that. That's something that we've got slated and the FCC wants to move forward on. It just adds greater resiliency and redundancy. And for those days—you know, God forbid, the next 9/11—it will provide the amount of capacity that we would have available in any situation. We've incorporated these concepts into the plan.

With regard to delay, one of the—I mean, we do—we are very concerned about the cost of the network. We think that's the greatest threat. So, by delaying—if we delay for any reason—the commercial 4G networks will continue to build out.

One of the cost savings that we see is, if the public safety system can be built at the same time, it will reduce the cost by leveraging some of those constructions, to be able to use the sharing infrastructure, the towers, those sorts of things. If we wait until—we have to wait to actually send out another truck to put up the public safety equipment and antennas and that sort of stuff, it'll greatly increase the cost. So, we're concerned about that.

We incorporated into our plan, also, the idea making sure that the rural areas gets coverage, as well, so that they don't have to rely on commercial networks going out there. So, as Director McClure mentioned, you know, what he needs out there is another tower to make sure that he has coverage, not actually more spectrum.

Senator KLOBUCHAR. Thank you very much.

The CHAIRMAN. Thank you, Senator Klobuchar.
Senator Begich.

**STATEMENT OF HON. MARK BEGICH,
U.S. SENATOR FROM ALASKA**

Senator BEGICH. Mr. Chairman, thank you very much. The reason I didn't want to make any comments at the beginning is because you have a mayor on the panel. As a former mayor, I appreciate it and thank you.

Mayor Parker, congratulations. I know it's delayed, but thank you for being here today and for the others that are here.

I want to first start with you, if I can, Mayor. Then I have a couple questions. As a former mayor, someone who had to spend lots of money building out the LMR system and getting operability between all our systems, I know how it can be and what it can cost. And I want to just echo your comment, "We love our states, but they're inefficient in delivery in systems where there is large areas." You mentioned 600 square miles that you have to cover. In Anchorage, where I was mayor, we had 1900 square miles to cover. So, in our view, it would've been logical to just direct the resources right to our community because we would be able to deal with it.

And also we would deal with our adjoining communities much easier than a state trying to do a state-wide perspective. Is that the position that the Conference of Mayors is focused on, and yourself? It's not saying the state shouldn't be part of the role, but there are regions that are more able to deploy and manage the development of their system. Is that a fair statement?

Ms. PARKER. Yes, sir. The U.S. Conference of Mayors is the largest cities in the United States.

Senator BEGICH. Correct.

Ms. PARKER. It would be the National League of Cities that would represent many of the more rural areas. But, yes—

Senator BEGICH. Yes.

Ms. PARKER.—we believe that the large urban areas, or those with already-built-out very sophisticated emergency response systems, should have direct access to federal support, if possible.

Senator BEGICH. Let me make sure, Admiral, I understood what you had said. On the issue of roaming, there is no opposition to priority roaming for public safety in the commercial network systems.

Admiral BARNETT. I think there's broad agreement across the public safety community that they do want to have roaming with priority access.

Senator BEGICH. And, from the commercial folks, there's no objection to that.

Admiral BARNETT. Well, we have talked to the—in the process of developing the National Broadband Plan, we talked to them about that. What they're—you know, the system is set up, the LTE is set up to do that. It has 15 levels of priority. What we would be considering, in our proceedings, is imposing upon them a responsibility to allow public safety to negotiate with them and be able to have priority access and roaming on that.

So, it would be for compensation, as it is now for priority services, under the current systems.

Senator BEGICH. Let me try it again. I want to make sure we're talking the same language. There's no objection to them being in priority position, but what I just heard was, as long as there's just compensation for where that priority fits and how you're paid.

Admiral BARNETT. Yes, sir.

Senator BEGICH. OK. I want to make sure that's clear, because I will tell you—again, as a former mayor—those bills get big. And, you know, we would—and I'll put myself in the shoes of a mayor for a second—we would always love to say, "We should be priority one, but we can't afford it." How do you address a public product—that's what you're leasing from the public—and then when the public needs it, as a priority for public safety, which is the fundamental priority of any government, the compensation will determine the prioritization. How do you justify that?

Admiral BARNETT. Well, the compensation won't determine it; it will actually be the—in essence, the baseline for it. But, this is the reason why—and I think it's an unusual thing, and it's reflected in Bill 3756—that there needs to be operating funds. This is not just to build a network, but public safety is going to need money to operate, to maintain, and, an important thing, to upgrade the network. We want—

Senator BEGICH. Understood.

Admiral BARNETT.—public safety networks to be able to keep up—as the commercial networks improve in technology, we want them to keep up with them. That’s why we think the operating fund for them are very important. As I think both the Mayor and the Chief mentioned, they’re paying commercial rates right now. We’d like to see that, I guess, transferred over——

Senator BEGICH. Doesn’t mean they like it.

Admiral BARNETT.—to their own——

Senator BEGICH. They have to.

Admiral BARNETT. They have to.

Senator BEGICH. Right.

Admiral BARNETT. So, I’d like to see it incorporated over into their own network and—so that there would be much less expense to them.

Senator BEGICH. OK.

Anyone on the panel want to respond to that discussion we just had here? Anyone have any additional comment?

[No response.]

Senator BEGICH. They’re negotiating here, so——

Mr. Johnson?

Mr. JOHNSON. Senator, I’ll take a run at that. I think the Admiral spoke correctly. I think we acknowledge there’s strength to having roaming agreements. But—so, if we just focus on what we agree on, what we agree on is that there’s added value to roaming, in how we envision the future public safety broadband network. We agree that 10 megahertz, as the public safety broadband core, is important. Where we disagree is whether 10 megahertz is enough.

Senator BEGICH. Right.

Mr. JOHNSON. And public safety’s view is, it is not.

Senator BEGICH. Right.

Mr. JOHNSON. And the National Broadband Plan contemplates that it is.

Senator BEGICH. OK. Thank you very much.

My time is out, but I’d be interested in any regulatory or statutory issues that you think inhibit the ability for you to do the work you need to do, in the sense of expanding because lots of times we can legislate, but then when it goes into the federal bureaucracy, you never know what comes out of that. And the regulatory process is very burdensome. So, I’d be very interested in, what are the items that are really hampering your ability to pursue? You don’t have to do that now, because my time is up, but if you could prepare something for me, I’d appreciate it. Thank you all very much.

The CHAIRMAN. Thank you, Senator Begich.

Senator Lautenberg.

**STATEMENT OF HON. FRANK R. LAUTENBERG,
U.S. SENATOR FROM NEW JERSEY**

Senator LAUTENBERG. Thanks, Mr. Chairman, for holding this hearing.

A lot of this is relatively esoteric, for lots of people. It’s complicated, but to get down to the nub, what is the effect on the local community?

Some advocate building a network used by both first responders and commercial companies. My state, New Jersey, is the nation’s

most densely populated state and home to what's identified by the FBI as the most dangerous 2-mile stretch in America for a terrorist attack. Now, if a shared public/private broadband network was built, what would happen during an emergency, in a state like mine, when police, fire, and other first responders, and residents, all need to use the network at the same time? Will we have the expanded use of the network available, no matter what the crisis or the load might be?

Mr. DAVIS. Thank you, Senator.

One thing I know that we don't want to happen is that, based upon our current experiences, the commercial networks are going to crash at some point as—if everybody is calling. What we can't have is to have the person running our dispatch center or controlling our radio communications and our data networks have to stop and call somebody to initiate preemption. That person, such as the Deputy Chief, down from New York P.D., here, needs to be able to hit the switch, do what he needs to do in that center to make it happen now. I can only imagine the types of protocols we would need to go through to hit the commercial entities to ask for permission for this preemption. And we just don't trust that. We know that those networks are going to get clogged. We know we'd be—we need to be able to control them at the public safety centers.

Senator LAUTENBERG. You know, my state lost 700 people on 9/11. And a lot of the people who were lost were those who were trying to help those who were stuck in the buildings. But, the fact of the matter is that it's believed that some perished and couldn't do what they wanted and were there to do because there was no way to communicate. And that's a disastrous situation.

Before I came here, I was a Commissioner of the Port Authority in New York/New Jersey—it's a bi-state agency—that had so many of its police officers and other emergency personnel there. So, when we think of what happens when a couple of towns, located not too far away from one another, have problems at the same time, is there an override? Is there an ever-increasing expansion of the network to take care of the traffic, no matter how heavy?

Dr. ZDUNEK. Senator, if I could—

Senator LAUTENBERG. Please.

Dr. ZDUNEK. If I could answer that.

First of all, in times of emergency, it's—we agree, it's extremely critical for public safety to have instant access. And it's also important that we understand that the broadband network that we're talking about is primarily for data and primarily for video communications. So, the notion of—access to the network, for a packet network, will be automatic. The priorities for the public safety users, when they need access to the commercial network, will be built into the device, and that slowing down of the existing traffic and allowing the public safety priority traffic—

Senator LAUTENBERG. Override.

Dr. ZDUNEK.—will be—will override that traffic and will be automatic.

Second, from the standpoint of multiple disasters in multiple communities, spectrum is important, but it is also, and maybe more important that the number of sites that cover those—that cover the geographic area, are provided. The more sites there are, the more

capacity there is. Allowing public safety the priority access on a commercial network that will have many more sites and will be much more densely built out, will be of an extreme advantage in the situation that you describe, where there are multiple disasters, multiple situations that must be responded to in different geographic areas. Those geographic areas, those incidents, will be served by different cell sites, and the capacity will be there to serve those.

Admiral BARNETT. We recommended 44,000 sites across the nation, incorporated that into the cost model that we recommended to Congress.

Senator LAUTENBERG. Mr. Chairman, I assume the record will be kept open and questions submitted will get a prompt response.

And thank you all for the work that you do.

The CHAIRMAN. Thank you, Senator Lautenberg.

And now Senator Udall, to be followed by Senator Warner.

**STATEMENT OF HON. TOM UDALL,
U.S. SENATOR FROM NEW MEXICO**

Senator UDALL. Thank you, Chairman Rockefeller, very much.

Admiral Barnett, the public safety network envisioned in the FCC's National Broadband Plan would use 10 megahertz of existing public safety spectrum, and, in emergencies, would provide an additional boost of spectrum from a shared public/private network. Members of this committee have heard from public safety officials who are deeply skeptical of the FCC's approach. Given this skepticism, why should Congress have confidence in the FCC National Broadband Plan's proposal to build a public/private network? And, could you also comment on the rural part of this? New Mexico is a very rural state. And so, I'm wondering what your thoughts are, in terms of making sure that our service reaches all of those rural areas.

Admiral BARNETT. Thank you, Senator. I certainly understand public safety's concern with some of the experiences that they've had with their own commercial providers. But, as Dr. Zdunek said—just indicated, this is a new technology that will have, actually, these aspects built in. LTE has 15 levels of priority. They will be able to, you know, go to the first in line—and, really, first in line is not the best analogy; it's kind of like they have their own speed lane that they'll be able to use.

With regard to rural, I'm very—I come from a rural state, Mississippi. I'm very concerned about that aspect of it, because if it's not nationwide, it really is not going to be interoperable. And we can leverage the commercial networks for about 95 percent of the network. So, you can envision a carrier putting up their own 4G antenna, you can also envision, at the same time—the public safety antenna going up at the same time. But, at some point, that—we've kind of reached the area that Director McClure mentions, where we're—it's too rural. And, for that reason, we incorporated into the plan the ability and the money to push additional sites and towers and equipment out there so it provides coverage to that. It's very critical that we fully fund that.

D Block is reallocated. We think that that affects the markets and therefore drives up the prices, and we would have some con-

cern that Congress would need to address this if the prices go up and then the cost goes up, in essence, for reaching rural areas.

Senator UDALL. And thank you very much.

And I'd like the public safety witnesses to comment on the stand-alone public safety network costs, and whether it's worth it. As you all know, spectrum is a scarce and a valuable resource. Public safety officials should have the spectrum; they need to protect us in emergencies and during natural disasters. The FCC estimates it would cost \$15.7 billion to build a stand-alone public safety network. And, as Admiral Barnett's testimony states, we could save \$9 billion if we built a shared network with private phone companies that want access to more spectrum for commercial uses.

I'd like to hear more from our public safety witnesses, particularly why they think the more expensive approach to building this network is justified, and, what are the added benefits, in terms of increased public safety?

Mr. JOHNSON. Thank you, Senator. Is the cost worth it? I think, one of the things we need to recognize is that investment in these systems is going on today at the local level. And what I think an adequate piece of spectrum will do is, I think it will be focused investment in one specific area that we all are moving too. And I think that's going to happen over time. If we come up short, here, we're going to continue to address this by adding other swaths of spectrum, and we're going to end up with a multiple-device scenario and the interoperable problems that we have today.

I think one of the issues you raised, that I think is excellent, is the issue of roaming and whether public safety has the adequate ability to access the commercial networks.

During disasters—I can't overstate this—during disasters, business, city, county, all aspects of a government, have business-continuity issues that they're going to be using this exact network for. Additionally, if we want to reflect on September 11th, of the number of people in those towers calling 9-1-1 and using the wireless networks, for us to overwhelm the network to achieve a public safety mission, and shut down meaningful communication from government, business, and other people, would be to ignore that these wireless companies have meaningful wireless clients and customers today that need to access their systems.

Further, I think that even—even if preemption occurs, we're still going to run out of spectrum in public safety with an intense event where we are controlling our bomb robots, we are moving wireless video, we are running extensive fire, police, and federal presence at an emergency scene. I think even if we had preemptive authority, we're still going to need network control. And when you start talking network control, that's when the commercial carriers get very nervous.

Senator UDALL. Thank you very much.

Ms. PARKER. Senator, if I may, we're already spending the money now, at the local level. And that is—and that's not going to stop. And we're making a—we're creating a patchwork system today, hundreds and hundreds of millions of dollars.

Senator UDALL. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Warner.

**STATEMENT OF HON. MARK WARNER,
U.S. SENATOR FROM VIRGINIA**

Senator WARNER. Thank you, Mr. Chairman. And, I appreciate your leadership on this.

And, you know, it is remarkable that, almost a decade after 9/11, we don't have this interoperability issue.

I differ with some of my colleagues in public safety on this. I think we have talked about the 24 megahertz that we're discussing right now, in the 700 block. I think we also—bear in mind that there's another 7500—75 megahertz in lower spectrum, very good spectrum, at 500 level and other levels, that public safety also has. And, you know, having spent a long time in the industry, a long time ago, you know, recognizing how hard it is to get common standards and—great respect for all you do in public safety, but trying to get your radio engineers to decide on common standards, common equipment, has been a real challenge.

And, quite honestly, I think we need to—I do believe that there's always going to be the problem that in this market, smallness in size is always going to be chasing the commercial market. So, your equipment, as always, in the current approach, is going to be three, five, ten times more expensive than the commercial side. I think that doesn't make any long-term sense. I believe there is an ability to prioritize.

And again, we're talking about surge capacity. I think Admiral Barnett's comment right now that—it was, we move from narrowband to broadband. You are going to have the equivalent of 160 megahertz. That's enormous added spectrum that will be able to be used. And I do think there are ways, with appropriate prioritization, that you can join these surge moments and meet the public safety needs without breaking down the very valuable roles that the commercial networks have, as well. I believe that the more we can get now, there are additional equipment requirements you had, and hardened systems—but the closer we can get the commercial equipment to mirror the public safety equipment, again, if we're talking—what Mayor Parker's looking for—how we bring down these costs—as long as this is a small market chasing the commercial market, we're never going to get close to equating the cost.

I guess, I'd like to also ask, colleagues, a couple of questions. One is—you know, partially this is talking about what we do with the D Block. And I know there's disagreement, in terms of exclusivity that the Chief wants, and others, and whether that could be shared. I, frankly, believe there is a shared process. But, I guess, what I'd also like is—beyond the D Block discussion—is: how could we give you the appropriate incentives, in public safety, to think about your existing other narrowband spectrum you have, converting that to broadband as well, which expands your capacity? Have we thought about narrowband conversion to broadband, using the existing spectrum you've got, as well, for broadband, the enormous opportunities that adds?

And again, I think about the challenges Mayor Parker has got. In Virginia, we finally bit the bullet on what—circa 2004—was the

most comprehensive interoperable system for all of our state services and our STARS market. The problem is, technology keeps moving ahead, and, by the time we make that investment, the commercial market's moved ahead and we're antiquated already.

One of the things I think would be, and it's not part of the discussion so far, but just to stir the pot a little bit, as we move toward more of a broadband system, could we even think about, on an optional basis, for communities to say, OK, some of that lower spectrum, that may not be fully used as you migrate to more broadband, perhaps we could look at incentive options to give those communities that might have excess spectrum, the chance to throw those into a bucket on an incentive option and share some of the proceeds. Because, Parker, my concern is that the notion that the Federal Government is going to continue to ante up for, not only total construction costs, but ongoing operating costs. And you continue to make your local government or state government costs. I just think there's not enough money to have this all happen.

And I would just ask the public safety community—and I look forward to working with the Chairman and the Ranking Member on this—to think about other revenue sources, to think about how we can migrate more spectrum into broadband, you know, to not close your minds about what we could do to, kind of, guarantee you on priority access and co-location. Again, and we think about rural communities. I've used up most of my time, but, you know, feedback on this notion of narrowband to broadband and some of the other spectrum that's really been not the subject of today's testimony, but how, as we move to broadband, that could be, perhaps, better utilized and give you a revenue stream.

Mr. JOHNSON. Thank you, Senator and members of the Committee.

So, let me just start by acknowledging your point about co-productivity of the commercial devices. That's part of our vision, as well. But, we're talking about the devices, and you can make small changes by the inclusion of band 14, in the engineering of the commercial devices that cover our spectrum, and then that does make those devices more coproductive. And it allows us to help, as you would say, chase the commercial market at more their pace.

You know, our emphasis has been on the spectrum and the network and the infrastructure, and I'm going to set that aside for just a moment.

Regarding the narrowband voice channels, you correctly articulated that, currently allocated, we have 10 megahertz of broadband in the public safety broadband swath; 12 megahertz of narrowband voice; and 2 megahertz to guard those bands—

Senator WARNER. Guard—

Mr. JOHNSON.—from interference. If we were to employ the 12—if we were to convert some of the narrowband today, we believe the interference would be drastic with the narrowband channels. I think there may be a logical date where we can migrate some of that capacity to broadband.

I would tell you, based on what I've seen, Senator, we're 15 years out before some of these technical issues can be solved and some of the operational issues can be—

Senator WARNER. Of course, I have to remember, back in the 1980s, when everybody in wireless, when I first got involved, said, "You know this cellular stuff is going to be really big. After thirty years we'll build out one national network, and 3 percent of Americans will have cell phones." Luckily for me, and, I think, for the American people, they were wrong. I think, in this area, if we can leverage some of the commercial applications, we can be more aggressive.

Any comments on some of the lower spectrum, as we think about this additional, you know, voice spectrum? You've also got voice spectrum at much lower bands that are extraordinary valuable.

Mr. JOHNSON. Yes, Senator, I think when the Admiral talked about the 160 megahertz currently allocated to public safety, that's across all the bands. Some of those bands do not lend themselves well to broadband high-speed data application, and some of them do more so. So, what we've focused on here is the spectrum that is best suited to achieve our broadband needs. Is there a date in the future where some of the spectrum that we currently operate land/mobile radio on could become available? I think that's a very realistic possibility.

Senator WARNER. And I'd ask you—and I know my time's expired, to think about—you know, I can't imagine us forcing you to give that up, but I would love for the public safety community and local governments, who have to foot the bill, to think about what kind of incentives could be used, and perhaps, again, through incentive auctions with shared proceeds that might give you that revenue stream, that might give that win-win. Because my concern is about all these stand-alone networks and the bill that is footed by the Federal Government, it's going to be a rough challenge.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Warner.

Let me just close with a couple of questions.

First of all, there has been a lot of talk about, If we're going to be able to afford this, and where money is going to come from? That's all answered in the bill. It's going to pay for itself. And it's going to come from three sources: revenues from the incentives auctions, which is included; second, revenues from the auctions of specific spectrum bands, by which I mean specific spectrum that has been identified for repurposing such as the NOAA and the spectrum known as AWS3 band, that's a second source of revenue; and third, revenues from the lease of networks to secondary users.

Now, that's all kind of esoteric talk, but it all turns into a great deal of money. And, in effect, it pays for everything that we've been talking about here this morning. So, this question of who's going to pay for it, how we are going to do it, is solved by the bill itself. It's just that the bill isn't that well known.

Second, we are going to be working leveraging with commercial interests. There's the thought that we're not going to do that. We are. But, please don't try to convince somebody from West Virginia that commercial wireless operators or broadband operators have any interest in rural West Virginia; they don't, because there's no money there.

That was the problem with the mine safety explosion. It took place way up "a holler," as we say. And, you had this, sort of, hor-

rible sight of these miners' families waiting to see if their miners were alive, and they couldn't call anybody, because there was no cell service. There were landlines, but only a couple at the coal plant operation. So, you had this sight which was witnessed by the national media, of truckloads of Verizon people coming with huge poles, trying to put up more landlines, which doesn't happen in a day, so that people could communicate with their relatives. Now, I'm not even talking about public safety and the problems they had.

Thirty-one percent of West Virginians have absolutely no access to cell whatsoever, by the decision of broadband companies. The commercial sector made the decision, "There's no money to be made in large swaths of West Virginia, and therefore we don't do it," Mr. McClure, "We're not going to do it," and, indeed, they don't. Talk about it, but they don't. And oh, they talk about it, but they don't. And Steve McClure knows that part of the problem in West Virginia is topographical. Only 4 percent of our land is flat. That means that 96 percent isn't.

[Laughter.]

The CHAIRMAN. And so, even on the interstates, if you live there long enough, you actually learn, because the interstates, obviously, are huge open areas, where obviously cell phones are going to be available. No. You learn, if you're driving on the interstates in West Virginia, those particular places where you can make a cell phone call.

Now, this is the way the commercial sector works, because they won't put up the towers. That's why we have to have the money provided in here for you to put up the towers, because they won't. They won't do it. Their shareholders don't require that. The public does require that, which is why the extra 10 megahertz is important; and the paying arrangements are important, not only for the building out, but the operating of all of this.

But telecommunications companies are not kind to rural areas because it's not in the interest of their shareholders to be kind to rural areas. And, I'm sorry, but that's just the way it is.

Now, I understand that T-Mobile and Sprint and others, they're against this because they want to buy the 10 megahertz themselves, so of course they're against it. And, they wrote part of the proposal, or the plan, that you referred to. So, of course they have a point of view.

My point of view is to make sure that you have everything that you need, the money to do it, it's set aside so there are no vagaries. And yes, you're going to cooperate with commercials. And yes, you're going to hang, as you said, I think, Mr. Davis, things on the towers; of course the commercials can use that. But, the towers are going to be out there, where emergencies will be taking place, which is virtually everywhere, which is a very large project, which is why we need the extra 10 megahertz.

Now, there are those in the Administration who don't want to do this, although now I'm feeling much better about the FCC, if we don't do this, what will we be saving? What do they want to do with this 10 megahertz? Well, they want to sell it or they want to do whatever. Why do they want to sell it? To reduce the deficit.

Well, that's a good idea. So, how much would it reduce the deficit? Maybe \$2 to \$3 billion.

So, you're left with the moral choice of \$2 to \$3 billion of deficit as we're about to extend tax cuts for billionaires and millionaires, on into the distant future, I think. Terrible idea. But, if we're going to do that, we have to come down to a choice of priorities. And I mentioned that with a Veterans Committee hearing this morning. If you're going to take care of veterans and they have been hurt by toxic problems that emanate from the Agent Orange era, which, incidentally, would have never really revealed itself if Admiral Zumwalt had not, himself, gone before the public. It wasn't Congress, it wasn't the Administration, it wasn't anybody who talked about it; it was Admiral Zumwalt who said, "My son was killed by Agent Orange." And all of a sudden the Congress sprang into action and did a lot of things.

Well, that's the situation here. We have sort of an Agent Orange question of the incapacity of you to serve the purpose for which you accept much lower salaries than you could otherwise get and put your lives at risk to help others. It's such an easy choice. We can pay for it, we can do it. We do the 20 megahertz. Yes, we cooperate with the commercials but don't depend on them, because they won't go out to the rural areas. You need to. And I—there'd be parts of urban areas they won't go to. You know, there are parts of cities they won't touch. Other parts of cities, which are prosperous and have lots of businesses, they will touch.

But, it's a national preemption, a priorities problem, and this is the chance to do it. It will be a national embarrassment—Senator Warner mentioned them—this, himself—the sheer national embarrassment if we come up to September 11, 2011, and we don't have this system or we don't have it being developed. I don't know how many people perished from your services in 9/11, but there had to be a tremendous number of them, and they couldn't communicate with each other. It goes back to the first Gulf War, when nobody could communicate with each other. And the services couldn't communicate with each other. We just have a terrible communications problem. Well, this is one place where we cannot have it. And you have to have the capacity; you have to have the range. And we're just going to keep working at this and having hearings on this until we get it done.

And, I'm actually very happy about the FCC. You've become my new best friend.

[Laughter.]

The CHAIRMAN. Because your National Broadband Plan had a sort of a different tack on it, and it didn't necessarily go for the extra megahertz. But, I read neutrality, at least, in you. And I think that's really good. Now we have to work on the Administration to feel exactly the same way, which is why it's so important that you all showed up and gave your good testimony.

So, get it done, we must. A question asked, I did not; but, I made a statement that I had to make.

And, with that, the hearing is adjourned.

[Whereupon, at 12:04 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. OLYMPIA J. SNOWE, U.S. SENATOR FROM MAINE

Thank you, Mr. Chairman, for holding this hearing on public safety communication. As we all know, the 9/11 Commission report cited the inability of first responders to communicate with each other as a significant challenge to providing comprehensive response on that horrific day. The report also found that “compatible and adequate communications among public safety organizations at the local, state, and federal levels remains an important problem.” Even with that warning we witnessed the very same problems during Hurricanes Katrina and Rita where public safety officials had to actually run handwritten notes between command centers since different agencies were unable to communicate with each other via radio.

Given that we just observed the ninth anniversary of 9/11, it is deeply troubling that public safety still does not have the nationwide interoperable communications network it requires to effectively respond in times of national or regional emergency. A nationwide interoperable public safety network is long overdue but I am concerned the recent debates about the D Block will unfortunately only delay the deployment of this critical asset.

As we all know, in 1997, Congress directed the FCC to provide public safety agencies with spectrum in the 700 Megahertz band. A decade later the FCC established rules for the construction, deployment, and operation of a nationwide public safety broadband network through a public-private partnership. The FCC unsuccessfully attempted to auction off the D Block spectrum for this network.

However, the National Broadband Plan, which the FCC released earlier this year, recommended this spectrum be put up for auction again and that a spectrum-sharing partnership be created where public safety can use in times of an emergency. While several wireless carriers have supported this recommendation, others, including some public safety organizations, have opposed it and support direct allocation of the spectrum to public safety.

Doing so certainly presents its own issues and challenges—primarily funding. How are we going to ensure that public safety has the necessary funds to pay for a nationwide interoperable network? If we don’t have adequate funds, we will only exacerbate the problems we currently face.

It must also be recognized directly allocating additional spectrum to public safety won’t automatically cure the problem that continues to plague public safety communications—the lack of interoperability. If the lack of interoperability continues to be an issue, no amount of spectrum is going to be effective. That is why I am very pleased the FCC recently established “ERIC”—the Emergency Response Interoperability Center—a recommendation of the National Broadband Plan. ERIC will assist in ensuring that applications, devices, and networks used by public safety organizations all work together, so that first responders nationwide will be able to communicate with one another seamlessly.

One thing which deeply concerns me about the fracture that has developed on this issue and with spectrum policy in general is the lack of trust that seems to be developing among parties. While public safety can make a strong case for why it needs its own spectrum, other stakeholders are also making similar claims. But this sense of absolute entitlement presents a serious problem since spectrum is a finite resource—and we cannot manufacture new spectrum. With growing demand for spectrum but a limited supply of it, such traditional thought of direct allocation will not get us very far and a spectrum crisis will truly present itself.

The only way we are going to prevent any looming spectrum crisis is through a multi-faceted solution that includes robust spectrum management policy, which utilizes spectrum sharing and reuse opportunities, and technical innovation that improves spectral efficiency so spectrum holders can do more with less. But if there is a lack of trust then it will be difficult if not impossible to employ spectrum sharing and reuse practices and, as a result, we will not be able to meet the future needs of all spectrum users and Americans will suffer—in both innovation and national security.

This is why Senator Kerry and I have introduced comprehensive spectrum reform to modernize policy and fix fundamental deficiencies in our nation's radio spectrum management and coordination activities. Taking this corrective action will allow us to meet the growing demands for spectrum that both commercial and government users are experiencing. For consumers, these fixes will lead to additional choices, greater innovation, lower prices, and more reliable services.

The fate of the D Block is not the only important issue we face in addressing the need for a nationwide, interoperable public safety network—I unfortunately think some parties have forgotten this. I hope this hearing and the witnesses testifying today will shed light on all the challenges we face and the solutions to overcome them.

I do have some concerns about the legislation being reviewed today but I am more than willing to work with the stakeholders and you, Mr. Chairman, to properly address this matter. The nation has for too long lacked a nationwide interoperable public safety network, so we need to find the quickest and most feasible path to achieve that goal.

Thank you.

July 21, 2010

Hon. JOHN D. ROCKEFELLER IV,
Chairman,
Commerce, Science, and Transportation
Committee,
U.S. Senate,
Washington, DC.

Hon. KAY BAILEY HUTCHISON,
Ranking Member,
Commerce, Science, and Transportation
Committee,
U.S. Senate,
Washington, DC.

Hon. JOHN F. KERRY,
Chairman,
Communications, Technology, and the
Internet Subcommittee,
U.S. Senate,
Washington, DC.

Hon. JOHN ENSIGN,
Ranking Member,
Communications, Technology, and the
Internet Subcommittee,
U.S. Senate,
Washington, DC.

Dear Chairman Rockefeller, Ranking Member Hutchison, Subcommittee Chair Kerry, and Subcommittee Ranking Member Ensign:

We are writing to express our strong support for the reallocation of the D Block spectrum for public safety. The Public Safety Alliance (PSA) and leading national associations representing America's state and local governments, known as the "Big 7," join us in our support.

After almost nine years since the catastrophic events of 9/11, our nation's first responders still lack crucial access to interoperable public safety broadband communications. Over time, public safety has been granted only small sections of spectrum 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 operating on different portions of the spectrum.

In March 2010, the Federal Communications Commission (FCC) released their National Broadband Plan. The plan calls for auctioning the government-owned part of the broadband spectrum, known as the D Block, to the highest bidder, with an understanding that the winner would provide priority access to public safety. However, this is woefully insufficient. During times of crisis, commercial networks are the first to fail because of inferior infrastructure and high-usage demand. A public safety network must be able to withstand an assault to its infrastructure and endure the highest usage demands of first responders during "mission critical" times. The D Block must be allocated exclusively to public safety in order to protect our citizens.

Legislation is necessary to allow the FCC to reallocate the D Block to public safety. Representatives King and Clarke are spearheading legislation to achieve this goal. In the House, The Broadband for First Responders Act of 2010, (H.R. 5081) has gained more than 40 bipartisan co-sponsors since its introduction in late April 2010; we ask for your support and Senate sponsorship of a companion bill.

Without this crucial legislation, the FCC is required to auction the D Block. The first attempt by the FCC to auction the spectrum failed in March 2008 because of the viability of forming a partnership agreement between the auction winner and public safety. Public safety officials, service providers, and infrastructure vendors agree that a more effective method would be to reallocate the D Block directly to public safety. The additional 10 MHz of spectrum will be combined with the current

10 MHz of spectrum allocated for public safety, in order to create a 20 MHz block of spectrum to build a nationwide public safety broadband network. When built, the new broadband network will be able to support a broad range of public safety, government, and critical infrastructure and consumer applications, such as voice, video, and data services.

The FCC has granted 21 conditional waivers and has received an additional 11 petitions for waivers, either to/from states or localities, to build-out an interoperable public safety broadband network in the 700 MHz spectrum. When these network build-outs begin, if public safety does not have ownership of the D Block, costs will be higher and the system created will not meet the full requirements of public safety. With the D Block reallocation to public safety and funding for network build-outs, our nation's first responders will have the required communication needs to provide the most effective service to every American.

Our nation cannot afford to miss this one-time-only opportunity and we call on you and your colleagues in Congress to support our first responders who put their lives on the line every day to protect and serve their communities by introducing and passing a companion bill to H.R. 5081: The Broadband for First Responders Act of 2010.

Sincerely,

Governor DAVID A. PATERSON,
New York.

Governor THEODORE R. KULONGOSKI,
Oregon.

Governor PAT QUINN,
Illinois.

Governor JIM GIBBONS,
Nevada.

Governor CHESTER J. CULVER,
Iowa.

Governor MARTIN O'MALLEY,
Maryland.

PREPARED STATEMENT OF PHILIP C. STITTLEBURG, CHAIRMAN,
NATIONAL VOLUNTEER FIRE COUNCIL

Since well before the September 11 attacks, first responders have had a clear need for additional radio spectrum space so they can communicate more effectively. In the wake of those terrorist acts, the 9/11 Commission made it clear that providing more radio spectrum to emergency services was a priority for improving both security and safety. Gaining access to a greater range of the spectrum would allow emergency services personnel to communicate more effectively.

On July 31, 2007, the Federal Communications Commission (FCC) revised plans to auction portions of the 700 MHz band of radio spectrum in order to create a nationwide interoperable broadband network for use by public safety. The revised FCC rule bundled electromagnetic spectrum bands of 758–763 megahertz and 788–793 (the D Block) with 12 MHz of spectrum already designated for public safety to be auctioned to a private entity that would have entered into a partnership with public safety organizations to develop a shared nationwide interoperable network for commercial and public safety users. Public safety users would have had priority access to the network during major emergencies. Originally, commercial entities like Google and Verizon Wireless expressed interest in the commercial market, but the auction, which took place in January 2008, received only one bid that fell far short of the \$1.33 billion reserve price set by the FCC.

In March 2010, the FCC proposed that the D Block be put up for auction again, only this time without the conditions that private bidders were required to meet in the previous auction to address the needs of public safety. This would basically leave public safety with only the spectrum it is licensed for and not enough to build out an effective nationwide public safety broadband network. Additionally, once the D Block is auctioned it would be gone forever—public safety won't get a second chance.

The NVFC's top priority for public safety communications is for establishment of a nationwide broadband network with requisite funding. This requires the D Block to be allocated, by Congress, directly to public safety. This will provide for the establishment of a nationwide broadband network that volunteer departments can access at a cost effective rate and would allow rural, volunteer emergency service agencies

to upgrade intra- and interoperability without making significant outlays for new equipment.

All public safety agencies face significant resource constraints but most volunteer fire and EMS departments operate on a shoestring budget even during the best of economic times. Volunteer agencies commonly serve rural areas that tend to have low population densities and a high poverty rates. Most volunteer agencies have to rely on private fundraising to supplement taxpayer contributions to their operating budgets. In communities of 2,500 residents or fewer, private donations make up close to 20 percent of the budget of volunteer fire departments, on average.

S. 3756 addresses the communications needs of the public safety sector generally by directing the Federal Communications Commission (FCC) to, “. . . take all actions necessary to ensure the deployment of a nationwide public safety interoperable broadband network in the 700 MHz band . . .” The NVFC is particularly pleased that the bill specifically recognizes the communications challenges facing emergency responders outside of densely populated areas, declaring that the FCC, “. . . shall ensure that the network is deployed and interoperable in rural, as well as urban, areas, including necessary build out of communications infrastructure in rural areas to accommodate network access and functionality.”

S. 3756 also addresses concerns that had been expressed publicly by the FCC about the feasibility of creating a nationwide broadband communications network for public safety using the D Block, which revolved around a lack of funding to build it. The bill creates a “Public Safety Interoperable Broadband Network Construction Fund” and a “Public Safety Interoperable Broadband Network Maintenance and Operation Fund,” ensuring that the resources will be available to build this vital communications tool for public safety users.

The NVFC strongly supports S. 3756 and asks the members of the Committee to vote to report the bill favorably so that it can be taken up and passed by the full Senate. It is crucial that this bill be enacted this year so that the FCC and public safety can begin to work together on building the much-needed broadband communications network.

PREPARED STATEMENT OF THE UTILITIES TELECOM COUNCIL

The Utilities Telecom Council (UTC) appreciates this opportunity to provide a Statement for the Record to the Committee regarding a nationwide interoperable public safety broadband wireless network. UTC’s statement will focus on the need for Congress to: (1) Ensure that the public safety community is afforded the maximum flexibility in the build-out and operations of a nationwide public safety broadband wireless network; and (2) Encourage innovation and regional flexibility by allowing public safety to execute agreements to build, operate and share the public safety network in a manner which best suits their needs and the circumstances as well as broader public safety interests, especially during emergencies.

Introduction

The Utilities Telecom Council (UTC) is the only trade association devoted to the telecommunications and information technology interests of critical infrastructure (CI) entities. Through its core members and affiliated trade associations, UTC represents virtually every electric, gas, and water utility and energy pipeline in the country—including public, cooperative, federal and investor-owned—on issues affecting their communications networks and infrastructure. UTC also encompasses an associate membership that includes a wide variety of the nation’s largest equipment manufacturers, engineering companies and others that support the communications needs of its core members. These diverse members have united to ensure the integrity of the critical infrastructure communications networks that support the safe, reliable and secure delivery of essential services to the public at large.

Since 1948, UTC’s primary focus has been protecting and promoting the private internal communications of the nation’s critical infrastructures. These communications networks are designed, built and operated to the highest standards—which must exceed those available on consumer-oriented commercial service networks. They are used for routine dispatch, emergency restoration and for remote monitoring and control of valves, switches and systems, among other functions. As such, these networks are essential to protect the safety of life, health and property and cannot be compromised.

To help its members ensure the reliability of the basic services they provide, UTC seeks to protect their rights as licensees of radio-frequency spectrum and to gain CI access to new spectrum as needed. UTC also tries to protect members’ rights over their own infrastructure to ensure its safety, to enable their opportunities to use

and provide telecommunications services as desired, and to assist members with their move to more advanced technology, “smart grids,” and compliance with homeland security responsibilities. In these efforts, UTC works with the Federal Communications Commission, the Federal Energy Regulatory Commission, Congress, the Departments of Commerce, Energy and Homeland Security and other agencies and offices—including state governments—as needed.

UTC also represents the interests of utility members that choose to act as facilitators and providers of telecommunications services. As facilitators, UTC’s members provide capacity services on their fiber networks and the poles, ducts, conduit and rights-of-way that they own or control, or wireless collocation on their communications or transmission towers; others are engaged in municipal networks or are deploying Broadband over Power Line systems for internal applications or commercial services. As providers of telecommunications services, in many cases UTC’s members offer the only source of advanced communications capabilities in a community. UTC supports a pro-competitive, deregulatory national policy framework by advocating telecommunications competition among all providers.

In its sixty-two year history, UTC has grown into a global federation of industry and affiliated trade association members in Canada (UTC Canada), Europe (European UTC) and South America (Aptel). In addition, the nation’s major critical infrastructure trade associations—including the American Gas Association (AGA), American Public Power Association (APPA), American Water Works Association (AWWA), Edison Electric Institute (EEI), Interstate Natural Gas Association of America (INGAA), the National Rural Electric Cooperative Association (NRECA) and the American Petroleum Institute (API)—are affiliated members of UTC.

As part of our federation mission, UTC spearheads the Critical Infrastructure Communications Coalition (CICC). CICC is a policy-focused group which recognizes the commonality of interests among all critical infrastructure industries—energy, water, railroads, petroleum and natural gas production and oil pipelines—in providing and maintaining the nation’s safe, efficient and reliable delivery of essential public services. In addition to the aforementioned organizations, CICC enjoys the support of the Association of American Railroads (AAR), the National Association of Water Companies (NAWC), and the Association of Oil Pipe Lines (AOPL).

Allocation of the 700 Mhz D Block to Public Safety

UTC supports the allocation of the 700 MHz D Block to public safety, with certain qualifications noted below, for the following reasons:

1. A nationwide interoperable public safety wireless broadband network must be built to meet public safety’s needs for resiliency, reliability, redundancy and ubiquity; it cannot be made to piggyback on other networks that do not satisfy those requirements or be forced to negotiate costly agreements to provide the priority access it requires during emergencies.
2. Public safety must have the ability to expand its communications capabilities to incorporate bandwidth intensive improvements in technology to perform their mission critical functions more efficiently and cost-effectively. This is a rare opportunity to allocate 20 MHz of contiguous bandwidth to provide for the long-term needs of public safety; otherwise, should future bandwidth requirements require more spectrum than the 10 MHz currently allocated to public safety, the nation will return to the times of patchworked systems and fractured equipment markets.
3. Public safety should be able to control with whom it partners to build and operate the nationwide interoperable wireless broadband network, and not be forced to deal with a spectrum license holder whose business model may be fundamentally incompatible with public safety.

UTC’s support, however, is predicated on several qualifications:

1. *Congress should maximize, not restrict, partnership opportunities for public safety in the build-out and operations of a nationwide interoperable wireless broadband network.*

Congress should not dictate a preference for a specific type of communications infrastructure, or specify technical operational parameters which would restrict the ability of local, state and regional public safety entities to: (1) partner with whomever best meets their construction and operational needs and (2) leverage existing financial and infrastructure resources. Additionally, a network built on spectrum owned by others or controlled by those who do not share common network requirements or similar business models minimizes public safety’s ability to control costs and deployment timetables to serve the more rural areas where the need to communicate is most urgent.

Rather, Congress' proper role is to dictate the national policy upon which the network will be built, namely, nationwide interoperability, reliability, resiliency, redundancy and ubiquity. How those policy goals are met should be determined by public safety according to their circumstances and needs.

In particular, the language in S. 3756 which requires backward-compatibility with existing commercial 2G and 3G networks should be stricken. This requirement may be an appropriate way to ensure adequate capacity for public safety by enabling roaming onto existing commercial networks where such infrastructure currently exists. But, in areas where there is no such commercial infrastructure, or when public safety chooses to partner with other, noncommercial providers, to build or operate the network, the requirement for backward compatibility is inappropriate. As Chairman Rockefeller noted during the hearings, "71 percent of West Virginians have no access to cell service because commercial providers won't put up the towers to provide coverage." Further, such a requirement may actually preclude public safety from partnering with anyone other than a commercial provider and may cause public safety, or its preferred partner, to incur additional unnecessary expenses to comply with the requirement.

Utilities and public safety share common communications network characteristics and functional requirements, as more fully explained later in Supplementary Information section of this statement. The FCC's National Broadband Plan noted those similarities:

The wide-area network requirements of utilities are very similar to those of public safety agencies. Both require near universal coverage and a resilient and redundant network, especially during emergencies. In a natural disaster or terrorist attack, clearing downed power lines, fixing natural gas leaks and getting power back to hospitals, transportation hubs, water treatment plants and homes are fundamental to protecting lives and property. Once deployed, a smarter grid and broadband-connected utility crews will greatly enhance the effectiveness of these activities.¹

Utilities have built and operated private, internal communications networks as the most efficient and cost-effective means to meet their mission critical function: the safe and reliable production, transmission and distribution of energy and water. Requiring backward compatibility with commercial networks would effectively eliminate the opportunities for public safety to partner with utilities in the build-out and operations of the nationwide broadband network, despite the synergies between these two communities.

The FCC has cited the unique public interest benefits of shared utility/public safety networks when granting waivers in the 800, 900 and LMR bands, including: (1) Improved utility communications and interoperability with public safety; (2) Cost-savings; (3) Increased coordination with security and public safety personnel; (4) Enhanced crew safety; (5) Prompt repair of power systems; (6) Impact on public safety of aging utility equipment and network infrastructure; and (7) That utilities support and sometimes respond before public safety when emergencies occur. The FCC's National Broadband Plan encouraged the leveraging of utility infrastructure and allowing utilities to share the 700 MHz band, thereby reducing costs and providing options for the public safety community to leverage commercial networks, private networks, or both.²

And finally, this type of technical requirement may act to vitiate current agreements between public safety and utilities in terms of build-out and use agreements, such as that outlined in a waiver filed by the State of Nevada on behalf of a myriad of public safety entities and NV Energy for a network in the 700 MHz band allocated to public safety,³ or have a chilling effect on negotiations that may already be underway in other parts of the country between public safety and other non-commercial service providers.

2. Congress should encourage innovation and regional flexibility for public safety to execute shared use and access agreements to meet regional needs and circumstances, including priority access and preemption on the network.

In its National Broadband Plan (NBP), the Federal Communications Commission (FCC) recommended that public safety should be allowed to enter into agreements

¹Report to Congress, A National Broadband Plan for Our Future, FCC, p. 252–253 (March 16, 2010), available at <http://www.broadband.gov/download-plan/>.

²*Id.*, p. 253.

³See <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020458038>.

with utilities on uses and priorities. Although the network will take years to build, carrying critical traffic from multiple users can help lower costs for all.⁴

One of the essential components of a nationwide public safety broadband network is reliability. Preemption or priority access implies that the network is fully functional under all conditions. As stated by a public safety official during the hearings, “Preemption on a network that is down does not help public safety.”⁵

The differences in network performance and resiliency of commercial networks compared to utility private, internal networks were highlighted in an FCC report on communications network performance following Hurricane Katrina.⁶ The FCC found that utility networks not only continued to operate during hurricane conditions but, in general, continued to operate afterwards. By contrast, the commercial cellular networks had 20 percent of their cell sites down a week after hurricane.⁷ Those findings were confirmed by an independent UTC survey of utilities in the impacted areas.⁸

In sum, public safety should have the flexibility and authority to determine priority use and appropriate preemption protocols based on its needs according to the particular circumstances, not by Congress. Of course, use agreements of this type assume that the network will be operational when needed the most.

Supplementary Information

UTC would also like to take this opportunity to provide some additional information to assist the Committee in its deliberations.

Utilities and Public Safety Share A Common Mission and Business Model in Design, Deployment and Operations of a Communications Network

The communications networks operated by utilities and public safety are essential to meet their common mission: the protection of life, safety and property. Utility field crews are among the first to respond to emergencies, working side-by-side with public safety personnel, to protect the public from downed wires and the consequences of power outages, and to repair and restore essential public services, including clean water. In fact, utility communications were designated “public safety radio services” under the Balanced Budget Act of 1997, recognizing the key role of utilities in the emergency response effort.⁹ Moreover, utilities have been classified as “essential service providers” under the Robert T. Stafford Act for coordination of emergency response efforts.¹⁰

This commonality of purpose means that public safety and utilities use a common business model when constructing and operating a communications network: they must be able to communicate wherever emergencies may occur and the lives and safety of the public and utility line crews are at risk, whether it be rural or urban or in mountainous or flat terrain. Network design and the deployment timetable are driven by the needs of public safety to protect the public and of utilities to ensure worker and public safety and to provide reliable power and water. In short, communications infrastructure investments by public safety and utilities are not based on maximizing subscriber revenues, as are commercial communications service providers, but to meet mission critical needs. In fact, the business model of utilities and public safety and that of commercial service providers appear fundamentally incompatible with each other.

Public Safety and Utilities Share Common Communications Needs

For decades, utilities have built, maintained, and operated their own private, internal communications networks for mission critical functions because of the need for greater resiliency, reliability, redundancy and coverage than can be provided by commercial communications networks, especially in rural or unpopulated areas.

These are the same design and operational requirements of a public safety network, as cited in the testimony by Mr. Jeffrey Johnson, Chief Executive of the West-

⁴*Ibid.* p. 315.

⁵Jeffrey Johnson, Chief of the Western Fire Chiefs Association and Former President of the International Association of Fire Chiefs, Salem, Oregon.

⁶See Final Report of the FCC’s Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks at <http://www.fcc.gov/pshs/docs/advisory/hkip/karrp.pdf>.

⁷*Id.* at 9.

⁸Hurricanes of 2005: Performance of Gulf Coast Critical Infrastructure Communications Networks; United Telecom Council; November 2005.

⁹P.L. 105–33, Title III Stat. 251.

¹⁰P.L. 93–228, Sec. 427 (42 USC 5189(e)).

ern Fire Chiefs Association and former President of the International Association of Fire Chiefs before the Committee, namely:

- **Reliability:** The network must remain operational even when the power is out for days or weeks at a time and when commercial networks are unavailable for whatever reason, including lack of back-up power at cell sites, infrastructure damage, or inability to meet the surge in communications demand;
- **Redundancy:** The network must have back-up facilities to maintain communications if any portion of the network is compromised;
- **Resiliency:** The network must be able to operate under adverse conditions, including hurricanes, ice storms, floods or manmade disasters; and
- **Ubiquity:** The network must operate everywhere emergencies may occur, even in the most rural, less-populated and rugged terrains.

Public Safety and Utilities Share Common Communications Deficiencies

Utilities do not enjoy access to any dedicated spectrum to meet their unique communications needs. In contrast, over 400 MHz has been allocated to commercial services, and more than 90 MHz to public safety.

Despite the differences in spectrum availability, the spectrum assignment framework used by the FCC to allocate spectrum for designated services has led to serious deficiencies for both public safety and utilities. These include:

Patchworked systems with no interoperability—Utilities have shared access to a total of 30 MHz of spectrum in disparate bands depending on what spectrum is available in a given geographic area, resulting in a lack of interoperability during emergencies with and among out-of-area field crews who assist restoration efforts and with public safety personnel. This same problem is shared by public safety amongst themselves as well as with utilities with whom they need to coordinate emergency response efforts.

Fractured market for technology and equipment manufacture—With no access to sufficient spectrum to meet their needs, each utility has had to design its network based on the spectrum available, leading in many cases to proprietary and thus more expensive solutions to their communications needs. Public safety has suffered from these same deficiencies.

Insufficient bandwidth—Increasingly sophisticated situational awareness tools (including video, mobile data, and personnel and resource management) require broadband capabilities that cannot be supported by available spectrum. And with the advent of Smart Grid, the lack of a utility-grade broadband network sufficient to handle distributed generation, integration of renewable energy sources, load balancing efficiencies, electric vehicle deployment and consumer control over energy use will become acute.

In sum, the testimony of The Honorable Annise Parker, Mayor of Houston, Texas pertaining to public safety communications is equally applicable to utilities:

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.¹¹

Public Safety and Utilities Need Interoperable Communications Both Within as well as Across Sectors—

As noted above, utility emergency restoration crews are among the first to respond to emergencies, working side-by-side with public safety personnel, to protect the public from downed wires and the consequences of power outages, and to repair and restore essential public services, including clean water.

During large scale emergencies, utility personnel from all parts of the country converge on the scene, pursuant to mutual aid agreements. Because of the fractured nature of the current spectrum available to utilities for mobile communications, crews cannot communicate with each other or with the impacted area crews, thus

¹¹ Written testimony of The Honorable Annise Parker, p. 4, available at: http://commerce.senate.gov/public/index.cfm?p=Hearings&ContentRecord_id=91233a4d-cbed-4b43-87bc-0983538b9318&Statement_id=05ae28ca-1527-4147-9313-7a5d522ef44&ContentType_id=14f995b9-dfa5-407a-9d35-56cc7152a7ed&Group_id=b06c39af-e033-4cba-9221-de668ca1978a&MonthDisplay=9&YearDisplay=2010.

leading to inefficiencies and dangerous situations in the coordination of power restoration efforts and in personnel and other resource allocation decisions.

In addition, utility personnel cannot communicate with public safety to coordinate emergency response efforts. UTC's report on utility network performance following Hurricane Katrina found that there was little or no formal coordination with state or local agencies or public safety organizations during or after the storms.¹² Lack of interoperability between utilities and public safety causes public safety to allocate personnel to babysit downed wires until crews can be dispatched, or lines are de-energized before public safety can aid those who are hurt, disabled or in need of medical assistance. A common communications platform built to utility (and public safety) grade standards for those involved in emergency response, particularly in the immediate aftermath of the disaster, would mitigate consequences by more efficient resource allocation and a more timely response.

The testimony of Stephen McClure, Director of Jackson County Emergency Medical Services in Ripley, West Virginia underscores this point and is equally applicable to utility communications:

“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.”¹³

Leveraging of Existing Utility and Public Safety Resources Can Reduce Build-out and Operational Costs

There are several areas in which the costs of a nationwide interoperable wireless broadband network can be covered through the use of current utility and public resources, including:

Infrastructure: Utilities currently operate extensive communications systems, with tower sites throughout their service territory. When combined with public safety infrastructure, broadband network construction will be limited to filling in the coverage gaps, not built from the ground up, especially in rural areas.

Equipment Costs: Due to the fractured nature of the current communications scheme for utilities and public safety, equipment markets are smaller and non-homogeneous, and in many cases only proprietary solutions are available. A broadband network for use by both public safety and utilities would expand the potential equipment market based on common standards and drive costs down for all.

Financial Resources: Numerous federal monies are already available to assist in network construction and operations. In addition to those mentioned in the written testimony of Stephen McClure,¹⁴ a portion of grants awarded under the Smart Grid (SG) Investment Grants program administered by the Department of Energy (DOE) are being used by utilities for communications infrastructure investments.

A study conducted by UTC in June 2009 revealed that utilities will be spending \$5.2 billion in 2010 alone (including DOE grants) for SG deployment, much of which for communications infrastructure to enable SG.¹⁵ Moreover, state and local government have appropriated millions of dollars to improve public safety communications capabilities on patchworked systems,¹⁶ scarce resources which can be better spent on a new common broadband platform.

We thank the Committee for the opportunity to submit this Statement for the Record. Please contact the following individuals who would be pleased to answer any questions or provide any additional information the Committee's requires dur-

¹²*Id.*, p. 3.

¹³Written testimony of Stephen E. McClure, Director, Jackson County Emergency Medical Services, Ripley, West Virginia, p. 5 available at http://commerce.senate.gov/public/index.cfm?p=Hearings&ContentRecord_id=91233a4d-cbed-4b43-87bc-0983538b9318&Statement_id=4cb696da-2a4a-4e17-825c-8fa925516db9&ContentType_id=14f995b9-dfa5-407a-9d35-56cc7152a7ed&Group_id=b06c39af-e033-4cba-9221-de668ca1978a&MonthDisplay=9&YearDisplay=2010.

¹⁴*Ibid.*, p. 4–5.

¹⁵“Utilities Telecom Spending Market Forecast,” a research study conducted by the Utilities Telecom Council published in June 2009.

¹⁶Oral Testimony of The Honorable Annise Parker, Mayor, Houston, Texas during the Committee hearings.

ing its consideration of this issue: Bill Moroney, President and CEO, UTC at bill.moroney@utc.org, 202.833.6801; Michael Oldak, Vice President and General Counsel, UTC at mike.oldak@utc.org, 202.833.6808, or Prudence Parks, Director of Government Relations, UTC at prudence.parks@utc.org, 703.623.4026.

September 23, 2010

Hon. JOHN D. ROCKEFELLER IV,
Chairman,
Committee on Commerce, Science, and
Transportation,
U.S. Senate,
Washington, DC.

Hon. KAY BAILEY HUTCHISON,
Ranking Member,
Committee on Commerce, Science, and
Transportation,
U.S. Senate,
Washington, DC.

Dear Chairman Rockefeller and Ranking Member Hutchison:

On behalf of the 19,000 cities and towns represented by the National League of Cities, thank you for the opportunity to submit this letter and express our support for the Public Safety Spectrum and Wireless Innovations Act of 2010, S. 3756 (the Act). This bill would reallocate the portion of 700 MHz radio spectrum known as the “D Block” to public safety so that a national interoperable public safety communications network can become a reality.

For years, state and local first responders have sought to build a national interoperable communications network that will provide secure transmission of real-time voice, video, and other data. Currently, first responders in the United States lack adequate secure broadcast spectrum to achieve this goal, in part, because public safety entities have been granted only small sections of spectrum and never enough to consolidate communications into a single frequency band. This lack of substantial, secure bandwidth on a national scale has hampered our first responders’ efforts to consolidate public safety communications. The result is a patchwork of public safety communications systems, where neighboring jurisdictions—and often, local police and fire personnel—cannot communicate with one another or share information effectively.

By reallocating the D Block to public safety and creating a fund for the construction, maintenance, and operation of such a network, the Public Safety Spectrum and Wireless Innovations Act would provide a one-time opportunity to improve our country’s emergency response system by creating a modern interoperable broadband network that would quickly distribute information to first responders, doctors, public institutions, and private citizens.

In addition to reallocating the D Block, the Act calls for the creation of a construction grant fund and a maintenance and operation grant fund for the public safety interoperable broadband network. As currently drafted, the legislation permits only states to directly request and receive grant funding unless they delegate that authority to an agency or political subdivision. To ensure an accelerated deployment of this network, we urge you to also include a provision that would allow local governments or regional public safety agencies to directly request and receive funds to deploy, maintain and operate the 700 MHz nationwide public safety interoperable broadband network within their jurisdiction. Of course, we concur that any local plan is to be coordinated with the state and conform to federal standards. This approach will ultimately benefit the entire national interoperable broadband system by expediting the construction of the system and providing a foundation for rapid expansion across a region.

The National League of Cities looks forward to working with you to enact the Public Safety Spectrum and Wireless Innovations Act of 2010 and ensure that we develop a nationwide interoperable public safety communications network that will guarantee first responders receive the information they need when lives are at risk.

Sincerely,

DONALD J. BORUT,
Executive Director,
National League of Cities.



September 21, 2010

The Honorable John D. Rockefeller
 Chairman
 Committee on Commerce, Science and Transportation
 United States Senate
 Washington, D.C. 20510

Dear Chairman Rockefeller:

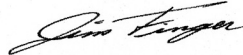
The universal availability of secure, reliable, priority access and public safety grade broadband communications is critical to the advancement of emergency medical care for patients in the United States. The best way to assure this availability is to allocate the 700 MHz D block to public safety for use in conjunction with the 700 MHz broadband spectrum licensed to the national public safety broadband license holder, to fund network development, and to coordinate both sets of spectrum through that license holder and its public safety representative board. We strongly endorse your legislation, S. 3756 - the Public Safety Spectrum and Wireless Innovation Act of 2010, and hope that it will become the vehicle to accomplish this.

As national organizations representing emergency medical service (EMS) provider agencies, professionals, and EMS system and service officials, we wish to emphasize that the potential provided by new field EMS diagnostic and treatment technology is impeded by the limitations of the narrowband communications systems we have used, basically without change, since the early 1970's. We believe that EMS may well become one of the biggest users of public safety broadband to bring lifesaving capabilities to our patients. We encourage your staff to work with leaders of the Public Safety Alliance and Public Safety Spectrum Trust to tailor this legislation to best meet these needs.

Letter from National EMS Organizations re S.3756
September 21, 2010
Page 2

We offer you our support in making S.3756 a success for the Nation.

Sincerely,



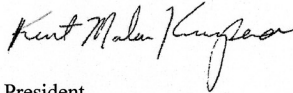
President
American Ambulance Association



President
Association of Critical Care Transport



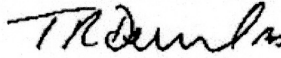
President and Director-At-Large
Association of Air Medical Services



President
Advocates for Emergency Medical Services



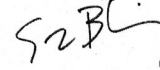
President
Emergency Nurses Association



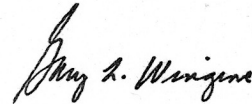
President
National Association of Emergency Medical
Services Physicians



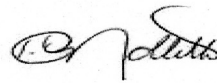
President
National Association of Emergency
Medical Technicians



President
National Association of State Emergency
Medical Services Officials



President
National Emergency Medical Services
Management Association



President
National Association of EMS Educators