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OVERSIGHT OF FIRST RESPONDER NETWORK AUTHORITY (FIRSTNET) AND EMERGENCY COMMUNICATIONS

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

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OVERSIGHT OF FIRST RESPONDER NETWORK AUTHORITY (FIRSTNET) AND EMERGENCY COMMUNICATIONS

THURSDAY, MARCH 14, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:32 a.m., in room 2123 of the Rayburn House Office Building, Hon. Greg Walden (chairman of the subcommittee) presiding.

Present: Representatives Walden, Latta, Terry, Blackburn, Scalise, Lance, Guthrie, Kinzinger, Long, Ellmers, Barton, Upton (ex officio), Eshoo, Matsui, Braley, Welch, Dingell, Pallone and Waxman (ex officio).

Staff present: Ray Baum, Senior Policy Advisor/Director of Coalitions; Sean Bonyun, Communications Director; Matt Bravo, Professional Staff Member; Andy Duberstein, Deputy Press Secretary; Neil Fried, Chief Counsel, Communications and Technology; Debbee Hancock, Press Secretary; Nick Magallanes, Policy Coordinator, Commerce, Manufacturing and Trade; David Redl, Counsel, Telecom; Charlotte Savercool, Executive Assistant, Legislative Clerk; Lyn Walker, Coordinator, Admin/Human Services; Tom Wilbur, Digital Media Advisor; Roger Sherman, Democratic Chief Counsel; Shawn Chang, Democratic Senior Counsel; Patrick Donovan, FCC Detailee; and Kara van Stralen, Democratic Special Assistant.

OPENING STATEMENT OF HON. GREG WALDEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. WALDEN. I would like to call to order the Subcommittee on Communications and Technology for our hearing on oversight of FirstNet and emergency communications.

Good morning, everyone, and welcome, especially to our witnesses on both of our panels, as well as our colleagues and guests.

In last year's Middle Class Tax Relief and Job Creation Act, Congress created the First Responder Network Authority. FirstNet is an independent entity within the NTIA tasked with implementing a nationwide interoperable public safety broadband network. That is no small task. On the first of today's two panels, we will hear from FirstNet, states, a former chief of the FCC Public Safety Bureau, and private sector representatives on what progress is being made and where we should go from here.

The legislation as adopted was not my preferred approach for many of the reasons expressed in today's prepared testimony. I favored construction from the bottom up, not the top down, with certain minimum interoperability requirements and commercial providers running the network in partnership with the states. That approach is by no means guaranteed by the legislation as finally passed. But we must do our best to implement that model within the confines of the law if this endeavor is going to succeed. We owe it to the state and local first responders that risk their lives for ours, the men and women who are the literal boots on the ground. And we owe it to the taxpayers, who funded it up front with up to $7 billion in federal revenue, and who will fund it over the long haul through their state and local taxes.

I am a firm believer that the work of Congress begins, not ends, when a bill is enacted into law. Even at this early stage, a recent forum of prospective participants highlighted concerns about how FirstNet is being administered and how the public safety broadband network will be realized. I look forward to exploring some of those concerns today. For example, will FirstNet meet the needs of both rural and urban parts of the country? Will it bring the needed innovation and efficiency of the commercial sector to public safety communications? Will FirstNet conduct open and transparent proceedings to ensure all potential stakeholders are heard?

As today's witnesses can attest, funding FirstNet will also be an essential element of making the network a reality. I was encouraged to hear Senator Rockefeller say at this week's FCC oversight hearing that the agency should conduct the incentive auctions in a way that maximizes participation and revenue. I agree that this will best ensure our public safety objectives are met.

We have learned time and again that in times of natural and national disaster, communication among our first responders is key. Ensuring communication lines are open to the public is equally important. With our second panel, we will examine the Emergency Alert System, Wireless Emergency Alerts, and 911 service.

As former broadcasters, my wife and I fondly recall running our required weekly tests of the broadcast emergency alert system. However, despite its more than 60 years of existence in one form or another, the EAS was only recently tested on a national level. While more than 90 percent of the stations properly ran the test message, technical challenges prevented stations in my home state of Oregon and elsewhere from receiving the message. This could have been catastrophic in a real emergency and it must be resolved in short order.

Broadcast alerts are a critical part of our emergency infrastructure, but emergency systems, like all communications media, have changed significantly over the last 20 years. In 1993 there were only 13 million cell phone subscribers in America. That was less than 5 percent of the U.S. population. Today, the broadcast emergency alert system is part of the Integrated Public Alert and Warning System, IPAWS, that incorporates broadcast, cable and satellite video programming distributors as well as more granularly targeted alerts to wireless devices. So I look forward to our witnesses

giving us a better picture of the successes and challenges with the alerting systems.

Finally, while getting timely emergency information to the public is critical to emergency response, getting information from the public is just as crucial. Sadly, emergencies occur every day in our homes, in our offices, in our cars and on the streets. This is the world of our 911 call centers. While no less devastating to those involved, these emergencies are often of a small scale, affecting just a few people. Every now and then, however, they occur on a large scale, taxing the resources of both the call centers and commercial providers. We cannot design the 911 system to cover every contingency but we should learn from our experiences to improve it whenever and however we can. We also need to discuss how we might incorporate more advanced technologies, which is why this committee incorporated Mr. Shimkus's and Ranking Member Eshoo's NextGen 911 Advancement Act in the Middle Class Tax Relief and Job Creation Act. I look forward to hearing how this national asset is adapting to serve our needs in a broadband world.

I would yield the last bit of my time to the vice chair of the committee, Mr. Latta.

[The prepared statement of Mr. Walden follows:]

PREPARED STATEMENT OF HON. GREG WALDEN

In last year's Middle Class Tax Relief and Job Creation Act, Congress created the First Responder Network Authority. FirstNet is an independent entity within the NTIA tasked with implementing a nationwide interoperable public safety broadband network. That's no small task. On the first of today's two panels, we will hear from FirstNet, states, a former chief of the FCC Public Safety Bureau, and private sector representatives on what progress is being made and where we should go from here.

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Finally, while getting timely emergency information to the public is critical to emergency response, getting information from the public is just as crucial. Sadly, emergencies occur every day in our homes, in our offices, in our cars, and on the streets. This is the world of our 9-1-1 call centers. While no less devastating to those involved, these emergencies are often of a small scale, affecting just a few people. Every now and then, however, they occur on a large scale, taxing the resources of both the call centers and commercial providers. We cannot design the 9-1-1 system to cover every contingency but we should learn from our experiences to improve it where we can. We also need to discuss how we might incorporate more advanced technologies, which is why this committee incorporated Mr. Shimkus' and Ranking Member Eshoo's Next Generation 9-1-1 Advancement Act in the Middle Class Tax Relief and Job Creation Act. I look forward to hearing how this national asset is adapting to serve our needs in a broadband world.

# # #

Mr. LATTA. I appreciate the chairman for yielding and thank him very much and I also appreciate you holding the hearing today, and I thank our distinguished panel of witnesses for testifying today.

Public safety and emergency communications are an extremely important topic, one that affects every single American. That is why it is imperative that FirstNet is successful. A nationwide interoperable public safety network is a massive undertaking and it is critically important that the communication system is done right by FirstNet for the sake of our economy and the safety of all Americans.

I am concerned that the role of the states is being overlooked. I would like to submit for the record, Mr. Chairman, a letter from the state of Ohio's Chief Information Officer on concerns regarding FirstNet's funding, communication planning and representation.

Mr. WALDEN. Without objection.

[The information appears at the conclusion of the hearing.]

Mr. LATTA. Thank you, Mr. Chairman.

I look forward to the hearing and the testimony from our witnesses and I look forward to a thoughtful and constructive discussion.

With that, Mr. Chairman, I yield back.

Mr. WALDEN. The gentleman yields back. The Chair recognizes the ranking member from California, Ms. Eshoo.

OPENING STATEMENT OF HON. ANNA G. ESHOO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Ms. ESHOO. Thank you, Mr. Chairman, and good morning to you, and thank you for holding this very important hearing today.

Mr. Chairman, through our bipartisan work in the 112th Congress, we laid the groundwork for the first-ever interoperable nationwide public safety broadband network. Now, more than 11

years after our Nation was attacked, it is the First Responder Network Authority, or FirstNet, who has been tasked with the build-out and maintenance of a network that will transform the way our first responders communicate.

To ensure that FirstNet remains on track, leverages the expertise of the communications sector, and does not repeat the mistakes that have plagued public safety communications for decades, I expect this will be the first of many oversight hearings because I think that is going to be important for us to do so, to keep everything on track, and as we do, all of the stakeholders will know how serious we are about.

For today's hearing, I would like to offer several observations that I believe will guide the success of FirstNet and the transition to Next Generation 9-1-1. First, consistent with statute, FirstNet must ensure equipment used on the network is built to open, non-proprietary, commercially available standards. A $5,000 radio is simply unacceptable, particularly when far superior, off-the-shelf technology can be purchased for a fraction of the price.

Second, FirstNet should leverage the expertise and innovative thinking found across Silicon Valley, my distinguished Congressional district. A modern, IP-based network in which first responders rely on Internet-enabled devices creates new opportunities for both device and application makers. Covia Labs, a Mountain View-based startup, is one example of the innovative thinking already underway.

Third, the transition to Next Generation 9-1-1 will require the continued support of Congress, the FCC, NHTSA and NTIA. Last month, the FCC issued a detailed roadmap to Congress on how best to advance and deploy NG9-1-1 across our country. I am encouraged by the progress made to date and I believe our success will ensure that local 9-1-1 call centers can quickly and accurately deliver emergency information to our first responders.

So I want to thank all of our witnesses today for being here and for your commitment to advancing our Nation's public safety communications.

And with that, Mr. Chairman, I would like to ask unanimous consent that a letter from the National Governors Association relative to our hearing today be placed in the record.

Mr. WALDEN. Without objection.

[The information appears at the conclusion of the hearing.]

Ms. ESHOO. Thank you. I yield back. Does anyone want to use—Congresswoman Matsui, I would be happy to yield time to you.

Ms. MATSUI. I thank the ranking member for yielding me time.

Let me start by saying that FirstNet is here to stay and it is part of our responsibility to ensure it is efficient and well implemented. If not, we jeopardize the entire network and it is as simple as that.

I believe transparent governance is paramount and critical to ensure America's first responders have an efficient and effective interoperable network. I also believe states should and will play a critical role during this process. While not perfect, I believe the law put in place a strong governance framework with a focus on public-private partnerships to ensure we achieve our primary goal of providing a nationwide interoperable broadband network for our Nation's first responders.

Throughout my career, I have sat on a number of governance boards, and I truly understand the importance of their roles in providing clear leadership. Simply put, good governance is a linchpin of the public safety network that would determine success or failure. It must be done right from the outset.

Thank you, and I want to thank the witnesses for being here, and I yield back my time to the ranking member to do with as she pleases.

Would anyone like to use 35 seconds? I would be happy to yield. I yield back.

Mr. WALDEN. I now recognize the chairman of the full committee, the gentleman from Michigan, Mr. Upton.

OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. UPTON. Well, thank you, Mr. Chairman.

Today's hearing is going to examine how we communicate in times of emergency. The first panel is going to focus on implementing provisions in our spectrum legislation to create a nationwide interoperable public safety network. That law could raise as much as $7 billion for first responders, help build out the communications system, and still clear as much as 120 megahertz of spectrum to meet growing demand for wireless broadband. But to do so, the FCC must refrain from excluding potential bidders and maximize the amount of spectrum that it auctions and the revenue it raises. We also have to ensure that state and local governments play an integral role in designing that network.

The second panel is going to focus on how we communicate with our citizens and they with us when danger strikes. The emergency alert and 9-1-1 systems are pivotal links when the unfortunate happens, and I want to particularly welcome today my friend, Diane Kniowski, President and General Manager of WOOD TV, WOTV, and WXSP. These stations do an excellent job of keeping our communities in southwest Michigan informed both in times of emergency and during our day-to-day lives.

I would yield to other members wishing time. Seeing none, I yield back.

[The prepared statement of Mr. Upton follows:]

PREPARED STATEMENT OF HON. FRED UPTON

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# # #

Mr. WALDEN. The gentleman yields back the balance of his time. We now recognize the former chairman of the full committee, the gentleman from California, Mr. Waxman.

OPENING STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WAXMAN. Thank you very much, Mr. Chairman, for holding this hearing, and welcome to all of our witnesses and especially Sam Ginn, Chairman of the FirstNet Board. Mr. Ginn has offered to spearhead a historic undertaking that is vital to our Nation. We appreciate his service and the service of all the FirstNet board members.

Last year, Congress enacted the Public Safety and Spectrum Act, delivering on one of the last remaining recommendations from the 9/11 Commission to create a nationwide interoperable public safety broadband network for first responders. The Act was the result of bicameral, bipartisan negotiations that produced a strong and innovative law. Our job now is to work together to make the legislation a success.

To deliver on the promise of the law, we will need the cooperation of partners in industry and public safety. The Act was designed to take advantage of existing commercial networks and economies of scale. Given the magnitude of this project, it is critical that FirstNet and its partners operate efficiently and innovate aggressively.

There will be a substantial taxpayer investment in FirstNet. The law provides FirstNet with valuable spectrum and $7 billion to build the new public safety network. We need to ensure that these public funds go as far as possible, and I am pleased that most stakeholders seem to recognize this and are committed to this shared goal.

We have profound respect and appreciation for our first responders, and it is their dedication and the searing experience of 9/11 that led to the creation of FirstNet. Now it is time for public safety to step up again and help make this promise a reality. This will require all parties to put aside old turf battles and collaborate in a way that puts the success of the national network first.

On the second panel, we will learn more about the FCC's recent activities to investigate the reliability and resiliency of our Nation's communications networks. This is a critical issue. Climate change is supercharging storms. In the aftermath of Superstorm Sandy, power outages and floods disrupted many types of communications services, including wireless, television, telephone and Internet services. It is absolutely critical that we explore the impact of weather emergencies on communications reliability.

It is fitting that we are discussing communications reliability at the same hearing during which we consider the construction of a public-safety-grade broadband network for first responders. One question I hope we can answer is whether "public safety grade" will become the new normal in a world in which natural disasters are more frequent.

Again, I want to thank all of our witnesses for appearing today and for your commitment to advancing our Nation's public safety communications. I thank the chairman for scheduling this important hearing. I look forward to the testimony. There is another hearing going on at the same time, so I will be back and forth. It in no way indicates a lack of interest on my part. If I don't get to hear your testimony, I will certainly get a chance to review it, and I appreciate everybody's participation in this hearing. Yield back my time.

Mr. WALDEN. The gentleman yields back the balance of his time.

And now we are ready to hear from our witnesses. We welcome you all today. On panel one, to discuss the FirstNet issues and the interoperable public safety broadband network build-out, we have the Hon. Sam Ginn, who is Chairman of the First Responder Network Authority; Chris McIntosh, statewide Interoperability Coordinator for Virginia; Ray Lehr, Director of statewide Communications Interoperability Coordinator from Maryland; Admiral James A. Barnett, Jr., Rear Admiral, United states Navy, retired, former Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission, Partner and Co-Chair, Telecommunications Group, Venable LLP—that takes 20 seconds of your time; Declan Ganley, Chairman and CEO, Rivada Networks. We thank all of you for being here and giving us the great value of your testimony and counsel.

Mr. Ginn, we are going to open with you. It is good to see you again, and I look forward to your testimony, and thank you. Go ahead.

STATEMENTS OF SAMUEL GINN, CHAIRMAN, FIRST RESPONDER NETWORK AUTHORITY; CHRISTOPHER MCINTOSH, STATEWIDE INTEROPERABILITY COORDINATOR, VIRGINIA; RAY LEHR, DIRECTOR, STATEWIDE COMMUNICATIONS INTEROPERABILITY COORDINATOR, MARYLAND; ADM. JAMES A. BARNETT, JR., REAR ADMIRAL U.S. NAVY (RET.), FORMER CHIEF, PUBLIC SAFETY AND HOMELAND SECURITY BUREAU, FEDERAL COMMUNICATIONS COMMISSION, PARTNER AND CO-CHAIR, TELECOMMUNICATIONS GROUP, VENABLE LLP; AND DECLAN GANLEY, CHAIRMAN AND CEO, RIVADA NETWORKS

STATEMENT OF SAMUEL GINN

Mr. GINN. Thank you, Chairman Walden and Ranking Member Eshoo. Thank you for the invitation, and I would like to thank the committee for the opportunity to give you a status of where we are at FirstNet. But first I think we have all watched 9/11, Katrina, and more recently Sandy, and even if you have sat in a local operation dispatch center for the police department, you understand how important this legislation has been, and just as a citizen of this country, I want to thank you, and I want to thank Congress for this law because it was an incredible piece of legislation and I think if we can execute on our end, we will reduce cost, we will improve operations and we will save lives. So as Chairman of FirstNet, I thank you.

Now, these are the early days of FirstNet, and I think the question I would ask myself is, how are you doing, and I will try to answer that question in just a few minutes. I think the first thing you have to understand is, this is probably the largest telecom project in our history. We will be building the equivalent of a commercial network over the next few years with very interesting requirements. We expect to cover every square meter of land. We expect to penetrate Manhattan skyscrapers. We expect to implement a new technology, LTE. We expect to engineer a network that is multi-carrier based, and we expect to put in this network public sector features that help them do their job better. So I think the point of saying this is, this is going to be a massive, complex and challenging mission, and I just think we have to understand that as we move into implementation.

The second thing that I think is important is what kind of leadership is gathering around this mission, and I would like to talk a bit about the board of directors, and first of all, technical competence is so important. I mean, when you get right down to it, this is a massive technical effort, and we have recruited board members with technical wireless backgrounds. They have engineered wireless systems all across the United states. They have engineered systems in Germany, Italy, Spain, Portugal, Sweden, Japan, India and South Korea. So I think you could be assured that what we have recruited on the board is a group of people who know how to engineer wireless networks, and I am confident myself that we have that technical competence.

The other thing I think is important about the board is the public safety representation. We have members on our board from police, fire, sheriff and EMS, and not only from those institutions but these people happen to be leaders in their disciplines. They are quite active and they make wonderful contributions. Also on the board, we have members with backgrounds in state government and cities, many years of experience. They know the issues that those entities face on a day-to-day basis. And I think the most important thing that I can report to you today is this board is coming together. It is beginning to operate as a team, and I think that is a first, wonderful implication of getting this project off on the right foot.

The second thing that I think needs to be said is, this is a start-up. We are starting from a blank sheet of paper. We have no milestones to measure our performance. We have no employees to start with. We have no budget. We have no financial controls. We have no audit function. We have no history and no culture. And so institutions need to put all of these things in place, and we have been busy for the last few months putting these requirements in place. And I would say that things are coming together. Next week we will announce the appointment of a general manager, and I would guess that the senior manager of the team will be in place very quickly, so the report is, we are progressing to a more normal operation, which is, we can manage and measure.

Now, the other thing is that the world doesn't stop even though you have only a board and no employees, and so we have had to deal with a number of emerging issues. We have obviously had to deal with the conceptualization of the network itself, and let me

just be a little more specific here. We are going to implement an LTE system. The LTE system is a commercial system, and it has to be modified for public safety requirements. We are in the process of doing that. If you don't do that, if you don't embed public safety needs into the standards, the standards get published and manufacturers don't deliver the kind of capabilities that public safety needs. So we have been heavily involved in the standards process making sure that public safety issues are addressed. We have been conceptualizing multi-carrier networks, and there are not many of these world, and there is a lot of work that needs to be done in terms of proof of concept and do multiple-carrier networks really work and how do they work best. So we have taken directors who have taken full-time jobs, one on technology, to work on these issues. We have a full-time director of outreach because you discover very quickly that the public safety community and other communities, for that matter, have points of view and they demand to be understood, and we understand that because customer expectations are clearly the way to solve these issues.

Mr. Chairman, I will stop there and be willing to take your questions.

[The prepared statement of Mr. Ginn follows:]

Written Testimony of
Samuel Ginn
Chairman
First Responder Network Authority Board

Before the
Committee on Energy and Commerce
Subcommittee on Communications and Technology
United States House of Representatives

Hearing on
"Oversight of FirstNet and Emergency Communications"

March 14, 2013

I. Introduction

Chairman Walden, Ranking Member Eshoo, and Members of the Subcommittee, thank you for inviting me to testify on behalf of the First Responder Network Authority (FirstNet). I am pleased to discuss FirstNet's progress, working with states, tribes, local governments and public safety, to deploy a modern, nationwide, interoperable public safety wireless network.

It is truly an honor to be sitting before you here today. I have spent my entire career building wireless networks and creating and running the companies that design, operate and maintain those networks. To be appointed Chairman of FirstNet, and especially to be able to serve with such a deeply and diversely qualified Board, gives me an opportunity to give back some of that experience toward a mission of enormous importance to our country and America's first responders: to deliver cutting-edge communications technologies to protect them and our citizens, both in their day-to-day operations and during times of disaster. You have my commitment, as Chairman of this Board, that we will do everything we can to get this done quickly and to get it done right.

What Congress did in the Middle Class Tax Relief Act was insightful. You recognized the serious consequences for first responders that flowed for decades from a fragmented communications architecture: high costs due to a lack of economies of scale, a lack of crucially needed interoperability, and technology that lags woefully behind that which many teenagers have on their smartphone. You saw the problem and you created FirstNet, finally establishing a solid foundation upon which to correct all of these problems and to set the stage for major, life-saving advances in public safety communications. You have put important assets at our disposal, including the use of 20 megahertz of prime spectrum on a nationwide basis, substantial initial Federal financial support, and a single, strong network governance structure that is paired with considerable collaborative opportunities and flexibility at the state and territorial level. The FirstNet Board agrees with your vision, and excited to have the opportunity to put our collective talents toward deploying this network.

In addition to the resources made available by the Act, FirstNet stands to gain considerable momentum from the years of intensive collaboration that public safety and industry have expended on public safety user requirements, interoperability principles, and technical standards. Such efforts are exemplified by the recommended minimum technical requirements developed by the Federal Communications Commission's Technical Advisory Board for First Responder Interoperability; the National Public Safety Telecommunications Council's (NPSTC) Statement of Requirements; NPSTC's Public Safety Broadband High-Level Launch Requirements - Statement of Requirements for FirstNet Consideration; the Emergency Communications Preparedness Center's (ECPC) Federal Broadband Mission Needs Assessment; and, the responses to NTIA's Notice of Inquiry on FirstNet's conceptual network architecture presentation. We are indebted to the hundreds of public safety professionals, state and local

officials, and other stakeholders who have given their time and energy to develop these invaluable documents that will help to guide and accelerate FirstNet's work.

II. Designing and Deploying a Nationwide Broadband Network For America's First Responders

As Congress and the public safety community are well aware, the FirstNet model represents a significant step forward from the traditional model for public safety communications. Instead of having thousands of individual, dedicated, stand-alone public safety systems, built individually for law enforcement, fire and emergency medical services agencies, FirstNet will be an integrated, nationwide public safety network that brings together the assets of state, local, tribal, federal, terrestrial mobile, and satellite mobile communications into a single, complete network for first responders. This network will ensure that first responders have access to the same modern communications capabilities we all enjoy on our smartphones and mobile devices.

FirstNet's fundamental goal is to design and deploy a cutting-edge wireless broadband network that serves our Nation's first responders and the public safety community with highly-reliable, interoperable, nationwide wireless services, applications and user devices, at the lowest possible fees. A nationwide network that meets first responders' requirements for mission-critical coverage, interoperability, security and reliability. A network you can bet your life on.

We are driven by multiple, mutually reinforcing core concepts:

The network must have a single, standardized architecture that assures interoperability and seamless operation across and among jurisdictions and services, as well as interoperability with legacy public safety networks.

The nationwide network must enable local control, customization and optimization within a seamlessly interoperable framework.

It must meet the higher standards demanded by public safety – in terms of mission-critical reliability, security, resiliency, redundancy, fault tolerance and backup.

It must have standardized network services and applications, with a nationwide procurement platform for network, devices and service platforms.

It must provide ubiquitous coverage, exceeding even that of the largest commercial networks, in order to meet the needs of the first responders who serve in rural, remote and tribal areas of our country, many of which historically have not had access to the latest telecommunications technology, as well as urban and other critical areas, consistent with the recommendations of the 9/11 Commission.

It must, to the greatest extent possible, leverage existing infrastructure and benefit from the work of early deployers of 700 MHz long-term evolution (LTE) public safety systems.

It must be flexible to meet the current and evolving needs of public safety and to benefit from new technology innovations.

It must be a more secure network than its commercial counterparts; protecting data across all its network elements, resisting threats, and quickly mitigating any vulnerabilities.

It must promote an ever-developing array of applications from which local first responders can choose to customize and optimize the network to meet their needs.

Finally, the network, its devices and services *must* be affordable to all of its users. To this end, I am confident of one thing: FirstNet will offer public safety users across this country a network that provides the high level of security, resiliency and reliability they need, as well as

cutting edge applications and services, and we will do so in a way that is more affordable than any other alternative that could be provided.

The magnitude and complexity of our task is truly historic. Deploying a public safety grade wireless broadband network with the scale of U.S. nationwide geographic coverage is an international first. The FirstNet network will be distinctive from all other networks in two critical ways. First, it will be the only network that is ever built entirely to public safety-level specifications for security and reliability. Second, it will be the only network to cover an entire nation of our size geographically, as opposed to coverage by population centers. Combine these two features and you begin to see just how groundbreaking – and challenging – our task is.

The FirstNet network will need to cover all 56 states and territories, and serve more than 60,000 state, tribal, local and federal public safety entities. By our current estimates, to meet its coverage requirements, the network will require tens of thousands of cell sites and a large core network; the securing of satellite coverage for the hardest-to-serve areas; and negotiations with wireless carriers, rural telecommunications providers, utilities, networking and software engineers, and equipment vendors. And we do intend to partner with a wide range of carriers, vendors and other parties that have something valuable to offer.

Limited time and money, of course, compound our challenges. More than a decade after the tragedy of September 11, 2001 – and disasters such as Hurricanes Katrina and Sandy since then – we cannot afford a pace that is anything less than urgent. While our enabling legislation provided significant funding based on future spectrum auction proceeds, the sheer size, scope and complexity of the network require that FirstNet be as efficient as possible in everything we do, especially as we find innovative ways to leverage and optimize existing public and private assets. And of course, at the user end, FirstNet service will have to be affordable for first

responder agencies, whose budgets already are under pressure, along with the finances of states, tribes, counties and cities across the country.

III. FirstNet is Making Important Progress

Less than seven months since the Board was fully constituted, I am pleased to report that we are making substantial progress toward our ultimate goal. Most importantly, we are benefitting from an experienced, skilled and motivated board of directors, made up of leaders from first responder agencies, former state and local officials, the mobile telecommunications industry and key federal government agencies. Taken together, the Board members bring more than twelve decades of experience designing, constructing, and maintaining wireless networks, both in the United States and internationally; more than thirteen decades of experience in public safety; and a perspective honed by nearly four decades of service in federal, state and local government. I can attest that every member of the Board is fully committed to bringing the benefits of wireless broadband data services to our first responders across the Nation.

Last month, FirstNet transmitted its first Annual Report to Congress for Fiscal Year 2012, as directed by the Middle Class Tax Relief and Job Creation Act of 2012 (Act). That report, which is appended to this testimony, addresses an array of activities conducted by, or on behalf of, FirstNet for the period beginning with the Act's passage on February 22, 2012, through the end of Fiscal Year 2012, including the work of the Federal Communications Commission's Technical Advisory Board for First Responder Interoperability, the National Telecommunications and Information Administration's (NTIA) actions to implement the State and Local Implementation Grant Program (SLIGP), the recruitment and appointment of the Commerce-appointed FirstNet Board members, and the outcomes of the Board's inaugural meeting in September 2012.

FirstNet is now focused on a number of key preliminary activities and objectives that we hope to complete in the coming months. These include:

- Building a world-class organization and management team capable of launching the nationwide wireless start-up dedicated to first responders;
- Executing an aggressive consultation and outreach strategy with all of FirstNet's key stakeholders, including states, tribes, local governments, and public safety agencies;
- Conducting extensive market research of terrestrial and satellite wireless carriers to identify optimal financial and operational deployment alternatives for the nationwide public safety network;
- Conducting business and financial modeling of the various network deployment scenarios, as key stakeholders and potential partners provide input to FirstNet, in order to produce a FirstNet business and financial plan;
- Evaluating network engineering technologies and potential network designs to determine if they can realistically be implemented and meet public safety standards;
- Working with standards-setting bodies to ensure public safety critical communications elements are included in standards;[1]

[1] Notably, the current LTE standards development organization, 3GPP, announced in December 2012 that one of its top focus areas for Release 12 in 2013 will be standardization of LTE in support of Public Safety and Critical Communications. This is a result of the creation of FirstNet and the formal standards development activities that the Public Safety Communications Research program, a collaborative effort of NTIA and the National Institute of Standards and Technology (NIST), is performing on behalf of FirstNet. *See* http://3gpp.org/New-Opportunities-for-3GPP-in-Rel.

- Performing network coverage planning and engineering activities, including nationwide architecture planning for the core and transport architecture and moving towards procurement of required infrastructure; and
- Establishing standard operating procedures in consultation with the public safety entity network operators to ensure local control and incident response.

To allow FirstNet to get a quick start on this preliminary work, we have brought on a small team of accomplished experts on a temporary basis to provide immediate assistance with key areas such as coordinating outreach and possible network configurations. In the near-term, FirstNet will initiate an expanded talent search for our regular, full-time team of experts and staff.

It is important to emphasize that while FirstNet is gathering information and asking questions on possible network configurations, we will consult, as is required by the Act, before we make any final decisions on the architecture for the network deployment plan. We will keep the Committee informed of our progress on this preliminary work.

IV. Consultation and Outreach

While we are engaged in the preliminary activities discussed above, and working to identify and evaluate cornerstone components of the FirstNet network, we are undertaking simultaneously, and, in parallel, an aggressive and comprehensive stakeholder outreach campaign. These consultations are rightly mandated under the Act, as they are critical to ensuring that the nationwide network is tuned and optimized to meet the specific requirements of its users, and that FirstNet has a full understanding of the existing infrastructure that can be brought to bear for the network.

The Board has tasked its member Chief Jeffrey Johnson, Past President of the Western Fire Chiefs Association, who serves as FirstNet's acting User Advocacy Officer, to develop a broad-ranging, comprehensive consultation and outreach strategy. This strategy is comprehensive. First, it encompasses the formal consultation process between FirstNet and state, regional, tribal, and local jurisdictions, which will identify, plan and implement the most efficient and effective way to utilize and integrate the infrastructure, equipment, and other architecture associated with the network. Federal agencies also will play a role in the successful deployment of the public safety broadband network, and the Board is excited about working with federal agencies to determine where and how federal assets and expertise can be leveraged for the benefit of the nationwide network and public safety first responders.

Our outreach must also extend across the full scope of both formal and informal interactions with our many stakeholders that we must engage to be successful. Certainly the Act's formal consultation process, which will culminate in every state's decision regarding its full participation in FirstNet's network deployment plan, must have the highest priority on our agenda. We also know, however, that long after the states have made their decisions regarding our network deployment plan, first responders in public safety agencies at every level of government will make their own daily judgments on the value and effectiveness of FirstNet's services and applications. This demands that we develop and maintain an ongoing dialogue with all stakeholders. The early phases of our consultation strategy include hosting a series of "listening tour" meetings, which will enable us to engage directly with the Governors of the states and territories, federal and state-level officials, and public safety stakeholders.

FirstNet's outreach to public safety users – our customers – is critical to ensure our network meets the unique and specialized needs of first responders. Our outreach goal is to

create informed consumers and partners of FirstNet services so that we can design a network that achieves "street-level" demand. We will achieve this by directly engaging with state, tribal, county, local, and federal officials; as well as public safety trade associations, trade unions and others, through an array of meetings, workshops, conferences, media and print publications.

With respect to states and territories, our first priority is to develop lasting relationships with Governors, the states' designated single officer or governmental body to coordinate implementation of the SLIGP grant funds, Statewide Interoperability Coordinators, state Chief Information Officers, and other state and territorial officials to fully understand their needs, their cost constraints, and what existing expertise, lessons learned and infrastructure they can offer to ensure the nationwide network meets those needs. We seek to build relationships built on mutual trust, understanding and open information exchange, while preparing for their full participation in the network.

FirstNet recently announced the final membership and structure of our Public Safety Advisory Committee, which is comprised of state, tribal and local organizations, and I'm pleased that its first face-to-face meeting is expected to take place in April. FirstNet will utilize this Advisory Committee not only as a key source of expertise and information, but also as a functional means of outreach to the representatives' sponsoring organizations and the broader public safety community. We will provide periodic updates to the Public Safety Advisory Committee Executive Committee, utilize the Advisory Committee's leadership as presenters at conferences and as advocates conducting direct outreach and, of course, solicit their feedback.

FirstNet is also committed to engaging with tribal jurisdictions to ensure their unique needs are met as we design and deploy the nationwide network. Our strategy includes immediate and ongoing meetings with tribal representatives at regional "listening tour" meetings and other

events to understand tribes' priorities and concerns, as well as working closely with both the Department of Justice, which has substantial presence through tribal public safety groups, and NTIA through its State and Local Implementation Grant Program.

The FirstNet Board has been hard at work trying to resolve issues associated with the seven partially suspended Broadband Technology Opportunity Program (BTOP) public safety projects, and has made significant progress to date. Led by member Sue Swenson, Board members conducted site visits before the end of last year with every one of the BTOP grantees to educate themselves on the specific project goals, their status and what they might offer FirstNet, both in terms of lessons learned and their incorporation into the nationwide network. Based on our site visits and other discussions with the projects' leaders and vendors, we've determined that these projects could provide benefits to FirstNet's nationwide deployment efforts and generate valuable lessons learned on the challenges we face. We are now engaged in a 90-day period to negotiate the terms and conditions of spectrum lease agreements that would provide FirstNet with the requisite confidence to recommend to NTIA that it allow these projects to resume and transform potential benefits into the tangible results of meaningful, working relationships between FirstNet and the BTOP grantees, as well as safeguarding taxpayers' investments.

FirstNet is also engaging with the vendor, manufacturing and services communities in order to maximize the quality of FirstNet products, offerings and operations. We have already received substantial and valuable input from an array of vendors in response to a Notice of Inquiry last fall, and have plans to hold several topic-specific open forums during the upcoming months where vendors can come together and learn about FirstNet requirements and provide valuable information about their company's capabilities. Additionally, we plan to engage vendor

trade associations through their advisory boards, trade conferences and other events. Finally, FirstNet already is and will continue to engage leaders in the technical community, including applications developers, who have contributions to make to FirstNet.

V. Flexibility Is Crucial to FirstNet's Timeliness and Cost-Effectiveness

While the FirstNet Board has unmatched experience in deploying, managing, and operating large scale mobile networks, we also operate within the structure of the NTIA and Department of Commerce and the federal laws, regulations and processes required for procurements and staffing. The magnitude and complexity of FirstNet's task requires that we negotiate with hundreds of wireless carriers, equipment manufacturers, and other vendors on all aspects of the network. The challenges of the multitude of complex and multi-tiered regulations and requirements that currently apply to our activities will add significantly to the costs and timeframes for deploying the FirstNet network, especially compared to the Board's collective experience deploying private sector wireless networks.

Let me be clear: FirstNet does not seek to modify in any way – and indeed believes it crucial to ensure – its statutory obligation to conduct procurements in a manner that is open, transparent and competitive. We want to work with Congress, especially the members of this Subcommittee, to explore obvious and reasonable measures that could avoid added costs and ensure we can deploy the network without unnecessary expense or undue time delay. I appreciate the consideration of this Subcommittee on how FirstNet can most effectively meet this challenge and will continue to communicate with Congress regarding this matter as necessary and appropriate.

VI. Conclusion

I want to again commend the bipartisan leadership of this Subcommittee, and Congress as a whole, for its leadership and support for the Middle Class Tax Relief and Job Creation Act of 2012. As the representatives of the taxpayers who are providing FirstNet with our start-up funding, Congress has a critical interest in FirstNet's operations. We recognize the importance of Congressional oversight over our activities, as well as our obligation to keep you informed of our ongoing activities, achievements and any challenges we face. FirstNet believes that your continued involvement is necessary to the success of our mission to deploy a nationwide, interoperable public safety broadband network for our Nation's first responders and for our country.

Thank you again. I am pleased to answer any questions you may have.

First Responder Network Authority
c/o National Telecommunications and Information Administration
United States Department of Commerce
1401 Constitution Avenue, N.W., Suite 4898
Washington, D.C. 20230

February 12, 2013

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

On behalf of the Board members of the First Responder Network Authority (FirstNet), I am pleased to transmit FirstNet's first Annual Report to Congress. As directed by the Middle Class Tax Relief and Job Creation Act of 2012 (Act), this report covers the activities conducted by, or on behalf of, FirstNet for the period beginning with the Act's enactment on February 22, 2012, through the end of Fiscal Year 2012. The report also includes notable activities of the Department of Commerce and its National Telecommunications and Information Administration (NTIA) during this period, including the early stages of implementation prior to the appointment of the non-permanent Board members in August 2012.

I firmly believe that the FirstNet Board is uniquely qualified to undertake the critical task that Congress has entrusted to it: to design, deploy and operate the nationwide interoperable public safety broadband network that first responders need and that was so grievously absent on September 11, 2001, and during subsequent disasters around the country. Taken together, the members of the Board bring more than twelve decades of experience designing, constructing and maintaining wireless networks, both in the U.S. and internationally; more than thirteen decades of experience in public safety; and a perspective honed by nearly four decades of service in State and local government. I can attest that every member of the Board is committed 100 percent to the success of FirstNet's mission to establish a superior organization and to build a network that not only meets the unique needs of public safety users, but also is technologically superior, cost-effective for users, and, ultimately, financially self-sufficient.

Although FirstNet has been in existence for only a brief period of time, a good deal of initial groundwork has already been performed by the Department of Commerce, NTIA, and by the Board. For instance, NTIA has worked expeditiously to implement its State and Local Implementation Grant Program, which will assist State, regional, tribal and local jurisdiction with their planning for the nationwide network. Additionally, the Board initiated a dialogue with stakeholders through its issuance of a Notice of Inquiry on how it might design a network and develop software applications. Board members have been engaged in extensive outreach with key constituencies, including public safety groups; State, local and tribal entities; jurisdictions planning and/or deploying local 700 MHz public safety networks; and others, to share ideas on how best to build the nationwide public safety network. We also are working with entities, such as the National Governors Association; the U.S. Conference of Mayors; public safety groups;

State, local and tribal organizations; and others, to leverage all available resources and expertise toward our shared goal of serving the urgent communications needs of America's State, regional, tribal, local and Federal first responders.

While this initial report provides information about activities undertaken through September 30, 2012, including FirstNet's inaugural Board meeting on September 25th, FirstNet and NTIA have undertaken substantial activity since then. Your continued support for FirstNet is enormously appreciated, and I look forward to keeping you updated on our activities as we move forward. If you have any questions regarding this report or any other FirstNet matter, please feel free to contact me.

Sincerely,

Sam Ginn
Chairman of the Board

Enclosure

FIRST RESPONDER NETWORK AUTHORITY

ANNUAL REPORT TO CONGRESS
FOR
FISCAL YEAR 2012

Submitted to the

Committee on Commerce, Science and Transportation
United States Senate

and the

Committee on Energy and Commerce
United States House of Representatives

February 2013

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I. Introduction and Background

Pursuant to Section 6210 of the Middle Class Tax Relief and Job Creation Act of 2012 (Act), the First Responder Network Authority (FirstNet) provides this Annual Report on its operations, activities, financial condition and accomplishments during the preceding fiscal year.[1] President Obama signed the Act into law on February 22, 2012; thus, this is FirstNet's initial annual report, covering relevant activities from the date of enactment through September 30, 2012.

The Act establishes FirstNet as an independent authority within the National Telecommunications and Information Administration (NTIA) and authorizes FirstNet to take all actions necessary to ensure the building, deployment and operation of a nationwide public safety broadband network based on single, national network architecture. FirstNet is responsible for, at a minimum, ensuring nationwide standards for use and access of the network; issuing open, transparent and competitive requests for proposals to build, operate and maintain the network; leveraging, to the maximum extent economically desirable, existing commercial wireless infrastructure to speed deployment of the network; and managing and overseeing the implementation and execution of contracts or agreements with non-Federal entities to build, operate, and maintain the network.

The Act also assigns specific responsibilities to NTIA, including implementation of the State and Local Implementation Grant Program, which will support the efforts of State, regional, tribal, and local jurisdictions to identify, plan and implement the most efficient and effective way to utilize and integrate the infrastructure, equipment, and other architecture associated with the network.

II. Activities Prior To Appointment of the Non-Permanent FirstNet Board Members

A number of key implementation efforts took place during the period between enactment of the Act and the appointment of the 12 non-permanent Board members on August 20, 2012. These activities laid a crucial foundation for the successful launch of FirstNet and its initial efforts.

A. Technical Advisory Board for First Responder Interoperability

Section 6203 of the Act established a Technical Advisory Board for First Responder Interoperability (Technical Advisory Board) within the Federal Communications Commission (FCC) to develop recommended minimum technical requirements to ensure a nationwide level of interoperability for the nationwide public safety broadband network, which are based on commercial Long Term Evolution (LTE) standards. The Act requires FirstNet to use these recommendations, without materially changing them, in its development of open, transparent, and competitive requests for proposals (RFPs) to private sector entities for the network's deployment, operations and maintenance.[2]

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[1] Middle Class Tax Relief and Job Creation Act of 2012, Public Law 112–96, 126 Stat. 156 (2012).
[2] *See* Section 6206 of the Act.

On May 22, 2012, the Technical Advisory Board reported its recommended minimum technical requirements to the FCC, which it developed in consultation with NTIA, the National Institute for Standards and Technology (NIST) and the Office of Emergency Communications of the Department of Homeland Security (DHS). On June 21, 2012, the FCC issued these recommendations for FirstNet.[3]

B. NTIA Actions to Implement the State and Local Implementation Grant Program

As noted above, the Act tasked NTIA with administering the State and Local Implementation Grant Program (SLIGP), which will support important consultation activities between FirstNet and State, regional, tribal, and local jurisdictions. Congress directed NTIA, in consultation with FirstNet, to establish certain programmatic requirements to govern the SLIGP not later than six months after the date of enactment (*i.e.*, by August 22, 2012). To help meet this milestone, NTIA issued a Request for Information (RFI) on May 16, 2012, seeking public comment on various issues relating to the development of the grant program. Specifically, the RFI requested comment on how FirstNet should conduct the consultation process with State, regional, tribal, and local jurisdictions; how to incorporate existing public safety governance and planning authorities into the development of the nationwide public safety broadband network; how best to leverage existing infrastructure for use in the nationwide public safety broadband network; what State and local actions should be eligible grant activities; and issues related to State funding and performance requirements.

In response to its RFI, NTIA received approximately 70 comments from a wide range of stakeholders, including States, local and tribal governments, Federal agencies, trade associations, private companies, consultants, and individuals. The majority of these comments discussed each of the issues identified in the RFI. NTIA considered the RFI comments to help shape the SLIGP's programmatic requirements.

Upon the Acting Secretary of Commerce's August 20, 2012, announcement of the appointed members of the FirstNet Board, NTIA initiated consultations with FirstNet on these SLIGP programmatic requirements. On August 21, 2012, NTIA issued a Notice, which described the programmatic requirements under which NTIA will award grants to assist State, regional, tribal, and local jurisdictions with planning for a nationwide interoperable public safety broadband network.[4]

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[3] As required by the Act, the Technical Advisory Board disbanded on July 6, 2012. The Technical Advisory Board's recommendations can be found at: http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0621/FCC-12-68A3.pdf.

[4] Links to NTIA's RFI, the comments received in response, and its Notice on the SLIGP programmatic requirements can be found at: http://www.ntia.doc.gov/federal-register-notice/2012/development-programmatic-requirements-state-and-local-implementation-gr.

C. Recruitment of Candidates for the Non-Permanent FirstNet Board Members

FirstNet is headed by a Board with 15 voting members. The Act names the Secretary of Homeland Security, the Attorney General, and the Director of the Office of Management and Budget as permanent members of the FirstNet Board, and charged the Secretary of Commerce with selecting the Board's remaining 12 members no later than 180 days after the Act's passage (*i.e.*, by August 20, 2012). At the direction of the Secretary of Commerce, NTIA conducted extensive outreach to the public safety community, all levels of government, industry, and the public at large to solicit nominations for candidates to the Board who satisfied the Act's requirements for membership.

While NTIA's outreach included numerous meetings and conversations with interested groups and individuals concerning Board membership issues, NTIA's formal recruitment efforts included a May 7, 2012, recruitment announcement, which it published in the *Federal Register*, as well as its May 22, 2012, release of a FirstNet Board Recruitment Prospectus, which NTIA posted on its website.[5] Both documents provided interested parties with additional background on FirstNet, statutory requirements for Board member eligibility, and the process by which candidates could be submitted for consideration.

NTIA also conducted due diligence for the Board member candidates. Based on the information it obtained, NTIA recommended a slate of candidates to the Acting Secretary of Commerce that met the mix of expertise and representation required by the Act.

D. NTIA's General Outreach and Education on FirstNet and the Act

In addition to NTIA's outreach for Board membership purposes, NTIA engaged in extensive outreach and educational efforts across the breadth of FirstNet's stakeholders. NTIA conducted formal and informal meetings with a variety of interested groups and individuals about the Act, including representatives of State, local, tribal, and territorial governments; public safety and first responder associations; private sector groups; publicly and privately-owned utilities; rural interests; and Federal agencies. NTIA participated in informational webinars and briefings, sent representatives to speak to stakeholder meetings and conferences in the Capital region and throughout the country, and conducted numerous interviews with general and trade media. NTIA also expanded its website to facilitate public access to current information about FirstNet and public safety issues.[6]

NTIA's outreach efforts have continued following the appointment of the non-permanent FirstNet Board members on August 20, 2012, both with respect to NTIA's own responsibilities under the Act, as well outreach activities in support of FirstNet, as requested by the Board.

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[5] The May 7, 2012, Recruitment Announcement and the May 22, 2012 Prospectus can be found, respectively, at: http://www.ntia.doc.gov/files/ntia/publications/fr_firstnet_bod_notice_120510.pdf and http://www.ntia.doc.gov/other-publication/2012/firstnet-board-directors-recruitment-prospectus.

[6] *See* http://www.ntia.doc.gov/category/public-safety.

E. NTIA's Partial Suspensions of BTOP Public Safety Projects

NTIA administers the Broadband Technology Opportunities Program (BTOP), a $4.4 billion competitive grant program funded through the American Recovery and Reinvestment Act of 2009.[7] BTOP is intended to accelerate broadband deployment in unserved and underserved areas and enhance broadband capacity and adoption, particularly among vulnerable populations, while also spurring job creation and stimulating long-term economic growth and opportunity, key objectives of ARRA. Through BTOP, NTIA oversees approximately 120 investments to expand broadband infrastructure in communities nationwide. Seven of these grants, awarded in 2010, support projects to deploy public safety wireless broadband networks. NTIA awarded these grants after the FCC authorized these jurisdictions, on a conditional basis, to use 700 MHz spectrum to deploy public safety broadband systems.

The passage of the Act in February 2012 substantially altered the landscape for these seven projects by directing the development of a nationwide public safety broadband network based on single, national network architecture. As a result, on May 11, 2012, NTIA partially suspended the seven BTOP-funded 700 MHz public safety projects to ensure that they proceed in a manner that supports development of the nationwide, interoperable network that meets the letter and spirit of the Act. NTIA continued to work with the grantees so that the grant funds could remain in their communities and that any taxpayer dollars would be spent on facilities and equipment that could be incorporated into FirstNet's network. NTIA also required these jurisdictions to avoid "high risk" investments that would be likely to require replacement if they were incompatible with a single, nationwide interoperable public safety broadband network. NTIA asked the jurisdictions to submit a revised statement of work and budget to determine which non-LTE aspects of their project might continue.[8]

III. Operations, Activities and Accomplishments of FirstNet in Fiscal Year 2012

A. Appointment of the Non-Permanent FirstNet Board Members

The Act requires that FirstNet be led by a fifteen-person Board, with the Secretary of Homeland Security, the Attorney General, and the Director of the Office of Management and Budget serving as permanent members of the Board. Congress charged the Secretary of Commerce with appointing twelve non-permanent members. By law, the term of all non-permanent FirstNet Board members is three years. However, the terms of the inaugural non-permanent FirstNet Board members are staggered, with four members serving three years, four serving two years, and four serving one year.[9]

On August 20, 2012, in a speech at the Opening General Session of the Annual Conference of the Association of Public-Safety Communications Officials (APCO) International, Acting Secretary of Commerce Rebecca Blank announced her appointment of the twelve non-permanent members of the FirstNet Board. Each member of this diverse group brings considerable public

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[7] American Recovery and Reinvestment Act of 2009, Public Law 111-5, 123 Stat .115 (2009) (ARRA).
[8] More information on NTIA's BTOP program, including the public safety projects, can be found at: http://www2.ntia.doc.gov/.
[9] Non-permanent FirstNet Board membership is limited to two consecutive full three-year terms.

safety, network, technology, and/or finance expertise. They also have a broad range of experience in working with State, regional, territorial, tribal, and local jurisdictions. They include (noting length of term):

- Tim Bryan, CEO, National Rural Telecommunications Cooperative (3 years)
- Charles "Chuck" Dowd, Deputy Chief, New York City Police Department (2 years)
- F. Craig Farrill, Wireless telecommunications executive (3 years)
- Paul Fitzgerald, Sheriff, Story County, Iowa (2 years)
- Samuel "Sam" Ginn, Telecommunications executive (2 years)
- Jeffrey Johnson, Fire Chief (retired); former Chair, State Interoperability Council, State of Oregon; CEO, Western Fire Chiefs Association (1 year)
- William Keever, Telecommunications executive (retired) (1 year)
- Kevin McGinnis, Chief/CEO, North East Mobile Health Services (3 years)
- Ed Reynolds, Telecommunications executive (retired) (2 years)
- Susan Swenson, Telecommunications/technology executive (1 year)
- Teri Takai, Government information technology expert; former CIO, States of Michigan and California (1 year); and
- Wellington Webb, Founder, Webb Group International; former Mayor, Denver, Colorado (3 years)

Acting Secretary Blank appointed Samuel "Sam" Ginn as the Chairman of the FirstNet Board. Chairman Ginn, a pioneer and leader in the wireless telecommunications industry, brings more than four decades of senior operations and management experience.[10]

B. Inaugural Meeting of the FirstNet Board

The FirstNet Board held its inaugural meeting in Washington, D.C. on September 25, 2012.[11] During this meeting, the Board adopted (unanimously) ten resolutions executing organizational and administrative matters, which are described below.[12]

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[10] Additional information on the FirstNet Board, including brief biographies of its members, can be found at: http://www.ntia.doc.gov/other-publication/2012/acting-secretary-rebecca-blank-announces-board-directors-first-responder-netw.

[11] Board meetings are webcast, and archives of meetings (including webcasts and transcripts) can be found at: http://www.ntia.doc.gov/category/public-safety?page=1.

[12] The complete text of each Resolution can be found at: http://www.ntia.doc.gov/other-publication/2012/firstnet-board-actions-09252012.

1. Organizational and Administrative Resolutions

a) Resolution to Adopt FirstNet Bylaws

The Board adopted its Bylaws and made them accessible to the public on NTIA's website.

b) Resolution on State and Local Consultation Process

The Board resolved to establish a State, Regional, Local and Tribal Consultation Committee and directed the Committee to establish and implement a State, Regional, Local and Tribal Consultation Plan. The resolution also requested that NTIA assist the Committee in the development and implementation of the Plan.

c) Resolution on State and Local Implementation Grant Consultation Process

The Board directed its State, Regional, Local and Tribal Consultation Committee to consult and collaborate with NTIA on the administration of the State and Local Implementation Grant Program, and to help ensure the program's success.

d) Resolution on Public Safety Advisory Committee

The Board resolved to establish its standing Public Safety Advisory Committee (PSAC) by drawing upon the existing membership of SAFECOM (which is administered by the Department of Homeland Security (DHS)) and directed the FirstNet Chair to work with DHS to establish the PSAC and appoint its Chair and Vice Chairs.

e) Resolution on FCC Notification on the FirstNet Spectrum License

The Board directed its Chair to formally request the FCC to immediately issue its license for the consolidated broadband spectrum to be utilized by the network. Accordingly, on September 25, 2012, Chairman Ginn transmitted a request for the license to the Chief of the FCC's Public Safety and Homeland Security Bureau.[13]

f) Resolution on BTOP Public Safety Projects

The Board directed its Planning and Technical Chair, in consultation with NTIA, to examine the BTOP-funded public safety projects and make recommendations to NTIA on whether and how such projects could support the development of the network.

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[13] Chairman Ginn's letter can be found at: http://www.ntia.doc.gov/files/ntia/publications/letter_from_firstnet_chairman_sam_ginn_to_pshs_bureau_chief_turetsky_9-25-12.pdf. Subsequently, on November 15, 2012, the FCC granted FirstNet's license, a copy of which can be found at http://wireless2.fcc.gov/UlsApp/UlsSearch/license.jsp?licKey=3422973.

g) Resolution on Service Level Agreement with NTIA

The Board directed its Chair to negotiate and execute a service level agreement with NTIA, under which NTIA would provide administrative, technical, staffing and other resources to FirstNet, as requested.

h) Resolution Appointing FirstNet Secretary

The Board appointed Uzoma Onyeije of NTIA as Secretary of FirstNet, pursuant to the NTIA service level agreement, with the powers and duties as set forth in FirstNet's Bylaws and as assigned by the Board or its Chair.

i) Resolution on FCC Advocacy

The Board requested that NTIA monitor activities at the FCC that might affect FirstNet's interests, and, as needed, represent FirstNet's interests consistent with the Act. In doing so, NTIA will take direction from the Board's Chair on policy matters and coordinate on FCC technical matters with FirstNet's Planning and Technical Chair.

j) Resolution on Standards Advocacy

The Board directed its Planning and Technical Chair to develop and implement a plan to coordinate efforts with NTIA to ensure that public safety network users' interoperability interests are represented effectively in standards-setting venues, and requested the assistance of NTIA and NIST in developing this plan.

2. Conceptual Presentations by Board Members and Notice of Inquiry

In addition to adopting the resolutions described above, two Board members shared conceptual presentations on a possible network design and on developing software applications for public safety use. These presentations were intended to provide a starting point for discussions within the Board, as well as with FirstNet's many stakeholders.

a) Presentation on a Conceptual Network Architecture

Board member Craig Farrill shared a presentation outlining a possible framework for designing the public safety network architecture in a manner that leverages existing resources and infrastructure, as is contemplated in the Act. Specifically, the FirstNet Nationwide Network (FNN) concept presented by Mr. Farrill would leverage the significant investments and combined efforts of the public sector and the commercial wireless industry to achieve the major elements of the nationwide wireless network called for under the Act, including ubiquitous coverage, reliable, redundant, and interoperable service, at reduced costs and with accelerated availability.[14]

[14] Mr. Farrill's presentation can be found at: http://www.ntia.doc.gov/files/ntia/publications/firstnet_fnn_presentation_09-25-2012_final.pdf.

b) Presentation on Public Safety Applications

Chairman Sam Ginn also discussed a general concept for developing applications designed specifically for public safety users. Under this general concept, FirstNet would seek to understand what applications Federal, State, tribal, and local public safety users would like to see developed. FirstNet would define interface and certification requirements for FirstNet applications, and would call on innovators to develop applications for the public safety community to use to do its job better and more safely. The public safety community could download these applications, thus enabling public safety users nationwide to benefit from individual innovations.

c) Notice of Inquiry to Seek Public Comment on Board Presentations

At the conclusion of these presentations, the Board requested NTIA to issue a Notice of Inquiry (NOI) to solicit comment and input from all interested parties. On October 1, 2012, NTIA issued this NOI, which was published in the *Federal Register* on October 4, 2012. The NOI had an initial comment deadline of November 1, 2012, which was subsequently extended to November 9, 2012, to accommodate those impacted by Hurricane Sandy.[15]

IV. Financial Condition of FirstNet

Section 6413 of the Act establishes the Public Safety Trust Fund (PSTF) and requires that proceeds of various Federal Communications Commission (FCC) spectrum auctions be deposited into the PSTF. Section 6413 of the Act also provides that amounts in the PSTF be used for repayment of authorized borrowings, specific programs, and deficit reduction. Section 6207 of the Act establishes that prior to the deposit of proceeds into the PSTF, NTIA may borrow up to $2 billion from the Treasury to implement Subtitle B of the Act.

Section 6206(e)(1) of the Act establishes the Network Construction Fund (NCF). Section 6413(3) requires that $7 billion less approximately $2 billion (any borrowing NTIA made under Section 6207 for FirstNet's initial funding and its own costs in implementing Subtitle B of the Act) be deposited into the NCF from the spectrum auction proceeds deposited into the Public Safety Trust Fund. In May 2012, NTIA and Treasury signed formal agreements establishing borrowing capability and roles and responsibilities between the two entities. In June 2012, the U.S. Treasury established the PSTF and the NCF.

On June 14, 2012, the Office of Management and Budget approved an apportionment in the amount of $2,238,000.[16] The apportionment request was estimated to cover necessary expenses of NTIA in establishing FirstNet, among other activities, as directed in the Act.

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[15] The NOI can be found at: http://www.ntia.doc.gov/federal-register-notice/2012/notice-inquiry-firstnet-conceptual-network-architecture; the comments received in response are posted at: http://www.ntia.doc.gov/federal-register-notice/2012/comments-nationwide-interoperable-public-safety-broadband-network-noi.

[16] Prior to funds being obligated by a program, an apportionment must be requested by the program and fully executed by the Office of Management and Budget (OMB). An apportionment is an OMB-approved plan to use budgetary resources as defined in 31 U.S.C. §1513(b) and Executive Order 11541. It typically limits the obligations

Snapshot of FirstNet Funding as of September 30, 2012:

Funds borrowed from Treasury	$2,238,000
Obligations	$1,017,679
Outlays	$213,921
Auction Receipts Deposited into the PSTF	$0
Funds Deposited into the NCF	$0

NTIA is working closely with FirstNet to ensure apportionments are accurate and reasonable. The obligations consist primarily of salaries, benefits and costs associated with NTIA personnel and Board members of FirstNet. Additionally, NTIA awarded a contract for management oversight and acquisition planning assistance associated with the formation of the FirstNet. NTIA borrows funds as necessary to timely cover outlays of NTIA and FirstNet. Once spectrum auctions are held and the FCC deposits receipts to the deposit account established in Treasury, NTIA and the FCC will work closely to record these revenues to the PSTF. At that point, NTIA will repay any borrowings to Treasury, as required by the Act.

Additionally, NTIA will transfer funds to the NCF as required by the Act for the activities of the NCF up to $7 billion.

V. Recommendations for Legislative and Administrative Actions

The FirstNet Board – including its members with expertise in designing and constructing wireless networks, public safety communications, and State, Federal and local matters – believes, as a general matter, that it can achieve its mandated goal of a nationwide public safety broadband network under the statutory framework established by Congress. Indeed, by establishing FirstNet, having it hold a single public safety 700 MHz wireless broadband license, and empowering it to take all actions necessary to ensure the design, deployment and operation of the nationwide public safety broadband network, the Act promises to finally overcome the many technical, cost, and governance-related challenges that doomed prior efforts to ensure nationwide interoperability.

During Fiscal Year 2012, and to date, FirstNet has focused on establishing the organizational infrastructure and processes necessary for its baseline operations, as well as soliciting input from, and initiating consultations with, key stakeholders regarding a conceptual network design that will best serve the needs of the public safety community and that can be made operational expeditiously and within its limited budget. FirstNet seeks the necessary flexibility to negotiate with wireless carriers, manufacturers, and other vendors to expedite deployment of a high-quality, reliable, and efficient nationwide wireless broadband network for our first responders at the best value to the American taxpayers and the public safety community. To this end, FirstNet has been working with acquisition, legal, and other officials within the Department of

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that a program may incur for specified time periods, programs, activities, projects, objects, or any combination thereof. It may also place limitations on the use of other resources such as personnel, or property. An apportionment is legally binding, and obligations and expenditures (disbursements) that exceed an apportionment are a violation of, and are subject to reporting under, the Anti-deficiency Act (31 U.S.C §1517(a)(1), (b)).

Commerce, and consulting with officials in other agencies that have undertaken acquisitions for related first responder-type services. This outreach is helping FirstNet both to understand how flexibilities within current procurement laws and regulations may best be used to support its statutory responsibilities and if additional legislative or administrative authorities may increase the likelihood of successful and timely deployment. Importantly, FirstNet does not seek to modify in any way – and indeed believes it crucial to ensure – its statutory obligation to conduct procurements in a manner that is open, transparent and competitive.

Similarly, FirstNet has been reviewing current personnel laws and regulations and considering if legislative and/or administrative relief might help to attract and retain senior level experts to design the network and to develop and execute a viable, sustainable plan. FirstNet will continue to communicate with Congress regarding this matter as necessary and appropriate.

Mr. WALDEN. Thank you, sir.

We will now turn to Mr. McIntosh. We are pleased that you are here to give us from an on-ground perspective as the statewide Interoperability Coordinator for Virginia, and please pull that mike up close and you have got your 5 minutes. Thank you.

STATEMENT OF CHRISTOPHER MCINTOSH

Mr. MCINTOSH. Thank you, Chairman Walden, Ranking Member Eshoo, distinguished members of the committee.

Communications is the one constant that forms the foundation for all other public safety disciplines. It is the bedrock of every response plan, the core of every procedure. In the past 11 years, billions of dollars have been spent across the Nation on communications programs. New radio systems have been fielded, interoperability has been greatly improved, and the ability of our first responders to communicate is better than ever.

Unfortunately, funding levels have fallen precipitously. Virginia has seen consecutive 50 percent cuts in federally funded state homeland security grant programs, and historically, almost 30 percent of that funding has gone to support and maintain communications. In 2011 alone, the Commonwealth received $43 million in requests from localities for communications grant funding and was only able to award $2 million. Virginia has also recently seen the loss of funding of two Urban Area Security Initiatives resulting in the reduction of tens of millions of dollars in annual funding. Much of that went to communications program as well.

We stand on the verge of a revolution in emergency communications capabilities. However, traditional land mobile radio systems are beginning to become integrated with Voice over Internet Protocol technologies. By fusing voice communications with Internet technologies, new possibilities are becoming a reality. Virginia operates one of the largest public safety Voice over IP networks in the Nation. Soon any laptop, tablet or smartphone in the hands of a Virginia public safety professional will become a radio capable of communicating with any PSAP in the state or any responder on a radio connected to it and fusing that with crisis management video and geospatial and system-based information to allow previously unheard-of levels of situational awareness.

All of these capabilities rely on reliable connectivity, and public safety broadband offers a solution that addresses many of the connectivity issues faced by public safety. Now public safety professionals will have the opportunity to have unfettered access to wireless communications in order to improve their ability to respond to incidents safely and effectively. The challenge lies in making all this a reality in the current fiscal environment.

Public safety communications budgets, like other budgets, are heavily encumbered with existing core funding needs and have little flexibility to fund new programs or new capabilities. Public safety broadband will not replace existing or planned land mobile radio systems in the near future. LMR has proven its reliability, survivability and usability many times over. Cellular technologies, on the other hand, have proven to be susceptible to widespread failure during natural disasters. Cellular infrastructure density results in a dependence on reliable power supplies and redundant backhaul

connectivity that is a major vulnerability. Even after mitigations to these issues are designed into the network, it will be some time before we can adequately evaluate their effectiveness. The cost of public safety broadband will be in addition to current land mobile radio costs currently paid by state and local governments. The time horizon for replacing LMR cost with public safety broadband cannot be determined.

The FirstNet Board has been on the record to state that the network will cover every square meter of the United states. They must do this with a network that greatly exceeds the design specifications and redundancies of commercial networks but with a fraction of the resources the private sector has currently expended in a network that only covers two-thirds of the country. The states are understandably nervous that the combination of increased costs and insufficient funding will result in the uncovered costs being passed on to state and local governments, further diminishing funding for other core first responder necessities. In light of this, states need the ability to define the level of partnership that they will engage in with FirstNet. states should be allowed to negotiate partnerships on their own with the private sector that are designed to generate revenue that can be applied to the network. Many of these potential partners are local or intrastate in nature, making the state-local team the appropriate governing structure for this arrangement as opposed to FirstNet. FirstNet cannot be expected to understand each state's unique circumstances and needs. It is through a partnership between states and localities and the FirstNet Board that this program will be successful.

In addition, adding a current state official to the FirstNet Board would be very helpful to this endeavor. The Act requires that each state or territory certify that they have designated a single officer or governmental body to coordinate, serving as a portal through which FirstNet will conduct its consultation with the state. Many states, including Virginia, have established this communications channel and are waiting for FirstNet to reciprocate. In the inaugural FirstNet Board meeting, a notional architecture for the network was presented, and we are told that a more refined version will be presented in April. This network is being designed before the consultation mentioned before has been done.

Public safety broadband is a far-reaching and mission-critical program. To succeed, it requires direct communication and coordination between FirstNet and the states. This will ensure that requirements are captured and adequate mechanisms are developed that permit the network as operations and maintenance and the planning, training and exercising and support are adequately and reliably funded. Establishing a vehicle for the designee of each state or territory to work directly with FirstNet within the FirstNet governing structure would vastly improve the collaboration between FirstNet and the states and territories. The partnership between the states and FirstNet must be direct, open, transparent and ongoing.

With that, I stand by for your questions.

[The prepared statement of Mr. McIntosh follows:]

Christopher I. McIntosh

Statewide Interoperable Communications Coordinator

Office of Veterans Affairs and Homeland Security

Office of the Governor

Commonwealth of Virginia

March 14, 2013

Over eleven years ago, interoperable communications was identified as one of the major areas of public safety that required major improvement following the attacks of 9/11. Communications is the one constant that forms the foundation for all other public safety disciplines; it is the bedrock of every response plan, the core of every procedure. Without reliable communications, effective command and control cannot be achieved, critical information cannot be passed, and life threatening developments cannot be shared. In the past eleven years, billions of dollars have been spent across the nation, new radio systems have been fielded, interoperability has been greatly improved, and the ability of our first responders, emergency managers, and homeland security professionals to communicate is better than ever.

We stand at a crossroads, however. Many of those critical radio systems procured in the years following 9/11 are becoming antiquated. Technology, as is always the case, has continued its relentless advance resulting in the need to perform major upgrades to existing systems, or in some cases wholesale replacement. The increased use of the finite radio spectrum has resulted in the FCC requirement to "narrowband", a federal mandate resulting in improved efficiency in the use of radio spectrum, but also creating the de facto obsolescence of an entire generation of radio equipment. Maintenance and sustainment costs for existing systems alone cost hundreds of millions of dollars, forcing jurisdictions to make tough budgetary choices, often resulting in critical systems no longer being supported.

All of this is occurring while funding levels have fallen precipitously. Virginia has seen consecutive 50% cuts in federally funded State Homeland Security Grant Programs and historically almost 30% of this funding has gone to support and maintain these federally mandated communications programs. In 2011 alone, the Commonwealth received $43M in requests from localities for communications grant funding, and was only able to allocate $2M. Virginia has also recently seen the loss of funding of two Urban Area Security Initiatives (UASIs resulting in the reduction of tens of millions of dollars in annual funding, much of which went to mandated communications programs.

Interoperable Emergency Communications Grant Program (IECGP) also lost federal funding. This grant provided for the planning, training, and exercises that improved the capabilities of the first responders who use these communications systems. IECGP also funded many of the Statewide Interoperability Coordinators (SWICs) around the country, who focus on the issues surrounding Interoperable Communications. Through the SWICs, states now have Statewide Interoperability Executive Committees (SIECs) that pull people in from across jurisdictions and disciplines, allowing them to work together to solve cross cutting communications problems, share lessons learned and best practices, and ultimately write the federally mandated Statewide Interoperability Plans (SCIPs) that shape a common direction forward. States were required to submit the inaugural Statewide Communication Interoperability Plan (SCIP) in 2008, and are required to report progress against the SCIP in an annual SCIP Implementation Report. Federal grants funding emergency communications require grantees to align projects to needs identified in the SCIP[i].

We stand on the verge of a revolution in emergency communications capabilities. Traditional Land Mobile Radio systems are beginning to become integrated with Voice over Internet Protocol (VoIP) technologies. By fusing voice communications with internet technologies, new possibilities are becoming a reality. Virginia operates one of the largest Public Safety VoIP networks in the nation which, by the end of CY 2013, will have points of presence in 122 jurisdictions, as well as the Virginia State Police, Department of Transportation, and Department of Emergency Management. The Commonwealth's Link to Interoperable Communications (COMLINC) program allows different radio systems to be linked together, much in the way that other radio gateways do, resulting in interoperability through the creation of a "patch" by an operator in a Public Safety Answering Point (PSAP). The true potential of COMLINC, when fully implemented, lies in its VoIP functionality however. Soon, any laptop, tablet, or smart phone in the hands of a public safety professional will become a radio capable of communicating with any PSAP in the state, or any responder on a radio connected to it.

Due to this advancement, interoperable communications no longer involves just voice and radio systems. We are entering an era where interoperable *information* is the goal. Advances in Computer Aided Dispatch (CAD), Crisis Management, VoIP, video, and Geospatial Information Systems (GIS) allow for the sharing and display of information that allows decision makers and responders to have previously unheard of levels of situational awareness. Using the common denominator of location, the ability to merge real-time information such as CAD, weather, sensor data, video, and Crisis Management reports with mapping systems and plan overlays allows personnel, from the tactical to the strategic, to have a better understanding of a given situation, presenting information in context that is critical for effective decision making. For example, a large hazmat on the highway is one thing, but a large hazmat on the

highway upwind from a county fair in a neighboring jurisdiction is something else entirely. The integration of COMLINC and its VoIP functionality now allows not only the rapid understanding of the true severity of a situation, but also allows for the interaction of decision makers through the same interface

It is important to note that we are not doing this in a vacuum. Virginia, along with the States of Oregon and California, initiated a National Information Sharing Consortium (NISC) in order to share technology and best practices which will enable state and local agencies across the country to work together towards these goals which we all share. Through the Consortium, which has grown to twenty- six members representing 100+ state and local government organizations (civilian and military), non-governmental and private industry partner organizations across the nation, we are able to leverage one another's experiences so that we, as a community, don't repeat costly mistakes over and over again. Additionally, we are also working closely with the DHS Science and Technology First Responders Group (FRG) and its Office of Interoperability and Compatibility (OIC) who are providing us critical assistance in assessing and working through the issues with the new generation of technologies that can facilitate achieving these goals such as shared services in "the cloud" and various "bridge" technologies. Taken together all of this will enable us to create a true "Virtual USA" enabling intrastate and interstate interoperability and will serve as the roadmap towards making use of the new broadband capabilities when they reach fruition.

All of these capabilities rely on reliable connectivity. In many cases, public safety responders rely on the public network for mission critical communications. This is especially true in the wireless world, where the rise in popularity of smart devices has created a demand for bandwidth that threatens to overwhelm the entire network when an incident occurs. According to the President's Council of Advisors on Science and Technology's report entitled "Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth", the amount of wireless data transmitted from smart phones and wirelessly connected tablets has doubled every year for the last four years. We saw this scenario realized during the recent earthquake in central Virginia. When the shaking stopped, most people picked up their phones to call a loved one, text a friend, or post on a social media site. This spike in volume resulted in the overload of the available wireless networks and reduced capability for users trying to access the network.

Public Safety Broadband offers a solution that addresses many of the connectivity issues faced by public safety. Now public safety professionals have the opportunity to have unfettered access to wireless communications in order to improve their ability to respond to incidents safely and effectively. Public Safety Broadband also provides the opportunity for public safety to implement a *terrestria*l network, linking PSAPs, EOCs, and critical infrastructure facilities in a secure and reliable manner, free from the

demands and limitations of the public internet. This network is necessary to support programs such as VoIP communications, GIS based information sharing, and Next Generation 911 routing. It would allow for the consolidation of PSAPs, the rerouting of call volume around failures, the use of improved situational awareness tools, and the ability for the public safety community to depend on data based communications unlike ever before. In short, it could change the entire landscape of the discipline.

The challenge lies in making all of this a reality in the current fiscal environment. Public safety communications budgets, like other budgets, are heavily encumbered with existing core funding needs and have little flexibility to fund new programs or new capabilities. After conducting an informal poll with the localities within Virginia in which we asked how much they could afford to contribute toward the operation of a Public Safety Broadband network, the almost universal response was "if it cost more than my departmental cellular service costs now, we can't do it". An analysis of that statement is revealing. Using the example of one county fire department in Virginia in which currently 50 of the 500 responders in the department have county issued cellular devices at a cost of approximately $50 dollars a month. This results in a department budget of $2500/month. In order to fulfill the operational vision of FirstNet, all 500 responders would have to have at least one (some probably more) device. If FirstNet were able to achieve the same price point as current private sector service, the increased operational usage alone would result in a new departmental budget of $25000/month, a 1000% increase. If you repeat that process in the hundreds of departments across Virginia, and the thousands of departments across the nation, we are talking about a very large fiscal requirement that currently has no funding support. Beyond the actual service, device cost is another issue. It has been said that FirstNet desires to provide public safety devices at a price consistent with current land mobile radios, most of which cost $3000 to $5000 a unit. Public safety will require thousands of those devices in order to utilize the connectivity that the NPSN provides, yet many do not have the funding to procure them in the current fiscal environment. The situation is akin to building a superhighway, but not being able to afford cars.

Additionally, public safety broadband will not replace existing or planned Land Mobile Radio (LMR) systems in the near future. LMR has proven its reliability, survivability, and usability many times over. Cellular technologies on the other hand, as recently as during hurricane Sandy, have proven to be susceptible to widespread failure during natural disasters. Cellular's infrastructure density results in a dependence on reliable power supplies and redundant backhaul connectivity that is a major vulnerability. Even after mitigations to these issues are designed into the NPSN, it will be some time before we can adequately evaluate their effectiveness. Finally, supplanting LMR with the NPSN violates the one truism of public safety communications; never put all your eggs in one basket. In summary, the cost of the FirstNet Public Safety Broadband service

will be in addition to the current land mobile radio cost currently paid by state and local governments. The time horizon for replacing LMR costs with the FirstNet Service cannot be determined today.

The Chairman of the FirstNet board has been on the record to state that the NPSN "will cover every square meter of the United States"[ii]. FirstNet must do this with a network that greatly exceeds the design specifications and redundancies of the commercial network, but with a fraction of the resources that the private sector has expended in a network that only covers approximately two-thirds of the country. The states are understandably nervous that the combination of increased cost and insufficient funding will result in the uncovered cost being passed on to the state and local governments, further diminishing funding for other core first responder necessities. In light of this, states need the ability to define the level of partnership that they will engage in with FirstNet. Clear guidance to establish the mutually beneficial relationship between FirstNet and the states has yet to be presented. To be successful in achieving our combined goal of a nationwide interoperable broadband capability for public safety, a successful model must be developed that falls somewhere in between the extremes "opt in vs. opt out", focusing on a sense of cooperation and problem solving that can result in an evolutionary leap forward in communications capabilities while providing adequate fiscal protection for its participants.

Ideally, states should be allowed to negotiate partnerships with the private sector that are designed to generate revenue that can be applied to the implementation, operation, and maintenance of the network, as well as fund the equipment first responders will need to access the network. The arrangements can range from the sharing of infrastructure to the leasing of underutilized spectrum; with prioritization and pre-emption agreements that ensure the availability of the network to public safety when needed. Many of these potential partners are local or intrastate in nature, making the state-local team the appropriate governance structure for this arrangement as opposed to FirstNet. States should operate within a framework developed by FirstNet, but create partnerships with their jurisdictions and surrounding states to create coalitions that are able to work together to solve the myriad of implementation issues that will inevitably arise, at the correct geo-political level. States should also be allowed, within the interoperable requirements established by FirstNet, to pursue every technical means available, including those cited in the Presidents Panel report, to ensure that the spectrum is used as efficiently and effectively as possible. States must also be allowed to follow their codified procurement procedures that are designed to ensure that competition between vendors is maximized.

FirstNet cannot be expected to understand each states unique circumstances and needs. It is through a *partnership* between the states and localities, their existing

governance structures, and the FirstNet board that this program will be successful. In addition, adding a current state official to the First Net board would be very helpful to this endeavor. The Act requires that each state or territory certify that they have designated a "single officer or governmental body" to coordinate with NTIA, serving as the portal through which FirstNet will conduct its consultation with the state. Many states, including Virginia, have established this communication channel. A similar requirement for FirstNet to establish a communication channel for the states and territories to coordinate directly with the Board would be very helpful.

At the inaugural FirstNet board meeting, a notional architecture for the NPSN was presented, and we are told that a more refined version will be unveiled in April. This network is being designed before any of the coordination or consultation with the States has taken place.

Last month, NTIA released the State and Local Implementation Grant Program (SLIGP). In the SLIGP guidance, it is stated that "NTIA will focus the SLIGP initially on planning, consulting, and development activities in preparation for consultations with FirstNet, including strategy and timeline development, meetings, governance planning, and outreach and education efforts". "The second phase will not begin until either after FirstNet has consulted with the State-designated contact about the matters listed in the Act, including defining coverage needs, user requirements, and network hardening and resiliency requirements, and advises NTIA it is ready for the commencement of data collection or when NTIA requests a revised budget from recipients for second phase activities. The second funding phase will primarily address States' needs in preparing for additional consultation with FirstNet and planning to undertake data collection activities. The second phase will fund data collection activities provided that FirstNet has determined that it needs standardized asset and infrastructure inventories from the States in designing the nationwide public safety broadband network"[iii].

As the SLIGP guidance suggests, we are a long way from a comprehensive and agreed upon set of user requirements, and are investing millions of dollars to: (1) establish a governance structure, or expand existing structures, to consult with FirstNet; (2) develop procedures to ensure local and tribal representation and participation in the consultation process with FirstNet; (3) create a process for education and outreach, through program development or through other efforts, among local and tribal officials, public safety users, and other stakeholders about the nationwide public safety broadband network; (4) identify potential public safety users of the public safety broadband network; (5) develop a standard Memorandum of Agreement (MOA) to facilitate the use of existing infrastructure with private sector entities that have been chosen by FirstNet to build, operate, and maintain the network on public safety infrastructure, or identified the legal

barriers to creating a standard MOA and describe potential remedies; (6) develop staffing plans that include local and tribal representation to participate in the public safety governance structure and to prepare for data collection activities in consultation with FirstNet; and (7) prepare a comprehensive plan as part of the existing Statewide Communications Interoperability Plan (SCIP), or a plan complementary to and similar in concept to the SCIP, describing the public safety needs that the States expect FirstNet to address in its design of the nationwide public safety broadband network"[iv]. All of this work must be done in preparation for consulting with FirstNet, in order to generate and provide to them a comprehensive set of requirements that adequately represent the needs of the state's entire stakeholder community. Given this, we are concerned that FirstNet is already designing a proposed network.

Public Safety Broadband is a far reaching and mission critical program. To succeed it requires direct communication and coordination between FirstNet and the States. This will ensure that requirements are captured and adequate mechanisms are developed that permit the network, its operation and maintenance, and the planning, training, and exercising that support it are adequately and reliably funded. Establishing a vehicle for the designee of each state or territory to work directly with FirstNet within the FirstNet governance structure would vastly improve the collaboration between FirstNet and the States and territories. The partnership between the states and FirstNet should be direct, open, transparent, and ongoing.

Virginia is made up of 135 jurisdictions, each with its own budget priorities and fiscal demands. Working together, we have learned that establishing mutually beneficial partnerships and creating a "coalition of the willing" that respects jurisdictional independence and organizational need, is the most successful model for implementing interoperable communications programs. The Statewide Interoperability Executive Committees, the first of which was created in Virginia, have been the laboratories for this process, and their success is a testament to the power of a collaborative approach. The creation of a National Public Safety Broadband Network is an extraordinarily complex endeavor. We must build and expand on this collaborative approach for Public Safety Broadband to succeed.

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[i] FY 2012 SAFECOM Guidance on Emergency Communications Grants, p3.

[ii] National Governors Association, Winter Meeting. *States and Cyber Security.* Feb 23, 2013

[iii] ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY, Federal Agency Name: National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce
Funding Opportunity Title: State and Local Implementation Grant Program (SLIGP)
Announcement Type: Initial Announcement
Catalog of Federal Domestic Assistance (CFDA) Number(s): 11.549, State and Local

Implementation Grant Program
Funding Opportunity Number: 2013-NTIA-SLIGP-01
[iv] Ibid

Mr. WALDEN. Thank you very much. I appreciate your testimony.

Now we will hear from Ray Lehr, who is the Director of statewide Communications Interoperability Coordinator for the state of Maryland. We welcome you today and look forward to your comments, sir.

STATEMENT OF RAY LEHR

Mr. LEHR. Thank you, Chairman Walden, Ranking Member Eshoo. Members of the committee, thank you for the opportunity to be here today. I have provided written remarks, which I believe you have available to you. Having previewed the testimony of the other panelists, and just heard my good friend Chris give his testimony, I am delighted to see we are mostly in agreement on the key elements. In an effort to save time, I am going to summarize my comments.

Let me start by formally thanking this committee, the entire Congress and the President for the passage of the legislation. This is a historic opportunity for public safety. A robust, reliable and secure broadband network will not only save citizens' lives, it will save first responders' lives on a daily basis.

Now that FirstNet has begun, it is in the best interest of every state to work with FirstNet to ensure that all of the requirements are met. How can we make that happen? I can tell you from personal experience in Maryland building a statewide radio system, you have to go to the source, the actual users of the system. We were designing coverage for our system and we found a half-mile by half-mile area that didn't have radio coverage. Looking at it on the map, it was heavily wooded, only had a single road so it looked like it would be minimal impact. But when we spoke to the local emergency managers, we found out this area sees a high level of public safety activity. Because of its isolation, criminals have used it as a dumping ground for stolen vehicles, and even a body. There have been field fires in the summer and traffic accidents on the windy single-lane road. This area needs coverage for police, fire and EMS. Even some federal task forces are now operating in the area. We never would have known this without the local input that we got during the design. This is why FirstNet needs to be involved with end users in the design and development of the broadband network.

I can assure you, we want to help. I urge FirstNet to build on the foundations that already exist in states, not only the network infrastructure but also the working groups that have been solving communication problems for first responders over the last decade. I believe the nationwide public safety broadband network has a much greater chance of success if all states opt in. That would make interoperability much easier and also take advantage of the seamless design. Also, the upgrades would occur in unison, ensuring continuity of operation.

To enable governors to make an informed opt-in decision, the states will need information on five key components. Number one is the network design security redundancy and reliability. Public safety needs a robust network and broadband devices that can operate during the worst conditions imaginable, because that is when our public safety folks are in the field. Number two: state assets

that can be leveraged, towers, fiber optics, microwave, network operation centers. By using state assets which are built to higher standards than commercial networks, we increase reliability, and states should realize some cost offsets by virtue of their infrastructure investments in the nationwide network. Number three is coverage, both in building and rural. As stated earlier, only the state and local public safety leaders can speak to their needs. The early input will ensure the network meets the expectations of each community. Number four, network priorities. Long-term evolution, or LTE, as it is known, is a standard that allows for a wide range of priorities for network access under different types of emergencies. Often these priorities will be dynamic as the event evolves so local control is absolutely essential. And number five is the cost to operate and maintain. This is of great concern to states because they will be asked to pay an unknown amount to use and maintain the network. The costs need to be no greater than what they are paying for cellular service today.

While it is possible that FirstNet could negotiate a better deal with national carriers, there are other potential partners in the region and at the local level. states need the ability to work with local business partnerships in order to help raise revenue where possible.

In closing, I would like to express our excitement about this once-in-a-lifetime opportunity. It is going to ultimately save lives, protect people and property, and enhance our performance during times of national crisis as well as every day.

With that, I thank you again and I look forward to your questions.

[The prepared statement of Mr. Lehr follows:]

STATEMENT OF
RAYMOND LEHR, INTEROPERABILITY DIRECTOR FOR
THE STATE OF MARYLAND
HEARING ON "OVERSIGHT OF FIRSTNET
AND EMERGENCY COMMUNICATIONS"
HOUSE SUBCOMMITTEE ON COMMUNICATIONS AND TECHNOLOGY
COMMITTEE ON ENERGY AND COMMERCE
MARCH 14, 2013

Chairman Walden, Ranking Member Eshoo, members of the Committee, thank you for the opportunity to be here today. This committee, the entire Congress and the President have taken a major step in providing the latest tools to our nation's first responders. As identified in the 9/11 Commission Report, the ability to communicate and share information in times of crisis as well as routine emergencies will save lives and increase the efficiency with which Police, Fire and Emergency Medical personnel perform their vital services.

I will focus my remarks on the need for strong and continuing involvement of the States in the next critical steps in getting the Nationwide Public Safety Broadband Network designed, deployed and operational for today's needs, as well as planning for the operation, maintenance and upgrade of the network in a reliable and cost effective manner for decades to come.

As this Committee knows, it took a united effort by a dedicated and diverse group—public safety organizations, governmental groups such as the National Governors Association (NGA), commercial and manufacturing groups—to secure passage of the Middle Class Tax Relief and Job Creation Act of 2012 with the Title VI provision that creates FirstNet and the funding to takes the Nationwide Public Safety Broadband Network a step closer to reality. And having been in the fire service for over 30 years, I can tell you that getting police and firefighters to agree is not always easy. But this need for a public safety focused broadband capability is so bold and necessary that advocacy groups that seldom agree, joined the cause encouraging Congress to pass bi-partisan legislation to set the stage for this once in a lifetime opportunity.

I'm grateful to our Governor, Martin O'Malley for his leadership through NGA and their appointment of me as the NGA Board member on the Public Safety Spectrum Trust (PSST), the precursor to FirstNet. Over the last three years I've been able to participate in much of the preliminary work to get us this far, and as historic as the passage of the legislation was, it clearly marked the start of a much more difficult and challenging process to make this network a reality. With the appointment of the FirstNet Board, Chaired by Mr. Ginn, we have the platform for advancing the design and implementation of the network. But even with the strong public safety, industry and government backgrounds of the board members, they can't do it alone or in isolation. The next several months will be critical since FirstNet must gather the requirements for the network. As this committee well knows, our country is as diverse in its geography as it is in its culture and people. The needs of urban areas differ dramatically from our nation's rural areas and farmlands. However emergencies can and do happen in all types of locations. First responders face large fires in high-rise buildings as well as forest fires that burn for weeks in our country's most remote areas. All of these locales need the ability to reach the network when the next crisis hits and that is a challenge even commercial providers haven't met. The public safety broadband network must also be resilient and able to serve our responders during hurricanes and floods and mass power outages, because those are the critical times when they rise to the challenge and serve while the public is being evacuated to safer locations.

So how do we get there? I can tell you from our personal experience in Maryland building a statewide 700 MHz voice communications system for all of our first responders, that you have to go to the source—the end users of the systems. As we were designing coverage for our system in Maryland, we found one small ½ mile by ½ mile area of one of our rural counties that didn't have radio coverage. Looking at it on the map, it was heavily wooded, only had a single road and a farm house on the edge where we could get coverage. When we spoke to the local emergency management folks, we found out this area is one that sees a high level of public safety activity.

Because of its isolation, criminals from a neighboring State urban area have used it as a dumping ground for stolen vehicles and even a body was discovered in the woods there. There have been field fires in the summer and a few traffic accidents due to the windy nature of the single lane road. This area needs coverage for police, fire, EMS and even some Federal task forces that are now working in the area. We never would have known these facts without local input during the design phase.

FirstNet faces a challenge that is at least 54 times greater when you consider all of the States and territories they must serve. We want to help. States either have the mechanism for gathering this data already in place through our previous interoperability activities, or can develop it through the soon-to-be released State and Local Implementation Grant Program administered by the National Telecommunications and Information Administration (NTIA) in the Department of Commerce. As Maryland's Statewide Interoperability Coordinator (SWIC), I know our national organization, the National Council of Statewide Interoperability Coordinators (NCSWIC), has been working with the Department of Homeland Security's Office of Emergency Communications to use the proven models for governance and outreach that have advanced the cause of interoperability in every part of the country.

I urge FirstNet to build on the foundations that already exist in the States not only for the network infrastructure, but also for the working groups that have been resolving communications problems for first responders over the past decade. All of us who have worked so hard to get to this point want FirstNet to succeed and involvement of States and their first responder communities is essential to that goal. I can assure you the States are ready to partner with FirstNet and we welcome the outreach mentioned in Mr. Ginn's testimony. In return, the States will need many questions answered between now and the "Opt-in/Opt-out" decisions Governors will face in the next few years. I believe the Nationwide Public Safety Broadband Network has a much

greater chance for success if all States "Opt-In." That would make interoperability much easier and also take advantage of a seamless design. To make that an easy decision for States, we'll need information that clearly lays out these important components:

- **Network design, security, redundancy and reliability** - Public Safety needs a robust network and broadband devices that can operate during the worst conditions imaginable. Because that's when the nation depends on their unwavering service.
- **State assets that can be leveraged (towers, fiber, microwave, Network Operations Centers, etc.)** – By using State assets, which are built to higher standards than commercial networks, we increase reliability and States should realize some cost offsets by virtue of their infrastructure investments in the nationwide broadband network.
- **Coverage: In-building and rural** – As stated earlier, only the States and local public safety leaders can speak to their needs. This early input will ensure the network meets the expectations of each community.
- **Network Priorities** – The Long Term Evolution (LTE) standards allow for a wide range of priorities for network access under different types of emergencies. It will take experienced Federal, State and local emergency managers to determine when the Fire Chief's communications are more critical than the Sheriff or Bomb Squad. Often, those priority settings will be dynamic as the event evolves, so local control is essential.
- **Cost to operate and maintain** – This is of great concern to States. We understand the huge commitment Congress and the President have made through the Middle Class Tax Relief and Jobs Creation Act of 2012 to build the Nationwide Public Safety Broadband Network. But we also understand it will be the States who will have to pay some yet to be determined amount to have access and maintain this investment in critical infrastructure. FirstNet needs to work with States to ensure the costs are no greater than commercial networks available today and provide innovative ways to allow States to form public-private partnerships as a way of making the operation and maintenance affordable for all.

At last month's National Governors Association meeting, Mr. Ginn was asked about public-private partnerships and expressed his belief that FirstNet could negotiate with the national carriers from a stronger position in order to gain the best possible deal. I can't fault that logic, as long as States are consulted during the negotiations. But there are other potential partners at the

regional and local level, such as utilities that may also want to lease idle spectrum. I have had discussions with one utility that would lease spectrum to take wireless meter readings during non-emergency times with the guarantee that public safety could preempt if an incident occurred. States need the ability to work with our local business partners to help raise revenue where feasible.

In summary I'd just like to express our excitement about this once in a lifetime opportunity to provide our first responders with state-of-the-art technology that will ultimately save lives, protect people and property, and enhance our performance during times of national crisis as well as every day. We are committed to the success of this mission and stand ready to assist FirstNet in developing the requirements that will meet the needs of each State's first responders and thereby increase our chances for success.

Thank you again for this opportunity to address this important topic and I look forward to your questions.

Mr. WALDEN. Mr. Lehr, thank you for your testimony. It is most insightful.

We will now go to James A. Barnett, Rear Admiral, U.S. Navy, retired, former Chief of Public Safety and Homeland Security Bureau, Federal Communications Commission, and now a Partner and Co-Chair at Telecommunications Group, Venable LLP. So we welcome you with the broad range of background you bring and the experience, and we appreciate the report you have provided for each of us, and its at times colorful analogies. Admiral Barnett, thank you for being here. We look forward to your testimony.

STATEMENT OF JAMES A. BARNETT, JR.

Admiral BARNETT. Thank you, Chairman Walden, Ranking Member Eshoo and distinguished members of the subcommittee and for the opportunity to talk about FirstNet's challenges and road to success.

As you mentioned, I used to be the Senior Vice President of the Potomac Institute for Policy Studies, which is an independent, nonpartisan science and technology policy think tank in the area, and as such, I was pleased to serve as the Principal Investigator for a study titled "What Should FirstNet Do First", which as the chairman mentioned is there and offered for the record.

FirstNet has many advantages and opportunities: a highly experienced governing board, 24 megahertz of great spectrum, and initial funding of $2 billion. But the challenges that FirstNet faces are daunting, as Chairman Ginn mentioned. The full funding of $7 billion is not enough for a nationwide network, and no model or precedent exists for establishing this network. Just like the failed D block auction, there are existential risks, and success is not assured. But everybody involved wants FirstNet to succeed, and in that spirit I would offer four recommendations. The first is to embrace the states, the second is, one size does not fit all, the third is to develop a cost model, and the fourth is to contract for expertise now.

First, FirstNet must embrace the states in a way that it has not previously. Before the FirstNet board members were seated, there was a confusion that developed that public safety is both the user and the customer, as it has been in the past. The states, which may be huge stakeholders and customers for FirstNet, perceive that they have been ignored and excluded from the table. So for a chronically underfunded and undercapitalized network, alienating your customers at the outset is a huge problem. FirstNet can forestall the active consideration by some states to opt out statutorily if it opens its process. As I suggested in the FirstNet report, Chairman Ginn and the FirstNet board have reached out to the National Governors Association, to the governors, the state CIOs, the states' BTOP recipients, and this effort should be continued and expanded to fully incorporate governors and state CIOs into the process with direct input to the board and ultimately representation on the board. FirstNet must be open to early deployers, public-private partnerships, innovative arrangements from the state to attract private capital, public infrastructure and more users into the network. The talk about signing over state assets to FirstNet must give way to discussions about how FirstNet will serve the states'

needs and how FirstNet can contractually use state infrastructure. Increased information sharing and transparency with the states will help also.

To achieve Congress's central goal, FirstNet should adopt a principle of national interoperability with local control, and one size will not fit all. Some states and localities may wish to combine into regions for the network. Some states may wish to form public-private partnerships with carriers or public utilities. Some may be able to obtain essential network funding if they are allowed to proceed now with their deployment plans.

FirstNet must retain the technical capability to administer the national network and ensure that it will be interoperable, but if it has that capability by contracting with experts, then the network can go faster and can achieve early wins.

To attract funding into the network, FirstNet should consider what might be called a franchise operation under its control. The decision to reopen the question of whether BTOP recipients may proceed is a very encouraging development and is consistent with the concept that one size does not fit all and that a network of networks may be the key to success.

FirstNet should develop a cost model and a financial analysis that will explain to state customers, public safety users and other stakeholders such as carriers and equipment providers what this network will cost to build and use. This is critically important. To move quickly and expertly, FirstNet should be allowed to contract with its cost model and financial analysis, and until this is developed, anyone making plans for use of the network would be speculating on what the services would cost and be. A cost model and plan would be a very high priority and must precede decisions that would limit where the model and plan might lead.

FirstNet needs more expertise and human resources right away. The FirstNet board members are an extraordinarily qualified and a very talented and experienced group but they are a board and they are not a full-time staff. They need a full-time staff. Some employees are being obtained but FirstNet needs access to their expertise now quickly, and to help them analyze and plan and coordinate and manage, and the fastest and best way is to contract for that expertise and to use government employees to oversee those contracts.

So thank you for this opportunity to talk to you about how FirstNet can be successful.

[The prepared statement of Admiral Barnett follows:]

Testimony of
James Arden Barnett, Jr.
Rear Admiral, USN (Retired)
Former Chief of the Public Safety & Homeland Security Bureau
Federal Communications Commission

Before the
Subcommittee on Communications and Technology
Committee on Energy and Commerce
U.S. House of Representatives

Hearing on "Oversight of FirstNet and Emergency Communications"

March 14, 2013

Good morning, Chairman Walden, Ranking Member Eshoo, and distinguished members of the Subcommittee. Thank you for the opportunity to talk to you on FirstNet even now as it is in the process of being born.

Last year, after I left the Federal Communications Commission and while serving as Senior Vice President for National Security Policy at Potomac Institute for Policy Studies, an independent, non-partisan science and technology policy think tank, I was pleased to serve as Principal Investigator for a study entitled *What Should FirstNet Do First? State Integration into the National Public Safety Broadband Network* (the "FirstNet Report") which was published by Potomac Institute on September 24, 2012, the day before the first open meeting of the FirstNet Board. I have offered the FirstNet Report for the record of this hearing, but I would like to emphasize some of the conclusions and findings of the Report now that almost six months have passed since the FirstNet Board was impaneled and the report was issued.

FirstNet is unprecedented in its promise and its challenges. With 24 MHz of excellent spectrum, billions of dollars in federal funding and an outstanding governing board, FirstNet has the potential to deliver an amazing array of broadband services to the first responder, whether to

the firefighter at the fireline or the police officer under fire and to do so in a way that will erase the decades-long, life-threatening calamity of non-interoperable communications.

However, as Chairman Sam Ginn will tell us, FirstNet has unprecedented challenges, too. No one has ever built a network remotely like the National Public Safety Broadband Network (NPSBN). No recipe or model exists to guide the FirstNet Board, and attempts to shoehorn FirstNet into incongruent examples or pre-existing mental models may not be helpful. In our age of fiscal austerity, it may sound heretical to say this, but, even with two-to-seven billion dollars in funding, FirstNet is underfunded. By most expert assessments, FirstNet will need to attract billions more in funding or in some form of network infrastructure savings, to achieve nationwide, nearly ubiquitous coverage.

FirstNet is at a critical stage of development where the best actions taken in the right order will lead to success, but where a significant risk exists that, instead of trial and error, any errors will end the trial. Everyone involved wants FirstNet to work, to achieve success and to fulfill the promise and the hope envisioned by the Middle Class Tax Relief and Job Creation Act of 2012 (the "Act"). In that spirit, I would offer these observations.

Embrace the States

First, it must be recognized that the nature of public safety communications is changing. In the past, public safety entities often have been the owner and operator, the purchaser and the user. As we move to Internet Protocol, broadband-based public safety communications, public safety has not owned the commercial networks they have been using, and now that public safety is moving to FirstNet, it will be the user but not necessarily the customer, that is, the entity who is contracting for or paying for the network The conflation of public safety network customer

and user, the confusion that public safety is both customer and user, has led to a significant and perhaps existential problem. Public safety users are represented on the FirstNet Board and should be. The customers, the individual States, are not.

The lack of representation of the States and the misunderstanding of which FirstNet's customers are have created some mistrust among those customers in both red and blue States. For a network that is already underfunded, alienating your core customers is bound to create additional problems. The description of what the network architecture will be before there has been the statutory consultation with the States may have added to the consternation of the States. This actually creates the opposite effect from what would be desired: if Governors, State CIO's and other state officials believe that their opinions and preferences are being ignored, they may consider opting out of the FirstNet network.

As I suggested in the FirstNet Report, Chairman Ginn and the FirstNet Board have reached out to the National Governors Association, the States and BTOP recipients. These are essential first steps which should be followed up with a permanent process of direct input to the Board, such as an advisory committee for the States, and ultimately some form of State representation on the FirstNet Board. FirstNet must, in essence, embrace the States. FirstNet must court its customers and seek real input before making decisions that might negate the customers' preferences.

By developing a customer relationship with the States, FirstNet can forestall the contemplation of the statutory opting out or the other opting out, which is simply to avoid participation in FirstNet. A strong relationship with the States, the Governors and the State CIO's will dispel the initial mistrust and facilitate cooperation on the joint use of State infrastructure. The talk about signing over title to State assets to FirstNet (which has significant

state statutory problems) must give way to negotiations about contractual agreements for joint use. The network will see a stunted future and spotty growth if this one factor is not addressed with new vigor and commitment.

FirstNet could enhance its relationship with the States and with the public safety by providing more information and transparency in its planning and deliberations, such as more public interaction and perhaps its own website.

One Size Does Not Fit All: Network of Networks

Initially, FirstNet was described in a way that made it sound like a monolithic, single nationwide network in order to be interoperable. This idea may have arisen from some preliminary assumptions about the business model and economic constraints, or statutory language in the Act about a single *architecture*. In any case, from a technological standpoint, a single, nationwide public safety network will not be necessary to achieve Congress' goal of network interoperability. Indeed, most of our Nation's major networks, including broadband networks, are, in essence, networks of networks or shared architecture networks. As long as FirstNet has strong, ongoing national control of standards, specifications and rules for interoperability, a network of networks model provides FirstNet with many more options to get private equity and public infrastructure involved in the completion of this essential nationwide network.

To achieve Congress' central goal, FirstNet should adopt a principle of national interoperability, but local control. One size does not fit all. Some States and localities may wish to combine into regions for the network. Some may wish to form public-private partnerships with carriers or public utilities. Some may be able to obtain essential network funding if they are

allowed to proceed now with their deployment plans. FirstNet must retain the technical capability to administer the nationwide network and ensure that it will be interoperable. If it has that capability, either through hiring or contracting with consultants, then the network can get off to a much faster start and achieve some early wins.

In order to attract funding into the network, FirstNet may consider what almost could be considered a franchise operation under its aegis and control. The decision to re-open the question of whether BTOP and waiver recipients may proceed is very encouraging and is consistent with the concept that one size does not fit all.

Develop a Cost Model and Conduct a Financial Analysis

FirstNet should develop a cost model and a financial analysis to explain to State customers, public safety users and other stakeholders (such as carriers, equipment providers and other potential users) what this network will cost to build and operate, how it will work and what services it will provide. This is critically important, because the lack of understanding of how FirstNet will work (or whether it will work) financially also causes concern and mistrust among its customers and confusion among stakeholders which might be able to help if there were more clarity.

A cost model and a financial analysis are not things that we should expect the members of the FirstNet Board to do themselves or any of the staff at the National Telecommunications and Information Agency (NTIA). A major milestone would be to hear that one or more studies have been contracted for to produce a cost model and financial analysis and concomitant options. This financial analysis should include what value the excess capacity of the NPSBN actually is. A great deal of speculation has been voiced about how leasing the excess capacity of the network

will help fund the network. To my knowledge, no one has come forward with an expert financial analysis of what can be expected.

The financial analysis must take into account how all of the stakeholders will participate and what incentives they have for providing their assets or services or paying for the use of the network or its services.

Until this is developed, anyone making plans for using the network would be speculating on what the services would cost and what those services will be, and any decision before that cost model is known would be made in the absence of whether the services would be less expensive than commercially available service or more expensive. The result is, without this financial analysis, States who are deciding now to opt-in are taking a risk that FirstNet will be affordable. A cost model and business plan must be a very high priority and must precede decisions that would limit where the model and plan might lead.

Expertise and Capacity

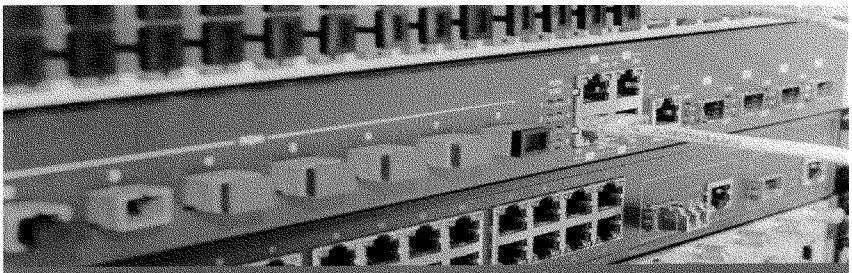
FirstNet needs more expertise and human resources right away. The FirstNet Board members are extraordinarily qualified and a very talented and experienced group; but, they are a board and not a full time staff. Some of them have full time jobs, as board members often do, and others are spending an amazing amount of time trying to be both board member and staff member because they are so committed to making this project succeed.

We have every reason to be proud of their dedication, and we should reward it by making available to them, immediately, with high priority, additional personnel with the expertise to plan, coordinate and establish this critical national infrastructure. The necessary resources would include funding for contracts to help them study, analyze, plan, coordinate, and manage

(including customer relations with the States), and the government employees necessary to handle these tasks. A Secretary to the Board has been hired, a General Manager is expected to be hired soon, and I understand that persons have been detailed from other agencies and departments, which may accelerate the process, but more is needed for the awesome task of standing up this network. The fastest way is to contract for the expertise that is needed. This additional expertise is a factor in the intended independence of FirstNet from NTIA.

Conclusion

In summary, to be successful, FirstNet will need to rapidly acquire additional expertise through detailed personnel from other agencies and by contracts with experts, including the ability to prepare cost models and to plan, execute and operate the network. The NPSBN will need support and material input from the States with respect to network plans, and FirstNet should vigorously incorporate the States into its processes as stakeholders. FirstNet could reassure its customers that this network will be affordable by quickly obtaining an independent cost model and financial analysis that will drive its decisions. Increased information flow and transparency will enhance the relationship of trust between FirstNet and its customers, the States. And, FirstNet should be open to multiple solutions tailored to differing needs among the States, public safety users, and all major stakeholders, under a guiding principle of national interoperability with local control. With appropriate levels of expertise, FirstNet can ensure interoperability while providing the critical services its customers and users require. These measures will give FirstNet the best chance of fulfilling its unprecedented promise and overcoming its unprecedented challenges.



What Should FirstNet Do First?

State Integration into the National Public Safety Broadband Network

A Report on Technical and Policy Implications of the Integration of State Public Safety Broadband Networks into the National Broadband Network and Possible Courses of Action

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EXECUTIVE SUMMARY

A nationwide public safety broadband network holds tremendous promise to deliver revolutionary public safety and emergency data (and later voice) services. At the same time, this network promises to solve the persistent and deadly problem of non-interoperable public safety communications systems. One intent of the Middle Class Tax Relief and Job Creation Act of 2012, a triumph in bi-partisan legislation, was to fulfill those promises. Yet the board of directors of the First Responders Network Authority (FirstNet) faces daunting challenges to make the National Public Safety Broadband Network (NPSBN) a reality.

One of those challenges is funding. FirstNet may not be able to count on more than $2 billion authorized by the Act to establish the network in the first few years, far less than will be needed to ensure that the NPSBN is truly nationwide. An additional $5 billion still may not be enough, and those funds will not be available until the Federal Communications Commission (FCC) is able to conduct voluntary incentive auctions for some of the television broadcast spectrum. This auction has been slated for 2014, but incentive auctions are new, innovative and therefore no one is exactly sure of the outcome or the timetable. FirstNet will have to act on the $2 billion until it gets other sources of reliable funding or revenues from leasing the spectrum it has been allotted.

Timing is another challenge. The statutory planning process may take years, followed by a complex Request for Proposals (RFP) for the new network. Between funding, planning and other timing matters, the NPSBN may not be launched until 2015, 2016 or beyond. The problem with funding alone may mean that the NPSBN will not be completed for a decade, bringing with that long period more challenges to keep the network interoperable.

During the planning stages of the NPSBN, several States want to proceed with state networks which can interconnect with the NPSBN when it becomes available. Prior to the passage of the Act, several waivers were granted by the FCC for early deployment, and the Department of Commerce's National Telecommunications and Information Agency (NTIA) made grants totaling approximately $382 million to start deployment of the State broadband networks. Some waiver recipients had other funding as well.

Unfortunately (in light of the underfunding of the network), NTIA impeded the early deployers after the passage of the Act, apparently because of concerns about compatibility and to preserve options to the FirstNet Board. The technical challenges raised by NTIA can be overcome with reasonable oversight and without undue expense. Accordingly, early deployers should be allowed to use their grants and their own funding to move forward, especially since it may be years before the NPSBN reaches them otherwise.

The FirstNet Board also will have the challenge of reaching out to its primary stakeholders and customer base, the States, the governors of which feel that they have been ignored and left out of representation on the FirstNet Board. FirstNet must find effective ways to incorporate the States through the governors, the governors' technical advisors and State Chief Information

Officers (CIOs). If FirstNet is not deployed soon, States may choose the statutory opt-out procedure, or if this is too politically challenging or the NPSBN is too expensive, the States may simply not participate. FirstNet should establish a separate advisory board for the governors, their advisors and State CIOs, provide non-voting representation on the FirstNet Board and develop a strategic plan with input from the States.

FirstNet needs its own, robust staff and professional resources with specific network, broadband and LTE expertise as well as business and oversight acumen, and they need more capacity to deal with the enormity of this $7 billion undertaking. Once FirstNet, an independent authority, gets that expertise and capacity, FirstNet may be more comfortable with embracing the States as early deployers that interconnect with the NPSBN and may even come to view States that opt-out as a strategy to extend the network. Even though NTIA has dedicated, hardworking staff members now, it will need more staff, too, to increase its oversight capacity.

While opting out is statutory right given to the States, the Act does not make opting out easy, and any State desiring to preserve its options must start planning and acting well in advance of the statutory trigger whereby the State governor notifies the federal government of the intent to build a state radio access network (RAN). Even if States are able to surmount the statutory obstacles, they still face the unprecedented prospect of paying leasing fees for the spectrum and use of the NPSBN core. For the NPSBN to succeed, FirstNet must be neutral and fact-based from the outset on the matter of opting out.

No one knows how much the services of the NPSBN will cost. For States opting-in, cost allocations for the RAN and other existing State infrastructure may be highly complex. The costs for States opting-in would include the resources required to manage access by FirstNet to State infrastructure. FirstNet must create a cost model and conduct a financial analysis, both to inform the Board of what business model should be adopted, but also to give the States the confidence that the services will be affordable and the ability to start budgeting for them.

Here are some of the things that FirstNet should do first:

1. Get expertise and personnel capacity.
2. Quickly develop a cost model and business plan.
3. Develop a customer relations and marketing plan for the States; embrace the States.
4. Facilitate the early deployment of those States and localities that are funded and ready to launch.
5. Formalize state representation.
6. Broaden the base of users to include transportation, utilities, and others.
7. Adopt a policy of national interoperability, local control.
8. Develop an Identity and Access Management System.
9. Negotiate roaming agreements.

FirstNet also must choose a course of action that launches the NPSBN in sustainable phases, leveraging State networks and commercial networks while preserving interoperability.

METHODOLOGY AND SCOPE

The Potomac Institute for Policy Studies is a non-partisan, not-for-profit science and technology policy research institute. The mission of the Potomac Institute is to identify and aggressively forge knowledge, discussion and collaborative courses of action on key science, technology, and national security issues facing the Nation.

For this study, Potomac Institute analyzed the implementation of the National Public Safety Broadband Network (NPSBN) under the Middle Class Tax Relief and Job Creation Act of 2012 and the actions that had been taken prior to that legislation. Those actions include waivers and grants for early deployment by State and local jurisdictions. The purpose of the study is to produce this report on the implications of integration of the States into the NPSBN, both technically and from a policy standpoint, with conclusions and recommendations. A list of technical and policy questions were developed, which were segmented into three related topic areas: (1) FirstNet Technical Challenges and Timing, (2) FirstNet Financing and (3) States Options and Alternatives.

The study was started on August 15, 2012 with the goal of completing the report in time to be useful to FirstNet's formation. During this intense period, Potomac Institute conducted research, interviewed experts and current and former government officials and held a colloquy of technical and policy experts. Research was conducted largely from online and print sources, including from government, academia, non-profit and the media.

The colloquy was held at Potomac Institute on September 10, 2012, moderated by the study's principal investigator, James Arden Barnett, Jr. The subject matter experts were:

- Dr. Jon Peha, Full Professor and Research Director at Carnegie Mellon University and former Chief Technologist at the Federal Communications Commission;
- Dr. Kenneth Zdunek, Senior Research Associate, Wireless Network & Communications Research Center, Illinois Institute of Technology;
- Mr. Anthony Parrillo, Parrillo Associates, Engineer and former Advanced Concepts and Technology Senior Advisor to the USDA CIO and program manager for the first rural 700 MHz public safety broadband (LTE) deployment;
- Mr. Bruce Gottlieb, J.D., former Chief Counsel to the Chairman of the Federal Communications Commission and, prior to that, legal advisor to FCC Commissioner Michael Copps.

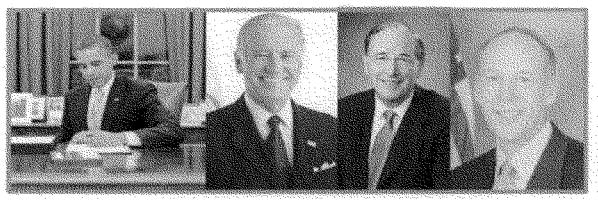
The results of the colloquy were analyzed and combined with the prior research, but this report represents the conclusions of the principal investigator only and should not be ascribed to any particular individual consulted during this process.

INTRODUCTION: THE PROMISE AND CHALLENGES OF PUBLIC SAFETY BROADBAND

The advent of a nationwide, ubiquitous broadband wireless network for public safety has the potential to revolutionize the level and types of services that can be offered to save lives, protect property, deter and solve crimes, prevent violence, provide medical services, safeguard critical infrastructure, improve emergency management and ensure the rapid restoration of services following a disaster. This network additionally could solve the quandary presented by the patchwork of non-interoperable public safety communications that has plagued the nation for three quarters of a century. The promise of this technology is enormous.

The Middle Class Tax Relief and Job Creation Act of 2012 (the Act) seeks to fulfill this promise.[1] The Act was a spectacular bi-partisan achievement in the 112th Congress, which has become notable for the scarcity of bi-partisan legislation. The Act adds the 10 megahertz of the D Block to the existing public safety broadband spectrum in the 700 MHz range for a total of 24 MHz of broadband–a tremendous amount of capacity.[2] The Act provides $7 billion for the establishment of the nationwide public safety broadband network (NPSBN), funded by voluntary incentive auctions of broadcast television spectrum authorized by the Act.

The First Responders Network Authority (or FirstNet) was established by the Act as an authority, under NTIA but independent of NTIA, to operate the NPSBN through its Board of Directors. Under the Act, FirstNet has the duty and responsibility to deploy and operate a NPSBN "in consultation with Federal, State, tribal and local public safety entities" among others.[3] The FirstNet Board was named in August, 2012, but it may take some time to get organized. Additionally, the Act provides specific directions on how States may plan for the network and how FirstNet will



President Obama signs the Act in February 2012, a bi-partisan effort led by Vice President Joe Biden, Senator Jay Rockefeller (D-WV) & Congressman Greg Walden (R-OR). Source: Official Photos

1. The Middle Class Tax Relief and Jobs Creation Act of 2012, adopted February 22, 2012, was known as H.R. 3630 for the 112th Congress, Pub. L. 112-96, 126 Stat. 156 and will be referred to in this report as "the Act."
2. Public safety also has narrowband spectrum in 700 MHz, which the Act provides may be able to be used flexibly for broadband.
3. §6204(a) of the Act provides that FirstNet is established as an independent authority within NTIA, and §6204(b) provides that FirstNet shall be headed by a Board. In §6206(b), the Act provides that FirstNet's powers, duties and responsibilities are to be exercised "through the actions of its Board."

advertise for and build the network. These statutory procedures could mean, conservatively, that the initial operations may not begin for years, and when the complexity of the revenue which will be used to complete the network is factored, FirstNet may not be truly nationwide for over a decade.

However, prior to the Act, several State and local entities applied to the Federal Communications Commission (FCC) for permission to build early public safety networks in the original 10 MHz of the public safety spectrum in the 700 MHz band. The FCC granted 21 such waivers and several received Broadband Technology Opportunity Program (BTOP) grants from the NTIA amounting to approximately $382 million.[4] A handful of other waiver recipients had existing grants or State and local funding. To ensure interoperability, the FCC required public safety broadband networks to use Long Term Evolution (LTE) technology and established interfaces and other interoperability requirements. Waiver recipients could not proceed with their networks under an FCC order unless the State or local entity could show that its network would interoperate with each other and the nationwide network. Still other jurisdictions had various levels of funding and had applied for waivers, but those waivers had not been granted by the FCC prior to the passage of the Act.

FirstNet Board

- Sam Ginn, Chairman, former Chairman of Vodafone AirTouch & of Pacific Telesis
- Craig Farrill, Co-founder of Kodiak Networks, formerly of Vodafone and AirTouch
- William Keever, retired regional president for Vodafone, AirTouch, Pacific Telesis
- Paul Fitzgerald, Sheriff, Story County, Iowa, former president, National Sheriff's Association
- Deputy Chief Chuck Dowd, NYPD, Major Cities Chiefs Police Association representative
- Jeff Johnson, Fire Chief (retired), former President, International Association of Fire Chiefs
- Kevin McGinnis, Program Manager, National Association of State EMS Officers (NASEMSO)
- Tim Bryan, CEO, National Rural Telecommunications Cooperative
- Ed Reynolds, retired, former president of BellSouth Mobility and AT&T executive
- Susan Swenson, retired, former president & CEO of Cellular One
- Teri Takai, DoD CIO and former CIO of Michigan and California
- Wellington Webb, former Mayor of Denver, Colorado
- Secretary of Homeland Security Janet Napolitano
- Attorney General Eric Holder
- Director of the Office of Management and Budget (Acting) Jeffrey Zients

Figure 1. Membership on the FirstNet Board of Directors

4. FCC Order of May 11, 2010 in the Matter of the Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-79A1.pdf.

Not long after passage of the Act, NTIA suggested the delay or suspension of certain expenditures by the BTOP grant recipients and requested that the FCC revoke the waivers (whether BTOP recipients or not).[5] These actions by NTIA represented a significant shift in policy, and either stopped the projects cold or threw them into a contractual limbo with a risk of losing grant funding.

In doing so, NTIA has raised significant policy and technical questions about the nature of State relations and integration into the NPSBN. NTIA officials have cited concern that the State waivers and BTOP projects might not be interoperable with FirstNet and the desire to preserve all available options for FirstNet. However, with regard to interoperability, NTIA awarded the BTOP grants on the premise that the State and local networks would interoperate with the nationwide network.[6] The passage of the Act did not change the underlying premise or capability to ensure that State systems could be integrated into the NPSBN.

Additionally, the NTIA action could delay the use of the public safety spectrum in those jurisdictions for years until FirstNet is able to extend the NPSBN to those areas. The safety of the public in those areas for those years could become a significant policy question.

Beyond the waiver and BTOP recipients, other complexities exist. The Act seemingly provides two avenues for States to participate in the NPSBN. The Act provides each State with an alternative to opt out of FirstNet's RAN and to construct and operate its own State RAN as long as it is interoperable with FirstNet. However, the process the Act creates is bureaucratically cumbersome and intentionally so rapid that States may not have a meaningful amount of time and information to react and decide. The Act provides the option, but clearly does not favor any State to exercise the opt-out alternative, and if the States do opt-out, they are subject to undetermined leasing fees for public safety spectrum. The Act seems to indicate that the FCC will have more responsibility over those States that opt out, creating questions about authority and interoperability.

Great expectations have been levied on FirstNet to fulfill the promise of a nationwide, interoperable public safety broadband network with the tools and authorities provided by the Act. The task is daunting. This report addresses the challenges the FirstNet Board faces in launching the network with limited funds and how the possibility and implications of interoperable State public safety networks, either through early deployers or by States opting out, play in the first decisions by FirstNet.

5. Wayne Hanson, "Feds Rethink Public Safety Network While Locals Stew," *Emergency Management*, August 30, 2012, http://www.emergencymgmt.com/safety/Feds-Rethink-Public-Safety-Network.html.
6. The FCC waivers to early deployers also were conditioned upon interoperability.

THE TECHNICAL AND POLICY IMPLICATIONS FOR THE LIKELY DEPLOYMENT TIMELINE FOR THE NATIONAL PUBLIC SAFETY BROADBAND NETWORK

The deployment of the NPSBN by FirstNet will take several years, perhaps as many as five to six to even launch the first phase based on current actions and projections. The date when the NPSBN will be truly nationwide may be over a decade away, and even that prediction may be optimistic. The pre-deployment planning and decision-making will be a lengthy process, and several factors play in the length of time.

The first factor is the Act itself. The FirstNet Board was not named until August 20, 2012 as required by the Act, and the first meeting of the new Authority board members in person is slated for September 25, 2012.[7] Once the Board is seated, some experts estimate that it will take a 3-6 months to get fully organized before major decisions can be made.[8] While the question has been widely asked, "When will the network be deployed," a more salient question is "When will the network get started?"

Those major decisions that the FirstNet Board must address include matters central to the operating concept of the NPSBN. The Act imposes a statutory duty on FirstNet to establish a nationwide, interoperable public safety broadband network, and it must do so "taking into account the plans developed" through the State and local planning process.[9] The network also must be based on "single, nationwide network architecture."[10] This single architecture, however, may be distinguishable from a single network, and the technological importance of this will be discussed below.

The planning process likely will not start until sometime in 2013, and some experts have opined that the planning will not get started until after 2014. If the nationwide network must wait on the State planning process, three to five years may elapse before a Request for Proposals (RFP) for the construction, maintenance and operation of the NSPBN could even be issued by FirstNet. The Act incongruously required that NTIA issue guidelines for the State planning grants by August 22, 2012, in consultation with the FirstNet Board, which was not even required to be named until August 20 and did not hold its first in-person meeting prior to the August 22, 2012 statutory deadline for the state planning grant guidance.

7. Media Release from NTIA, August 20, 2012, http://www.ntia.doc.gov/other-publication/2012/acting-secretary-rebecca-blank-announces-board-directors-first-responder-netw.
8. Presentation by NTIA Staff at the National Governors Association's National Forum on Preparing for Public Safety Broadband, June 28-29, 2012, Leesburg, Virginia.
9. The Act §§ 6202(a) and 6202(b)(2)(B).
10. *Id.* at §6202(b).

Technologically, networks in States and regions can be linked into a "single, nationwide network architecture" without interoperability problems. Telecommunications carriers have been doing so for years.

However, NTIA did publish its findings (noting the incongruence) in the Federal Register on August 21, 2012 from a Request for Information (RFI), issued on May 16, 2012, in preparation for the grant guidance.[11] Those findings reveal a key factor in the timing of the planning process. Several respondents to NTIA's RFI noted that States will need time and money to hire staff and prepare for the planning process, something that could take months or years.[12] Many States are already underfunded and suffering from budgetary shortfalls. They are operating, maintaining and in some cases upgrading existing public safety communications systems, so the fiscal flexibility to hire staff with expertise in broadband networks and communications is nearly non-existent.[13]

Nevertheless, the mindset that the new NPSBN has to be a single network may be driving a timeline that excludes a phased, flexible deployment. The Act requires a "single, nationwide network architecture," which can be interpreted as allowing phases, and the Act specifically refers to phases in requiring rural development throughout the establishment of the NPSBN.[14] Some States are farther along and better prepared; these could receive earlier grants if NTIA and FirstNet have the technological expertise and the oversight capacity and competence to ensure that earlier development does not introduce interoperability problems. Technologically, networks in States and regions can be linked into a "single, nationwide network architecture" without interoperability problems. Telecommunications carriers have been doing so for years. This is particularly the case given that the FCC required LTE interoperability for public safety waiver recipients two years ago and all subsequent state planning has been under that requirement.

The current process envisioned by NTIA seems to be as follows: in the next few months, NTIA will have contracted with a consultant to help with writing an RFP and working through federal-state procurement matters (and as an independent authority, FirstNet should obtain its own consultants). By the spring of 2013, the FirstNet Board and staff should be organized and can consult with NTIA on the grant guidance for the state planning grants. The grant process

11. Development of Programmatic Requirements for the State and Local Implementation Grant Program To Assist in Planning for the Nationwide Public Safety Broadband Network, Federal Register, Vol. 77, No. 162, August 21, 2012, Notices at Page 50481.
12. *Id* at Page 50483.
13. The matter of expert staffing and capacity must be addressed at the federal level as well. NTIA had less than 20 persons working on public safety communications issues before the passage of the Act on February 22, 2012. As late as September 1, 2012, there are still less than 20 at NTIA assigned full-time to working on bringing about a $7 billion nationwide network.
14. The Act §6206(b)(3).

is anticipated to having two phases (which naturally means more time). The first phase is aimed at initial planning, governance planning and stakeholder education. The second phase involves consultation with the authorized state point of contact on matters of network coverage, user requirements and hardening of the network.[15]

Hypothetically, if the first phase grant guidance goes out as early as April, 2013, States could be required to apply for the State planning grants by August, 2013, and it would take some time for the grants to be evaluated and awarded. The States would then have to implement the grant, issuing requests for proposals or otherwise issuing contracts, hiring staff, conducting outreach to State stakeholders, creating inventories of assets and educating users. While there is nothing that says that phase two must wait until phase one is complete, as envisioned by NTIA, phase one may take a year or more.

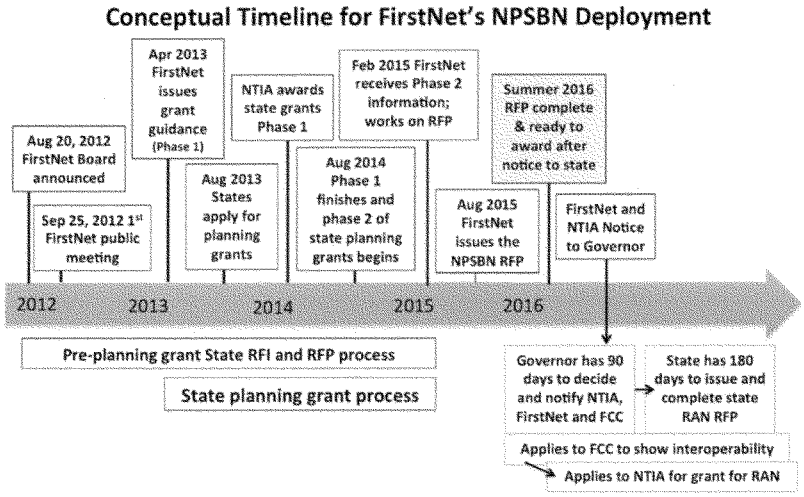


Figure 2. Conceptual Timelines for Deployment and Opting Out

15. Development of Programmatic Requirements for the State and Local Implementation, F.R. at Page 50485.

For the sake of the hypothetical, this means that the phase one planning grant could be completed, ambitiously, by August, 2014. If the phase two grant process starts before the end of phase one, it is possible that phase two could start immediately in August, 2014. Phase two could then take six months, completing in February, 2015. Accordingly, this would be about the earliest that a State's planning information could be considered by FirstNet for the purposes of preparing a RFP for that particular State.

If FirstNet takes the position that all States must have turned in their plans in order to meet the statutory requirement that State plans be taken "into account" in the development, construction and operation of the network, then the timeline becomes significantly longer. States which fail to plan, plan slowly or suffer some setback in planning would become the determinant force in the timing of the new NPSBN.

A more practical approach would be for FirstNet to phase the launch of the NPSBN, providing the wherewithal for States to conduct their planning to level the playing field among financially strained States and those with some funding; and incentivizing speed and enthusiasm with the promise that those who plan first and well will have an advantage of getting the funding and the network before others who do not plan and implement energetically. This position presupposes that FirstNet and NTIA have the necessary technical expertise and oversight capacity to ensure interoperability even as the phased deployment proceeds.

Assuming for the hypothetical that FirstNet does not wait until it has all the State plans before it issues its first RFP, the FirstNet RFP process could begin as soon as it evaluates and takes into account the phase two information that it receives in February, 2015. Realistically, the review of the planning information could take several months to incorporate into a NPSBN RFP. Hopefully, initial groundwork for the RFP would shorten this length of time, but a reasonable (if ambitious) estimate may be six months, with FirstNet issuing the RFP in August 2015.[16]

This RFP will be technologically complex, requiring a longer response time, perhaps nine months, and some time to review and award, perhaps one to two months. Under this hypothetical, the NPSBN contract to begin the network would be in the summer of 2016, except for one statutory matter which does not follow the generally accepted government contracting process.

The Act requires that FirstNet provide to the governor of each State the details from the RFP for the build-out of the NPSBN in that governor's State and the funding level for the State which has been determined, not by FirstNet, but by NTIA.[17] Upon receipt, the governor has 90 days to decide whether to proceed under the FirstNet plan or to have the State build its own public safety broadband radio access network. If the governor chooses the latter, then the State has only 180 days to complete its own RFP for the construction, maintenance and operation of the

16. August of 2015 if FirstNet does not break the RFP up into regions or pieces which could make the launch in those areas go somewhat faster.
17. The Act §6302(e).

State's RAN.[18] This statutory process could inject an additional 270 days into the award of bids for the NPSBN, a factor which is unusual for government contractors and may affect the bidding process and price structure.[19]

While no specific deadlines are imposed by the Act, once the governor has notified the federal government that the State will opt out, the State must apply to the FCC and show that it can meet the Minimum Technical Recommendations (the "Minimum Recommendations") for interoperability and that it can interoperate with the NPSBN.[20] If the FCC approves the application, the State must apply to NTIA for a lease of the spectrum and for a grant to fund construction of the state RAN. These approval processes do not line up well with the requirement that the State complete its RFP within 180 days. The approval process could take longer, leaving the potential contractors, the State and its RFP process stranded until a final decision is made.

Another key factor in the timeline for deployment is funding. While the Act authorized $7 billion for the network, $5 billion is dependent on the receipt of revenues from the incentive auctions of spectrum which is currently licensed and used by other entities. Rules and agreements must be established, broadcast channels repacked, border interference protection negotiated, and since all of this could take a significant amount of time, a possibility exists that a funding gap could occur. The spectrum will not be cleared until after the auction, which could affect what price the spectrum brings.

Even the most ambitious plan by the FCC does not have the first incentive auction occurring until 2014.[21] The revenue for the auctions will not accrue to FirstNet quickly or regularly, and there is no guarantee on the amount of the auction proceeds. FirstNet is allowed to borrow $2 billion from the U.S. Treasury in anticipation of the auction revenues, but it must also pay this amount back to the Treasury. Statutorily, FirstNet is required to become self-sustaining through revenues it generates from spectrum leasing and user fees.[22]

Almost irrespective of how well the auctions might ultimately succeed, the specter of funding gaps will militate the FirstNet Board to operate cautiously within the confines of the initial $2 billion for the first few years and until the next installment of funding becomes available from auction revenues. No one has suggested that a nationwide public safety network can be established for $7 billion, much less $2 billion. FirstNet will be forced to see the initial funding as phase one of the NPSBN, and this will delay nationwide implementation unless Congress

18. The Act §6302(e)(2) and (3). The state also must obtain approvals from the FCC and NTIA (not FirstNet), but these requirements are not included within the 180 day deadline.
19. The awarding of the NPSBN contracts may be segmented regionally, which could allow other States to proceed. The 270 day addition becomes a factor if the state's RFP process fails, and it must resort to FirstNet's NPSBN.
20. *Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the NPSBN*, FCC Technical Advisory Board for First Responder Interoperability, May 22, 2012.
21. Stacey Higginbotham, "Need Spectrum? FCC Plans TV Incentive Auction for 2014," *Gigaom*, September 6, 2012; http://gigaom.com/2012/09/06/need-spectrum-fcc-plans-tv-incentive-auction-for-2014/.
22. The Act §6208.

amends the Act or advances the funding. Unless FirstNet adopts a phase one approach or gets significant revenues from the lease of the spectrum, some of the initial members of the FirstNet Board may rotate off before the network becomes operational.[23]

The real question for FirstNet will be how to implement phase one. The Act requires that rural coverage be included in all phases of deployment.[24] Accordingly, phase one will not be just a combination of large cities, and politically it will not be tenable to concentrate the phase one network in one part of the country. However, spreading out phase one geographically is also problematic, since systems which are remote from each other will necessarily not have as much opportunity or need to interoperate.

Thus, the Act, the funding scheme and the complexities of launching a NPSBN combine to push the *initial* operational capability of a small part of the system until five or six years after the adoption of the Act. The final operational capability (FOC) of the NPSBN is not foreseeable at this time because the funding and the funding model simply do not exist. Clearly, FOC is more than ten years away on the current course.

The current course of action is not the only one available to FirstNet, however. FirstNet can move forward with those jurisdictions that received waivers to use the 700 MHz public safety spectrum and received either BTOP grants or other funding. Proceeding with the waiver recipients would require the right technological expertise and more oversight capability than NTIA (or FirstNet) currently has. FirstNet also could establish the first phase of the NPSBN by simply contracting with wireless carriers to provide a 10x10 Band Class 14 radio access network along their current commercial network lines, with an emphasis on those serving rural areas (or a requirement that some percentage of the commercial network serve rural areas).[25] Part of this bargain might be a leasing arrangement with the carriers for the spectrum capacity to bring in revenue for FirstNet.

FirstNet also has an opportunity to encourage those States that have the funding and enthusiasm to move forward without any or significant federal funding. Here again, the question is ensuring interoperability by having the right expertise and capacity for technical and budgetary oversight.

23. The Act §6204. Other than the three federal members, the 12 appointed members serve 3 year terms. Some, however, will be staggered. Members may be reappointed once.
24. The Act §6202(b)(3).
25. The 3GPP standards group established four different band classes for 700 MHz, and Band Class 14 encompasses the D Block plus the public safety spectrum previously designated for public safety broadband.

TECHNICAL CHALLENGES FOR STATE INTEGRATION INTO THE NPSBN AND SOLUTIONS

Technical challenges for the integration of the State and local public safety broadband networks into an interoperable NPSBN do exist, but they can be overcome reasonably and, with proper planning and execution, without undue expense.

First, it must be recognized that all forces work against interoperability, especially market and local budget forces. Our American system of free enterprise is actually based on producing products that can be differentiated from the competition. Interoperability costs money, and when public safety communications systems come under budgetary pressure, as they always do, cutting interoperability does not actually degrade the capability of the system within that jurisdiction. For example, in a budgetary crunch, why would Smith County pay more just to be able to talk to Jones County, especially when it doesn't have to do so except in rare emergency situations? The same is true for States. In addition, the U.S. system of federalism highly values State (and local) autonomy, an issue not encountered in some large European countries, where police forces are organized at the national level.

The lack of interoperability, however, costs lives, often the lives of first responders, a fact that unfortunately can become detached in the fray of procurement and budget decisions. If market forces do not drive interoperability, and State and local budget pressures work against it, the driver has to be a national resolve that interoperability must exist throughout the public safety communications environment. That national resolve now resides in the Act, and the opportunity for an affordable NPSBN only exists because a new technology is being launched into a relatively unencumbered spectrum.

The longer the Nation takes to launch the NPSBN, the greater the risk that it will not be interoperable and the greater the cost to ensure that it is interoperable. For instance, an expanse of ten years from the start to final operational capability means that some parts of the system will be a decade old just as new jurisdictions are brought on line.[26] The Act anticipates constantly upgrading the system to keep it in close parallel to commercially available systems.[27] This disparity in age and upgrade status invites problems with interoperability and increased costs to maintain interoperability. Clearly, funding and time are two of the greatest non-technological threats to interoperability.

Second, a significant threat to interoperability comes from a lack of technical expertise and a sufficient workforce to provide technical, budgetary and contractual oversight of the multi-billion dollar national asset. The Act shifted responsibility for State and local public safety

26. The rapid obsolescence of technology can be seen in changes in cellphones just in the last decade. The first iPhone was only five years ago and is no longer supported by Apple or most of the carrier infrastructure.
27. The Act §6206(c)(4).

communications in the broadband world away from the FCC, where there are over 1,800 employees, over one hundred of whom work on public safety communications, to the NTIA, where there are only a handful dedicated employees who were working on public safety communications *before* the Act was adopted. NTIA's numbers for working on public safety and FirstNet have not changed appreciably in the months since then. The persons who currently work on FirstNet are dedicated experts, who are now being overworked to keep up with the awesome responsibility. None has constructed or managed the launch of a broadband network of this proportion. The point is that they need reinforcements immediately with the right expertise and the right numbers; this should be a high priority.

The reinforcement of NTIA and FirstNet should be an "all hands on deck" endeavor. Federal agencies with expertise, such as the FCC and Department of Homeland Security, should be called upon to detail experts to NTIA and FirstNet. The FCC set up a division entitled the Emergency Response Interoperability Center (ERIC) while it still had responsibility for the public safety broadband network to provide the expertise required for the early deployers. Experts from ERIC could be detailed temporarily to FirstNet and NTIA.[28] NTIA has already advertised for expert assistance in program management, cost-estimating, acquisition management and professional expertise in telecommunications in an RFP that was released on August 10, 2012.[29] FirstNet itself should contract for independent expert assistance in the short run. In the long run, NTIA and FirstNet must obtain permanently the expert staff that they need as integral parts of their respective organizations.

NTIA's lack of capacity and capability may have already become manifest in its decision to stop the BTOP grant recipients and other early deployers of 700 MHz public safety systems. NTIA issued BTOP grants totaling over $382 million to seven recipients who had received waivers from the FCC to deploy in the 10 MHz of the public safety spectrum in 700 MHz band. With the assurance that the NPSBN will never have enough funding, $382 million is a significant down payment on the network. The grants also spurred a great deal of State and local spending, sometimes at the expense of other public safety communications priorities and needs.

NTIA's grants were conditioned on interoperability. Presumably, NTIA thought at the time of the BTOP grants for public safety broadband that these systems could be integrated into the NPSBN seamlessly, a national goal since the passage of the homeland security legislation in

28. §6213 of the Act provides that the FCC may provide technical assistance to FirstNet. The Act represents a major shift in responsibility for public safety communications from the FCC, which has a dedicated and experienced expert force, to NTIA, which traditionally deals with federal communications, not state or local. FCC has a force of over 1800; NTIA has a total force of just over 200 and really less than twenty hardworking people dedicated to FirstNet so far.
29. Department of Commerce Request for Proposal to Obtain Advisory and Management Support Services for NTIA to Form the First Responders Network Authority, August 10, 2012.

2004 and a leading recommendation of the 9/11 Commission.[30] NTIA encouraged the building of these systems and pushed hard to make sure that the BTOP funds were obligated on time and were being expended on schedule. NTIA got the National Institute of Standards and Technology (NIST) and its Public Safety Communications Research laboratory involved in working on interoperability.

After the passage of the Act, NTIA abruptly shifted its position and ultimately stopped these systems from moving forward, citing concerns about keeping options open for FirstNet and NTIA's concept that the purchase of components it had already funded might not be compatible with the NPSBN.[31] NTIA did not suspend the grants or order that LTE equipment not be purchased or, if already purchased, installed. The BTOP recipients were asked to "pause" in ordering, taking delivery or installing LTE equipment, even though each of them had contractual obligations based on the BTOP grants.[32]

Unfortunately, the stoppage may mean a loss of millions of dollars to the network of grant funding and of State and local funding. Most probably, this loss would be a permanent one; the unspent federal money may simply revert back to the Treasury and would not be re-programmed for the NPSBN. An opportunity cost was exacted as well, since those State and local funds and the time of the local and State officials were needed for other public safety communications projects. The network in Charlotte, N.C. could have been operational for its recent National Special Security Event, the Democratic National Convention. The networks in Mississippi and Houston, Texas, could have been operational for Hurricane Isaac and the remainder of the 2012 hurricane season. If NTIA had already had the level of expertise and the numbers of persons required for oversight, the BTOP grants could have been managed to ensure interoperability with the NPSBN, especially given the LTE interoperability requirements. Allowing BTOP recipients to continue moving forward would expedite state and local broadband interoperability, which is especially important given that the NPSBN may not be operational for several years.

Early deployment has already yielded a great deal of crucial information, which was one of the essential reasons that NTIA and the FCC pursued waivers and BTOP grants for early deployers. Even with the stoppage, NTIA has acknowledged that early deployments are useful and that FirstNet and NTIA will learn from them, and its officials have stated optimism about moving

30. National Commission on Terrorist Attacks Upon the United States, *The 9/11 Commission Report*, 2004, at p. 293. The 9/11 Commission Report does not specifically recommend a nationwide interoperable public safety network, but it cites the problem of the lack of the ability to communicate and some of its recommendations are answered by an interoperable NPSBN (*see* p. 396-398). http://www.9-11commission.gov/report/911Report.pdf
31. Testimony of Assistant Secretary of Commerce Lawrence Strickling on "Broadband Loans and Grants" before the House Energy & Commerce Subcommittee on Communications and Technology, May 16, 2012.
32. Letter from Assistant Secretary Lawrence Strickling to Charles Robinson, City of Charlotte, N.C., May 11, 2012, http://www2.ntia.doc.gov/files/grantees/20120511095904533.pdf.

forward with up to three such systems.[33] While such optimism does not clearly square with the stoppage and loss of funding and time, it is a muted recognition that development of State and local systems can be managed to ensure integration into the NPSBN.

Technical challenges to the integration of State and local systems, at this point, include the disparity in the spectrum. The original waiver recipients got permission from the FCC to deploy systems that used the original 10 MHz of public safety spectrum. FirstNet's NPSBN will use, in essence, 20 MHz, that includes the D Block that was reallocated for public safety use by the Act.[34] Since the Act requires the FCC to assign the D Block to FirstNet, the FCC declined to grant permission to use it to the existing waiver recipients. Instead, the FCC said it would wait for FirstNet to request a license for the public safety broadband spectrum.[35] Originally, usage by the waiver recipients was limited to a 5x5 configuration, in contrast to the 10x10 configuration expected under FirstNet.

NTIA had an interoperability concern with systems moving from a 5x5 to a 10x10 configuration, and NTIA has asked the FCC to reconsider its decision and allow waiver recipients to use the spectrum *only* if they used the entire 20 MHz in a 10x10 configuration.[36] The concern expressed was that waiver recipients would have to upgrade their systems in order to be compatible with FirstNet's 10x10 NPSBN.

However, this technological challenge can be handled in other ways than simply denying the early deployers the ability to use the systems that they already have planned at NTIA's behest and encouragement. First, FirstNet's NPSBN system will not even reach initial operational capability for several years; final operational capability may be much longer. That is four to six years that these early systems could be used to protect the public and first responders, all the while learning from them. Second, the early deployers could be required to upgrade their systems to 10x10, and their vendors could be brought in contractually or by bond to ensure that this will be done. This upgrade may not be very expensive, since much of the deployed equipment has the ability to use all of Band Class 14. Since NTIA has already acknowledged that one to three early deployments should be allowed, then a policy of facilitating these deployments should be energetically pursued. This is a technical challenge that can be overcome.

33. Donny Jackson, "The Impact of NTIA's Decision to Put LTE on Hold," *Urgent Communications*, September 7, 2012, http://urgentcomm.com/policy_and_law/mag/Public-safety-broadband-deployments-stopped-in-their-tracks-20120907/index.html.
34. The Act §6101 (requires the FCC to reallocate the D Block in the 700 MHz spectrum).
35. Order Implementing Public Safety Broadband Provisions of the Act, PS Docket No. 12-94 (July 31, 2012), http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0802/FCC-12-85A1.pdf.
36. Letter from Hon. Lawrence Strickling to FCC Chairman Julius Genachowski, August 17, 2012. http://www.ntia.doc.gov/files/ntia/publications/ps_dkt_no_12-94_08172012_fcc_letter.pdf

Moreover, Release 10 by 3GPP, the standard for LTE, will allow for carrier aggregation of spectrum. Carrier aggregation increases capacity by adding bandwidth. Since a principle of LTE is backward compatibility with LTE Release 8 and 9, aggregation is accomplished by combining the component carrier with a bandwidth of 1.4, 3, 5, 10, 15 or 20 MHz with a maximum of up to 5 component carriers, or a maximum bandwidth of 100 MHz.[37] Simple carrier aggregation uses contiguous component carriers within the same operating frequency band, and the D Block and the 700 MHz public safety broadband (Band Class 14) fall into this description. However, even if the component carriers were not contiguous, a situation which commercial carriers face using LTE in the 700 MHz range, these component carriers can be combined as well under LTE Release 10.

Hence, the concerns raised by NTIA can be addressed by requiring adherence to LTE Release 10, which was made available in 2011 and the features of which are being tested by companies now.[38] Most of the upgrades involve software changes and should not cause undue expense. At any rate, during the four to six years before FirstNet deploys the NPSBN, early deployers could be required to upgrade to 10x10 or face either a revocation of the ability to use Band Class 14 spectrum or higher spectrum fees. The FCC declined to limit applications for Special Temporary Authority (STAs) to only 10x10 configurations, leaving these few jurisdictions with flexibility in managing the transition to interconnection with the NPSBN; the FCC order provided that it would entertain STA applications for either 10x10 or 5x5 configurations.[39] The amount and configuration of the spectrum is not a sufficient technological reason for stopping the early deployments.[40]

...the concerns raised by NTIA can be addressed by requiring adherence to LTE Release 10, which was made available in 2011 and the features of which are being tested by companies now.

However, STAs are not the perfect answer for early deployers. Harris County, Texas will now proceed on STAs granted by the FCC on August 31, 2012.[41] Charlotte, North Carolina may be next. The State of Mississippi is

37. Jeanette Wannstrom, "Carrier Aggregation Explained," *3GPP*, May 2012); http://www.3gpp.org/Carrier-Aggregation-explained.
38. *4G Mobile Broadband Evolution: 3GPP Release 10 and Beyond*, page 11, 4G Americas, February, 2011. http://www.4gamericas.org/documents/4G%20Americas_3GPP_Rel-10_Beyond_2.1.11%20.pdf
39. FCC Order on Reconsideration Adopted August 29, 2012 In the Matter of Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012, FCC 12-96, PS Docket No. 12-94, WT Docket No. 06-150, PS Docket 06-229.
40. *See also, Public Safety Priority Access to Shared Commercial Networks,* Roberson & Associates, LLC, Ex Parte Filing, March 2, 2012, FCC WT Docket No. 06-150; PS Docket No. 06-229; GN Docket No. 09-51. While this filing with the FCC discusses spectrum sharing with priority access relating to commercial and public safety sharing, the concept can be applied to public safety-only scenario, where an existing state/local RAN is shared between a state/local EPC core and the NPSBN EPC core.
41. FCC Order Adopted on August 31, 2012, DA 12-1432, granting the STA application of the State of Texas to proceed in Harris County.

still interested, but the nature of STAs is that they are temporary. Governor Phil Bryant expressed the desire of the State of Mississippi to proceed on its public safety broadband network in a letter dated August 15, 2012 to Larry Strickling, Assistant Secretary of Commerce and NTIA Administrator, but he also expressed the concern that long-term access to the spectrum was necessary to warrant Mississippi's investment.[42]

The letter also indicated that negotiations were ongoing with the State's vendor for a contractual indemnification provision to ensure that the State of Mississippi's system could interoperate with the NPSBN when it became available.[43] This indemnification provision is a reasonable safeguard upon which to proceed with State and local public safety broadband systems.

FirstNet will need to design and move forward with a network core as early in the process as possible (discussed more below), since the network core is essential to interoperability. A component of the process of developing the core is establishing NPSBN Identity and Access Management, as seen in Figure 3. While much of the discussion of FirstNet and the NPSBN revolves around 700 MHz, Band Class 14 and the RAN, the radio access network is just one way to access the full utility of the network. Police officers, firefighters, EMS personnel and other first responders will be on the radio network for data and information on the front line, but other public safety personnel will need access to that same data as well. They may access the databases and applications via commercial networks, a cable Internet service provider or WiFi service. To facilitate that, FirstNet should develop a robust identity and access management system consisting of five important components:

a. Network Access
b. System Access
c. Applications Access
d. Process Access
e. Data Access

Users will be allowed into levels and compartments based on need and function. This system is indispensable to figuring out how federal, State, local, tribal and regional jurisdictions will work together, and partnering with the States as discussed in the section on consultation below.

42. Letter of Governor Philip J. Bryant to Assistant Secretary of Commerce Larry Strickling, August 15, 2012.
43. *Ibid.*

Just as "eternal vigilance is the price of liberty," constant testing will be the price of interoperability.[44] The Act and the FCC's Minimum Recommendations both express the requirement for non-proprietary equipment and infrastructure to ensure interoperability.[45] Even with the clearest of technical requirements, manufacturers, vendors and integrators may have interpretations that cause interoperability problems.[46] Since the FCC will not be involved in providing regulations for the NPSBN, FirstNet will have to rigorously enforce interoperability testing, and FirstNet must have the capacity, expertise and culture to do so, including training, legal[47] and contractual oversight capabilities.

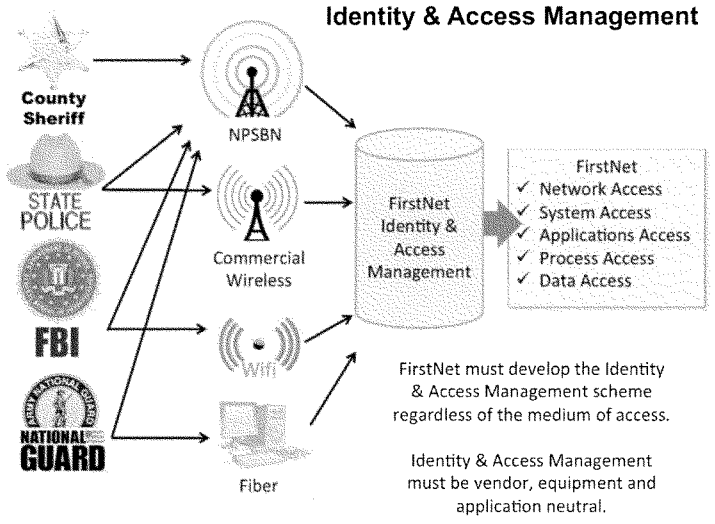


Figure 3. Identity and Access Management

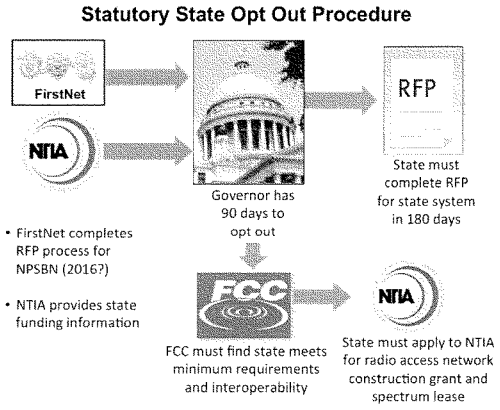
44. Wendell Phillips' Speech to the Massachusetts Antislavery Society, 1852.
45. *Recommended Minimum Technical Requirements* at §4.1.11 Additional Recommended Reference Points and Standards; http://apps.fcc.gov/ecfs/document/view;jsessionid=T5wnP2fJynkxfcZG8vcncmwnbwBcR3hTV7hRYQRl2Cq2jLlfgjLQ!-1969853125!-1221852939?id=7021919873.
46. *Recommended Minimum Technical Requirements* at §4.3.3.2 Infrastructure Interoperability Tests.
47. One interesting detail of a combined state-federal NPSBN system will be law enforcement intercept of other law enforcement agency communications. For instance, what happens if a federal investigation is opened on a State or local agency which is suspected of corruption or illegality? In the same vein, what procedures will be in place for a State or local investigation of a federal agent suspected of corruption or other illegality when the communications system is shared?

Early deployments raise the risk that problems with interoperability will occur when the early systems tie onto the NPSBN, but these risks have already been weighed and accepted by NTIA in issuing grants totaling $382 million. FirstNet must require that any network cores that serve the State public safety broadband systems become subservient to the NPSBN core and Network Operations Center (NOC) once they are on line and ready for interconnection.

The technical challenges to interoperability can be mitigated and handled by close coordination and monitoring by NTIA, FirstNet and its technical consultants (until NTIA and FirstNet can be fully staffed with the number of experts that they need). The current early deployers are geographically dispersed (in Charlotte, North Carolina; Harris County, Texas; the State of Mississippi; Adams County, Colorado; and even the Bay Area). Despite any functional interoperability problems, operational interoperability problems among them are unlikely in the first years leading up to the NPSBN due to this geographic dispersion. Their operational systems will provide opportunities to work out problems with interoperability to the advantage of NPSBN.

OPTING OUT: TECHNICAL, FINANCIAL, POLICY AND SPECTRUM ACCESS IMPLICATIONS

The Act sets up a statutory opt-out procedure for the States so that the States may have their own Band Class 14 Radio Access Network (RAN) and with it the right to enter into public-private partnerships for construction, maintenance, operation, and improvement of the network within that State, including leasing excess network capacity.[48] However, the Act provides many challenges for any State considering opting out, setting up a byzantine set of tight deadlines, serial reviews from federal agencies, and gubernatorial decisions on state plans prior to the assurance of federal funding.



48. The Act §6302(e) and (g).

Any State that opts out must follow a statutory process that will be exceedingly difficult to navigate successfully. These procedures also imply the need for state legislative authority and appropriations in advance of the triggering event set forth in the statute. [49]

THE STATUTORY OPT-OUT PROCESS

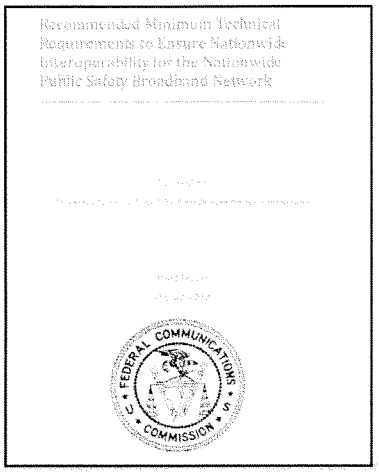
Once FirstNet completes the RFP process for the NPSBN, presumably in 2015 or 2016, the Act requires FirstNet to provide the governor of each State notice of the completion, "details" of the plan for build-out in the governor's State and information on the funding level for the State as determined by NTIA (not FirstNet).[50] This notice and information from FirstNet is the statutory trigger for the State's decision. First, the governor has 90 days to notify FirstNet, NTIA and the FCC of the governor's decision to participate in FirstNet's NPSBN or for the State to build its own public safety radio access network (RAN).

If the State chooses to build its own RAN, the governor must develop plans for the construction, maintenance and operation of the RAN and *complete* an RFP for the same within a brisk 180 days.[51] A six-month period is not unusual for an RFP process for a construction project alone; for the development of plans for a statewide RAN and the completion of an RFP, six months is breakneck speed.

Although not part of the 180 day period, another statutory process is triggered at the same time which will be determinative of the State's ability to have its own RAN. The Act requires that the State submit an alternative plan for the network to the FCC that demonstrates (1) compliance with the minimum technical requirements developed by the statutory Interoperability Board at the FCC in May, 2012, and (2) interoperability with the NPSBN.[52]

A short review of the Interoperability Board's process and product is appropriate at this point. The Act required the FCC to impanel a committee of experts to develop the minimum technical requirements for interoperability for the new network[53], a tacit recognition of the FCC's technical expertise in overseeing this work. FirstNet has the duty to include the Minimum Requirements, without material alteration, in its RFPs. The Act set up the Interoperability Board with technical representative from national, regional and State wireless providers, public safety members and State and local governments as voting members; it also provided NTIA with an appointment of one non-voting member.

49. *Id.* The triggering event is the presentation of information to the governor from FirstNet's Request for Proposal, including the funding level determined by NTIA (not FirstNet) for that governor's state.
50. The Act §6302(e).
51. *Id.* at §6302(e)(3)(B).
52. *Id.* at 6302(e)(3)(C).
53. The Act §6203. The formal name of the Interoperability Board is the "Technical Advisory Board for First Responder Interoperability."


Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the Nationwide Public Safety Broadband Network

FEDERAL COMMUNICATIONS COMMISSION

The recommendations of the Interoperability Board on its Minimum Requirements for interoperability, released on May 22, 2012, received widespread praise as on target.[54] However, even members of the Interoperability Board noted limitations due to time and other constraints.[55] Some experts have noted that the Minimum Requirements are indeed minimal and non-specific.[56]

The NTIA non-voting representative advocated for non-specificity in the Minimum Requirements for interoperability in order to preserve FirstNet's flexibility and options (since FirstNet would not be established until after the statutory deadline for the Interoperability Board). An irony of NTIA's position is that flexible Minimum Requirements means that States will have more flexibility in showing the FCC that they meet those requirements for the purpose of opting out.

States deciding to opt out, however, also will have to show the FCC that they can interoperate with the NPSBN, and no statutory guidance is provided on how the FCC should make this determination and what the status of the NPSBN will be at that point. Whatever the FCC's decision, the Act places the exclusive jurisdiction for appeals of the decision on alternative state plans with the U.S. District Court for the District of Columbia and establishes a standard of review that requires affirmation of the FCC's decision unless there is a showing that the decision was "procured by corruption, fraud, or undue means."[57]

If the State does not receive approval from the FCC, the State "shall proceed" with the plan proposed by FirstNet.[58] Assuming that the opting out State receives the approval of the FCC, the State must then apply to NTIA (not FirstNet) for a grant to construct its own public safety broadband RAN and for a lease of the public safety 700 MHz broadband spectrum. To secure the funding grant and the spectrum lease, the State must show:

54. Statement of FCC Commissioner Jessica Rosenworcel, *Recommendations of the Technical Advisory Board for First Responder Interoperability*, PS Docket No.12-74, FCC 12-68; http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0621/FCC-12-68A6.pdf.
55. Donny Jackson, "Advisory Board Submits 700 MHz Broadband Interoperability Report to FCC," *Urgent Communications*, May 24, 2012; http://urgentcomm.com/policy_and_law/mag/dblock-law-whats-next-201203/.
56. Potomac Institute NPSBN Expert Panel, September 10, 2012.
57. The Act §6302(g)(1).
58. The Act §6302(e)(3)(C)(iv).

a. The technical capability to operate the State RAN;

b. The funding to support the State RAN;

c. The ability to maintain ongoing interoperability with the NPSBN (which implies upgrades);

d. The ability to complete the project in a timeframe that is comparable to FirstNet's plan for that State;

e. The cost-effectiveness of the State's plan as submitted to the FCC; and

f. That the State RAN will have comparable security, coverage and quality of service to that of the NPSBN.[59]

The overall result is the statutory equivalent of a requirement to obtain the broom of the Wicked Witch of West: nearly impossible and fraught with risk. Clearly, no State could accomplish all that would be required of it to opt out in the six to nine months after the governor has received notice of the details of what FirstNet intends to do in the governor's State; the planning process must have started well before that point in order to preserve the State's options. States desiring to preserve or pursue this option will have to develop a strategic plan, issue requests for information or RFPs for a State RAN, and work with legislatures on flexible funding authorizations in advance of the FirstNet notice and NTIA funding information.

While the Act requires FirstNet to consult with state officials during its development of the initial national RFP, with 56 States and territories, and FirstNet's limited resources, it will be a challenge for the national RFP to adequately reflect specific needs of each State.[60] States which have biennial budget cycles particularly will have to plan well in advance to preserve the option for a State public safety RAN. However, opting out is a statutory right given to the States, and FirstNet and NTIA may actually have some unrecognized reasons to work with the States to facilitate opting out rather than discouraging, as will be discussed below.

In an ideal world, the best course for interoperability would be for every State and jurisdiction to sign onto FirstNet's NPSBN for service, but this is only true if FirstNet has a truly *nationwide* network. The NPSBN is not nationally interoperable if it does not extend to all jurisdictions (those jurisdictions without NPSBN will be on some other system). As discussed, interoperability is the prime consideration, but it is not the only one; funding limitations, financial uncertainty, and timing make a truly nationwide network unlikely for a decade or longer. Gaps in coverage are inevitable in the first years of the network. FirstNet could leverage both State funding and assets and commercial funding and assets, drawing more dollars into the overall system, by encouraging and incentivizing State and commercial investment in interoperable state systems for States that opt out.

59. The Act §6302(e)(3)(D).
60. The Act §6206(c)(2).

FirstNet's facilitation of opting out of the RAN, for those States that desire it, seems counter-intuitive. However, if FirstNet develops the technical expertise and oversight capability and capacity to ensure interoperability, FirstNet's facilitation of State opt out could improve relationships with States, deliver public safety broadband service to those States sooner, allow FirstNet to focus on the national evolved packet core, free up FirstNet funding for the rest of the NPSBN and contribute to the early revenues of FirstNet.

Whether or not States are successful in opting out, another first will occur: traditionally, public safety entities and States have not had to pay to use public safety spectrum. Even if States opt out of the national RAN, they will have to negotiate with NTIA for a lease, with lease payments, to use the spectrum as well as pay network user fees for using the core network, just like their non-opting out sister States.[61] States that choose to use FirstNet's RAN and evolved packet core also will pay network user fees.[62]

The fact that the Act appears to allow FirstNet to charge participating States a bundled fee, and opting-out States must negotiate spectrum lease terms, could raise concerns. Fees should be based on a reasonable basis, such as the prorated use of the network core and administrative costs. The FCC and NTIA will have to be careful that fees are reasonable for all States and not unduly discriminatory against opt-out States. Congressional oversight may be needed to ensure that the overarching goal of increasing and expediting public safety interoperability is served.

THE OTHER OPT-OUT

States have another opt-out alternative which is not statutory but is inherent: some States may decide that they cannot afford to use the NPSBN. Many States and jurisdictions are already using broadband systems in their vehicles and many public safety officers and employees have commercial broadband user devices. If the per user charge per month for using the NPSBN exceeds the current commercial charge, and if the device cost is significantly higher, States may simply sit out the NPSBN and wait to see when and if it gets cheaper. Nothing in the Act compels States to use the system, and States will still have to maintain their voice systems for some time (perhaps 10 to 20 years).

61. The Act §6302(e)(3)(C)(iii) and (f).
62. The Act § 6208(a)(1). Because the Act defines the nationwide public safety broadband network as encompassing both the evolved packet core and the radio access network, § 6202(b) and § 6001(21), the network user fee in 6208(a)(1) refers to a participating State's obligation with respect to both the core and the RAN.

The NPSBN will be a data only system until the 3GPP standards are developed for mission critical voice, which could take several years to develop and implement.[63] This extra expense of maintaining the voice system while building the broadband data system was recognized in the National Broadband Plan, which recommended that States be provided with a budget-neutral fund for operational transition.[64] In the absence of this support, the transition will be difficult for many States and jurisdictions.

Another policy difficulty for FirstNet and the NPSBN is that NTIA has not recognized who FirstNet's customers would be: the States.[65] The FirstNet Board is made up of excellent individuals with extensive experience and knowledge, they are diverse and talented, and they seem to meet the criteria set up for the twelve appointed members of the Board. The Act requires that the Secretary of Commerce appoint at least three persons who represent States, localities, tribes and territories. Rural and urban interests must be represented, as well as public safety professionals. The Board must have at least one person from the fields of public safety, broadband communications, commercial communications networks and finance (especially financing and funding networks).[66]

States have another opt-out alternative which is not statutory but is inherent: some States may decide that they cannot afford to use the NPSBN.

The Secretary of Commerce's appointments reflect these criteria. However, the persons supposedly appointed to represent States and localities have represented national public safety professional organizations over the past few years and understandably wanted to be on the Board as the public safety professionals required by the Act. The Secretary did not appoint anyone who currently serves as a state official. The States, however, perceive that they have no one to whom they can point who represents the interests of the States and the State officials who actually operate networks.[67]

63. Donny Jackson, "Panel: Broadband Will Not Supplant LMR Voice in the Short Term," Urgent Communications, December 7, 2011; http://urgentcomm.com/mobile_voice/news/broadband-wont-replace-lmr-20111207/.
64. National Broadband Plan, Chapter 16, March 16, 2010, http://www.broadband.gov/plan/16-public-safety/.
65. States should be considered both stakeholders and customers, since they will have to invest in infrastructure and operations as well as buy the services of the NPSBN. Users may be considered customers, too, but FirstNet must address its essential partners in the NPSBN, the States.
66. The Act at §6204.
67. The Honorable Teri Takai is currently the Chief Information Officer for the Department of Defense, but she is a former CIO for California and Michigan. She is arguably the most knowledgeable person on the FirstNet Board about state communications and information technology systems and needs. For the governors, the question may still be perception, and the NGA clearly wanted someone currently serving in a state position.

The dissatisfaction of the primary customers of FirstNet was unmistakably shown in the comments of the National Governors Association (NGA) immediately after the announcement of the membership of the FirstNet Board. An NGA press release expressed appreciation to the Department of Commerce and NTIA for the appointment of the FirstNet Board, but then remarked, "...however, [the] governors are disappointed by the failure to provide States with adequate and appropriate representation by current State officials."[68] The NGA statement is remarkably strong for an organization made up of governors of both parties, which do not normally agree on policy and therefore rarely issue such strong statements.

Just in case this was not clear, Governor Jack Markell, Democrat of Delaware, and Governor Mary Fallin, Republican of Oklahoma, the NGA Chair and Vice Chair respectively, signed a letter to Acting Secretary of Commerce, Rebecca Blank, on September 19, 2012, regarding the "strong concern and disappointment" of the governors about State representation on the FirstNet Board.[69] They suggested that future appointments include representatives of the State, that a State advisory board be established and that FirstNet meet with the governors promptly.

> "The nation's governors appreciate the FirstNet board appointments...however, [the] governors are disappointed by the failure to provide States with adequate and appropriate representation by current state officials...."
>
> National Governors Association
> August 20, 2012

The FirstNet Board has a goodly number of former executives who have a superior knowledge of and experience in customer relations, but FirstNet starts in the negative territory because of the failure to recognize States as key stakeholders from the beginning. Appointments of state officials to the advisory boards allowed in the Act may help ameliorate the situation, but it is not clear what if any influence the advisory board or boards will have at this point. At any rate, the State governors currently do not perceive that they have a voting member or representative on the FirstNet Board, and this perception will make FirstNet's job more difficult.

68. "Governors: FirstNet Board Appointments a Critical First Step," NGA Website, August 20, 2012, http://www.nga.org/cms/home/news-room/news-releases/page_2012/col2-content/governors-firstnet-board-appoint.html
69. Letter from Governor Jack Markell and Governor Mary Fallin, NGA, to Acting Secretary of Commerce Rebecca Blank, September 19, 2012; http://www.nga.org/cms/home/federal-relations/nga-letters/economic-development--commerce-c/col2-content/main-content-list/september-19-2012-letter----firs.html

The FirstNet Board will find another interesting problem as it builds its customer relationships with the States: no cost model currently exists for the NPSBN. Although the NPSBN has been envisioned for years and certainly since the passage of the Act in February 2012, NTIA has not conducted (or publicly released) a cost model or financial analysis to show States NTIA's projection of how much the NPSBN will cost, how it will operate, how it will reach and maintain financial self-sufficiency, fund upgrades, and how much NPSBN service will cost each State annually or on a cost per user basis.

The FCC prepared a cost model based on its concept for a NPSBN as described in the National Broadband Plan, released in March, 2010, two years before the Act.[70] The FCC's cost model may have influenced the amount initially requested for the NPSBN, but the FCC's concept of the NPSBN and its assumptions about it were very different from the NSPBN set up in the Act. In the absence of this information, States will have a difficult decision of whether to opt out or not. Until some financial projections are known, even States who decide now not to opt-out are taking a risk; the per-user network cost may be too high for State and local budgets.

Many State and local public safety entities already use broadband devices through commercial services, so it is clear that these public safety entities value the service and are willing to pay, at least, commercial prices. Presumably, these public safety entities would be willing to pay a marginally higher price for additional features such as security, exclusivity, interoperability and access to public safety specific databases and applications. However, if the price disparity is more than marginal, public safety entities and budget makers may decide that the NPSBN is too expensive. A priority for FirstNet will be developing a cost model that works for the NPSBN and for public safety.

In the economic uncertainty that may engulf the first few months or years of the NPSBN, FirstNet should endeavor to broaden the base of users of the network. The network is and must be primarily for first responders and public safety users, but if the massive capacity of the NPSBN spectrum is only used by these groups, it constrains the number of potential users, limits the number of contributing organizations and entities and drives up the cost per user. FirstNet can boost its financial base by endeavoring to include in the network more potential users. For example, in a disaster, power utility workers are essential before the first responders can be effective. Forging alliances and strategies that bring in utilities, transportation, hospitals and other essential services could augment the effectiveness of the network, expand the financial support for the NPSBN and without diminishing the use or priority of the network to public safety (see Figure 4).

70. *A Broadband Network Cost Model: A Basis for Public Funding Essential To Bringing Nationwide Interoperable Communications to America's First Responders*, FCC Omnibus Broadband Initiative, 2010. http://transition.fcc.gov/pshs/docs/ps-bb-cost-model.pdf

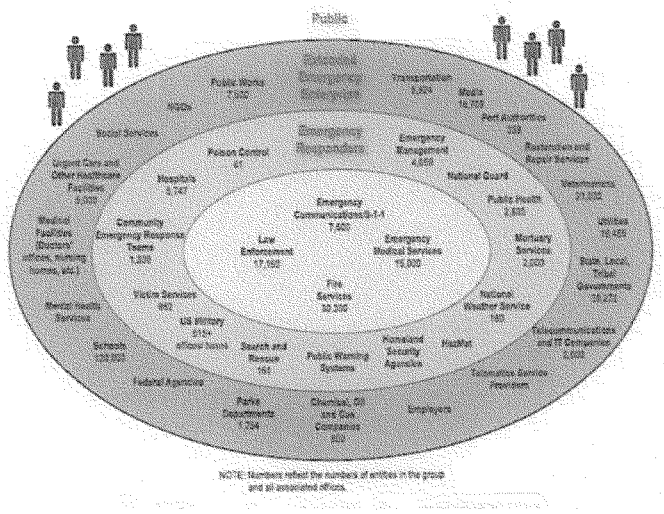


Figure 4. Expanded Base of NPSBN Users Source: COMCARE 2007

As the concept has developed for the NPSBN, certain assumptions have been ingrained into the discussion and even the Act. First, the NPSBN will, in many places, have more capacity than it needs for public safety purposes (except in major emergencies). Second, this excess capacity is valuable and can be marketed to commercial providers. The Act provides authority for FirstNet or the opt-out States to collect revenues for the use of excess network capacity by non-public safety users on a secondary basis.

Yet, no one has produced an estimate of what this excess capacity is worth, how valuable it could be to commercial carriers, and what revenues it could generate. One reason that this estimate has not been produced is because of the financial uncertainty in which it is engrossed. First, the excess capacity can only be used on a secondary basis. If public safety needs the capacity, public safety can pre-empt the commercial, non-public safety use of the network. This is understandable and desirable from a public safety standpoint, but it severely impacts the value of the capacity to commercial carriers. After all, most customers want to be able to use their cell phones and broadband devices in emergencies, too.

> No one should invest $2 billion to $7 billion in a new network without some due diligence into how the NPSBN will work financially and whether a business model and plan can be developed that works for FirstNet and its customers.

The places where this network capacity will be most valuable will be in cities where commercial broadband capacity is already stretched. FirstNet may be able to garner significant revenues from excess capacity in densely populated areas. However, these urban areas also are where public safety communications may impact the NPSBN capacity from time to time. In less urban areas and in rural areas, carriers may need less or no extra capacity, and the excess capacity of the NPSBN may have little or no value. In other words, revenues from excess NPSBN capacity will be generated from densely populated areas and not from rural areas. How those revenues are shared or employed could become contentious. The first priority, though, is for FirstNet to get some sound economic projections on what revenues can be expected and what cannot.

In fact, a major priority for FirstNet must be to invest in a comprehensive financial analysis and cost model. No one should invest $2 billion to $7 billion in a new network without some due diligence into how the NPSBN will work financially and whether a business model and plan can be developed that works for FirstNet and its customers.

INTEROPERABILITY REQUIREMENTS: HUGE CHANGES IN PUBLIC SAFETY COMMUNICATIONS

Public safety communications are undergoing the greatest change in three quarters of a century. Wireless voice communications have been the mainstay of public safety communications since the mid-1930s. Public safety land mobile radios will still play a vital role for the next ten to twenty years, but the advent of broadband communications will fundamentally change public safety communications. Public safety agencies have become accustomed to owning and operating their own systems, so that a patchwork of technologies and capabilities proliferated and frustrated interoperability and efficiency. However, an advantage of this model was local control and responsiveness.

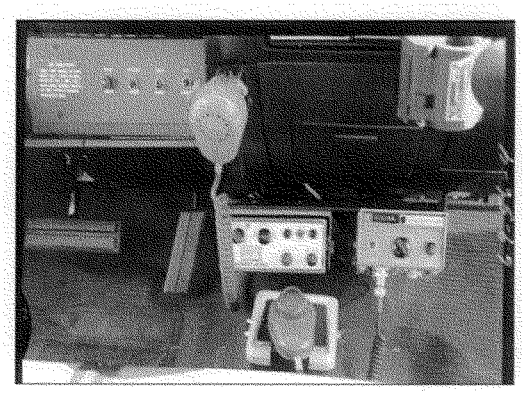


Figure 5. RCA Radio and Federal Interceptor Siren. Source: SEOCOMM.COM

As public safety communications transitions from narrowband voice to broadband voice and data, local control and responsiveness are possible even in the absence of ownership, but the governance and operating procedures must provide for it. Indeed, unless States and local jurisdictions perceive that the new NPSBN will provide some degree of local control and responsiveness, as well as robust new capabilities, States and public safety agencies will not commit to FirstNet and instead will hold onto LMR systems and commercially provided broadband systems.

As the transition occurs, public safety agencies will become more reliant on State broadband experts and NPSBN and commercial expertise. The broadband systems are exponentially more complex than the LMR systems. This complexity is manifest in the Minimum Recommendations submitted to the FCC by the Technical Advisory Board for First Responder Interoperability required by the Act.[71]

The Minimum Recommendations imply a baseline of interoperability wherever the NPSBN system is deployed and used. Not every application used by every jurisdiction will work across the system, but the clear intention is that any person using an authorized device on the NPSBN could go to another jurisdiction on the NPSBN and expect to have some level of communications and use of applications.

The ramifications of interoperability and vastly increased applications and utility are momentous and in some ways are inversely proportional. As interoperability increases, the applications must be standardized across jurisdictions (or universally available), presumably at increased cost. As applications which are not universally available increase, interoperability decreases, requiring a baseline.

Such a baseline dictates national governance which must be provided by FirstNet, or interoperability will be thwarted (again). This imperative for national governance is repeated in other aspects, such as network operations and management, security for the network, access to the network and through the network to databases, and testing.

This is the main polar tension that will exist in the transition from State and locally owned systems to a nationally provided public safety communications network: the need for local control for the day-to-day efficiency of public safety operations on the one hand, and the imperative for national network control for interoperability and efficiency of operations on the other. Issues of governance and control must be determined early by FirstNet.

The network core is a major factor. The entity that controls the network core in essence controls the network. Exact definitions will be an immediate priority and an ongoing challenge for

71. *Recommended Minimum Technical Requirements*. http://apps.fcc.gov/ecfs/document/view;jsessionid=T5wnP2fJynkxfcZG8vcncmwnbwBcR3hTV7hRYQRl2Cq2jLlfgjLQ!-1969853125!-1221852939?id=7021919873.

FirstNet, but "network core" should not be confused with the "core network." The Act defines a "core network" as being the data centers that connect the Radio Access Network (RAN) to the Internet or publicly switched network or both.[72]

The network core refers to the servers and equipment that constitute the Evolved Packet Core (EPC) that controls and manages the network. As the NPSBN was being imagined, some talked about one network core. One network core is actually impractical; what is needed is central control and management of the network. FirstNet does not need to decide on the front end how many network cores are needed. FirstNet needs to decide what network operation and management capabilities are needed and the level of latency, distributive characteristics, redundancy and expense which are acceptable. Those factors will drive the number and location of network cores. FirstNet can look to the commercial networks and to the Department of Defense standards and practice and guidance for the number, distribution and location of cores (such as the number per time zone, the spacing between cores for latency reduction, and the redundancy for disaster and attack management).[73] Network cores will need to be uniform and distributed to reduce latency and provide redundancy for outages and interruptions.

The management and control of the network strongly implies a NOC, something very different from the past experience of current State and local public safety systems. The NOC and network operations and management are functions that FirstNet may obtain contractually. However, public safety communications contain some functions that may be classified as inherently governmental, so FirstNet may not be able to completely outsource these functions. For efficiency, a government owned, government operated NOC may not be practical, but a government owned, contractor operated (GOCO) NOC may be, one with governmental oversight and ultimate control.

HOW FIRSTNET DECISIONS AFFECT STATE AND LOCAL PUBLIC SAFETY FIRST RESPONDERS ONCE THE NPSBN IS DEPLOYED AND OPERATIONAL

The FirstNet Board faces huge technical, operational and financial challenges. FirstNet starts in uncharted waters: the establishment of this network is unprecedented. The technology is new, and the standards are still developing. No one has integrated federal, State and local public communications into one broadband network previously.

72. The Act §6202.
73. Potomac Institute NPSBN Expert Panel, September 10, 2012.

The Interoperability Board's Minimum Requirements are an excellent starting point, but must be seen as the bare minimum. Many problems with interoperability can develop, so the FirstNet Board must concern itself with what are the *most effective requirements* to ensure interoperability, not just the minimum imposed by the Act.

Some of the most important technical, operational and financial decisions the FirstNet Board will make are those which will determine how willing State governors, chief information officers and public safety officers are to invest in and adopt the new NPSBN.

First, a paradigm shift will occur as public safety communications systems move from a model where the system is built, owned, maintained and controlled locally or on the State level to a model where the system is built, owned, maintained and controlled by someone else which provides a service to State and local jurisdictions. Those State and local jurisdictions will, no doubt, retain the responsibility for effective communications for public safety, and for that reason, the States and localities will require procedures that offer a significant degree of confidence that State and local jurisdictions can control and rely on those communication services.

What could undermine this confidence? One of the great benefits of the NPSBN will be that it will facilitate interoperable communications among State, local, tribal and federal agencies, but that also stimulates a concern. How will the States know that the federal government will not dominate or pre-empt a communications system upon which the States and localities rely and have significant investment? Accordingly, FirstNet, as it is shoring up its relationship with governors and States, must act quickly to reassure the States that they will have input into the development of standard operating procedures and protocols for the usage of the network.

On a day-to-day basis, federal-state usage may not be a problem. The broadband spectrum provided for the NPSBN has tremendous capacity.[74] The concern will arise where an incident quickly accelerates to involve more than one jurisdiction and then several agencies, including federal agencies. Who will control the network communications? Who will decide allocations and which applications can be used to conserve bandwidth? FirstNet must come up with a process to determine these procedures and protocols which incorporates the views of the States and localities and inspires confidence that the NPSBN is not a federal network that the States are allowed to use.

74. Certainly there will be areas and situations where congestion exists, but the Band Class 14 spectrum has the capacity to handle a great deal of users at the same time depending on the application. LTE allows for dynamic aggregation and dis-aggregation of spectrum. The use of video or high definition video, concentrated in one area, will be a major limiting factor and will have to be managed, but the 10x10 MHz channelization recently allowed by the FCC certainly ameliorates concerns.

This potential crisis of confidence is magnified by the governance structure of FirstNet itself. FirstNet is established as an "independent authority with the NTIA."[75] NTIA has the responsibility, among others, to manage federal spectrum.[76] Technically, the spectrum used by the NPSBN is not federal spectrum, but the Act does not preclude that and estimates of users of the NPSBN by NTIA include federal users. Indeed, not including federal users would be an unthinkable mistake for a network designed to be interoperable following widespread disasters or terrorist attacks. Additionally, the FirstNet Board is comprised of three federal executives and twelve members appointed by the Secretary of Commerce. In combination, some may perceive FirstNet as a federal board managing federal or federalized spectrum.

The perception of federalization (and the consequent discourage of States to join the NPSBN) can be quickly obviated by the FirstNet Board in taking action to ensure that the States have direct input to the procedures and protocols for State, local and federal use of the NPSBN. One avenue may be to establish a standing State advisory committee as authorized by the Act that is geared to the governors' offices, their technical advisors and State Chief Information Officers.[77] This State advisory committee should be separate and distinct from the public safety advisory committee that is mandated to FirstNet by the Act.[78] Whatever means is chosen by FirstNet to accomplish the buy-in of the States, it should be part of an overall effort to repair the damage done to FirstNet's relationship with its primary customers.

CONSULTATION WITH THE STATES: DEVELOPING CUSTOMERS FOR FIRSTNET

FirstNet will spend a good deal of its time consulting. First, FirstNet is statutorily obligated to construct, maintain and operate the NPSBN in consultation with federal, State, tribal and local *public safety* entities and with the Director of NIST, the FCC and the public safety advisory committee established in the Act.[79] Second, FirstNet must consult with regional, State, tribal and local jurisdictions about the distribution and spending of funds for construction timetables, coverage areas, service levels, performance criteria, construction of the core network, RAN, and

75. The Act §6204.
76. http://www.ntia.doc.gov/category/spectrum-management
77. The Act §6205.
78. *Ibid.*
79. The Act §6206(b)(1). Note that the Act does not require on-going consultation with the state executive, but rather with state public safety entities. Only with respect to developing the initial national RFP and the state planning grants does the Act require FirstNet to consult with a State's designated official. See §6206(c)(2)(B) and §6302(d). Local government public safety entities may consult with FirstNet directly, too. The Act also does not prescribe the method for on-going consultation, and it does not limit the consultation to national organizations or representatives.

numerous other matters of State and local importance.[80] However, even though the consultation is with regional, State, tribal and local jurisdictions, the Act may be misconstrued to limit the consultation; the Act provides that consultation will only be between FirstNet and the single officer or governmental entity designated by the *State*.[81]

Regardless of the minimum consultation required by the Act, FirstNet should develop an early and constant dialogue with the governors' offices, the State chief information and chief technical officers as well as the public safety entities in each State. In essence, FirstNet should design a strategic marketing plan geared to its customers, incorporating the States and the state leaders into the process. The clear message, which may have been lost during the pendency of FirstNet, should be, "States, FirstNet wants this to be YOUR network. We want to know and provide YOUR needs."

FirstNet's plan should include direct input from the States and plenty of transparency and information for the States. This could be accomplished by establishing an advisory council for the States, appointed by the governors, a gubernatorial representative or the State CIO[82]. The advisory council should be funded and given real influence. FirstNet may wish to appoint a non-voting representative from the governors or the NGA to attend FirstNet meetings and work with FirstNet, its staff and consultants.[83]

FirstNet will be a business. As a business, statutorily required to be self-sustaining, it must aggressively pursue business development, sales, and marketing to help States budget for service, implement partnerships and get users. If it is a business, it must have sales, a sales plan and a sales force.

Depending on the course of action and business model that FirstNet's adopts (hopefully with a lot of input from governors, State CIOs and State network managers), FirstNet actually may want to encourage States to build their own RANs as a way to speed network deployment and incorporate state funding. State leadership is an essential ingredient to a successful and affordable NPSBN.[84]

80. The Act §6206(c)(2)(A) on required consultation.
81. The Act §6206(c)(2)(B) referring to the single officer or governmental body designated and certified by the state in the state's application for grant funds set forth in §6302(d). This seems to channel regional, tribal and local consultation through this single officer or governmental body at least with respect to the RFP and state planning grants.
82. Philip J. Weiser, *Communicating During Emergencies: Toward Interoperability and Effective Information Management*, 59 Federal Communications Law Journal 547, 571 (2007), emphasizing the inclusion of state CIO's as part of a successful strategy.
83. FirstNet also may want to have a Native American non-voting representative, since some of the sovereign Native American tribal lands cross state lines and the interests and needs of the States and the sovereign nations do not always align.
84. Weiser at 571.

IMPLICATIONS OF THE FINANCING OF THE FIRSTNET NPSBN AND FOR LOSING BTOP AND OTHER GRANTS FOR STATE AND LOCAL SYSTEMS

With almost universal concurrence by experts, the costs of establishing FirstNet will not be covered by the funding amounts set forth in the Act, unless other funding is obtained early.[85] If this is true of the total authorization of $7 billion, the shortfall is aggravated by the timing of funding. The initial funding is only $2 billion, an amount that FirstNet is allowed to borrow, interest free, from the U.S. Treasury, but which must be paid back with revenues from the NPSBN or the lease of excess capacity. Congress imposed deadlines on FirstNet to achieve at least a break-even mark, and Congress limited the amount of administrative expenses that FirstNet can incur (not counting audit and oversight expenses to prevent fraud, waste and abuse) to $100 million over the first ten years after adoption of the Act.[86] However, no time limit or horizon was set by the Act for when FirstNet would receive, or start to receive, the additional $5 billion set forth in the Act.[87]

NTIA's original reasons for authorizing BTOP grants for early deployment of public safety broadband systems in 700 MHz are still good reasons for moving ahead with early deployments today. First, the money invested in early deployments represents a down payment on a nationwide system that will be underfunded. Moreover, the early deployments will draw in State and local funding that may not otherwise be available to the NPSBN. Much has already been learned from early deployers, which will save money and time as the system is built across the nation. For instance, an early deployment in Tampa and surrounding area for the Republican National Convention allowed local public safety agencies to communicate huge amounts of data during that National Security Special Event, proving the value and functionality of a multivendor public safety LTE network.[88]

Finally, early deployments of public safety broadband systems will save lives and property and protect first responders years before the NPSBN will reach initial operational capability. These advantages were apparent as the BTOP grants were given to early deployers, and they are still advantages now.

85. *E.g.*, Potomac Institute NPSBN Expert Panel, September 10, 2012. *See also,* Donny Jackson, "Regarding Public-safety Communications, What a Difference a Year Can Make," *Urgent Communications*, September 11, 2012; http://urgentcomm.com/policy_and_law/commentary/Public-safety-well-on-way-to-broadband-network-20120911/. If FirstNet is able to secure significant revenues for secondary leasing of the spectrum, these funds could be used early on to assist in spreading the network.
86. The Act §6207.
87. The Act §6413 (describing the usage of the Public Safety Trust Fund).
88. *Public-safety Network Gets Trial Run at Republican Convention,* Brooks Boliek, Politico, September 18, 2012, http://www.politico.com/news/stories/0912/81309.html#ixzz26rZhYfl0

Since the NPSBN will not have enough funds initially to spread the system across the country, and a gap in funding may actually occur, the loss of the BTOP funds is particularly unfortunate. Each of the BTOP recipients, and other 700 MHz early deployers with other funding, re-directed public safety communications funding from current maintenance and improvement projects to facilitate the public safety broadband project. Those funds are now stranded, helping neither the broadband nor the narrowband communications efforts.

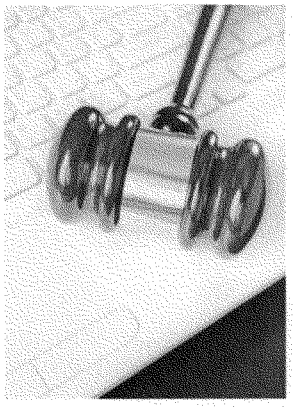
The lack of full funding and the foreseeable funding gap have a real and negative impact on the scope of the nationwide deployment. Even though the Act requires that each phase of the deployment of NPSBN include "substantial rural coverage milestones,"[89] the shortfall could result in major gaps in coverage in rural areas for a considerable amount of time. The NPSBN then becomes a system of the fortunate and the well-off: those rural and urban jurisdictions that were lucky enough to get NPSBN coverage in the phases before the money ran out and those that can afford to build the RAN and tie on to the NPSBN (if allowed to).

In August, the FCC issued an order that kept the possibility of an early deployment alive for some waiver recipients, setting forth the criteria against which the FCC would review applications to use the 700 MHz public safety broadband spectrum. The FCC approved the interoperability showings of Charlotte, N.C. and Harris County, Texas (Houston and some of the surrounding area) and indicated that these jurisdictions could apply for special temporary authority.

SPECTRUM AUCTION TIMING AND EXPECTATIONS TO FUND THE NPSBN

The FCC has announced its intention to hold the first broadcast incentive auction in 2014.[90] However, 2014 would be the earliest date for perhaps the first of a long series of auctions, which could extend over a decade or more. For the NPSBN, the first auction for the broadcast television spectrum is the only one that counts. The voluntary incentive auction concept is innovative, even revolutionary, but the auctions *are* voluntary and untried in this arena. At least one network has stated that it does not plan to participate. Broadcast stations do not have to participate, but it is anticipated that the FCC will be able to clear approximately 60-80 MHz of spectrum for the first auction (or initial series of auctions).[91] Estimates of the sale of this auction

89. The Act §6206(b)(3).
90. Higginbotham, "Need Spectrum? FCC Plans TV Incentive Auction for 2014." Additionally, FCC Chairman Genachowski has announced his intention to take up the matter of auctions at the September FCC meeting in 2012. Dave Seyler, "Genachowski Holds Forth on TV Spectrum Auction," *RBR.com*, September 8, 2012, http://rbr.com/genachowski-holds-forth-on-tv-spectrum-auction/.
91. Cecilia Kang, "FCC Kick-Starts Auction Plan, But Airwaves Won't Hit Your Smartphone For Years," *Washington Post*, September 7, 2012, http://www.washingtonpost.com/blogs/post-tech/post/fcc-kick-starts-auction-plan-but-airwaves-wont-hit-your-smartphone-for-years/2012/09/07/c45e2666-f914-11e1-a073-78d05495927c_blog.html



run between $15-25 billion, but the fact is that no one knows for sure.[92] The Congressional Budget Office (CBO), in scoring the Act, estimated that the incentive auctions will yield $15 billion for the network in the ten years after passage of the Act in February, 2012, with $8 billion coming in the first five years.[93] Based on the priorities in the Act, this would fund the network with the remaining $5 billion.

In fact, even though the CBO and the FCC auction experts and FCC watchers are optimistic about the incentive auction concept, the outcome is uncertain, and a possibility remains that the incentive auctions will not yield the revenues expected or will be delayed due to complications with negotiations or even lawsuits. Members of the public safety community will not forget that they were promised a NPSBN once before, based on revenues from the auction of the D Block. That auction closed without a bid that reached the established minimum.[94]

FirstNet may not have the luxury of waiting on the outcome of the initial spectrum auctions, and it will be driven to designing a phased plan that starts with the $2 billion upon which it can rely statutorily. Early leasing revenues may help. Alternatively, FirstNet could build the bridge halfway across the river on the expectation that the remainder of the money will become available and the political imperative to make sure that money is appropriated to avoid a "half a bridge" denouement. However, such a plan would be financially and politically risky.

LEVERAGING COMMERCIAL NETWORKS AND STATE SYSTEMS

FirstNet will have to leverage commercial systems if a NPSBN is to become a reality based on the funding and the timing. FirstNet also will have to offer something more than an alternative to commercial service, especially since the price of the NPSBN to States and jurisdictions may be more per-user than what public safety entities are currently paying. If FirstNet cannot compete on price, it must come more close as it can and still offer more and different services than can be offered commercially.

92. Potomac Institute NPSBN Expert Panel, September 10, 2012.
93. Adam Bender, Howard Buskirk, "Congress Clears Public Safety Network, Voluntary Incentive Auctions," *Communications Daily*, Vol. 32, No. 34, February 21, 2012; http://www.capitolsolutions.com/wp/wp-content/uploads/2012/02/120221-Communications-Daily.pdf
94. Paul Kapustka, "FCC May Examine D Block Auction Fiasco," *Gigaom*, Feb 11, 2008. http://gigaom.com/2008/02/11/fcc-may-examine-d-block-auction-fiasco/. *See also*, Corey Boles, "Failure of D-Block Spectrum Sale Partly Caused by Fees-FCC," *Dow Jones Newswire (Cellular News)*, http://www.cellular-news.com/story/30800.php.

That lagniappe, the features not offered by commercial carriers, would need to include more than just interoperability. As discussed previously, LTE mission critical voice will not be available for several years, until the standards are established and the technology becomes available, but FirstNet should establish this as part of its trajectory from the beginning.

Even if the first phase of the FirstNet data network is basically commercial grade, the NPSBN must have elements of mission critical communications, including coverage, security, signal availability, reliability, data rate, performance and hardening against disasters. FirstNet must develop a plan that ensures the network reaches a standard of mission critical communications, data and voice, at a level and timeframe that is acceptable to the public safety community and affordable by the States. FirstNet's NPSBN will need to have a suite of readily accessible, universally available applications and databases for public safety, and NPSBN needs to be an environment that encourages innovation and new ideas for public safety. The States should not accept a NPSBN which is only commercial grade, and the public safety community will not accept it.

As the network develops, the ability for public safety to roam over to commercial networks would be a tremendous advantage. This ability also provides redundancy in case the NPSBN suffers an outage. However, the public safety handsets would have to be equipped to use the commercial spectrum (such as Band Classes 12, 13 and 17). The more spectrum that the handset can use, the more complex and expensive the handset becomes. If some States or jurisdictions only have Band Class 14 (the public safety spectrum) and one other carrier, roaming in another jurisdiction where that carrier is not used and where the NPSBN does not have full coverage could result in a lack of communications.[95] FirstNet will have to weigh the cost and complexity of the handset against the benefit of roaming among multiple carriers. FirstNet may decide that Band Class 14 plus one other carrier may be the baseline for interoperability and redundancy, leaving the decision to add other carriers to the States and local governments and the evolution of the system.

Part of the planning process envisioned for FirstNet involves the inventory of State infrastructure and assets and their use in the NPSBN. This is an excellent concept which could improve efficiency and coverage, and one that should be pursued, but the complexity of incorporating State assets and infrastructure into the NPSBN should not be underestimated. If the model adopted by FirstNet is a public-private partnership, the interaction of the private company and each State will take time. Understanding the implications of the State and territorial laws on the use of State assets by a private entity or by a federal entity may take an extended period of time. Some States may have to pass legislation to allow that to happen; some may refuse or be unable to do so. Ultimately, State assets can be used much more easily if it is a State system that ties onto the NPSBN. If the State uses the NPSBN, FirstNet may have to wait until a second or third phase to incorporate State assets.

95. Moore, Linda K., "The First Responder Network and Next Generation Communications For Public Safety: Issues for Congress", p. 21, Congressional Research Service, August 7, 2012; http://www.fas.org/sgp/crs/homesec/R42543.pdf

T-BAND ISSUES AND IMPLICATIONS FOR THE NPSBN

In some urban areas in the Nation, public safety land mobile radio (LMR) voice communications are so congested that the FCC allowed the use of the television spectrum for Channels 14 through 20, known as the T-Band, for LMR on a shared basis with broadcasters. If one of the channels in a city was not being used for TV broadcast, the FCC would allow it to be converted to public safety LMR and other uses. The use of this spectrum has been critical to public safety communications, especially in places like Los Angeles, where thousands of public safety employees and multiple entities and agencies co-exist.

The Act requires the FCC to reallocate the T-Band currently used by public safety in 2021 and begin a system of competitive bidding to grant new licenses for the use of the T-Band spectrum, the proceeds of which will go to pay for the relocation of the current public safety occupants of the T-Band.[96] The relocation process must be complete by February 22, 2023.[97] Presumably, this T-Band give-back provision was part of the deal in which public safety got the valuable D Block spectrum adding to the public safety spectrum it already had in 700 MHz.

From both technical and policy standpoints, the T-Band give back is problematic as currently structured. The nine-to-eleven year horizon seems to provide an ample amount of time in which to move to other spectrum and to clear the T-Band. Some have counseled public safety to wait to see how it will work out. However, public safety LMR systems are very expensive and some investment decisions must be made now about systems that will have a life span past eleven years. Moreover, T-Band jurisdictions have no place to move. Generally, the reason they were allowed to use the T-Band was that all of the other public safety spectrum was choked.

Some policy makers may have assumed that T-Band use could simply move over to the new NPSBN, but as discussed, LTE is a data communications technology for now. Years will be needed before the LTE mission critical voice standards are even ready. In the meantime, places like Los Angeles and Chicago have to make investments in T-Band systems to keep them going. Voice over LTE (like VoIP) is possible, but it is not a replacement for the mission critical voice communications carried over public safety LMR.[98]

The T-Band conundrum is not one which FirstNet must solve, but the problem is an element of State and local angst about NPSBN and the Act. The ultimate solution will be for the FCC and most probably for Congress to provide. If new efficiencies cannot be found soon on existing public safety narrowband spectrum (and this would be doubtful), or other spectrum cannot be found for the T-Band jurisdictions (also doubtful), then the only other solution is some relief from Congress, such as more time before the T Band give-back for the development of

96. The Act §6103.
97. *Ibid.*
98. On August 7, 2012, MetroPCS announced the world's first commercial launch of Voice over LTE (VoLTE), and the first sale of a VoLTE-capable handset in the Dallas/Fort Worth market.

LTE mission critical voice standards and implementation, relief which the T-Band jurisdictions would like to know about now so that they can make judicious and cost-saving decisions about their public safety narrowband voice systems.

WHAT SHOULD FIRSTNET DO FIRST?

FirstNet has a magnificent opportunity and an unenviable position. The foregoing discussion has attempted to lay out the difficult terrain through which this unprecedented board must lead many stakeholders with divergent interests to establish a national asset that delivers on the promise of an interoperable, public safety broadband network. Based on the foregoing discussion, here are action items that the FirstNet Board should consider and possible courses of action regarding a concept of the new NPSBN.

1. **Get expertise and personnel capacity.** FirstNet should immediately obtain additional expertise and capacity through consulting contracts, direct hires, and details from other agencies. FirstNet is an independent authority, and it should make sure that it is not dependent on any agency or solely reliant on NTIA's staff, which has an oversight function and should have a close, but arm's length relationship. The business acumen of several members of the FirstNet Board is acute, and the Board will quickly realize that it needs its own staff, including access to engineers who have built and operated broadband networks, economists, attorneys, contract and business people who know this business. FirstNet should capitalize on the expertise in DHS's Office of Emergency Communications, and the Board should use the functionality of the inter-agency group known as the Emergency Communications Preparedness Center (ECPC) as a sounding board for federal users.

   NTIA needs to acquire additional experts and staff capacity as well, but in addition to engineering expertise, NTIA will need extra capacity with contracting, grants, strategic planning, contract oversight and auditing. The Department of Commerce should make the staffing of NTIA to support this network a priority for human resources.

2. **Quickly develop a cost model and business plan.** For the States and local governments to believe in this network and want to invest their scarce funds, the State leaders with budgetary responsibility and network operations responsibility must understand what the NPSBN is going to cost them, what it can provide and when. Since the Act imposes the responsibility for FirstNet to be self-sustaining, a competent business plan is vital.

3. **Develop a customer relations and marketing plan for the States.** This is where FirstNet should say to the governors, "we want to be YOUR network" and then listen to the States to understand what that means to them. The governors, State CIOs and treasurers should be courted for their input. The States should be regarded as both customers and shareholders. Once FirstNet gets the technical expertise and capacity to

oversee the NPSBN and its interoperability, the FirstNet Board will not have to be so wary of State systems. State funding (where available) can be leveraged as well as state assets, speeding the spread of the NPSBN, not impeding. FirstNet should consider facilitating States to opt out if that is their decision, rather than resisting it. FirstNet should reach out to the National Governors Association and the National Association of State CIOs to assist in repairing relations.

4. **Facilitate the early deployment of those States and localities which are funded and ready to launch.** Getting the necessary technical expertise for oversight is a prerequisite, but moving forward with the early deployers will show the value of the system, will allow some early success and will provide vast amounts of information to improve the NPSBN. The early deployers should be allowed to use BTOP and other grants. Network cores that serve the States must become subservient once the systems are connected with the NPSBN. FirstNet must be hardnosed about requiring that the early deployers remain interoperable and committed to paying the expense of making sure that they are interoperable when the NPSBN is more widely operational. Nevertheless, there is no technological reason why the state public safety broadband systems cannot be integrated into the NPSBN; it just takes the technological expertise, oversight and capacity to enforce interoperability to make it happen and to hold States, vendors and carriers accountable.

5. **Formalize representation.** FirstNet should ensure that the States are actually stakeholders, first by a dedicated State advisory board (not just public safety) made up of the senior technical advisors to the governors and the State CIOs. This advisory board should be treated like a corporate investor group or a body of FirstNet's largest customers, because, in essence, that is what it will be. Second, FirstNet should include a representative or two as non-voting members of the FirstNet Board from the governors (or suggested by the State advisory committee) in all matters except where the FirstNet Board feels that it must be in executive session.

6. **Broaden the base.** Another way to ensure the financial viability of the NPSBN is to broaden the number of potential users to include other quasi-first responders or critical second responders, such as transportation and utilities (such as power and water). Some of these industries which have critical infrastructures have a similar need for the NPSBN, and they may have funding to invest. This can enhance the utility of the network without diminishing the capacity, function or control of the NPSBN by public safety.

7. **National interoperability, local control.** FirstNet should embrace the States as key stakeholders and partners, ensure their input on standard operating procedures and protocols for accelerating emergencies, which is actually part of the customer relations plan. FirstNet should assure the States that this is not just a federal network that FirstNet is allowing the States to use, too. With full input from the States, FirstNet should adopt a policy of (1) national technical control to ensure interoperability and (2) State and local control and certainty for tactical and operational priorities. To further instill confidence, FirstNet should hold workshops, hearings and take public comments on how federal users will be incorporated into the NPSBN.

8. **Develop an Identity and Access Management System.** Developing an Identity and Access Management system, and the procedures and protocols that go with it, in close conjunction with the States (such as the CIOs), public safety, and federal users, is critically important to the establishment of the network and the confidence of the stakeholders.

9. **Negotiate roaming agreements.** A feature of any business model that FirstNet adopts must be roaming agreements. Roaming agreements can ensure that public safety can still communicate if a public safety user leaves the NPSBN coverage, something that may happen more during the initial phases of the establishment of the network. FirstNet can use its national stature and position more effectively than any of the States alone. Roaming agreements can be a major benefit to public safety throughout the build out or establishment of the NPSBN.

COURSES OF ACTION

With these initial steps which are advisable regardless of the course of action, FirstNet can decide how to launch a nationwide network with only $2 billion and an unsure amount of lease revenues. The common themes among FirstNet's courses of action are (1) to establish a network core (or distributed set of cores), (2) to get some early public safety RANs by any reasonable means, (3) to require adherence to nationwide interoperability requirements and standards, (4) to add RANs as funding becomes available, and (5) to leverage commercial infrastructure by infrastructure sharing agreements and roaming agreements. A key issue will be making sure that handsets are interoperable across Band Class 14 and other commercial spectrum. FirstNet will need to work with the FCC on priority access for public safety roaming on to commercial networks.

Here are some possible courses of action:

Course of Action No. 1: Build the Core, Share the Infrastructure

a. Lay out the overall architecture for the NPSBN and install the minimum number of cores for a basic level of coverage, which would be affordable within the $2 billion.

b. Require any State or local public safety broadband systems to link into the FirstNet core and encourage other States with funding to build compatible systems also linked into FirstNet's core.

c. With any additional funds from the $2 billion, and any revenues from leasing excess capacity, fund the building of RANs in other States, either as part of the system or as State systems.

d. Encourage the collocation of Band Class 14 equipment on commercial sites by creating specific agreements by which local agencies can leverage existing infrastructure and then add RANs as funding becomes available.

Course of Action No. 2: Quality versus Nationwide Coverage

Another course of action is to ensure the quality of the service that the NPSBN provides from the very start, which may come initially at the expense of widespread coverage and availability.

a. Establish the NPSBN in as many States as possible with high quality, mission critical data service (resisting the temptation to trade quality for coverage).

b. Establish priority roaming agreements with at least two (or more) carriers in those regions.

c. The only construction would be to supplement commercial infrastructure in those regions (not to replace it), thereby reducing infrastructure costs.

d. As additional funds or revenues become available, extend the network.

Course of Action No. 3: Fully funded, geographically dispersed networks

A third possibility, as a variant to Course of Action No. 2, is not really demonstration network, but high quality, fully funded and built out networks in several areas around the Nation, some in urban areas, some in rural, all linked into the FirstNet core and NOC. This would prove the viability of the network, which could be added to in phases as more funding becomes available.

Course of Action No. 4: Turn Key Spectrum Leasing Agreements (MVNO 1)

a. Build a single, distributed Evolved Packet Core, Network Operations and Security Center and application databases.

b. Set standards and requirements for States to interconnect (disallowing interconnection and database access if those standard and requirements are not met).

c. Sign a turn-key spectrum leasing agreement with one or more major carriers for access to Band Class 14 spectrum in return for which the carriers would make Band Class 14 chips and handsets available to operate on the full 700 MHz broadband spectrum.

d. With funding from the leases, establish a Mobile Virtual Network Operator (MVNO) operating with any carrier in 700 MHz with the home form that network operator in Band Class 14.

Course of Action 5: MVNO 2

a. Establish a MNVO and procure and deploy an LTE network core, network operations center, and billing infrastructure, which should be feasible in the currently allocated funding.

b. Pursue roaming agreements with major carriers to get much better wholesale rates for the agencies and municipalities that are currently using the commercial carriers for data in the field.

c. FirstNet would be in a position to start provisioning and deploying its own SIMs and setting up recurring revenue models with the agencies across the nation in the form of lower broadband wireless data costs even though NPSBN end users would still primarily be riding on the commercial carrier networks.

CONCLUSION

The promise of a nationwide, interoperable public safety broadband network is possible but not assured. FirstNet must take immediate steps to gain independent expertise and capacity, recognize and establish strong ties with its key stakeholders and customers, the States, and allow early deployers to move forward, always with close, expert oversight to ensure nationwide interoperability. FirstNet must conduct financial analysis, develop a cost model and adopt a business model within is first $2 billion and its lease revenues to establish the NPSBN as a national asset.

APPENDIX

TABLE OF ACRONYMS

BTOP	Broadband Technology Opportunity Program
CBO	Congressional Budget Office
CIO	Chief Information Officer
ERIC	Emergency Response Interoperability Center
FCC	Federal Communications Commission
FRNA	First Responders Network Authority
FOC	Final Operational Capability
GOCO	Government Owned, Contractor Operated
LMR	Land Mobile Radio
LTE	Long-Term Evolution (4G)
MVNO	Mobile Virtual Network Operator
NIST	National Institute of Standards and Technology
NGA	National Governors Association
NOC	Network Operations Center
NTIA	National Telecommunications and Information Agency, Dept of Commerce
NPSBN	National Public Safety Broadband Network
RAN	Radio Access Network
RFI	Request for Information
RFP	Request for Proposals
STA	Special Temporary Authority

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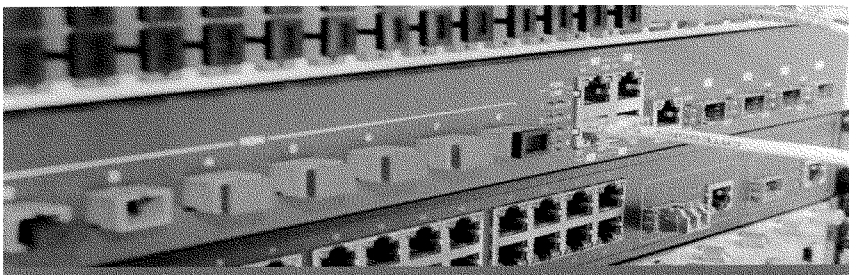

What Should FirstNet Do First?

A Report on Technical and Policy Implications of the Integration of State Public Safety Broadband Networks into the National Broadband Network and Possible Courses of Action

POTOMAC INSTITUTE FOR POLICY STUDIES
901 North Stuart Street | Suite 200 | Arlington, Virginia | 22203

Mr. WALDEN. Thank you, Admiral. We appreciate your testimony and the report.

We will go now to our final witness on this panel, the Chairman and CEO of Rivada Networks, Declan Ganley. Mr. Ganley, we are delighted you are here this morning and we look forward to your testimony, sir.

STATEMENT OF DECLAN GANLEY

Mr. GANLEY. Good morning, Chairman Walden and Ranking Member Eshoo. Thank you for your invitation this morning.

My wife's family business was headquartered in World Trade Center Two, and 9/11 was a very impactful event for my family, and I had rolled out a broadband across several countries in Europe. I do not envy Chairman Ginn the task that he faces in getting this thing rolled out here, but 9/11 brought home to us in a very personal way the issues that the 9/11 Commission report covered so well highlighted, of course, the establishment, the passing of this legislation and the establishment of FirstNet goes a long way to achieving the objectives of the 9/11 Commission report.

I want to say right at the outset, I see no other way to get it done other than this in terms of what FirstNet has been tasked with doing, getting the job done and getting it done as expeditiously as possible, and the board that has been put together certainly contains the competence, the ability, the public safety expertise to accomplish many of those goals.

During Hurricane Katrina, Rivada Networks, my company, deployed emergency cellular base stations in Louisiana with satellite backup, and while able to provide emergency communications to first responders, we found that when usage capacity was at a maximum, we were unable to provide prioritized access to those who needed it. So there were times when the system would be at maximum capacity, a Coast Guard admiral would key up, try to get on and would have to wait to be able to get on.

And as a result of that experience, Rivada spent a number of years developing tiered priority access—we call it TPA—allowing us to allocate access to bandwidth based on prioritization of the end user, and having developed tiered priority access, we realized that if we could tier priority access at a local level, we could do it on any scale, allowing bandwidth to be commoditized and allocated to users based on real-time valuation, dynamic allocation of that bandwidth and of access to that bandwidth. TPA allows public safety control over its own permanent, dedicated network—it is their network—granting full and absolute priority when needed through a throttling mechanism while making the surface bandwidth dynamically available to the wholesale commercial users during the significant periods of fallow time when the bandwidth is not being used by emergency responders. This dynamic-spectrum arbitrage revenue-generating capability can allow private capital sufficient security to construct these networks for cities and states and in a great many of these cities and states will provide surplus funding, which could be used to help FirstNet and fund the FirstNet mission.

In our view, FirstNet has the best opportunity to achieve a nationwide public safety network that is fully interoperable, and

while states opting out of the FirstNet model is permitted by the legislation, it is, in our opinion, neither optimal nor necessary. The best path to success for states and cities is under the FirstNet umbrella. The ability to provide a dedicated network that guarantees absolute prioritization for public safety while eliminating the burden to the taxpayer and generating surplus revenue to fund the maintenance, expansion and improvement of the network is obviously compelling. Partnering with private capital, public safety gains a state-of-the-art network built to public safety standards and a new stream of revenue that eases and in cases may even eliminate this burden on the America taxpayer.

And so these core goals, the highest quality of public safety network built to public safety standards, flexibility to allow these networks to start getting built out in as expeditious a manner as possible, and a positive revenue outcome are unlikely to be achieved in a more efficient way than that type of approach.

So in essence, the good news is, because this spectrum that this legislation allocated is prime real estate, it is very valuable, public safety can own and control it themselves, but by allowing cities, states, FirstNet to be able to allow dynamic access to that spectrum, you have a source here to generate revenue that under the legislation can offset and maybe even eliminate the burden to the U.S. taxpayer of building these networks. That has got to be good news for the American taxpayer, and for public safety.

[The prepared statement of Mr. Ganley follows:]

Testimony of Mr. Declan Ganley, Chairman and CEO, Rivada Networks International LLC, to the House Committee on Energy and Commerce Subcommittee on Communications and Technology hearing entitled "Oversight of FirstNet and Emergency Communications."

Thursday March 14th, 2013

Contents

Executive Summary

During Hurricane Katrina, Rivada Networks deployed emergency cellular base stations in Louisiana with Satellite backup. While able to provide emergency communications to first responders, we found that when usage capacity was at maximum, we were unable to provide prioritised access to key users who needed it.

As a result of that experience, Rivada spent a number of years developing Tiered Priority Access (TPA), allowing us to allocate access to bandwidth based on prioritisation of the user. Having developed TPA, we realised that if we could tier priority access at a local level, we could do it at any scale, allowing bandwidth to be commoditised and allocated to users based on real time valuation, dynamic allocation of, and access to, that bandwidth.

TPA allows public safety control over its own permanent, dedicated network, granting full and absolute priority when needed through a throttling mechanism, while making the surplus bandwidth dynamically available to wholesale commercial users during the significant periods of fallow time when the bandwidth is not being used by emergency responders.

This dynamic spectrum arbitrage revenue generating ability can allow private capital sufficient security to construct these networks for cities and states, and, in a great many of these cities and states, will provide surplus funding which could help fund the nationwide FirstNet mission. In our view, FirstNet has the best opportunity to achieve a nationwide public safety network that is fully interoperable. While a state "opting out" of the FirstNet model is permitted by the legislation, it is in our opinion neither optimal nor necessary. The best path to success for states and cities is under the FirstNet umbrella.

The ability to provide a dedicated Network that guarantees absolute prioritisation for public safety, while eliminating the burden to the taxpayer and generating surplus revenue to fund the maintenance, expansion, and improvement of the network is obviously compelling. Partnering with private capital, public safety gains a state of the art network, built to public safety standards, and a new stream of revenue that eases, and in cases may eliminate, this burden on the American taxpayer.

These core goals – the highest quality public safety network, flexibility, and a positive revenue outcome, are unlikely to be achieved in a more efficient way.

Introduction

From the days of her birth as a nation, through her journey to world superpower, America's strength has been built on her unique capacity to address the great challenges of the day by harnessing the ingenuity and inventiveness of her people and her Government. For 237 years, the United States has been the mother of invention, providing the world with electricity, telephones, air travel, new medicines, and the internet itself.

Following the tragic events of September 11th 2001, the 9/11 commission report recommended that:

"Congress shall support pending legislation which provides for the expedited and increased assignment of radio spectrum for public safety purposes" (9/11 commission report, P396-397)

This objective was achieved with the legislation establishing FirstNet and allocating the D-block to public safety.

The challenge of providing this secure, cost-effective, reliable, and high quality access to communications bandwidth for public safety agencies and America's first responders is of paramount concern in an era where natural disasters, terrorist incidents, or other unforeseen emergencies can take place in major population centres, placing immense strain on existing communications infrastructure and often compromising the ability of those engaged in life-saving work to communicate with each other.

Civilian commercial communications networks are built for peacetime and periods of calm – they are designed to handle a steady volume of commercial civilian traffic, and rely heavily on the ready availability of electricity, a lack of network congestion, and conditions of general normality that frankly do not exist in those moments when public safety agencies are called into action en masse.

Although there is an essential role to be played by civilian commercial carriers and networks in interacting with the public safety network, it would be unwise to become overly reliant on them.

Rivada Networks has been involved in public safety communications on an exclusive basis for over a decade. In that time we have provided assistance during Hurricanes Katrina, Gustav, and Ike, as well as during disasters such as the California Wildfires and the collapse of the bridge in Minnesota. In all of these disasters we have seen the same pattern of events:

The network infrastructure suffered catastrophic physical damage, and combined with a natural surge in civilian cellphone use during the incident, as concerned people attempted to call their loved ones, public safety officials simply could not access the cellular networks, leading to sub-optimal performance and in some cases, confusion between agencies and responding units. In other cases, the disaster affected rural or remote areas with limited commercial network coverage to begin with.

In all of these cases, the limitations of relying on a commercially provided cellular communications network, designed for mass public use, became distressingly apparent.

Commercial cellular companies simply are not programmed to respond to major emergencies and as such cannot be relied upon to immediately restore access to the networks in the immediate aftermath of a major incident:

- In Hurricane Gustav, it took the commercial networks over a week to get repair teams on the ground to restore the networks. In Katrina, it took considerably longer.

- During Hurricane Sandy, almost 25% of the entire commercial network was unavailable, and was not restored for several weeks in some places.

To tackle this problem, the FCC tried, in the aftermath of Hurricane Katrina, to require commercial carriers to upgrade their cellphone towers to something approaching a public safety standard, including the installation of backup batteries at cellphone towers so that they might operate in an environment deprived of electricity. The companies successfully sued to block the rule, arguing that the cost of such statutory improvements would be prohibitively expensive, and that they required flexibility in the provision of backup power at their facilities.

The first minutes and hours after a disastrous incident of this nature are absolutely critical to emergency response teams, and is during this period that they most urgently require access to a telecommunications infrastructure built on sites that are hardened to survive this type of trauma, and supported by backup power in the event of electricity becoming unavailable. As such, reliance on commercial carriers for this kind of emergency situation is not a valid option for public safety, as it simply is not designed to provide, and is not capable of providing, for the unique requirements of modern public safety.

A much more desirable solution is the provision of a network dedicated to public safety, guaranteeing priority access to public safety when it is most needed.

Up to now, however, the ability to fund the build out, and operation of a cutting edge public safety broadband network has been a major issue for most cash-strapped jurisdictions. Allocating billions of dollars to this effort is just not a realistic option for the majority of states. Furthermore, the nature of public safety in America is "bottom up" in its structure, right down to the most local level. The knowledge and appreciation of needs tends to reside at that level, and flow up to the state and federal level. It would seem logical that a successful FirstNet model will cater to and provide for the flexibility that will be required in what are rarely uniform structures from one state to another. No two state structures are identical.

At present, any state that builds its own network can, in collaboration with FirstNet, allow commercial services on the network (although only through a public private partnership). Legislation requires revenues generated by the state to be used only for the construction, maintenance, operation, or improvement of the public safety broadband network. Given the spectrum crunch that commercial carriers are currently facing, these state public safety networks have the potential to generate significant revenues for the state, and the nationwide FirstNet mission by the wholesale of any excess capacity on the network.

Rivada has therefore developed the world's first technology that seamlessly allocates excess spectrum to where it is most needed. It combines prioritization of users on the network with a real-time auctioning process, and is capable of allocating previously unused bandwidth to other networks and users, thereby minimizing unused resources on the network and providing a source of funds for the build out and operation of the public safety network.

Rivada's proposal

Commercial wireless operators are currently in the process of deploying 4G LTE networks to meet increasing bandwidth requirements for their customers. However, as demand for bandwidth continues to exponentially increase, further pressure will be applied to operators to provide the necessary radio capacity.

It is widely acknowledged that public safety agencies will need access to their full 20 MHz of spectrum to ensure they have the necessary and sufficient bandwidth for the capabilities they need for comprehensive emergency response situations. However, thankfully, emergencies on this scale do not happen every day, week, or month, and therefore not all of this 20MHz will be needed all of the time – the requirement is simply that bandwidth on this scale can be accessed immediately should the need arise. Much like an F-15, it is not needed every day – but when it is needed, it is really needed, and thus must always be available.

In addition to bandwidth, public safety agencies will also require access to funding to build, operate, and maintain the facilities required. In order to eliminate the cost to Government, and provide on-going funding for the maintenance and expansion of a first-rate public safety communications network, Rivada proposes an innovative approach as follows:

- The development of a purpose built, top of the range broadband LTE network dedicated to, and controlled by, the public safety agencies, funded by private investment, utilising and re-using existing communications assets owned by public safety agencies (tower sites, backhaul capacity, network operations centers, etc).
- The on-going real-time auctioning of excess bandwidth not being used by public safety agencies to private commercial operators on a dynamic basis, providing on-going funding to the agencies for maintenance and expansion of the network.
- Under such a proposal, the operator would not operate as a competitor to commercial carriers, but instead would act as a service provider to all carriers, providing access to public safety bandwidth to existing carriers and new entrants who will now be able to compete as a result of reduced barriers to entry provided by the public safety infrastructure.

The benefits of this approach are legion. For starters, it can completely eliminate the requirement for Federal Government funding for the initial build-out, and provides a recurring stream of funding for the annual

operation and maintenance of public safety/FirstNet networks. In turn, this allows the Government to allocate funding to do more outside of the initial network build.

This approach also allocates control of the network directly into the hands of the public safety agencies, allowing them absolute priority access to their bandwidth controlled by the agencies themselves.

By reducing the barriers to entry to the commercial market for new entrants, allowing them to purchase bandwidth dynamically without the investment in a national cellular network, this proposal also fosters the creation of an entirely new marketplace that will result in countless new innovations in cellular communications, and thousands of jobs in broadband cellular communications, as well as increasing the revenue available to fund public safety communications and improving the sustainability of the FirstNet network.

Dynamic Spectrum Arbitrage Tiered-Priority-Access (DSATPA)

Rivada Networks has pioneered an approach to deliver and allocate public safety spectrum to commercial users on a dynamic basis. Dynamic Spectrum Arbitrage Tiered-Priority-Access (DSATPA) enables dynamic arbitrage of public safety network capacity to allow non-priority commercial access to the available spectrum, thus generating revenue for the public safety network. This approach manages a frequency band to ensure end-users have access to the capabilities they require on an as-needed basis, and allows the spectrum controller to charge for use of surplus spectrum. This makes the spectrum much more efficient, by maximising its revenue value and minimising/eliminating unused spectrum.

DSATPA is a spectrum resource optimisation method that can be used by both private commercial, and public safety wireless providers. It allows spectrum to be available in multiple domains dynamically, and allows public safety to benefit by delivering LTE capability to public safety users while reducing or eliminating its operational costs.

A technical explanation of DSATPA is included on pages 9 and 10 of this document.

Dynamic Spectrum Arbitrage

Dynamic Spectrum Arbitrage (DSA) has been developed by Rivada Networks to deliver and allocate public safety radio assests as a short term lease to secondary users dynamically.

DSA enables Public Safety to charge secondary users for the use of underutilized radio resources on a dyanamic basis. The dynamic reallocation of underutilized radio resources makes the spectrum and radio resource use far more efficient. DSA also provides the method to pay for the buildout and operation of the LTE public safety network without taxpayer funding.

DSA is a policy driven resource allocation scheme and is unque in that it can enable:

- Dynamic bidding process for radio resources
- Provides a centralized arbitrage process
- Provides local control of resources
- Uses existing specifications
- Incorporates a Backoff Process

For public safety the DSA backoff process is essential and ensures that public safety always have immediate access to the leased radio resources when needed.

DSA involves the use of the Dynamic Policy Controller (DPC) and the Dyanmic Spectrum Contoller (DSC).

Figure 1 is a high level diagram of a public safety and commercial wireless network that utilize DSA.

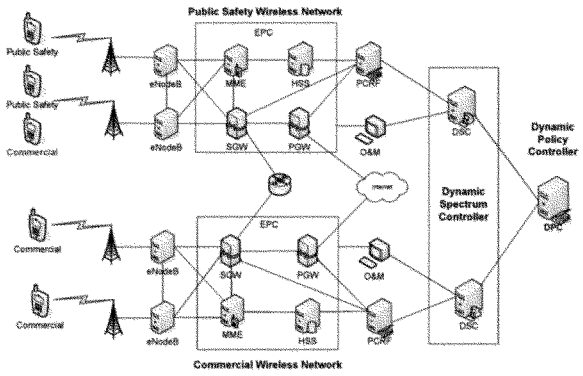

Figure 1: High Level DSA Architecture

The DPC in figure 1 is used to coordinate DSA policies and share relative information between wireless carriers which is agreed upon. The DPC facilitates the charging policy and resource requests which are then put forth to the DSC.

The DSC faciliates the traffic and capacity management policy implementation and is add on to the OMC/NMS of a wireless carrier. The DSC also oversees the backoff processes ensuring primary users have priority access following policy decisions.

The cost considerations

Firstnet has limited funds at its disposal. Its resources constitute less than 1% of the cumulative US wireless network investments to date. If the alternative to the Rivada proposal is to use multiple commercial networks to ensure reliability within the public safety spectrum, this will mean outfitting a huge number of existing MNO cell sites with Band 14 equipment. The $7bn FirstNet has been allocated is simply inadequate to upgrade all but a fraction of these sites to LTE Band 14 capability. Alternatively, if a single MNO is upgraded to this capability, there are simply no incentives for commercial carriers, or indeed effective mechanisms, to ensure priority access for public safety.

While a carrier led deployment of Band Class 14 service has the potential to save money, it is certainly not guaranteed. For example, if vendor implementations prevent adding Band Class 14 to existing base stations due to lack of scalability or security concerns, new eNodeBs may be required. Furthermore, additional large antennas on towers may not be feasible and add expense. Add to this installation, tower loading, backhaul provisioning, and additional lease costs and the potential to add great expense accumulates quickly.

Ultimately, we believe that these costs exceed available FirstNet funding and that the cost to operate the incremental network will exceed Public Safety's capacity to pay user fees to the commercial carriers, who, in order to then justify the business case, will have to leverage the spectrum to consumers, compromising priority access.

These issues create an incentive for the commercial carrier to minimize the difference in how it operates the public safety network and ultimately dilutes the public safety offering. For example, the carrier is unlikely to provide detailed system performance information to public safety, nor will it allow public safety to control the system configurations to its benefit.

Ultimately, it is our view that this model is not sustainable or cost efficient. Public safety does not simply require a dedicated network – it will, in time, require new devices, services, and applications needed for its mission, and a network that drains costs rather than adds revenue is simply not desirable. Our model of a dedicated network that generates revenue, rather than an essentially hired out network that guarantees neither access nor control nor cost control, is much more advantageous and allows the allocation of FirstNet revenues to the modernisation of other areas of public safety communications.

Opportunities arising from savings under Rivada approach:

Rivada's approach provides tremendous flexibility for FirstNet to use its funding to address other pressing areas of public safety need, rather than expending valuable resources on a commercially provided public safety network. Using private dollars in this manner wherever possible is far more efficient and enables FirstNet to use its limited funding for investments in the following areas:

- Construction of towers and shared RAN in challenged areas

While Rivada does not support investments in infrastructure where it already exists, FirstNet investments could be made in areas where commercial service does not exist today (or is inadequate) but where private investments do not have a viable business case. FirstNet could put out for bid projects that involved the construction of towers, shared backhaul, and shared eNodeBs such that all carriers could benefit from the investment. This would then benefit both public safety and the public and enhance our general broadband goals

- Public safety specific devices

FirstNet could invest in the development or subsidization in devices to support the specific needs of the public safety community. Because there will be a large ecosystem for Band Class 14 devices with the Rivada approach, commercial class devices will be affordable. In order to compete with the other carriers, however, FirstNet would need to subsidize even these less expensive devices. FirstNet could leverage its funds to stimulate the development of new specialized devices that otherwise would generate little commercial interest.

- Hosted public safety applications

Many agencies are not able to fully benefit from public safety applications due to their cost. FirstNet hosted applications could further improve the usability of the network for all public safety user groups and enhance adoption by providing basic functionality to public safety and services for 3rd party integration of advanced features.

- Applications and Application Platforms

FirstNet should fund an effort to develop applications that support public safety operations, with application platforms that enable public safety specific standards, and include freely available published programing interfaces. The creation of standards for public safety application development will encourage developers to create additional commercial products that are configurable and fully interoperable. These platforms will be the genesis of a sustainable product ecosystem that will reduce costs and create important choices for public safety professionals. Funding that would otherwise be allocated to network build and operations should be used to ensure applications are affordable, reliable, and adequately meet public safety's comprehensive requirements.

- Emergency Deployable Systems

Public safety needs emergency systems under its control that can seamlessly be integrated with the public safety network. These systems should be capable of being set up to facilitate communications when normal service is compromised or unavailable. Even hardened sites can become compromised during major incidents. A critical element of these systems is satellite backhaul. Public safety requires guaranteed access to a nationwide dedicated satellite bandwidth facility to ensure these systems can interoperate with the nationwide network during emergencies. Rivada's significant experience in this area indicates that all too often local responders are forced to scramble to procure satellite access during emergencies – when it is in most demand and least likely to be available. In the past few days, Craig Farrill of the FirstNet board has authored an authoritative piece on this issue, which may be found here.

Conclusions

FirstNet has limited funding, and the Rivada approach supplements that funding with substantial private investment that provides on an ongoing basis a revenue stream that allows public safety to strengthen and maintain a world-leading infrastructure. While saving the American taxpayer hundreds of millions of dollars, our approach also places the control of a dedicated disaster-resistant network into the hands of public safety officials who are guaranteed that it will be available to them when circumstances require.

For the American citizen, this extends high quality bandwidth across the country and and provides greater access to 911 and other critical calls. It provides increased commercial service, and competition in the cellular market.

For Firstnet, it involves public safety itself at the heart of delivering the solution, and allows FirstNet to focus its resources on other critical public safety capabilities like investment in new devices and emergency satellite communications backups.

It has been my honor and pleasure to speak with you and the members of this honorable committee today, Mr. Chairman. On behalf of Rivada Networks, it would be our privilege to be of service to FirstNet and the public safety community as they strive to improve capabilities and place the United States on the forefront of the emerging global wireless standard for public safety communications. I would like to thank you for this opportunity to talk to you about a solution which presents a historic opportunity for public safety to secure its communications future, secure a new funding platform, and deliver the service the American people deserve. Thank you again, and I will be happy now to take your questions.

Mr. WALDEN. Mr. Ganley, thank you very much for your testimony. Thanks to all of you on the panel. We will now go into the next phase of our hearing, which is the question-and-answer part.

I want to ask Mr. McIntosh and Mr. Lehr representing the two states, well, the Commonwealth of Virginia and the state of Maryland—I will try to get that right—in the governors' letter to us, they point out that they remain disappointed states were not better represented on the FirstNet board. So what is really going on there?

Mr. MCINTOSH. Thank you, Mr. Chairman. As was alluded to by all the members up here, the partnership—one thing we have learned through interoperable communications is partnership begins with participation.

Mr. WALDEN. Right.

Mr. MCINTOSH. And the fact that there is not a current state official on the FirstNet board——

Mr. WALDEN. But there is supposed to be somebody by statute on the board representing the state interest, right?

Mr. MCINTOSH. The one member that I am aware of that is there to fulfill that requirement is not a current state official.

Mr. WALDEN. How does that happen?

Mr. MCINTOSH. I don't know.

Mr. WALDEN. Mr. Lehr, do you care to comment on that point? Who made the appointments?

Mr. LEHR. Chris is absolutely correct. The current member is a former CIO Of two states, I think California and Michigan, but not currently representing or doesn't hold an active role in the state. Also, Mr. Chairman, I will point out that when the National Governors Association met two weekends ago in Washington, the Wyoming Governor, Governor Mead, also made a pitch that not only should the NGA be represented but perhaps a governor himself or herself should be the representative on the FirstNet board.

Mr. WALDEN. Because I assume—I won't put words in Admiral Barnett's mouth but he was an admiral and he was at the FCC and then he was off at a think tank and now doing whatever it is you do, you don't get to speak for the Navy now, right?

Admiral BARNETT. No, sir, I do not.

Mr. WALDEN. And so why would we have a federal employee speaking for the states? Mr. Ginn, how did that happen?

Mr. GINN. Mr. Chairman, I was not privy to the appointment of the board.

Mr. WALDEN. Who makes the appointments to the board?

Mr. GINN. The Secretary of Commerce.

Mr. WALDEN. All right. So we will take up that matter with the Secretary of Commerce then.

Mr. GINN. But just a comment——

Mr. WALDEN. Are you comfortable with that situation?

Mr. GINN. Well, I would say this. Diversity is really important, but you reach a point where knowledge and competence is just as important.

Mr. WALDEN. So are you saying that the states don't have anybody that would be knowledgeable or competent enough to represent——

Mr. GINN. No, I am just saying that the current appointee is an outstanding member of the board.

Mr. WALDEN. Well, I don't dispute that. It is just that we wanted somebody that actually was from a state. I guess we should have been more clear in the statute, but somebody representing the states' interests we thought would mean somebody from a state, not from the federal bureaucracy.

Mr. GINN. I guess that got interpreted as since she had been a CIO for both California and Michigan, that she met the requirement.

Mr. WALDEN. Well, it feels like an insider deal to me in terms of federal government pretending to represent somebody it is not, and that is not any aspersion on the individual. I am just saying that it seems to me it would be better if actually the governors had that say in making a recommendation. I realize you don't make that appointment but, hey, you're the only one we have before us today.

And you and I have talked on a number of occasions, Mr. Ginn, starting at the end of last year about some of the urgent, specific problems you felt needed to be rectified through legislation, and I know in your testimony you said you wanted to work with Congress to explore obvious and reasonable measures. This is your opportunity to make those obvious measures known to us and to the public. Can you be real specific about the issues you are encountering and what it is you think needs to be changed statutorily?

Mr. GINN. Well, I think the way to start this is to say that someone coming from a commercial enterprise and faced with the acquisition and procurement rules and government, you see that potentially they can increase the costs or extend the time that we can build this network, and what I would suggest is that we work together looking at those procedures and give us the freedom to really execute this network more efficiently than we otherwise could. So that is the point I made in my testimony.

Mr. WALDEN. Do you have specific recommendations for us? Because when we talked at the end of the year, I was under the impression that you had some or were at least developing some, because there was——

Mr. GINN. Well, we have developed some. We have actually submitted some recommendations to your staff and the staff at the Senate, and what we would like to do is take the time to sit down with you and discuss those. We are not trying to move away from what is competitive and open, and all the requirements that I know that you would insist on and I would insist on, but all I am saying is, government rules in a complex project like this are not necessarily geared to——

Mr. WALDEN. Well, that is why I was hoping in the context of this hearing, we would get more of that out on the table.

My time is now expired so I will recognize the gentlelady from California, Ms. Eshoo.

Ms. ESHOO. Thank you, Mr. Chairman, and thank you to each of the witnesses. You have been absolutely terrific, and I thank you for what you are doing. What I really have drawn out of this and I appreciate is the wonderful spirit that is at the table, and there are obviously some sticky wickets that we have to work out. This

is the first time in the history of our Nation that we are taking this on, and each one of you mentioned that in some way, shape or form, but the spirit in which you have approached this, I really appreciate and I think that that remains with us as we work our way through all of this.

Let me start with Mr. Ginn. Thank you for being the first heading up FirstNet. Congratulations to you. The chairman just mentioned your meeting with him. We met in my Palo Alto office, my district office, on the 21st of February, and you also met with Mr. Waxman to go through the concerns that you have. I think the sooner you get these issues to us, the specifics of them, that we can start to work on them because the subcommittee wants all of this to work just the way you do, and you know that I was concerned that what you were sharing with me would ensnare the work and really throw sand in the gears relative to ensuring that we have a nationwide interoperable public safety network. So the sooner you get this to us, I think the better off we are going to be.

What I would like to ask is, what steps is FirstNet taking to achieve economies of scale in device costs? I have been concerned about that all along, and if you could just answer that as quickly as possible because I have three other questions I would like to ask.

Mr. GINN. OK. Well, good. Well, one of the advantages of a national architecture is, you take advantage of scale, and with scale, you get reduced cost, and specifically with terminals, I think what is going to come out of this program is a completely engineered terminal for first responders, and it is going to be multichannel, it is going to have special features built into it. It will be positioned to service police and fire and emergency medical. And when you order in volumes, you can drive down the costs.

Ms. ESHOO. Now, have you considered integrating adjacent spectrum bands used by commercial wireless providers into 4G LTE-based public safety devices as a way to drive down cost?

Mr. GINN. Absolutely.

Ms. ESHOO. Good, good. And given the sensitive nature of data that will travel across the nationwide networks, what steps is FirstNet considering to ensure that security is built into the network from day one?

Mr. GINN. It is a really important issue. Cybersecurity has got to be a part of the system.

Ms. ESHOO. Good.

Mr. GINN. We are going to rely on DHS and Department of Defense, who have some real experts in this arena, to help us put that plan in place.

Ms. ESHOO. Is it too early, or has the FirstNet board received threat and vulnerability briefings from agencies such as DHS or NSA?

Mr. GINN. Well, what we——

Ms. ESHOO. It might be too early for that. I don't know.

Mr. GINN. Let me tell you where we are.

Ms. ESHOO. Quickly, because I have 59 seconds left.

Mr. GINN. From a nationwide point of view, from our point of view, a number of things have to be in place: interoperability, which means that these systems not only have to communicate be-

tween local police and fire but they have to be able to communicate across states, number one. You have to have a nationwide security system. You have to have reliability standards that are nationwide, and because we anticipate an application engine for the entire network. That needs to be engineered on a national basis. So we are in the process of establishing these. When we establish them, we are open to states to do whatever they want, and just let me say here——

Ms. ESHOO. Well, we are just about out of time. Maybe you can respond in writing.

If I might, Mr. Chairman, and I appreciate what was given to us and the work that was done by the Potomac Institute for Policy Studies, but as I opened it this morning, I looked at page 8. I am struck by something, and again, I appreciate all the work that has gone into this, and I will read the entirety of the report. There were women involved in this, women Members of Congress, to produce this legislation, namely Kay Bailey Hutchinson in the Senate. She contributed mightily from the very beginning on this issue. You are looking at someone that worked very hard to keep this bipartisan and to produce a great product. So, looking at this, it seems as if it is a very old Congress that doesn't have any women and women involved in it, and I don't think that is the message that you intended to send out, but I was struck by it and I wanted to raise it, and it is National Women's History Month too. So thank you for our service to our country. We are in service to our country as well.

Mr. WALDEN. May I take a point of personal privilege?

Ms. ESHOO. Certainly, Mr. Chairman.

Mr. WALDEN. You just referred to a very old Congress, and I see my picture is one of those.

Ms. ESHOO. No, you deserve to be there. You are the chairman of the committee.

Mr. WALDEN. But it is the old part I was——

Ms. ESHOO. No, no, no, no.

Mr. WALDEN. This is now an age discrimination issue I am going to take up with you at a later date.

Ms. ESHOO. No, no, no. You know what I am referring to, Congresses of yesteryear.

Mr. WALDEN. And you were terrifically involved in this whole process, and you and I and our staffs spent many, many hours involved, and we couldn't have done it without your leadership and help.

We will now turn to the vice chairman of the subcommittee, Mr. Latta.

Mr. LATTA. Thank you very much, Mr. Chairman, for yielding, and if I may say, sometimes it is not the age, it is sometimes the mileage.

Mr. WALDEN. I take a personal——

Mr. LATTA. I appreciate you for yielding.

Back when I was in the Ohio General Assembly in the 1990s, Ohio was in the development of the state's land mobile radio system, what we call the Multi-Agency Radio Communications System, or MARCS for short. And you fast forward to today and MARCS is currently providing a critical mission voice and data for

Ohio's public safety and first responders. The system is currently going through a $90 million upgrade and is actively pursuing local government and the adoption is steadily increasingly. Now with the establishment of FirstNet last year, the folks back in Ohio were concerned that the FirstNet board has already designed a system without that state input, and if I could, and following on with Chairman Walden talked about a little bit earlier, Mr. Ginn, if I could ask this first question to you. In your testimony, you are very encouraging to the committee in that you appear to recognize the need for state and local input into FirstNet's decisions. You have also indicated your intention to maintain local control and management of the network. And again, as stated by the chairman, Ohio and other states have raised concerns about their inclusion in the network design and the build process and about the need for local control and about the financial impact, and on page 4 of your testimony, you do state that it must be affordable to the user and states' participation in FirstNet.

I also hear you say that it is your intent to reach out to the states, but given that this has not happened to a significant degree some 6 months into the process, can you assure us and the states when this is going to start happening, that the states are going to be involved in these decisions that are happening, and especially the governors because I know in Ohio, they are very, very concerned about what is happening, and so if I could just pose that first question to you as to some kind of a timetable.

Mr. GINN. Well, yes. I think first of all, there is a lot of outreach already taking place. Many of us have attended many forums, communicated about FirstNet and its goals and objectives, and there is an enormous outreach effort in place today. Now, I think you need to understand that what we anticipate is a national architecture with local control and operations, OK? And that is the way I think this network has to operate, and if you take a look at Adams County, Colorado, I am fascinated by what happened there in the BTOP arena. Here you had local public safety, you had local political structure. They got together. They dedicated buildings and dark fiber and all kinds of capabilities to that system and built it at a very, very inexpensive cost. So once we get the national architecture in place, we are quite open to states and cities constructing their own system so long as they follow the national standards around interoperability, cybersecurity and reliability.

Mr. LATTA. And again, it is getting that information to the states, because again, there is very much of a concern that they are not involved in the process.

And if I can shift real quick to Mr. McIntosh, if I can ask you this. On page 4 of your testimony, you cite concerns regarding the costs associated with public safety broadband network and that resonates with me because I have heard those same concerns again from your counterpart in the state of Ohio, and I can tell you, and I am not sure how it is in Virginia, but I have a lot of volunteer departments out there, and I try to hit as many of them and support the pancake breakfasts and the fish fries and the chicken barbecues that they have just to raise funds for those departments. And have you seen any evidence of a business or cost recovery model evident yet in FirstNet planning?

Mr. MCINTOSH. Not from FirstNet, no, sir. The only—we have been approached by the private sector on some business and cost recovery models, some of which are intriguing, but as far as direct communications from FirstNet, no, we have not gotten anything.

Mr. LATTA. Mr. Lehr, may I ask you that same question?

Mr. LEHR. Congressman Latta, let me first of all let you know in front of me I have an email from Darryl Anderson from the state of Ohio. As soon as he heard that I was going to be testifying today, boom, the email lit up and, make sure you tell them that Ohio is in the same boat, we need to get some more information. He was very complimentary of your support for them with their Ohio MARCS system.

I can tell you that the public safety community, we are the ultimate, I hate to use the term "old boy network," after especially the admiral got nailed for that, but when we are building new 700 voice systems in the state of Maryland, so the first thing I did was call up Ohio, and your CIO and Darryl got on the phone with our CIO and myself and gave us the benefit of lessons learned, what they did, so the public safety community is used to having those kind of forums and exchanging information. I don't think Verizon calls up AT&T when they are going to deploy their 4G network and says, tell us how you did it. So that is the kind of information we are hoping FirstNet is going to tap into.

Mr. LATTA. Thank you. Mr. Chairman, my time has expired and I yield back.

Mr. WALDEN. The chairman recognizes the former chairman of the committee, Mr. Dingell, for 5 minutes.

Mr. DINGELL. Mr. Chairman, I thank you for your courtesy.

I first want to welcome Ms. Diane Kniowski, who is General Manager of several broadcast stations in western Michigan. I want to thank her for the work she and her stations do to provide viewers with excellent service and emergency information.

Now, I want to also welcome Mr. Ginn and the rest of our panel members. The Middle Class Tax Relief and Job Creation Act requires FirstNet to take all actions necessary to consult with, amongst others, federal, state, tribal, local public safety entities in building and operating FirstNet. Now, Mr. Ginn, these questions will be yes or no. Now, will FirstNet establish long-term relationships with state, regional, tribal and local public safety entities to ensure their input receives full consideration in FirstNet's proposed architecture as well as in its ongoing operations? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. Mr. Ginn, again, is the preliminary technical and engineering work initiated by FirstNet based on known public safety requirements? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. Now, Mr. Ginn, does such work represent a foundation upon which outcomes of your consultations with regional, state, local, tribal and public safety entities will be based? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. Now, Mr. Ginn, in other words, this preliminary design work is just that and not final? Yes or no.

Mr. GINN. It is not final.

Mr. DINGELL. Thank you. Mr. Ginn, further, will the network allow for local customization to meet unique local operational requirements? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. And I want to apologize to you. I hate to do this to witnesses but it helps us get a lot on the record.

Mr. Ginn, will FirstNet consult with a variety of equipment manufacturers and vendors as it considers operations for network architectures, technologies and deployment options? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. Mr. Ginn, many states like my state of Michigan find themselves presently in serious financial straits. I think it is extremely important that FirstNet work with the states to make the operation and the maintenance of the public safety network affordable for all. Do you commit to doing so in a meaningful fashion? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. Now, I would like to return to the issue of FirstNet's architecture. I think it is very important that FirstNet serve the reliability, security and functional needs of public safety around the country. Recognizing there are no absolute guarantees when it comes to network resiliency, I would like to ask you the following questions. Again, Mr. Ginn, in regions of this country that experience severe weather such as hurricanes, will FirstNet be designed to ensure that towers can withstand these forces? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. I assume you will also be doing that with regard to backup power facilities. Is that correct?

Mr. GINN. Yes.

Mr. DINGELL. And also with regard to things like earthquakes and other disasters. Am I correct?

Mr. GINN. Would you repeat that, sir?

Mr. DINGELL. And so you are going to see to it that it is hardened against other natural disasters and also perhaps the activities of terrorists and others. Is that right?

Mr. GINN. Yes, sir.

Mr. DINGELL. Now, Mr. Ginn, will it also be designed with sufficient power-surge protection?

Mr. GINN. Yes.

Mr. DINGELL. Mr. Ginn, will the network be designed for peak usage capacity?

Mr. GINN. Yes.

Mr. DINGELL. Now, Mr. Ginn, will the network be designed to ensure that public safety has network priority at all times? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. Mr. Ginn, will the network be designed to ensure that critical mission services have enhanced security? Yes or no.

Mr. GINN. Yes.

Mr. DINGELL. I want to thank you, Mr. Ginn. You have been most gracious, and I want to encourage you to keep these matters in mind as you implement the public safety portions of the Act. Thank you for your courtesy.

Mr. Chairman, I thank you for your kindness to me. Have a good day.

Mr. WALDEN. The gentleman yields back the balance of his time. The Chair now recognizes the former chairman of the Commerce Committee, the gentleman from Texas, Mr. Barton.

Mr. BARTON. Thank you, Mr. Chairman. And I want to say on the record that I want to commend you and Ms. Eshoo for holding this hearing. This is an example of the committee at its finest. FirstNet is really not operational. I think your first board meeting was last month, and we are conducting an oversight hearing in a bipartisan fashion to try to make sure that things go as they should go, so this shows the country that we can do things that are positive, and I want to commend both of you.

I want to tell Mr. Ginn that it is not all peace and love. I am quite frankly skeptical of this whole concept. I would not have designed the legislation the way it was designed. I would not have passed the bill that became law exactly as is, but it is what it is, and we want you to be successful. But there are a few of us, at least me, that have some grave doubts about this, and again, knowing that you are just getting started, you are going to get the benefit of the doubt, but some of the questions that former Chairman Dingell just asked you, the only question he didn't ask was, when FirstNet is fully operational, will it have a direct line to heaven without a long-distance call. If you do everything you say you are going to do, this is going to be a phenomenal network, and I hope it is successful. But we are going to keep a watchful eye as FirstNet develops. I just want that to be on the record.

Now, my specific questions are Texas specific, which normally I don't ask regional questions, but because FirstNet is in its infancy and Texas is something of an exception in that it had a BTOP grant in the Harris County-Houston, Texas, area, I am going to ask you some fairly specific questions, and if you need to have staff take a look at them, I totally understand.

The first question deals with the BTOP project that was already underway in Texas. Texas has gotten an FCC waiver to continue that, but in the site visit that your agency made to Texas, they were told that if Texas wants to participate in FirstNet, they have to give the current assets they have already put in place to FirstNet. The question is, wouldn't the effect of this transfer of assets eliminate the state's statutory authority to opt out of the FirstNet deployment since it would otherwise be left with no beneficial access to those assets?

Mr. GINN. Well, first of all, Texas was funded through a different program than the BTOP program, and just let me say that we have included it because we would like to implement a showcase project. We would actually like to use these BTOP locations including the Houston area as showcases. Let us build them, let us take a look at them, let us let public safety take a look at them, let us upgrade our designs as a result of them, and then continue to implement across the country.

I don't know what happens with the investment. Let me just say this. I am really—the issue of opt-out and opt-in, I think, is not so important. What is important is getting a national architecture in place so that you have interoperability, that you have

cybersecurity, that you have network standards, and then who builds it and who owns is less important to me so long as we have those principles in place. So that is where I come out. I don't know who took that position but I will try to understand it and——

Mr. BARTON. I like your answer. I think that is a fair answer.

In my last 14 seconds, I have one more Texas-specific question. In the first FirstNet board meeting, which was recently held, the board approved Resolution 18, which directs the board to negotiate spectrum lease agreements with BTOP public safety grant recipients within 90 days. Texas was not included within that resolution, and there are concerns with the special temporary authority process because it is temporary, causing jurisdictions concern about investing money into the network and planning in Texas. Is there planning within NTIA and FirstNet to ensure that Texas is allowed to negotiate a long-term spectrum lease agreement, and if so, when might that be expected?

Mr. GINN. Well, hopefully within the next 90 days.

Mr. BARTON. Well, that is a good answer. But do you understand the intent? Texas doesn't want to negotiate a short-term deal and then not be able to do a long-term deal. What I am hearing you say is that in your position, you are open to that.

Mr. GINN. Well, yes, I am open to who builds the network in Texas so long as you meet the national standards that we put in place.

Mr. BARTON. It sounds good to me. I have several other questions but I will submit them for the record. Thank you, Mr. Chairman.

Mr. WALDEN. Thank you. I will now turn to the gentlelady from California, Ms. Matsui, for 5 minutes.

Ms. MATSUI. Thank you, Mr. Chairman. Thank you all for being here.

Mr. Ginn, I have a few questions here, following along with the question about states. There have been a lot of questions regarding outreach and some aspects of this, and just generally speaking, would you commit to getting these critical questions that have been occurring answered to the states' satisfaction before they have to make a decision about whether to opt out of the FirstNet network?

Mr. GINN. Well, I think one of the first principles, if you don't satisfy your customers, you don't succeed. So the idea that we are somehow not interested in custom requirements is just not true. We are going to spend a lot of time trying to understand them and incorporate them into our engineering.

Ms. MATSUI. That is a good answer. So you are going to be continuing to reach out to the states to ensure that their concerns are addressed, because there are some states obviously hesitant to sign on as a partner, which I believe will not really benefit the goal here, but if it seems like—I don't know what this is—if not enough states could ultimately opt out, do you have a backup plan for this?

Mr. GINN. Well, as I said before, to me, the opt-in, opt-out issue is not so important as us putting in place national standards that everybody agrees to so that we have interoperability, so that we have cybersecurity, that we have network standards. Who builds the network and operates the network beyond that, I think, is open and negotiable.

Ms. MATSUI. OK. Following along with that then, in his testimony, Mr. Barnett outlines a network-of-networks approach in which FirstNet's network will be based on a shared architecture approach with each smaller network presumably controlled at the state or local level, and Mr. Barnett argues that such an approach would present many more options to get private equity and public infrastructure involved. What do you think about his recommendation?

Mr. GINN. Well, the problem I have with it is I think you take risks around the issue of interoperability. If you have 15 people engineering a network, how you come out of that with national interoperability, I think, is a risk, the same with cybersecurity and the same with the standards of maintenance and reliability.

Ms. MATSUI. OK. I just right now would just like to make a statement for the record. I know it was brought up today about an individual that is on the FirstNet board who apparently there is some concern about whether this individual has knowledge to fulfill that position. I must say that this individual has been a CIO of two large states, Michigan and California, and I would just like to state for the record that she definitely understands the state focus, and, I just need to say for the record. I think it is important because this board is really just starting to form to a great degree and I think it is really very important that you get the best people there who understand what is going on at the state level. So I just want to make that comment. I appreciate very much, and if you want to make a comment, Mr. Ginn.

Mr. GINN. I would just say that she is an outstanding talent and I am so pleased with having her on board.

Ms. MATSUI. Thank you, and I yield back the balance of my time.

Mr. WALDEN. The gentlelady yields back the balance of her time. The Chair now recognizes the gentleman from Nebraska, Mr. Terry.

Mr. TERRY. Thank you, Mr. Chairman.

Mr. Ginn, we will just stay with you. First of all, I am going to associate myself slightly with Mr. Barton's remarks. This seems to be such a monumental task, a huge beast that I am just wondering what its ultimate costs and bureaucracy will end up being. That is just a comment, not a question.

I am curious. This is a question. The way it has been presented or I am envisioning what you are saying is, is it accurate to say this is a public safety intranet system nationwide?

Mr. GINN. Yes. I have been trying to think of a way to explain it simply, but let us just think of your electrical grid. We are going to put a wireless grid in place, and conceptually in any state or city, you can plug in the applications that make sense for running your operations. So with the app engine that we are going to put in, it is really going to revolutionize public safety. Let me put it to you this way. When you got your first cell phone, could you have predicted the number of apps that are available to you today?

Mr. TERRY. No, I couldn't, but I guess what I am saying is, there are not going to be other users accessing these transmission wires. I mean, there are not going to be other state activities or university activities or medical hospital to medical hospital activities? This is all going to be just traffic from public safety?

Mr. GINN. That is my understanding of the legislation, although hospitals may be included. I am not sure.

Mr. TERRY. All right. That is my understanding too. I just wanted to make sure, so I would call that an intranet when it is just, other users not allowed to be involved in that.

Now, in your testimony you said that FirstNet must be larger, more resilient and more secure than commercial networks. I assume that is why it is more of an intranet than an internet, but you also stated it is going to be cheaper for users than any alternatives but we don't know what the costs there are, so I would want to know how it is going to be cheaper, but can you explain how a better network is going to be cheaper when by definition you have fewer users on that network?

Mr. GINN. Yes. I think the assumptions we are making here with scalability, with terminals, for instance, instead of ordering several thousand, we are ordering 4 to 5 million, we drive down dramatically the cost of the terminal. The same with radio access networks. If you order in volume, you get lower pricing.

Mr. TERRY. So you are going to be the central supplier of the equipment to each one of the public safety entities, so Omaha Fire Department comes to you for their handhelds?

Mr. GINN. Well, if they do, they will be able to get it, in my opinion, a lot cheaper.

Mr. TERRY. What do they do with their old equipment?

Mr. GINN. With their older?

Mr. TERRY. Their current handheld devices, radio services that they already have, do they scrap what they have?

Mr. GINN. Well, I think for mission-critical services, they will be used for a number of years, but for basic cellular traffic, that will be converted to the network almost immediately.

Mr. TERRY. OK. That is a question that several of our public safety and our state OI has asked me, are they going to be able to use the same equipment, are they going to have to swap it out or buy from you. There is a lot of unanswered questions here, and I understand it is very embryonic stage.

Mr. GINN. Yes. All of the above, by the way.

Mr. TERRY. All of the above?

Mr. GINN. And I think each state is going to have to make its own decisions about the rate of adoption and just what they implement in their state.

Mr. TERRY. All right. Last question. Does the FirstNet plan on charging municipality users to use the network?

Mr. GINN. The rate structures really haven't been developed, and I just would prefer not to comment until we have a sense of what our total costs are going to be and how we recover them.

Mr. TERRY. All right. Perfect. Yield my second.

Mr. WALDEN. The gentleman yields back the balance of his time. The Chair now recognizes the new ranking member for the hour, Mr. Welch.

Mr. WELCH. Thank you very much.

How does FirstNet plan to ensure that rural areas get access to the public safety broadband network? I know you probably have been talking a little bit about that but, we have got problems with

the build-out in rural areas that are different, as you know, than urban areas.

Mr. GINN. I think the answer is that in some cases——

Mr. WELCH. Can I interrupt? I think I jumped ahead of the line. All right. We are on the verge of doing something that Congress doesn't like to do, jump over seniority. Very dangerous when you are the jumper, so thank you, Mr. Pallone. Go ahead.

Mr. GINN. I think in some cases, we might negotiate with one of the existing carriers who now serves the rural areas to cover it.

Mr. WELCH. So you would partner with local carriers in rural areas?

Mr. GINN. Absolutely, and we would partner with rural local telephone companies or we might even cover those rural areas with satellite.

Mr. WELCH. So is the partnering going to save you some money and also——

Mr. GINN. You would hope so. I mean, we have talked about, it has been mentioned in this forum about the value of the spectrum, and so we would use that to the maximum advantage to get perhaps a carrier to serve a rural area in exchange for some other use of the spectrum in another city.

Mr. WELCH. All right. Let me just ask you one other thing. It is terrific of the Chair to have this hearing because it is tough to get a hearing before this committee and subcommittee, so all of us are eager to get the 1–2-3 problems that you see as the biggest impediments to being successful in the effort, so what would you describe those to be?

Mr. GINN. What would——

Mr. WELCH. You have got challenges. You have got impediments. You have got regulations.

Mr. GINN. Yes, we do.

Mr. WELCH. You have got hassles, and you are being polite here, OK? So just tell us what is going on, the biggest problems and impediments this committee needs to be aware of.

Mr. GINN. As I tried to say in my opening remarks, this is an enormous technical challenge.

Mr. WELCH. Well, we know that.

Mr. GINN. And basically trying to pull all the technical issues together along with a new——

Mr. WELCH. I am not asking you that. That is the challenge. I am asking you what are the things that we are doing or policy-wise that are getting in the way of you being able to succeed in taking on that challenge?

Mr. GINN. Well, the chairman and I have had these discussions.

Mr. WELCH. Yes, but we haven't.

Mr. GINN. And if you look at government acquisition rules and procurement rules, in my opinion, they were designed for a specific purpose.

Mr. WELCH. So if you would change them, you would do what?

Mr. GINN. Well, I would greatly simplify them.

Mr. WELCH. Give me an example.

Mr. GINN. Well——

Mr. WELCH. Look. Let me——

Mr. GINN [continuing]. Right now——

Mr. WELCH. We have to get real here. I mean, this is a big problem for the country. You are the guy who knows what the problems are. I am asking you what they are. Tell me what they are.

Mr. GINN. Well, I am told by government attorneys that if you want to negotiate a contract, you have to assume it is 18 months. Now, that is going to—in the commercial world, that is way beyond what it would ever take.

Mr. WELCH. So in order to——

Mr. GINN. Number one.

Mr. WELCH. Go ahead.

Mr. GINN. And number two, in an iterative process, if you are looking-if you are negotiating with one carrier and you get an offer from a second carrier, you can't go back and change the document that allows you to negotiate with carrier A, so you——

Mr. WELCH. So that is a practical challenge.

Mr. GINN. It is a practical challenge.

Mr. WELCH. Right.

Mr. GINN. And so it is going to add months and perhaps years to the implementation process.

Mr. WELCH. That is helpful to know. That is very helpful to know.

Mr. GINN. But I am very sensitive because I understand the need to be open and transparent and competitive, and I want to do that.

Mr. WELCH. So essentially, the big problem you have identified so far is the contracting process that takes too long and prohibits easy counteroffers.

Mr. GINN. Yes. It reduces our flexibility.

Mr. WELCH. OK. Thank you.

Mr. WALDEN. The gentleman yields back the balance of his time. The Chair now recognizes the gentleman from Louisiana, Mr. Scalise, for 5 minutes.

Mr. SCALISE. Thank you, Mr. Chairman. Thanks for having the hearing and again for your leadership in getting this done in the first place, something that hadn't been done for years and years in Congress finally actually getting written into law. The tough part of getting the program put in place, getting the spectrum, getting the funding has been done but now your task is to do the tough part of actually building out the network, and so when you look at just how big of an undertaking this is going to be, I want to ask you, Mr. Ginn, how do you all go forward to make sure that you are able to ensure the solvency of this, to oversee that you don't have cost overruns that drive it up to a point where it ultimately is not able to be built out the way that Congress intended, since you are still in some of those early stages? We have seen, unfortunately, bad track records of big government projects yet there is the ability to get things like this done if it is laid out right in the front end. So how are you all approaching that to make sure those kind of problems don't happen?

Mr. GINN. I think in a very traditional way. You start out with a set of milestones, benchmarks, and then you measure yourself in performance and cost-wise in achieving those benchmarks, and if you get off scale, you deal with it, and so that is the way we are going to run FirstNet. We are going to run it like a business enterprise, and if people don't perform or people miss their budgets, we

will deal with it. So I have done this before. It is not my first rodeo. So I think we are capable of managing the budgets that we put forward to the organization.

Mr. SCALISE. It is good to hear, and obviously we are going to be watching and working with you along the way to make sure that it happens that way because it is important to all of us like it is to you that it gets done correctly but it also gets done in a fiscally responsible way, the way it was intended.

I want to talk to you about the timetables for moving forward with deployment. I know we have heard a lot about those BTOP grants that some states got through stimulus states like mine, Louisiana, that didn't get it yet have been moving forward on their own with building out an interoperable network because we can't wait. Unfortunately, we get a lot more than our fair share of hurricanes and other natural disasters and so our state has been moving forward building out its interoperable network. What would be a timetable that we could expect so that we are not hindered? We can't afford to wait maybe 5, 6 years from now and in the meantime there are going to be other things that we may have to deal with.

Mr. GINN. I wish I could be more specific, but I think our focus now is BTOP, get these agreed to and constructed and run the assessments on their performance and basically after that see where we are, and I am sorry I can't at this point go any further than that.

Mr. SCALISE. Because I know FCC granted something like 21 waivers to different states to at least have some waiver ability. Our state and others put in waiver requests that were rejected, and again, we still have the same needs with our first responders and we have been putting up our own money.

Mr. GINN. Our objective is to get this done as quickly as we possibly can, and so that is the only promise I can make to you is we want to get this system implemented as soon as we can.

Mr. SCALISE. All right. Thank you.

Mr. Barnett, if I can ask you, in your Potomac Institute paper you talked about the opt-out process, and you said, I think your quote was, the opt-out process for states is akin to asking someone "to obtain the broom from the Wicked Witch of the West, nearly impossible and fraught with risk." Can you explain that, kind of expand on what you mean by that?

Admiral BARNETT. Yes, sir. The statute does in fact provide an opt-out process for states but the time frames that are allowed the governor, after FirstNet determines that the cost and what would be done for the state, it is presented to the governor. The governor has 90 days to inform them whether they are going to opt out or not. They have 180 days to not only start but complete an RFP. So at the most, the amount of time would be 270 days, which is very difficult for a state to do, particularly for those states that may be on a biannual legislation process. There would have to be a whole lot of planning to happen before that, if they even have a chance, and even then, they have to get, in essence, approval from the FCC and from the NTIA, so it is a two-step process. So it is a pretty difficult process. All that can be obviated by bringing the states inside the tent rather than kind of outside and making sure that

they understand what the needs are so that the states don't even to consider opting out.

Mr. SCALISE. All right. Thanks, Mr. Chairman. I yield back the balance of my time.

Mr. WALDEN. The gentleman yields back the balance of his time. The Chair now recognizes, as he should have earlier, the gentleman from New Jersey, Mr. Pallone, for 5 minutes.

Mr. PALLONE. Thank you, Mr. Chairman.

I wanted to ask Mr. Ginn a question in regard to Hurricane Sandy and the lessons from that. My district and many other areas of my state were devastated by Superstorm Sandy last fall, and given the coastal location of our state and the associated emergency weather events, I was just going to ask what particular lessons do you think FirstNet could learn from New Jersey's BTOP grant, assuming it is allowed to proceed in the near future? In other words, what could be done better for the public to disseminate information or for first responders to communicate with each other, whatever, if you would try to respond to that.

Mr. GINN. Well, in engineering circles, it is not a secret. Typically what happens is, you lose power or towers become disabled, and so clearly in those prone areas of hurricanes, natural disasters, we are going to have to step up and strengthen the standards in those locations particularly, and we will do that. There is some—it is being debated at the moment but basically putting 150-mile-an-hour standard on new towers, and that would get the vast majority of hurricanes that are likely to hit New Jersey.

Mr. PALLONE. Well, I have to say just for my own experience as I was going around in the aftermath, in the immediate aftermath, that many times it was the same locations. In other words, we have had—I mean, this was certainly the worst I have ever seen but you had Irene, you had nor-easters, and many times it was the same location. Go ahead. I am sorry.

Mr. GINN. The other thing that happens, you lose backhaul, particularly if it is aerial, and so, we are going to look at all those standards in those critical locations.

Mr. PALLONE. I appreciate that because it gets frustrating after a time whether it is communications or it is power or whatever, you have so many people, and of course, now many of them are interested in buyouts have just had the same experience over and over again, and of course they come back to us and say well, you already knew that this was the problem area where we were going to have this problem, what are you doing about it. So I just want to stress that what you are doing is really important in terms of communications. That is really the key when these disasters strike and people expect us to do something about it and particularly now since they have had the experience a few times.

Thank you very much. I yield back.

Mr. WALDEN. The gentleman yields back the balance of his time. The Chair would ask unanimous consent to insert in the record a letter from Textron Systems Corporation detailing issues including their information that is available at www.connectingfirstresponders.com. Without objection, so ordered.

[The information appears at the conclusion of the hearing.]

Mr. WALDEN. And now the Chair will recognize the gentleman from Missouri, Mr. Long.

Mr. LONG. Thank you, Mr. Chairman, and I am glad that it is Ginn because if the guy across from me hollers "gin" that is usually not a good thing.

Have you taken into consideration EMPs, electromagnetic pulse attacks on this new system that according to Congressman Dingell is going to be a vanguard against everything but I think that there is a very real possibility in the world we work in today that if a terrorist launched a missile off of the U.S. coast from a freighter that could release an EMP, that the damage would be immense. Are there any safeguards being built into the system?

Mr. GINN. Well, the technical group has taken a look at these issues, and I don't know. I am totally unfamiliar with how it might impact our system, but it is theoretically possible, but I don't at this point understand how we would deal with it, to be honest with you.

Mr. LONG. OK. Well, I would definitely recommend it because that is not only theoretically possible, I think that it is probable and one of the easier attacks for people to carry out against our country, so I would definitely think that the board members would definitely want to take that under advisement, and taking into consideration all of Congressman Dingell's questions, as Mr. Barton said was going to be built for everything, do you think that $7 billion is going to get this job done?

Mr. GINN. I don't know. I will have a conversation with that when we get more equipment pricing, we know what these systems are going to cost, the radio access is going to cost, what the terminals are going to cost, and the benefits of arbitrage deals that we may make with carriers. When I can pull all that information together, I think I can give you a reasonable estimate.

Mr. LONG. With taking into consideration the EF–5 tornado that we had in my district that was half-mile, three-quarter-mile wide, 6 miles on the ground that went through a town of 50,000 people, Joplin, Missouri, and the devastation, Congressman Dingell was asking you about generators and protecting them against natural disasters, and when a seven-story hospital is completely destroyed to the point that it was moved and had to be torn down, their backup generators, they were in the back of the building, ended up in the front parking lot of the building. So I don't know, but normally when the government thinks something will cost $7 billion, it usually costs about three times and takes about three times as long to do as what they think, but in rural areas with buildings, maintaining telecommunications networks is quite extensive. Does FirstNet plan to partner with existing rural telecommunication providers to build out and maintain the public safety broadband network?

Mr. GINN. Say that again. I am sorry.

Mr. LONG. Do you plan to partner with existing rural telecommunications providers to build out the system?

Mr. GINN. Absolutely.

Mr. LONG. You do?

Mr. GINN. Where it makes sense, we will.

Mr. LONG. Good.

Mr. GINN. We view it as a really good option if we can do that.

Mr. LONG. One of the most common criticisms of the broadband stimulus is that grants were awarded before work was completed to determine the investment was needed and now we hear testimony that FirstNet will produce its network build plan before it has finished asking states where they need additional assets. Shouldn't FirstNet conduct its consultation with the state before it decides where and how to build?

Mr. GINN. Well, see, I don't quite understand that. We have been directed to build an LTE network. We know what we are going to build, so the question is, how do we go about doing that and what kind of features and functions do we put in place.

Mr. LONG. But you can't do that before you talk to the states, can you, and find out what their needs are?

Mr. GINN. Well, the other assumption that you make is not true from my point of view is, we develop concepts, network concepts. We have not completed a final design, and we are not likely to ever complete a final design because as you learn, you update your architecture, and that will happen over time.

Mr. LONG. Let me move on real quick in my last few seconds here. What interaction has the National Telecommunications and Information Administration, NTIA, or the FCC had with other agencies that are not on the FirstNet board but have valuable expertise and critical infrastructure and telecommunications, and is everyone talking together? So again, what interaction have they had with other agencies that are not on the board?

Mr. GINN. I met with the chairman of the FCC yesterday, and NTIA has been wonderfully supportive of our efforts, given the fact that we were just getting started, no employees, no space, no anything, and they have been very helpful.

Mr. LONG. OK. Thank you, and I thank all our panelists for being here today, and I yield back.

Mr. WALDEN. The Chair now recognizes the gentlelady from North Carolina, Mrs. Ellmers, for 5 minutes for questions.

Mrs. ELLMERS. Thank you, Mr. Chairman.

Mr. Ginn, I do want to kind of follow up on my colleague from Missouri on the question of partnering with other networks. Is this network going to be exclusively used by emergency personnel for emergency purposes or will you be allowing non-emergency uses currently offered by commercial providers to emergency and non-emergency personnel?

Mr. GINN. We will be providing, and I think the legislation supports communications for first responders for public safety, both mission critical and non-mission critical.

Mrs. ELLMERS. So it will be exclusively emergency usage?

Mr. GINN. Public safety.

Mrs. ELLMERS. Public safety emergency. OK. Great. Thank you. And again, thank you to all the panelists that are here.

Mr. Ganley, your business model seems to be predicated on finding sufficient private equity interest to build out a network based on your technology. Have you secured this financial backing for such a project, and if not, why do you think that is?

Mr. GANLEY. First of all, actually the bulk, in many cases all of the funding would be debt, not equity. The reason that it can be

structured as debt rather than equity is cheaper money because of the value of the spectrum. Now, sort of coming back to one of the questions you asked earlier, the legislation as created does allow for partnering, commercial partnering and for commercial use of the spectrum when public safety isn't using it, and as it happens, when you build these networks and they are large networks, public safety will not use or need all of the capacity on all of the cell towers all of the time. In fact, that will rarely, if ever, happen where they will need all of the capacity on all of the cell towers for a big period of time. So dynamically, you can create an arbitrage process where carriers and utilities and perhaps new businesses that we can't even think of right now but new entrants will come in and say we will pay, we will bid dynamically in real time for access to that bandwidth and we will do it on a free-market, competitive basis and compete with each other and we will name the prices that we will pay at any given moment to dynamically access that bandwidth. That creates a revenue flow, so they could be carriers, they could be, as I say, new entrants. That creates a source of revenue from this very valuable spectrum that can be used to pay for the accomplishment of the mission at the local, state and nationwide basis.

So I expect that with this model, debt financed in most cases for rollouts in different parts of the country that it will provide not just the ability to pay for the build-out of the network in full and to pay for operations and maintenance and refreshing of handsets and equipment but in addition it will provide a surplus from several of the parts of the country that can go into a FirstNet pool. This is not my place to determine but I am just speculating here but it could go into a FirstNet pool that can pay for all of the additional applications, services and many of the demands that public safety are going to look to FirstNet to be able to achieve.

So the short answer to your question is debt can pay for these networks because this spectrum is prime real estate. In the context of New York City, it is like a block of land on 55th and 5th. So let us say public safety needs four stories of the building every day. So we are saying build an 80-story building, public safety can have their first four stories, and if they need 80 stories on any given moment, they can have all of them immediately. When they are not using it, they can use all of that space to sublet to whoever wants to pay the most for it, kind of like those offices where you can rent an office for a day or a few hours, people can come in, whoever wants to bid the most gets the space. That income then is used to offset and pay down the debt so you service your debt first, you pay your fees, etc., your refreshing fees for the equipment and then you can then fund your nationwide mission also from that pool of capital. And the answer to your question, are the markets prepared to fund that model? The answer to that is, we believe so. We have been working with Wall Street, one of the top three banks on Wall Street has partnered with us on this, and they believe that the demand is likely to be there to ensure that the debt markets will very competitively fund the rollout of these types of networks, these LTE networks.

Mrs. ELLMERS. Thank you.

And Mr. Chairman, if you could indulge me for just a moment, I was just going to see if Mr. Ginn had maybe a follow-up to the answer that Mr. Ganley gave.

Mr. WALDEN. I think we can do that. Without objection.

Mr. GINN. Yes. What I would say is, this is one method but this spectrum is going to be arbitraged one way or the other, and the question is, do you follow that process or do you follow another process that we negotiate with the carriers for the arbitrage or the use of the secondary spectrum.

Mrs. ELLMERS. Great. Thank you so much. I appreciate it. So this is one method, not necessarily the one that will be——

Mr. GINN. Well, there are a number of ways to do this. That is one way.

Mrs. ELLMERS. OK. Thank you so much, and thank you, Mr. Chairman, for allowing me to ask that follow-up.

Mr. WALDEN. Absolutely. We are here to get answers. We now recognize the gentleman from New Jersey, Mr. Lance, for 5 minutes, and if you don't have any questions on this panel, I believe we have exhausted our members and probably the panel, so we appreciate your participation. We look forward to continuing this dialog. As you know, I believe in doing the oversight, and just because we pass a law doesn't mean we are done with that law, and your counsel has given us more issues to deal with. So thank you very much for your good work for the country, and we will work together to build out this interoperable public safety broadband network for our first responders and for the safety of our citizens. Thank you, you are dismissed.

We will welcome our second panel of witnesses. As our panelists make their way to the witness table, I am going to turn over the chairmanship to the gentleman from New Jersey, Mr. Lance, who obviously represents a state that was very adversely affected by Hurricane Sandy, and I thought it appropriate for him to chair this segment of our hearing so we can all learn more about emergency response.

Mr. LANCE. [Presiding] Good afternoon, and we certainly welcome the panel. We have four witnesses, and we will ask our first witness, Mr. Turetsky, the Chief of the Public Safety and Homeland Security Bureau of the Federal Communications Commission for an opening statement, and we welcome you, Mr. Turetsky, and you have 5 minutes for an opening statement. Thank you.

STATEMENTS OF DAVID TURETSKY, CHIEF, PUBLIC SAFETY AND HOMELAND SECURITY BUREAU, FEDERAL COMMUNICATIONS COMMISSION; DIANE KNIOWSKI, PRESIDENT AND GENERAL MANAGER, WOOD/WOTV/WXSP, LIN MEDIA; CHRISTOPHER GUTTMAN–MCCABE, VICE PRESIDENT, REGULATORY AFFAIRS, CTIA–THE WIRELESS ASSOCIATION; AND TREY FORGETY, DIRECTOR, GOVERNMENT AFFAIRS, NATIONAL EMERGENCY NUMBER ASSOCIATION

STATEMENT OF DAVID TURETSKY

Mr. TURETSKY. Thank you, Congressman, and I should say from the outset that I grew up in New Jersey and went to high school there, so——

Mr. LANCE. Where did you grow up in New Jersey?
Mr. TURETSKY. I grew up in Paramus, New Jersey.
Mr. LANCE. Bergen County. Lots of good shopping in Paramus.
Mr. TURETSKY. There is.
Mr. LANCE. Thank you very much.
Mr. TURETSKY. Except on Sundays.
Mr. LANCE. Blue laws still exist in Bergen County, yes.

Mr. TURETSKY. Thank you for the opportunity to appear before you. Today I will address first the FCC's efforts to strengthen the resiliency of our Nation's critical communications including emergency 9-1-1; second, modernizing our 9-1-1 system through next-generation technology; third, enhancing our emergency alert and warning systems; and fourth, securing our cyber environment.

First, a critical test of the reliability of our communications networks was the fast-moving and unexpected derecho storm in June that severely disrupted service provider networks that serve 9-1-1 facilities. Seventeen 9-1-1 call centers, also called PSAPs, lost service completely, affecting the ability of over 2 million people to reach 9-1-1. Seventy-seven PSAPs serving more than 3.6 million people lost some degree of connectivity including vital 9-1-1 location information. The FCC's Public Safety and Homeland Security Bureau conducted an extensive inquiry into the causes and released a report finding that 9-1-1 communications were disrupted largely due to planning and system failures that could have been avoided if providers had followed industry best practices and guidance. Next week, the Commission will consider launching a proceeding seeking public input on recommendations from the report including ensuring that service providers conduct periodic audits of 9-1-1 circuits and maintain adequate backup power at central offices.

Yet another challenge to our communications networks came in October, of course, with Superstorm Sandy. For example, about 25 percent of mobile antenna sites in the affected region went out of service with higher service losses in New Jersey and parts of New York. The 9-1-1 networks, however, fared much better than in the derecho. In Sandy's wake, the Commission began field hearings exploring communications resiliency and related topics. The first was held in early February in New York City and in Hoboken, New Jersey, and the second was held 2 weeks ago in California. The FCC will use the information gathered to consider options to ensure greater network robustness.

Second, we are moving forward with Next Generation, or NG, 9-1-1 technology, as it is called, which will improve the reliability and performance of 9-1-1 in future disasters. Specifically, NG 9-1-1 will facilitate interoperability and improve connections and information for and between 9-1-1 call centers. It will not only support traditional 9-1-1 calls but also the transmission of text, photos, videos and data so that emergency responders can respond more effectively.

As we consider the path to NG 9-1-1, the Commission has been working with stakeholders to achieve the near-term step of enabling text messaging to 9-1-1, which might sometimes be the only way for a person to get help. The Commission initiated a rulemaking in December that builds on a voluntary agreement by AT&T, Verizon, Sprint Nextel and T–Mobile along with APCO and

NENA under which each carrier would provide text to 9-1-1 service by May of next year to requesting PSAPs.

Also last month, pursuant to the NG 9-1-1 Advancement Act, the Commission submitted to Congress a report with recommendations on how to address legal and regulatory barriers to the transition. The lead recommendation is for Congress to create incentives for states to become early adopters of NG 9-1-1.

Third, we are working with FEMA and others to make people safer by ensuring that the public can receive emergency alerts and warnings over multiple communications technologies. Wireless emergency alerts, or WEA, addressed by the WARN Act is an example. The public receives geographically targeted alerts over mobile devices about imminent threats to life and property. We are working with stakeholders on a voluntary basis to continue to improve the program. The Emergency Alert System, or EAS, also continues to be a critical part of our Nation's primary alerting system, and along with our federal partners, we are working to modernize and diversify it.

Finally, we are committed to promoting the cybersecurity of our critical communications infrastructure. We work with stakeholders in a public-private partnership to develop voluntary measures and best practices. We have also developed tools to promote mobile cybersecurity like our smartphone security checker, which helps consumers protect their mobile devices, and our Small Biz Cyber Planning for small businesses.

I thank you for the opportunity to testify, and I am pleased to answer any questions.

[The prepared statement of Mr. Turetsky follows:]

Written Statement
of

David S. Turetsky
Chief, Public Safety and Homeland Security Bureau
Federal Communications Commission

"Oversight of the First Responder Network Authority (FirstNet) and Emergency Communications."

Before the
Committee on Energy and Commerce
Subcommittee on Communications and Technology
U.S. House of Representatives

Thursday, March 14, 2013

Good afternoon, Chairman Walden, Vice Chairman Latta, Ranking Member Eshoo and Members of the Subcommittee. Thank you for the opportunity to appear before you to discuss the Federal Communications Commission's (FCC's) efforts to strengthen the connectivity, reliability, and resiliency of our nation's critical communications facilities.

INTRODUCTION

The safety of our communities requires effective communications tools. I will address four relevant areas: ensuring the reliability and resiliency of critical communications networks, particularly the 9-1-1 system, through natural or man-made disasters; modernizing the capabilities and increasing the resiliency of our 9-1-1 system through the use of "next generation" technology, or NG911; enhancing our emergency alert and warning systems; and securing our cyber environment.

I. RELIABILITY OF CRITICAL NETWORKS

The severe weather events that affected diverse regions of the United States in the past year underscore the need to promote and ensure the reliability and resiliency of our nation's critical communications facilities. The Commission is very focused on those needs.

Here are two examples.

First, in June, a fast-moving weather storm called a derecho arrived unexpectedly and caused billions of dollars of physical damage and 22 deaths, affecting wide swaths of the United States, beginning in the Midwest and continuing through the Mid-Atlantic and Northeastern regions. Millions of Americans lost electrical power during the accompanying heat wave and the networks of service providers that serve 9-1-1 facilities were severely disrupted, from isolated breakdowns in Ohio, New Jersey, Maryland and Indiana, to systemic failures in northern Virginia and West Virginia. Seventeen 9-1-1 call centers (or "PSAPS") in three states lost service completely, affecting the ability of more than 2 million people to reach 9-1-1 at all. Seventy-seven PSAPS serving more than 3.6 million people in 6 states lost some degree of connectivity, such as vital information on the location of 9-1-1 calls.

At the direction of FCC Chairman Julius Genachowski, the Public Safety and Homeland Security Bureau (Bureau) conducted an extensive inquiry into the causes of the communications failures relating to the derecho and ways to prevent them from occurring in the future. The Bureau found that above and beyond any physical destruction from the derecho, 9-1-1 communications were disrupted in large part because of avoidable carrier planning and system failures, including the lack of functional backup power, notably in central offices. [1] Monitoring systems also failed, depriving communications providers of visibility into critical network functions.[2] In most cases, the 9-1-1 and other problems could and would have been avoided if providers had

[1] "Impact of the June 2012 Derecho on Communications Networks and Services: Report and Recommendations" (*Derecho Report*) at 1, 40-41.

[2] *Id.* at 40-41.

followed industry best practices and available guidance. Although the Bureau had previously issued public notices highlighting some of these best practices and reminding carriers of the importance of implementing them, such reminders apparently had little effect.

Next week, the Commission is planning to consider a Notice of Proposed Rulemaking focused on the areas that the Derecho Report recommended for Commission action to promote the reliability, resiliency, and availability of 9-1-1 communications networks. The Commission will consider proposals aimed at ensuring that service providers: conduct periodic audits of 9-1-1 circuits; maintain adequate backup power at central offices and follow regular maintenance and testing procedures; have adequate network monitoring links; and have a more specific obligation to notify 9-1-1 call centers of breakdowns of 9-1-1 communications. Even in the context of a storm like last summer's derecho, a large-scale failure of communications—particularly 9-1-1 communications—is unacceptable and we must act to prevent similar outages in the future. To quote Chairman Genachowski: "Here's the bottom line: We can't prevent disasters from happening, but we can work relentlessly to make sure Americans can connect with emergency responders when they need to most."[3]

Second, in October, Superstorm Sandy devastated significant portions of the northeastern United States, causing 146 deaths and billions of dollars of physical damage along the Eastern Seaboard. Unlike the derecho, Sandy's arrival on the shores of the continental United States was anticipated and predicted with considerable accuracy, which gave communications providers time to prepare, and implement emergency plans. Nevertheless, Sandy's destructive effect on the communications infrastructure was still dramatic. Again, millions lost electrical power and communications networks were severely impacted. This time, however, most of the impact was not on 9-1-1 call centers, but on the communications networks that the public relies on to communicate with one another and to secure help in emergencies. For example, about 25 percent of mobile antenna sites in the Sandy-affected region, which encompassed all or part of 10 states and the District of Columbia went out of service. In hard hit New Jersey and parts of New York, however, the percentages were much higher. The most common causes were backhaul issues or loss of power to antennas.

Commission staff worked around the clock, including through our 24-hour operations center, to try to assist communications companies in meeting the considerable challenges they faced in maintaining and restoring communications services in the wake of Superstorm Sandy. We issued emergency authorizations that enabled out-of-town utility companies to use their communications frequencies and tools during restoration activities in the stricken areas. We worked with our governmental partners to facilitate fuel delivery to wireless providers so that they could refuel generators and undertake repairs. We worked with broadcasters, issuing temporary authorizations to increase their

[3] *See* News Release, FCC Chairman Genachowski Announces Action to Strengthen Reliability and Resiliency of 9-1-1 Communications Networks During Major Disasters (Jan. 10, 2013), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-318333A1.doc.

power in certain areas to help get local news to the public, and urged other governments to allow broadcasters to access their studios and transmitters in hard-hit areas, and to receive fuel preferences for their satellite trucks and generators. We monitored 9-1-1 call centers, worked with cable companies, and kept in touch throughout with communications companies, including calls from our FCC Chairman to their CEOs, to try to identify and help them meet needs that could preserve or hasten restoration of communications to the public. Additionally, at FEMA's request, the FCC sent a vehicle outfitted with mobile network monitoring equipment to measure the mobile signal strength coverage on hard hit areas of Long Island, New York. We also continued our practice, which began during Hurricane Isaac, of keeping in touch with non-English language broadcasters to help ensure that non-English speaking communities would continue to have a source of important local news during times of emergency.

In the wake of Superstorm Sandy, Chairman Genachowski announced that the Commission would hold field hearings to examine challenges to the resiliency of the nation's communications networks and consider next steps.[4] The first hearing, held on February 5, 2013, in New York City and in Hoboken, New Jersey, focused on the severe impact to communications resulting from Superstorm Sandy, the response, and access to information during the storm's aftermath.[5] A second hearing, held just two weeks ago on February 28, 2013, at Moffett Federal Airfield in California, focused on how innovative network technologies, smart power solutions, social media and mobile applications might improve communications network resiliency in times of disaster.[6] The Commission is currently in the process of reviewing and evaluating the presentations and answers to questions provided on the record in the field hearings to date. At the conclusion of the field hearings, the Commission will consider options to address the information gathered and to explore broader issues of network reliability and resiliency that are not part of next week's 9-1-1 Reliability Rulemaking.

While the issues can be complex, the goal of the Commission's work in this area is simple -- use the information and lessons we learn to enhance public safety by helping to make communications more reliable and resilient.

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[4] *See* News Release, FCC Chairman Genachowski Announces Post-Superstorm Sandy Field Hearings to Examine New Challenges to Resiliency of U.S. Communications Networks During Natural Disasters & Other Times of Crisis (Nov. 21, 2012), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db1121/DOC-317543A1.pdf.

[5] *See* FCC Announces Date and Locations for the First Post-Superstorm Sandy Field Hearing, *Public Notice*, DA 13-19 (Jan. 8, 2013), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0108/DA-13-19A1.pdf.

[6] *See* FCC Provides Additional Details Regarding the Second National Hearing on Network Resiliency and Reliability, *Public Notice*, (Feb. 27, 2013), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0227/DOC-319159A1.doc.

II. PROMOTING RELIABLE ACCESS TO 9-1-1 IN THE FUTURE

It is crucial that our existing infrastructure works well, even as we develop plans for enhancing our systems in the future. But as the *Derecho Report* also noted, the migration of "legacy" 9-1-1 systems to Next Generation technology will improve the reliability and performance of 9-1-1 in future major disasters, thus making it important to move forward on Next Generation 9-1-1 (NG 9-1-1).

The transition to NG 9-1-1 will facilitate interoperability and system resilience, improve connections between 9-1-1 call centers, and support not only traditional voice 9-1-1 calls but also the transmission of text, photos, videos, and data. These new capabilities will enhance the accessibility of 9-1-1 to the public, including people with speech and hearing disabilities, and will provide PSAPs with enhanced information that will enable emergency responders to assess and respond to emergencies more quickly and effectively.

A. First Steps: Text-to-9-1-1

Text messaging has become a part of the fabric of modern day life. CTIA reported last year that more than 184 billion texts – that's billions with a "b" – are sent *monthly*. Persons with hearing and speech disabilities are also increasingly turning to text-based applications to stay connected, leaving behind older technologies like TTY in favor of more mainstream and generally accessible formats.

It is natural, therefore, that in an emergency people will increasingly expect to be able to use text as a means of contacting 9-1-1. While voice services are still preferable for reaching 9-1-1, there are times when a voice call may be impossible, inadvisable, or both. First, text may be the only means for a person with a hearing or speech disability to reach out for help. Second, there are times that a voice call may place someone in danger, such as in a live shooter situation or domestic abuse. Third, when voice networks are congested, text messages may have a better chance of getting through. Multiple text messages can also be open at the same time, enabling PSAPs to prioritize life-threatening emergencies and move them to the top of the queue. It is vital, therefore, that even as we consider the longer path to NG 9-1-1, we start by addressing text messaging in the short term.

The Commission has been working diligently with PSAPs, carriers, consumer groups, and other stakeholders to achieve this first step. Beginning several years ago, PSAPs in several states and localities launched text-to-9-1-1 trials with different carriers and vendors, in Black Hawk County, Iowa; the City of Durham, North Carolina; the State of Vermont; and the State of Tennessee. Results of the trials have been encouraging and have brought concrete public safety benefits, for example, a woman who was at risk of domestic abuse texting for help undetected by her assailant; a child reporting instances of domestic abuse; and an anonymous report of imminent sales of controlled substances. In one case in Vermont, a life was saved when emergency personnel were able to thwart an attempted suicide following a text message to 9-1-1. PSAP participants in these trials have generally reported no negative operational impacts on their systems as the result of the trials.

More recently, some jurisdictions have moved beyond trials and have begun live

deployment of text-to-911. One of the first of these is York County, Virginia, where the PSAP has launched text-to-911 with Verizon Wireless.

In December of last year the two major public safety organizations -- the Association of Public Safety Communications Official-International (APCO) and the National Emergency Number Association (NENA) -- and the four major wireless carriers – AT&T, Verizon, Sprint Nextel and T-Mobile, announced a voluntary agreement under which each of the four would provide text-to-9-1-1 service by May 15, 2014, to PSAPs who request such a service. Under the terms of the voluntary agreement, these carriers will also implement an automatic "bounce-back" message capability by June 30, 2013. The bounce back message will alert subscribers attempting to text an emergency message to instead dial 9-1-1 when text-to-9-1-1 is unavailable in that area.

The Commission issued an NPRM in December that builds on this agreement by proposing rules for implementation of text-to-9-1-1 and bounce-back capability that would apply to all wireless carriers and to certain other providers of text services. The NPRM also seeks comment on what the required timeframe should be for carriers and other text providers to develop this capability. We have asked for expedited comment on the bounce-back requirement, and we may act on this issue soon. The record on the remaining text-to-911 questions remains open, and we will be carefully evaluating these issues as the comments come in.

B. Next Steps: The FCC Report to Congress

Beyond text-to-9-1-1, the Commission has also been working to encourage the evolution of the nation's emergency response networks to an NG 9-1-1 platform. Last month, as directed by the Next Generation 9-1-1 Advancement Act of 2012, the Commission submitted to Congress a report with recommendations on how to address legal and regulatory barriers to this transition. I'd like to take a moment to highlight just a few of the report's findings and recommendations.

The 9-1-1 system has traditionally been managed at the state and local level, and the transition to NG 9-1-1 will necessarily also happen at this level. We also believe, however, that the federal government and Congress in particular, can play a key role in assisting these efforts. In this respect, the report's lead recommendation is for Congress to create incentives for states to become "early adopters" of NG 9-1-1. This will accelerate the NG 9-1-1 transition in these states while also generating valuable experience with NG 9-1-1 implementation that other states can follow. We also recommend that Congress encourage states to establish or empower state 9-1-1 boards or similar state-level governance entities to provide technical and operational expertise. The report also recommends that Congress consider creating a federal regulatory "backstop" to ensure that there is no gap between federal and state authority over NG 9-1-1. These policies would also promote consistency, efficiency and interoperability.

In addition, the report recommends that Congress promote a consistent nationwide approach to key elements of NG 9-1-1 deployment, including standards that support seamless communication among PSAPs and between PSAPs and emergency responders; support reforms to the NG 9-1-1 funding structure; encourage states to adopt appropriate liability protection; and provisions to make NG 9-1-1 fully accessible to people with disabilities. The report recommends that Congress promote the development

of location technologies that will support all NG 9-1-1 applications regardless of the network or device used by the caller. We also recommend that Congress support establishment at the national level of certain databases that support NG 9-1-1 routing and security.

Finally, the report identifies areas where Congress could assist in the elimination of legacy state regulations that are impeding NG 9-1-1 deployment, while providing incentives for states to modernize their laws and regulations to accommodate NG 9-1-1. These reforms would enable service providers to support an expanded array of NG 9-1-1 services and applications, and facilitate a more flexible and resilient network architecture.

Lastly, I would like to briefly address the importance of NG 9-1-1 in relationship to the network to be built by FirstNet. The evolution of the 9-1-1 system to support next generation technologies is a necessary corollary to the FirstNet network, because next generation PSAPs can serve as a hub for data that comes in from 9-1-1 callers, telematics providers, and others, which the PSAP may then disseminate to first responders using the FirstNet network. So when a PSAP receives video of an accident from a witness sending it to 9-1-1, it can send it to the response personnel who need the information quickly and seamlessly. It is imperative that we lay the foundation for these data-rich opportunities.

III. PUBLIC ALERTS AND WARNINGS

Emergency alerts are different than 9-1-1, but are very important to public safety. While calling 9-1-1 is about the public reaching first responders during an emergency, alerting enables the government to provide life-saving information quickly to the public.

A. Wireless Emergency Alerts (WEA)

Wireless Emergency Alerts, or WEA, is a system that allows the public to receive geographically targeted alerts about imminent threats to life and property over cell phones and other mobile devices. Launched in April 2012, WEA allows mobile devices to receive emergency alerts in the area where the emergency is happening, irrespective of which carrier an individual may use or where that person's primary number is located. The alerts are intended to reach the right people, at the right time, with the right messages. A WEA alert consists of a short message that is accompanied by a unique attention signal and vibration, which helps people with hearing and vision-related disabilities recognize the alert, and there is no charge to consumers for receiving these alerts.

Developing WEA has been a team effort. The cooperation of the wireless industry has made the WEA, a voluntary system, into a potent force for public safety. CTIA in particular has been a close collaborator on WEA (formerly known as the Commercial Mobile Alert System) since Congress passed the Warning, Alert and Response Network (WARN) Act in 2006. The wireless industry continues to work with us and other federal agencies, such as FEMA and the National Weather Service, as WEA is fast becoming the leading edge of the Integrated Public Alert and Warning System (IPAWS).

In the less than one year that WEA has existed, it has often provided fast, targeted alerts to people in danger in a manner that gets their attention and directs them to life and property saving action. For example, during the July 2012 derecho, a tornado touched down in Elmira, New York - an area not known for tornadoes. A man packing his car heard the alert and got his family to safety just in time. Similarly, last month in Mississippi, a woman told the National Weather Service that she was about to go to bed when she received a WEA alert on her cell phone warning her of an imminent tornado. She went out her back door and discovered a tornado backlit by lightning moving towards her. She ran back into the house, got her daughter and husband into the bathtub, and within moments, the tornado struck their brick house, heavily damaging the bedroom where she and her husband would have been in bed.

WEA success stories are not limited to tornadoes. In December 2012, the National Center for Missing and Exploited Children began to issue AMBER alerts over WEA. Within weeks of the AMBER WEA launch, a child abduction Amber Alert was issued in the Minneapolis/St. Paul area, and was heard by a teenager who recognized the car described in the alert and called 9-1-1. The police arrived just as the abductor was dyeing the child's hair in preparation for flight out of the state. It is not an exaggeration to say that but for the WEA alert, that child may not have been recovered.

As with all new technologies, there is a shake out period. With WEA, we and other stakeholders are working to improve the specificity of alert targeting, understanding of when to use the system, and to increase the number of WEA-capable handsets. But as the examples I just gave indicate, WEA has already made a real difference.

B. The Emergency Alert System

Just as wireless providers form the backbone of the WEA, broadcasters form the backbone of the Emergency Alert System, or EAS. The cooperation of The National Association of Broadcasters (NAB) and other broadcaster organizations has been essential to the continued modernization of the EAS, and was vital to the success of the first Nationwide EAS Test.

1. CAP Adoption.

For over 50 years, what we now call the EAS has provided emergency alerts to the public, and has ensured the ability of the President of the United States to deliver a message to the public in the event of a national emergency. The FCC, FEMA, and the National Weather Service are charged with maintaining the EAS, and FCC rules require broadcasters, satellite radio and television service providers, cable systems, and wireline video systems (EAS Participants) to install and operate equipment capable of delivering EAS alerts to their viewers and listeners.

The EAS remains the nation's primary alerting system. To ensure its continued relevance, diversify its operation, and enhance its reliability, we are engaged with our federal partners in two major initiatives. First, we have modernized and diversified the

EAS by requiring EAS Participants to also provide a broadband-based distribution architecture. Second, in close collaboration with FEMA, we have taken a series of steps, including a national test, to improve the reliability of the legacy, broadcast-based EAS.

A key step toward modernizing the EAS was taken last year with the requirement that EAS Participants be able to receive alerts using the Common Alerting Protocol (CAP). CAP is a powerful tool that is rapidly becoming the world-wide standard for alert distribution. It is an Internet-based language that allows alert initiators, such as the National Weather Service and state and local alert initiators, to use FEMA's IPAWS to deliver alerts simultaneously over multiple media, including radio, television and wireless devices, and will ultimately allow better service to the deaf and hard of hearing community and those whose primary language is not English. Using CAP has another benefit to the EAS in that it compresses the EAS distribution architecture from the complicated, broadcast-based "daisy chain" I will describe in more detail later to a simple "one to many" architecture that has many fewer single points of failure.

2. Legacy EAS Improvement and Nationwide EAS Test.

The EAS was designed to enable the President to deliver a nationwide live broadcast message after a catastrophic event, when access to electrical power and communications systems may be significantly degraded and when few if any other communications pathways may exist other than battery-powered radios and televisions. The EAS architecture was thus designed to deliver a live audio feed from the President, delivered over a secure line (provided by FEMA) to the Primary Entry Point (PEP) radio stations, a select group of geographically distributed, independently powered and electromagnetic pulse (EMP) hardened radio stations that collectively can reach over 90 percent of the American populace. The PEPs would then broadcast the alert to other EAS Participants, which would receive and, in turn, transmit the alert via the hierarchical broadcast-based EAS distribution system to the public across the U.S.

Although the EAS was tested weekly and monthly on a local and statewide basis, prior to 2011, the national distribution architecture for a Presidential alert had never been tested -- a fact inconsistent with America's need for a back-up, fail-safe alerting system. Accordingly, the Commission, in coordination with FEMA, the NWS, and the Executive Office of the President, scheduled the first Nationwide Test of the EAS for November 9, 2011 at 2 p.m. Eastern Standard Time.

Because the system had never previously been tested nationally, we expected issues would arise. Our key goal was to identify problems and address them to ensure that the system would perform as designed. The Nationwide EAS Test was designed to test the links in the distribution architecture, and the test successfully showed that this architecture was viable. As the alert propagated nationally, the vast majority of EAS Participants were able to receive the alert and, where necessary, transmit it to other EAS Participants. However, the test also revealed a number of problems related to the reception and transmission of the Emergency Action Notification, the code used to activate the National EAS, by EAS Participants. The primary problem was a

transmission anomaly caused by a feedback loop at the initial distribution to the PEPs, a lack of PEP stations at various parts of the country, among which was Oregon, and poor audio quality at various points in the system.

Since the test, the FCC and FEMA have been analyzing these problems and both planning and executing their remediation. First, FEMA has explored alternative alert transmission technologies for the FEMA/PEP connection and plans to introduce satellite conductivity to back up the Public Switched Telephone Network-based connection that FEMA currently uses to send the EAN to the PEPs. Second, FEMA continues to expand the PEP system from the 63 PEPs in operation at the time of the test to a total of 77 by 2015. We understand that FEMA has already completed construction of a number of these additional PEP stations, including PEPs in Portland and Eugene, Oregon. The FCC is monitoring the effectiveness of these improvements through its weekly and monthly EAS testing regime, as well as by reviewing State EAS Plans to ensure that all EAS Participants have available up-to-date and accurate information about what stations they are to monitor in order to receive an audible and decipherable EAS alert.

Under FCC rules, EAS Participants had until December 27, 2011 to submit their test results to the FCC. On coordination with FEMA, we are analyzing this data to determine what worked and what did not, and to make recommendations for improvements as necessary. In the meantime, we are working with FEMA and EAS Participants to learn more about problems that have already been identified and what actions we should take to address them.

C. Next Steps for Emergency Alerting

Looking to the future, the FCC will continue to work closely with FEMA, the National Weather Service, industry, and state and local governments to ensure that the public has access to emergency alerts and warnings over multiple communications technologies. Those efforts will include, of course, our continued work to ensure that the benefits of WEA and EAS are available to consumers in all parts of the country and to ensure that the EAS continues to provide a reliable and effective method to transmit timely and accurate emergency alerts to the public.

IV. CYBERSECURITY

Internet security, or cybersecurity, presents a real and constant challenge to everyone from the casual broadband user to the very core of our nation's critical infrastructure. The world depends on the security of broadband communications infrastructure for commerce and to move vast amounts of data that enable the functioning of industries such as banking and energy. Government also depends on the reliability and security of broadband networks.

The Internet contains built-in vulnerabilities that were mostly absent in legacy circuit-switched networks. The openness of the Internet makes it more vulnerable to certain types of exploits, and specific areas of risk exist in Internet routing and domain name systems. Furthermore, users are exposed to torrents of malware and spam, making

them vulnerable to infection and setting them up as threats to other users and, in extreme scenarios, the communications infrastructure itself.

The Commission has played, and will continue to play, a vital role to promote the nation's communications reliability and resiliency against cyber threats. At the FCC, we are able to work productively with communications providers in a public-private partnership to develop voluntary measures and best practices, and educate stakeholders on threats. We then seek to measure the extent to which these best practices are having the desired result.

The Commission has also been an advocate and educator for consumers and small businesses to help them understand the simple proactive measures that they can take to combat cyber threats. The Commission has, with the aid of the Communications Security, Reliability and Interoperability Council, and in collaboration with the industry and our government partners, developed tools available on our website to promote mobile security, like our tip sheets for international travelers and our "Small Biz Cyber Planner" i.e., for small businesses.

That cybersecurity is a challenge was amply evident in the recent "zombie apocalypse" alert issued over hacked EAS equipment, which we believe could have been largely avoided if the factory passwords on EAS equipment had been changed and adequate security protocols followed.

The Commission has worked to promote cybersecurity through its work with CSRIC. This month, the third iteration of this group will be wrapping its work in the area of domain name system security, botnet remediation, and secure routing, where it has made recommendations to the Commission.

It is essential that the Commission partner with other government entities and the private sector to develop best practices that address new technologies such as cloud computing and distributed authentication, on which the resiliency and reliability of the new communications infrastructure rely.

We are also committed to executing our responsibilities under the Executive Order and the Presidential Policy Directive, as well as any legislation Congress may pass, and to working with our partners and industry to develop and implement best practices more broadly in promoting the security and resilience of critical communications infrastructure on which the Nation depends.

I thank you for your time and the opportunity to testify before you today, and am pleased to answer any questions you may have.

Mr. LANCE. Thank you very much, and I am very impressed you came within 2 seconds of your time. You had 2 seconds to go, so that is a very good job and I am very impressed.

Our next witness is Diane Kniowski, President and General Manager of WOOD, WOTV, WXSP, Lin Media, and we welcome you to Washington.

STATEMENT OF DIANE KNIOWSKI

Ms. KNIOWSKI. Good morning, Congressman Lance and Congressman Welch. Thank you for the opportunity to speak with you today about the valuable, often lifesaving services that local radio and television broadcasters provide during disasters and other weather emergencies.

At our core, broadcasters are first and foremost and for decades have been the most important source of vital emergency information for all Americans. When a tornado rips through Missouri or an earthquake shakes California, listeners and viewers turn to their local broadcasters for news and information. When the power goes out, when phone service and the Internet may go down, broadcasters are there and on the air.

I have seen it personally in Michigan. In February 2011, a major blizzard dropped 25 inches of snow in a 24-hour period. We knew it was coming, so we went into action. Three days prior to the storm, we began alerting the public on what areas would be hit and what essentials would be needed in the home. We sent teams into the field keeping abreast of what was happening. We stayed on the air for 3 to 4 days until the roads were cleared and we knew there was no loss of life. I still remember the many letters we received from viewers thanking us. And stations around the country do the same thing.

For example, during Hurricane Sandy, WABC–TV in New York prepared in advance for the storm. They shored up their infrastructure, inspecting and securing rooftop and tower antennas and testing backup transmission paths. On the radio side, the engineering team at Clear Channel's radio stations moved backup generators and reserve transmitters into the area. They implemented longstanding fuel contracts and gathered satellite phones and mobile housing for staff. As the storm knocked out other means of communications in many parts of the tri-state area for nearly a week, broadcasters were ready for the storm's fallout.

For decades, radio and television broadcasters have been the backbone of the Nation's Emergency Alert System, known as EAS. EAS is a national public warning network that connects public safety authorities to the public through over-the-air radio and television stations and cable systems with a simple push of a button. In addition to alerting the public of local weather emergencies such as tornadoes and flash foods, EAS is designed to allow the President to speak to the United states within 10 minutes. The EAS system works through a chain reaction of alerting that begins at the broadcast radio level. For example, WTOP here in D.C. is a primary station that other broadcast stations and cable systems monitor for local alerts. All EAS participants are required to maintain FCC-certified EAS equipment that continuously monitors the signals of at least nearby sources for EAS messages. Broadcasters

work in partnership with state, county, and local emergency managers and public safety officials on how best to deploy EAS in each state. Although EAS can be triggered by the President and state or local authorities under certain conditions, the majority of the alerts are originated by local emergency managers and the National Weather Service. The EAS is also used for Amber Alerts. This was created by broadcasters and local law enforcement in Texas in 1996. To date, over 600 abducted children have been successfully recovered, and at my station, we routinely put these alerts out with much success, and it is one of the most gratifying parts of my job as a broadcaster.

Clearly, EAS participation is an important component of our public service, and broadcasters are proud of our pivotal role. Although participation in EAS on the local level is technically voluntary, virtually every radio and television station in the country participates, and we do so enthusiastically. All EAS equipment is purchased by broadcasters at their own expense and all stations must test their EAS systems on a weekly and monthly basis. At my station, we also conduct surprise emergency rehearsals four times a year because rehearsals help identify problems and issues.

In November 2011, FEMA and the FCC conducted the first-ever nationwide test. The purpose of the test was diagnostic and included participation from every radio and television station in the United states. The test was successful and served its purpose of finding where any technical problems may exist. The issues that were discovered are being addressed, which is precisely why we fully support testing the EAS on a regular basis.

I am grateful for this opportunity to share my views on broadcast emergency communication. I look forward to working with you toward our shared goal of keeping the American people safe through timely alerts and warnings. Thank you.

[The prepared statement of Ms. Kniowski follows:]

Testimony of Diane Kniowski
Vice President & General Manager, WOOD TV, WOTV and WXSP

Hearing before the U.S. House Committee on Energy and Commerce
Subcommittee on Communications and Technology

Oversight of the First Responder Network Authority (FirstNet)
and Emergency Communications

March 14, 2013

Good morning, Chairman Walden, Ranking Member Eshoo, Members of the Subcommittee. My name is Diane Kniowski. I am Vice President and General Manager of three television stations owned by LIN Media in Western Michigan, WOOD TV, WOTV and WXSP-CD. I have been with LIN since 1993, where I started as a national sales manager and rose through the ranks. Thank you for the opportunity to speak with you today about the valuable, often life-saving services that local radio and television stations provide during natural disasters and other emergencies.

Broadcasters' commitment to public service is never more apparent than during times of crises. During an emergency, particularly one that arises with little notice, no other industry can match the ability of broadcasting to deliver timely warnings as well as on-going, comprehensive information as the situation unfolds to millions of people simultaneously. Local television broadcasters reach 97.1% of the approximately 118.5 million households in the U.S., while local radio reaches more than 242.8 million Americans, or 92% of the population, on a weekly basis. The wide signal coverage of broadcasters ensures that anyone in a car, at home or even walking around with a mobile device with a broadcast tuner can receive up-to-the-minute alerts when disaster strikes. As a ubiquitous medium, broadcasters understand and appreciate their unique

role in disseminating emergency alerts and information. Radio and television broadcasters take pride in their indispensable role during an emergency, and Americans know they can turn to their local broadcasters first for in-depth coverage.

I am pleased that you have called for this hearing and grateful for the opportunity to share the views of local broadcasters on EAS and our role as "first informers" during times of crisis.

I. Local Broadcast Stations Are the Backbone of the Nation's Emergency Alert System

Local broadcasters are the backbone of the Emergency Alert System (EAS). EAS is a largely wireless network that allows the prompt dissemination of alerts to the widest possible audience, or target alerts to specific areas, as appropriate. EAS is intended for use during sudden, unpredictable, or unforeseen events that pose an immediate threat to public health or safety.

EAS was put into place on January 1, 1997, when it superseded the Emergency Broadcast System, which itself superseded the Control of Electromagnetic Radiation System (CONELRAD). In addition to alerting the public of local weather emergencies such as tornadoes and flash floods, EAS is designed to allow the President to speak to the United States within 10 minutes, although the nationwide federal EAS has never been intentionally activated. The EAS regulations are governed by the Federal Communications Commission (FCC), and EAS is jointly coordinated by the FCC, the

Federal Emergency Management Agency (FEMA), and the National Weather Service (NOAA/NWS).

EAS is used on radio, television, and cable television. Sirius XM has been required to participate in EAS since 2006, and satellite television providers have been required to participate since 2007.

Messages in EAS are composed of four parts: a digitally encoded Specific Area Messaging Encoding (SAME) header, an attention signal, an audio announcement, and an end-of-message signal. The SAME header contains information such as who originated the alert, a brief description of the event, the areas affected, the expected duration of the event, and the date and time it was issued.

FEMA has designated and hardened certain radio stations as Primary Entry Point (PEP) stations, which are responsible for distributing presidential messages to other broadcast stations and cable systems. FEMA is in the process of modernizing and expanding the PEP system to include 77 stations.

All EAS Participants, including broadcasters, are required to maintain FCC-certified encoder/decoder EAS equipment points that continuously monitor the signals of at least two nearby broadcast stations for EAS messages, one of which must be designated a local primary station, which is the first link to EAS message originators. Broadcasters typically work in partnership with state, county and local emergency managers and public safety officials on how best to deploy EAS in each state.

Although EAS can be triggered by the President, and state or local authorities under certain conditions, the majority of alerts are originated by local emergency managers and the NWS.

The specific content of EAS messages can vary depending on the nature of the emergency, but may include information on the timing and path of storms, evacuation plans and routes, shelter-in-place instructions, and America's Missing: Broadcasting Emergency Response Alerts, or Child Abduction AMBER Alerts, which help expand the eyes and ears of local law enforcement when a child is abducted. Nationwide, since the inception of AMBER in 1996, AMBER alerts have helped safely recover more than 602 abducted children.[1] In fact, the Amber Plan was originally created by broadcasters with the assistance of law enforcement agencies in the Dallas/Fort Worth area.

EAS participation is an important component of broadcasters' public service. Although participation in EAS on a local level is technically voluntary, virtually all radio and television stations participate, and do so proudly. All EAS equipment is purchased by broadcasters at their own expense. All stations must test their EAS systems on both a weekly and monthly basis. We have all seen or heard the familiar announcement: "The following is a test of the Emergency Alert System. This is only a test."

The FCC and FEMA conducted the first nationwide test of the EAS system on November 9, 2011. The broadcast industry fully supported this endeavor and lent our resources to the project. We worked closely with our federal and local partners to

[1] *See* http://www.ncmec.org/amber (last visited March 8, 2013).

ensure that the national test was useful and informative. Broadcasters prepared for the national exercise by reviewing their internal EAS equipment and processes, and if appropriate, upgrading software or hardware in advance of the national test. Broadcasters also conducted an extensive nationwide awareness campaign in the days leading up to the test, to ensure that Americans understood that it was "only a test." The test was discussed on numerous high-profile newscasts and morning shows and repeatedly covered on radio talk shows. The broadcasting industry also created and distributed a variety of English and foreign language Public Service Announcements (PSAs) that were aired thousands of times as the test approached.

The goal of the test was to diagnose the efficiency and reliability of a nationwide EAS alert, and identify areas in need of potential improvement, and in my view, the test was a success. It was the first time an official "live-code" national alert message was purposely deployed end-to-end throughout the system, under conditions simulating an actual emergency situation. Almost all broadcasters, including my stations, were able to successfully rebroadcast the EAS test message they monitored and received, despite certain technical problems with the origination of the message which have now been addressed.[2]

Specifically, while most PEP stations successfully received and transmitted the test message, two such stations did not receive the message. The PEP station in Oregon,

[2] These problems included: (1) a "loop-back" of the digital message header codes emanating from one of the PEP stations that caused the test message initiating codes to repeat about every six seconds, which led some EAS equipment to seize upon receiving the second set of header tones; (2) FEMA's originating equipment had a clock error which caused some equipment to delay pass-through of the message by three minutes; and (3) a few scattered problems with reception of the test message through the PEP network of radio stations.

however, received the message, but experienced technical difficulties which prevented the message from being disseminated. It is my understanding that FEMA has worked diligently to identify and correct this problem. Overall, the nationwide EAS test was designed as a diagnostic event, which enabled officials to successfully pinpoint and repair potential vulnerabilities before a real event may occur.

To further ensure the reliability of EAS, broadcasters support the continued nationwide testing of EAS. EAS is tested weekly by each radio and TV station and monthly within each state. Such tests allow message disseminators to confirm that their equipment is working properly, or to diagnose and fix any problems. We believe that there should be regular testing of the federal government's ability to send an alert message throughout the nation.

Although a success, the nationwide test highlighted the need for a redundant transmission architecture that does not rely solely on the PEP network. To some degree, this will be addressed with the recent transition to the new digital-based Common Alerting Protocol (CAP) and FEMA's use of the internet as the backbone of its Integrated Public Alert and Warning System (IPAWS).

In June 2006, President Bush issued Executive Order 13407, entitled *Public Alert and Warning System*, which states:

> It is the policy of the United States to have an effective, reliable, integrated, flexible, and comprehensive system to alert and warn the American people...establish or adopt, as appropriate, common alerting and warning protocols, standards, terminology, and operating procedures for the public alert and warning system to enable interoperability and the

> secure delivery of coordinated messages to the American people through as many communication pathways as practicable...administer the Emergency Alert System (EAS) as a critical component...ensure that under all conditions the President of the United States can alert and warn the American people.

In response, FEMA is developing the IPAWS Program that is designed to improve public safety through the rapid dissemination of emergency messages to as many people as possible over as many communications devices as possible. Among other capabilities, IPAWS is enabling the transmision of alerts via text messages to mobile phones, or Wireless Emergency Alerts (WEAs). However, such text messages are limited to only 90 characters, which limit the amount of emergency-related information that can be conveyed. Given that limitation, the advent of WEAs has underscored the importance of broadcasters during times of emergency, as virtually all WEAs instruct citizens to "tune to local media" for further information regarding an emergency.[3]

The transition to the digital CAP system has also raised the specter of cyber hacking that could disrupt EAS. For example, on February 12, a hacker was able to access the EAS equipment of a handful of stations in Montana and elsewhere, causing those stations to issue a false EAS alert concerning an attack by zombies. It is my understanding that the hacking was limited to a few isolated instances where individual stations neglected to reset the factory-set, default passwords on their new CAP-compliant EAS equipment and did not have adequate firewall protections on their

[3] Broadcasters are also rolling-out Mobile EAS (M-EAS), which is a next-generation approach to public warnings that leverages the backbone of Mobile Digital TV transmissions. M-EAS utilizes terrestrial broadcasting rather than cellular network connectivity, which allows highly reliable message dissemination, even when cellular networks are down. M-EAS also enables rich multimedia alerts (*e.g.*, video, audio, text, and graphics) to mobile DTV-equipped cellphones, tablets, laptops, netbooks, and in-car navigation systems. M-EAS is compliant with CAP and designed for full incorporation into IPAWS. *See* http://mobileeas.org/.

networks. The breach did not occur at the message origination level, so there was no danger of a widespread false message. Broadcasters take cyber security very seriously, and this hacking situation was an excellent reminder for all EAS participants to double-check the security of their EAS equipment and their IT networks.

Broadcasters are also leveraging social media and other message pathways to broaden dissemination of alert messages. When you receive an emergency alert via email, text message, or Facebook from your local radio or TV station, you know you're receiving reliable information from an authoritative source.

In my view, the continued success of EAS will largely turn on the expertise and ability of local authorities to fully deploy EAS and act as a "civil authority" with full access to the system. In the past, there have been some isolated instances where EAS could have been used more judiciously directly resulted from a lack of awareness or expertise on the part of local officials concerning EAS. To this day, some state and local emergency managers still require additional education and training on the benefits of EAS, how and when to trigger an EAS alert, and the proper crafting of alert messages. Fortunately, FEMA has taken steps to address this vacuum by creating and administering a training and certification program for users of the system. However, to cement this program as an ongoing priority, it is imperative that Congress reauthorize and fund the IPAWS program.

A properly working EAS is a fundamental and essential component of our nation's homeland security. For example, it is crucially needed in my state of Michigan to

respond to the myriad of potential terrorist threats facing our region's target rich environment, including 21 Coast Guard facilities, Selfridge Air Force Base, the Detroit Arsenal, which is a tank mass production facility, and three nuclear power plants, including the Palisades Nuclear Plan, which is located inside one of my station's Designated Market Area. Our border with Canada also presents unique concerns.

Michigan experiences frequent weather-related emergencies, such as flooding and substantial snow storms. In addition, Michigan's many major roadways are among our nation's most significant transportation corridors, potentially facilitating the transport of dangerous substances such as biological, chemical or nuclear waste material. Accordingly, it is imperative that the EAS system, both nationally and statewide in Michigan, receive the support necessary to maintain its reliability.

II. Broadcasting Is the Most Important Source for Critical, Life-Saving Emergency Information for All Americans

In addition to our role as the backbone of EAS, radio and television stations are also our nation's most reliable network for disseminating emergency information to the public. Local broadcasters take pride in their role as "first informers" during times of emergency. Even if the electricity is out, causing the Internet and cable television to go down, and phone service is lost because networks are clogged or cell towers or phone lines are down, free, over-the-air broadcasters can still be on the air and delivered to anyone with a battery operated radio or other receiver. Americans know they can turn to local radio and television stations during an emergency for timely, detailed, and accurate information. Local radio and television stations have dedicated news and

weather personnel who use their familiarity with the people and geography of their local communities to provide the most helpful, informative news to their audiences, whether that includes information on where to shelter-in-place, which streets will serve as evacuation routes, or where local businesses may find fuel and or generators. It is also common during larger disasters for a local radio or television station to serve as an information clearinghouse for citizens in search of family and friends.

Broadcasters deliver emergency information with passion – before, during and after – a disaster. In February 2011, for example, an enormous blizzard essentially shut down all of Western Michigan. WOOD TV stayed on the air with live, on-the-scene reports for nine hours consecutively. Our news teams began forecasting the storm at least nine days in advance, allowing our viewers to prepare themselves and their property, and we stationed reporters out in the field in at least three different counties during the height of the storm. In fact, Grand Rapids Mayor George Heartwell singled out WOOD's meteorologist during a news conference in which he thanked the media for warning citizens about the storm.

Also in 2011, our station stepped up during a thankfully rare situation when an individual shot and killed seven people in the Grand Rapids area, shot two others, fired shots wildly through his car window while police chased him, sped the wrong way down the highway during rush hour, and took several hostages before ultimately killing himself. WOOD TV stayed on the air for seven continuous hours, warning people to stay away from the constantly changing danger zone. To expand the reach of our news coverage, we partnered with WOOD Radio and live-streamed coverage of the event throughout

the night. Following the incident, WOOD TV took a leadership role in the community as citizens mourned the victims.

Broadcasters' commitment to emergency information was also evident during Hurricane Sandy, which devastated the Northeastern United States in late October 2012. Overall, 147 fatalities were attributed to Sandy, with losses in the United States ranging from $50 billion to $71 billion.

Fortunately, as the storm approached, radio and television stations in the path, knowing they were likely to be the only source of information during the storm, mobilized their staff and facilities, or the damage could have been even worse. Dave Davis of New York City-based WABC-TV described his station's efforts:

> As our news department worked to gather the latest information... our engineering department made sure our own infrastructure was prepared... testing and tuning up all the generators, topping off fuel tanks, inspecting and securing rooftop and tower antenna installations, installing additional receive systems at the station, and testing backup transmission paths. We knew our life-saving information would not save lives unless we stayed on the air.[4]

These kinds of measures were typical of broadcasters, and proved extremely important as the storm knocked out other means of communication in parts of the tri-state area for almost a full week, including one-quarter of the cell phone towers in the storm zone.[5] As a result, all television stations and virtually all radio stations were able to remain on

[4] Statement of Dave Davis, President and General Manager, WABC-TV, New York, & Vice Chairman, New York State Broadcasters Association, Inc., FCC, Field Hearing on Super Storm Sandy (Feb. 3, 2013), at 1-2.
[5] Brian X. Chen, *Cellphone Users Steaming at Hit-or-Miss Service*, New York Times (Nov. 2, 2012), available at http://www.nytimes.com/2012/11/03/technology/cellphone-users-steaming-at-hit-or-miss-service.html?_r=0.

the air during the storm.[6] Even FEMA Administrator Craig Fugate recognized the critical importance of broadcasters, as he urged the 50 million people in the storm area to get a battery powered radio or a hand cranked radio before the storm to ensure reliable access to local news and weather updates in the event of power, Internet and cell tower outages.[7]

During and after the storm, local broadcasters provided round-the-clock coverage, including LIN Media-sister station WTNH in New Haven, Connecticut, which stayed on the air for over 40 hours with live, on-the-scene coverage in a 54-hour period, including one stretch of 28 ½ hours straight. WTNH reminded citizens to stock their homes with batteries and other essentials, and made sure to inform viewers that the station would also live-stream all of its coverage during the storm. Similarly, LIN Media station WPRI in Providence, Rhode Island, provided critical information regarding evacuations, Red Cross and United Way and other information both on the air and on a dedicated web page it specifically created for Hurricane Sandy. To expand access to its news, WPRI also broadcast its signal during the height of the storm over WCTK(FM).

[6] "Batteries are drained, internet connections long-gone. For the nearly 5 million households muddling through a fourth day without power in the wake of Hurricane Sandy, there's really only one medium that matters, and that's radio." Michael Learmonth, *Sandy Brings Back Prime Time for Original Wireless Network: Radio*, Ad Age (Nov. 2, 2012), available at http://adage.com/article/media/hurricane-sandy-brings-prime-time-radio/238114/.

[7] CBS Morning News (Oct. 29, 2012).

Many other radio and television stations along the northeast coast stayed on the air continuously for several days, providing life-saving information[8] and a megaphone for public safety officials to announce evacuation, shelter-in-place, and other instructions.[9]

Local broadcasters also formed partnerships with other outlets to reach as many citizens as possible, including music and sports radio stations that simulcast storm coverage provided by news-oriented radio stations, and television stations that simulcast their news over radio. Local broadcasters are competitors, but when disaster strikes, they work together to remain on the air and expand coverage. During times of crisis, it is a routine matter for broadcast engineers to help competing stations stay on the air.

Local broadcasters also leveraged digital outlets and social media to expand their reach. Most stations transmitted storm coverage 24/7 on their websites and social platforms like Facebook and Twitter. Page views of radio and television stations' websites were up by a factor of two to three times during the storm. Moreover, unlike other communications outlets, local broadcasters invest in journalism and employ experienced reporters. Citizens know that their local radio or television station is best place to turn for reliable, accurate information during emergencies.

[8] The importance of broadcasters during the storm is also borne out by statistics. According to Arbitron, radio listening jumped 70 percent in New York City, 245 percent in Nassau/Suffolk, and 42 percent in State Island, during Hurricane Sandy.

[9] New Jersey stations WSUS and WNNJ aired an interview with New Jersey Assemblyman Gary Chiusano in which the state government announced its plan for rationing gasoline. Statement of John Hogan, Chairman and CEO, Media and Entertainment, Clear Channel Communications, Inc., FCC Hearing on Hurricane Sandy (Feb. 5, 2013) at 9.

It is also important to note that, to provide these life-saving public service, many station employees had to overcome various personal challenges as well, including dangerous driving conditions in the storm, sleeping at work, and most importantly, sacrificing time with their families for several harrowing days.

Following the storm, local broadcasters also took a leading role in helping to rebuild the impacted areas, from major telethons like the 12-12-12 (A Concert for Sandy Relief) that was carried nationwide on Clear Channel radio stations, to local stations like Univision's WXTV, which delivered relief goods directly to those in need and WTNH, which created and ran public service announcements that informed viewers how to seek emergency assistance. Radio and television stations are uniquely positioned to organize, announce and publicize fundraising relief efforts, and they take pride in their ability to do so.

Finally, I would be remiss if I did not take this opportunity to suggest one simple but important step that Congress could take that would greatly improve broadcasters' ability to provide emergency information, and without the expenditure of any funds. Broadcasters need credentialing from state and local authorities to allow them to access their facilities, such as studios and transmitter sites, during times of emergency. This will enable radio and television stations to repair or maintain their equipment and fully leverage their resources, local knowledge and training to keep the public informed during emergencies. While certain states accommodate broadcasters who need to access their facilities, such cooperation is not universal. Congressional action in this

area could greatly enhance our ability to maintain operations and deliver vital information to our audiences.

Thank you for the opportunity to present this statement. I look forward to responding to any questions you may have.

Mr. LANCE. Thank you very much, and thank you for our public service regarding emergencies that occur across the country.

Ms. KNIOWSKI. My pleasure.

Mr. LANCE. Our next witness is Christopher Guttman-McCabe, who is the Vice President for Regulatory Affairs at CTIA–The Wireless Association. Good afternoon.

STATEMENT OF CHRISTOPHER GUTTMAN-MCCABE

Mr. GUTTMAN-MCCABE. Good afternoon, and thank you, Congressman and members of the subcommittee.

On behalf of CTIA—The Wireless Association, thank you for the opportunity to speak with you today on the subject of emergency communications. The wireless industry recognizes its role as a link between citizens and public safety officials and works hard to ensure that this link is as vibrant and reliable as possible.

Today, my testimony will focus on two areas. First, I want to provide the subcommittee with an update on the Wireless Emergency Alert Program. This program is a true public-private success story. Second, I want to urge you to work with the wireless industry and other interested parties to create a uniform national baseline for liability protection for text to 9-1-1 and NG 9-1-1 services.

The Wireless Emergency Alert Program is an outgrowth of this committee's efforts to enact the WARN Act. CTIA supported this legislation, which we believe struck a balance by augmenting the existing emergency alerting system without imposing new prescriptive mandates on the wireless industry. This approach was consistent with and built up previous public-private partnerships that led to the successful creation of Wireless Priority Service and the Wireless Amber Alert Program. In the period since enactment of the WARN Act, we have moved from an advisory committee to an FCC rulemaking, standards development, coordination with FEMA and now deployment.

I am pleased to say that the results of the Wireless Emergency Alert Program justify the effort. Just last month, the National Weather Service alone sent 100 tornado alerts, 80 blizzard alerts, 40 flash food warnings and five ice storm alerts, and as a father, in a story that warms my own heart, last month also saw the first successful recovery of an abducted child as a result of a wireless Amber Alert. As Minnesota's Public Safety Commissioner observed, wireless emergency alerts are another important way to ensure that the public receives vital information right away wherever they are.

The wireless alert program is working as this committee envisioned it would. Its utility will only grow as additional alert-capable handsets are deployed and the carriers and FEMA work towards a more granular alerting capability. With this in mind, CTIA urges Congress to resist calls to impose new technology or participation mandates that could threaten the public-private collaboration that has produced a 21st-century complement to the television and radio alerts that we all grew up with. Those broadcast and radio alerts remain valuable but are inadequate by themselves for today's highly mobile citizenry. Wireless alerts fill the gaps by notifying those not within the reach of radio or television.

The second issue we commend to the attention of the committee is the need for clear, comprehensive, standardized, nationwide limitation of liability protection for all entities participating in any aspect of emergency communications including text to 9-1-1 and NG 9-1-1 services. The existing protections flow from the state-based laws that were originally adopted for wireline providers in the 1970s, 1980s and 1990s. Those protections were extended to wireless and VoIP providers under federal law but they vary by state. Merely extending the patchwork of state legislation to 9-1-1 service providers is insufficient because states vary significantly in terms of the duties of care and the potential liabilities imposed on 9-1-1 activities. CTIA and others believe it is time for a comprehensive effort to establish a nationwide, overarching, platform-agnostic federal liability standard for Next Generation 9-1-1. A failure to do so could hamper the transition to these services.

There is a general expectation that robust, reliable 9-1-1 and ultimately NG 9-1-1 services should be available to every consumer irrespective of what jurisdiction he or she may be in at their time of need. Providers should be covered by a similar ubiquitous, reliable, consistent standard for liability protection.

The recent commitment by the four national carriers along with APCO and NENA to develop and deploy text to 9-1-1 capabilities highlights the need for federal engagement. This voluntary framework will provide near-term emergency communications options for wireless subscribers who rely on SMS for everyday communications including individuals who are deaf, hard of hearing or speech-impaired.

In its recent report to Congress, the FCC specifically called for extending liability protection to any entity that is providing NG 9-1-1 services on a voluntary basis. The industry is working hard to bring this capability to consumers. Congress can support this effort by ensuring that carriers and others involved in the provision of these services are covered by appropriate liability protections.

CTIA and its members look forward to working with the committee on these issues and other matters intended to promote secure, reliable, emergency communication services.

Thank you for the opportunity to testify today, and I look forward to your questions.

[The prepared statement of Mr. Guttman-McCabe follows:]

Testimony of

Chris Guttman-McCabe

Vice President, Regulatory Affairs

CTIA – The Wireless Association®

on

"Oversight of FirstNet and Emergency Communications"

before the

House Energy & Commerce

Subcommittee on Communications & Technology

March 14, 2013

CTIA
The Wireless Association®

Chairman Walden, Ranking Member Eshoo, and members of the Subcommittee, on behalf of CTIA – The Wireless Association® ("CTIA"), thank you for the opportunity to speak with you today on the subject of emergency communications. The wireless industry serves as an increasingly important link between citizens and public safety officials and we all have an interest in ensuring that this link is as vibrant and reliable as possible.

Today, my testimony will focus on two areas. First, I want to provide the Subcommittee with an update on the Wireless Emergency Alert program, a real public-private success story. Second, I want to urge you to work with us and other interested parties to create a uniform national baseline for liability protection for NG911 services.

The Wireless Emergency Alert program is an outgrowth of this Committee's efforts to enact the Warning, Alert and Response Network (or WARN) Act, which became law as Title VI of the SAFE Ports Act in October 2006. CTIA supported enactment of the legislation, which we believe struck a reasonable balance by attempting to augment the existing emergency alerting system without imposing new cost or technology mandates on the wireless industry. This approach was consistent with, and built upon, previous public-private partnerships that led to the successful creation of Wireless Priority Service (a collaborative effort between the National Communications System and the wireless industry) and the AMBER Alert program (a joint effort involving the Department of Justice, the National Center for Missing and Exploited Children, and the wireless industry).

In the period since the WARN Act's enactment, we have worked through an advisory committee process, a rulemaking process at the FCC, standards-development, coordination with FEMA, and now deployment. The result of these efforts is a nationwide alerting system that enables participating providers to transmit three classes of alerts – Presidential, Imminent Threat, and AMBER alerts – to consumers with WEA-capable handsets.

While the process of bringing WEA to life was a lengthy and complicated process, I am pleased to say that the results of the WEA program justify the effort. Just last month alone (February 2013), the National Weather Service sent 100 tornado alerts, 80 blizzard alerts, 40 flash flood

warning alerts, and five ice storm alerts. In addition to these weather-related alerts, last month also saw the first successful recovery of an abducted eight-month old child as a result of an AMBER Alert sent over the WEA system. As Minnesota's Public Safety Commissioner observed after that young child was recovered, "Wireless Emergency Alerts are another important way to ensure the public receives vital information right away, wherever they are."

WEA is working as this Committee envisioned that it would, with participation by carriers serving more than 97 percent of wireless subscribers. The program's utility will only grow as additional WEA-capable handsets are deployed and the carriers and FEMA work toward the deployment of even more granular geo-targeting capabilities. With this in mind, CTIA urges Congress to support the WEA program and resist calls to allow FEMA or the FCC to impose new technology or participation mandates that could threaten the public-private collaboration that has produced a 21st century complement to the television and radio alerts we all grew up with. Those alerting mechanisms remain valuable, but are inadequate to serving today's highly mobile citizenry. WEA fills the gaps by reaching those not within reach of broadcast signals and for this reason we hope this Committee will continue to support it.

The second issue we commend to the attention of the Committee is the need for clear, comprehensive, standardized, nationwide limitation of liability protection for all entities participating in any aspect of emergency services, including Text-to-911 and Next Generation 911 ("NG911") services. The record in the recent proceeding that led to the FCC's *Report to Congress on the Legal and Regulatory Framework for Next Generation 911 Services* demonstrates widespread support for updating the liability protections that backstop the 911 system and suggests that a failure to do so could hamper the transition to NG911.

The reason for these concerns is that the existing protections flow from the state-based protections originally granted to wireline providers in the 1970s, 1980s, and 1990s. The protections were extended to wireless providers and VOIP providers under federal law, but they vary by jurisdiction. In addition, merely extending the "patchwork" of state legislation to 9-1-1 service providers is insufficient because states vary significantly in terms of the duties of care and potential liabilities imposed on 9-1-1 activities. CTIA, and others, believe that as the

NG911 system continues to evolve, it is time for a comprehensive effort to establish a nationwide, overarching, platform-agnostic federal liability standard. There is a general expectation that robust, reliable E911 and ultimately NG911 services should be available to every consumer, irrespective of what jurisdiction he or she may be in at the time a call for help is necessary. A corollary to the expectation that NG911 should be available ubiquitously should be the idea that providers are covered by a similarly ubiquitous, reliable, consistent standard for liability protection.

The need for federal engagement on this issue is highlighted by the recent commitment by the four national wireless carriers - AT&T, Sprint, T-Mobile, and Verizon – to the FCC that they will develop and deploy text-to-911 capabilities. If successful, this voluntary framework will provide near-term opportunities to meet the emergency communications needs of wireless subscribers who currently rely on Short Message Service ("SMS") for everyday communications and individuals who are deaf, hard of hearing, or speech impaired. In its recent *Report to Congress*, the FCC specifically called for extending "liability protection ... to any entity that is providing NG911 services on a voluntary basis," as is the case with the national carriers' commitment. The industry is working hard to bring this capability to consumers; Congress can support this effort by ensuring that carriers and others involved in the provision of these services are covered by appropriate liability protections.

CTIA and its members look forward to working with the Committee on these issues and other matters intended to promote secure, reliable emergency communications services. Thank you for the opportunity to be a part of today's hearing.

Mr. LANCE. Thank you very much for your testimony, very timely testimony.

Our next witness is Trey Forgety, the Director of Government Affairs, the National Emergency Number Association. Good afternoon.

STATEMENT OF TREY FORGETY

Mr. FORGETY. Good afternoon, Representative Lance and also Representative Welch and Mr. Vice Chairman Latta.

I will submit my written testimony for the record, but I would like to summarize just a little bit and provide a few comments on some of the items brought up by the other witnesses.

NENA is the only professional organization devoted exclusively to 9-1-1. It is our wheelhouse. It is our everything. And about 10 years ago, we recognized the acute need to start planning for a future that wasn't based on technologies that were reaching 100 years of age. The telephone has been with us for a very long time now, and for the past 45 years it has been the basis of our public communications system for reporting emergencies, 9-1-1.

But the way the public communicates is changing very rapidly. Already, we have seen consumers shed their wirelines in droves. Businesses are now following suit. Voice over IP adoption rates are off the charts. Consumers are using mobile technologies in ways never before thought possible. Voice, text, mobile, voice over IP, all of these technologies are coming onto the market and they are being adopted quickly by consumers.

Now, the first panel this morning talked quite a bit about FirstNet, and FirstNet, I think, is a very important technology but neither FirstNet nor 9-1-1 can be looked at by themselves. Ultimately, what citizens need is an end-to-end system that allows them to report their emergencies to public safety officials and receive a response that works, and that can happen in our interconnected world only if citizens have the ability to push the data that they have—images, videos, medical data, location information—only if they can push that data directly to the public safety answering points and the public safety answering points can push it directly to the responders. That is going to take a great deal of coordination and it is going to take a great deal of detailed work to make sure that we have standards that work across platforms, across technologies and so forth.

I think we have laid a very firm foundation for that. We have seen just recently the FCC's CSRIC, Communications, Security, Reliability and Interoperability Council, is working on and will soon finalize a report on new location technologies that will make it easier than ever to locate people who call 9-1-1, to locate responders who use FirstNet to communicate. We have got to remember, in a mobile and interconnected world, those are one and the same technologies and both the public and first responders should have access to advanced location technologies. But getting there is not going to be easy ultimately. 9-1-1 has been a success in part because it has been so reliable. It has been a great experiment of states and localities basically working from the ground up.

Now, there are things that Congress can do, and I think Representative Eshoo put it well earlier as did Chairman Walden.

There are policy changes that can be made that will help to move the ball forward, and I think the important thing to remember about that is, there are easy policy changes that require little or no new money to get good outcomes at the state and local level. One simple thing that Congress can do is to level the playing field. Right now, we have about half a dozen different federal agencies that supply grant funding for public safety, everything from police, fire, EMS and so forth, but in nearly all of those instances, 9-1-1 is not included in the definition of public safety. Now, it is true, of course, that 9-1-1 in many places is part of one of these other services but typically those other services want to focus on their core issues. If it law enforcement, it is guns and badges on the street. If it is fire, it is engines and firefighters. We need to level that playing field so that 9-1-1 is mentioned specifically in public safety grant programs so that they can compete for those federal funds on an equal basis with the other public safety professionals.

And I will close with this. The last piece is cybersecurity and network resilience, and those are two fundamentally important issues for 9-1-1, and Next Generation 9-1-1 will have tremendous benefits in this regard in terms of improving reliability, resiliency, redundancy, path diversity. Already we have standards work done in the areas of encryption and authentication, role-based access models, all of which can be leveraged by FirstNet to drive down the cost of implementation for both systems, and I think that is a key important point is, this ecosystem, if it works right, if it works together, it can save the public a lot of money, a lot of lives and a lot of property.

And I thank you for your time, and I welcome your questions.

[The prepared statement of Mr. Forgety follows:]

Before the United States House of Representatives
Committee on Energy and Commerce
Subcommittee on Communications and Technology

Oversight of FirstNet and Emergency Communications

March 14th, 2013

Testimony of Telford E. Forgety, III; "Trey"
Director of Government Affairs & Regulatory Counsel
NENA: The 9-1-1 Association

Summary

1. NG9-1-1 service is the critical consumer-to-PSAP counterpart to the PSAP-to-field communications capability offered by FirstNet.
2. Congress should ensure that FirstNet leverages the extensive technical and operational development work already completed for NG9-1-1.
3. Congress should allow all 9□1□1 to compete for grant funding by including 9-1-1 in the definition of "public safety" for all federal public safety grant programs.
4. Consistent with the FCC's report, Congress should direct the National Implementation Coordination Office to deploy a PSAP Credentialing Agency and a national Forest Guide to support NG9-1-1 system security and call routing.
5. Congress should direct the Department of Homeland Security to deploy a national 9□1□1 data collection and analytics capability to provide real-time insight into natural and man-made disasters and aid the detection of cyber attacks on Public Safety Answering Points (PSAPs).

Testimony

Chairman Walden, Ranking Member Eshoo, and may it please the Committee: My name is Trey Forgety,[1] and on behalf of the 9-1-1 Association's more than 7,000 public- and private-sector members, I want to thank you for holding this hearing. Providing emergency response service is perhaps *the* core function of government, and 9-1-1 is the crucial first link between the public and emergency responders. Just last month, we marked the 45th anniversary of the first 9-1-1 call. As we celebrate that important milestone, it is entirely appropriate that we should evaluate the role of 9-1-1 in public safety communications with a view toward ensuring that consumers can request help from their communities' field responders using the devices, applications, and originating services that they use every day. Next Generation 9-1-1 is the foundation of that vision.

Next Generation 9-1-1 or "NG9-1-1" will provide a standards-based platform for PSAPs and field responders to exchange information such as medical data, photos, video, and response histories. In this regard, NG9-1-1 systems will serve as the bridge between consumers and public safety: Information will flow in to first responders through NG9-1-1 systems and out to field responders via FirstNet. In

[1]I joined NENA: The 9-1-1 Association in 2010 after two years as a Presidential Management Fellow in the Department of Homeland Security (DHS) Office of Emergency Communications. During my fellowship, I served temporarily with the Federal Communications Commission's (FCC) Public Safety and Homeland Security Bureau and with the Department of Commerce's National Telecommunications and Information Administration (NTIA). At the FCC, I developed recommendations for the Public Safety chapter of the National Broadband Plan. Later, at Commerce, I worked to implement the Plan's recommendations as NTIA evaluated applications to the Broadband Technology Opportunity Program (BTOP). Both at NTIA and DHS, I participated in discussions with senior administration officials from the Office of the Vice President, the Office of Management and Budget, the Office of Science and Technology Policy, and the National Economic Council to develop policies for the deployment of the nationwide mobile broadband network for first responders, now known as FirstNet. I hold a Bachelor of Science in Applied Physics and a Doctor of Jurisprudence, both from the University of Tennessee.

this regard, neither system can be fully utilized without the other. That's why NENA believes it is imperative that the federal government take concrete steps to support the deployment of NG9-1-1, and to ensure that FirstNet is deployed in a way that ensures its integration with PSAPs and NG9-1-1 systems. Additionally, NENA believes that NG9-1-1 systems, and the protocols, interfaces, and security models on which they are based, can provide a basis to speed the deployment of FirstNet.

Over the last decade, the public safety community, carriers, hardware manufacturers, and software developers have worked collaboratively through NENA to develop consensus standards for the architecture and operation of Next Generation 9□1□1 systems. Next Generation 9□1□1, or "NG9-1-1," represents the first fundamental change in how the public communicates with public safety agencies since the introduction of 9□1□1 service. NG9-1-1 introduces a new, robust roles-based security model and standards-compliant authentication and encryption mechanisms. Rather than relying on specialized and expensive-to-replicate facilities in a single carrier's network, NG9-1-1 is based on open standards, commodity hardware, and fungible connectivity. For example, an NG9-1-1 PSAP will have the ability to procure connectivity from multiple, diverse carriers to increase resilience in the face of network failures. Indeed, NG9-1-1 systems can even be offered on a fully-redundant, hosted basis. This change in paradigm will provide the public with several benefits, including greater reliability and resilience of 9□1□1 service, an expansion of available communications media to include text and video, and lower costs of service resulting from competition for hardware, software, and connectivity.

These benefits need not be limited solely to NG9-1-1 systems, however: FirstNet can, and, in our view, *should* incorporate standards work that has already been completed outside the public safety radio community. For example, FirstNet could meet the oft-quoted need to provide granular authentication and access control mechanisms by incorporating methods analogous to those contained in NENA's Next Generation Security standard. Borrowing liberally from other public safety standards such as NENA's i3 architecture for NG9-1-1 systems will also allow FirstNet to deploy broadband service for field responders at a lower overall cost by reducing the need for expensive protocol conversion systems and one-off interworking solutions. The deployment of both NG9-1-1 systems and FirstNet are long-term projects for United States, but they must be coordinated. Because NG9-1-1 deployment is already underway, however, it will be particularly important to ensure that the deployment of FirstNet does not displace funding for its sister system, and that it does not create stranded assets for state and local 9-1-1 authorities.

NG9-1-1 systems are already being deployed, in stages, around the country, but deployment timelines are inconsistent from state to state, and even from county to county. In some places, it may be a decade or more before the public has access to the advanced capabilities of NG9-1-1. At the same time, funding for 9□1□1 service, largely a fee-for-service model premised on wireline telephone revenues, is undergoing its own radical transition. Wireline subscribership continues to fall at a dramatic pace as wireless and broadband services replace it in consumer adoption. Not all states have prepared for or reacted to this transition, however, and many public safety agencies already find themselves underfunded as the user fess that once supported their operations dwindle while call volumes remain the same

or continue to rise. Agencies will also face some additional costs as they transition to NG9-1-1 in order to continue operating legacy services and facilities in parallel with Next Generation facilities and software until a final cut-over can be effected.

In the Middle Class Tax Relief and Job Creation of 2012, Congress directed several federal agencies to conduct studies aimed at identifying steps that could be taken to speed up the transition to NG9-1-1. Recently, the FCC submitted to Congress its report on the legal and regulatory framework necessary to support NG9-1-1 service. That report recommends several actions that Congress can take to promote NG9-1-1 deployment. Overarching all of the Commission's recommendations, however, is an important principle that I wish to highlight: Although NG9-1-1 will undoubtedly require larger roles for states and new, but limited roles for the federal government, it will remain a uniquely local service. Recognizing this fact, the Commission's report recommends a number of ways that Congress could provide states, regions, and 9-1-1 authorities with incentives to deploy NG9-1-1 quickly and wisely. NENA very much supports this approach over more regulatory processes that have, at times, been employed in the past. In order to realize the benefits of an incentives-based approach, however, the FCC and other federal agencies that will play a role in NG9-1-1 must have meaningful incentives to provide. Fortunately, NENA believes that Congress can create incentives for NG9□1□1 deployment without appropriating any new dollars.

Currently, the Departments of Justice, Homeland Security, Commerce, and Transportation administer billions of dollars in federal public safety grants. Yet almost none of that money can be used to make improvements in 9□1□1. Because the statutory and regulatory definitions of "public safety" used in these grant programs typically include *only* law enforcement, fire, or EMS service,

9□1□1 doesn't even get a chance to compete for grant funds. Congress can level the playing field, however, by simply changing the definition of "public safety" to explicitly include "9□1□1." This would provide a powerful incentive for 9□1□1 authorities and other local governments to develop smart, cooperative plans for NG9-1-1 deployment, and reward the best plans with federal support.

Providing these incentives through access to federal grants would also help to provide valuable information about which approaches were successful, and which were not, ensuring that later adopters could leverage these lessons learned to improve their own deployment outcomes. There already exist many projects that could benefit from access to grant funds. For example, the Counties of Southern Illinois NG9-1-1 deployment project represents a new regional approach to governance and operations that NENA believes could provide significant advantages and cost savings to local governments that adopt it. Likewise Tennessee's statewide NG9-1-1 transition plan could showcase the virtues of a federated, phased approach to deployment, while Alabama's could showcase the potential of a centralized, swift approach.

Besides providing incentives to speed and improve the roll-out of NG9-1-1, there are two specific roles that only the federal government can play in NG9-1-1. First, the role-based security model developed for NG9-1-1 requires a PSAP Credentialing Agency or "CA." A CA is *not* a new federal bureaucracy, but rather a service that verifies whether the electronic identity of a PSAP corresponds with the government authority actually responsible for it, and issues cryptographic credentials that PSAPs can use to authenticate and secure their communications. Second, the location-based routing model developed for NG9-1-1 will benefit greatly from the deployment of a "Forest Guide." A Forest Guide is a national

database that contains boundary information for lower-level routing servers at the state and/or local levels. A national Forest Guide is also responsible for exchanging routing information with other nations' Forest Guides. This will be particularly useful in areas along our extensive and in some places densely-populated border with Canada where routing decisions are particularly sensitive to location and mobile networks may reach across the international boundary.

NENA previously recommended to the FCC, and the Commission included the option in its report, that these functions should be housed within the National 9-1-1 Implementation Coordination Office, jointly operated by NTIA and NHTSA. NENA believes that the ICO's experience with 9□1□1 and its sterling reputation with stakeholders in the 9□1□1 community make it the best and most appropriate agency to administer these functions. Additionally, the Office's existing subject matter expertise and familiarity with expert contractors will speed the deployment of these functions, once Congress directs the office to begin their development.

Beyond their obvious operational benefits to consumers and public safety, both NG9-1-1 systems and FirstNet also present a significant opportunity to realize positive external benefits such as planning inputs and cost savings for all levels of government. Just as the private sector has begun to leverage "Big Data" to gain insights into manufacturing and retail processes, the public safety community needs access to analytic and visualization capabilities to leverage the tremendous value of aggregated 9□1□1 data. During and after last year's *derecho*, for example, there arose significant questions and perhaps even disagreements as to precisely when, how, and to what extent 9□1□1 service failed, and precisely when it was restored. Had analytic capabilities been in place, however, affected PSAPs could have de-

tected the outage quickly as 9□1□1 call volumes deviated from the expected range for that date and time. More recently, DHS discovered multiple Telephone Denial-of-Service attacks against PSAPs – *weeks* after they occurred. Had a data aggregation and analytics system been in place, these attacks could have been detected in near-real-time, perhaps allowing carriers to mitigate the attacks at higher levels within affected networks, or to locate and apprehend the perpetrators. From a preparedness perspective, robust analytic capabilities will be key to future improvements in 9□1□1 service as they allow 9□1□1 authorities to better match staffing levels to expected call volumes, to reduce the instance of over-provisioning in circuits or bandwidth used to receive 9□1□1 calls, and to detect service failures such as abnormally-long call ring times or abandonment rates.

Analytic capabilities will also play an important role in prioritizing the use of scarce public resources in the improvement of public safety and homeland security response services. For example, knowing the percentage of 9□1□1 calls in a given jurisdiction that require a response by fire protection services, and the type of response at that, will allow municipal officials to make better, more informed choices about how to expend taxpayer dollars with the greatest effect on taxpayer safety. Without these capabilities, the public safety community will remain largely blind to the drivers of its costs and largely unable to effectively articulate its impact on safety of life and property in data-driven regulatory and legislative processes.

NENA believes that these capabilities will prove particularly valuable at the federal level for providing situational awareness and response prioritization. Near-real-time map-based visualizations, for example, could allow coordinating agencies such as FEMA and the FCC to detect incidents as they occur and mon-

itor their progress as they expand, contract, and change in character. On a nationwide basis, NENA estimates that deploying analytic and visualization capabilities to 366 metropolitan statistical areas would cost less than $20 million in capital expenditures, and less than $10 million in annual operating expenditures; expanding such capabilities to all 6,000+ primary PSAPs would be only marginally more expensive. Given the clear benefits that such capabilities can provide in terms of ongoing improvements to the preparedness and resilience of public safety communications and to the broader public safety enterprise, NENA believes that achieving a nation-wide deployment of such capabilities should be a key homeland security goal for the next five years, and recommends that Congress direct DHS to begin developing and deploying such a system as soon as possible.

Providing reliable and responsive emergency communications service to the public is the core mission of NENA's membership, and I am pleased, Mr. Chairman, that you and your Committee have called this hearing and allowed me to testify about how we can better do so in the future. I believe that significant improvements in 9-1-1 service can be achieved over the short term and with minimal fiscal impact if only the necessary parties can work together with a common goal and a common understanding that 9-1-1 is a unique service with unique requirements and a central position in the preparedness of our nation. I look forward to working with you and the Committee to achieve these benefits for all Americans.

Respectfully submitted,

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Tenn. BPR No. 027226
Director of Government Affairs
& Regulatory Counsel
NENA: The 9-1-1 Association

Mr. LANCE. Thank you very much for your testimony.

I have several questions, and I appreciate all of your being here to be with us today.

Mr. Turetsky, I have a question related to the district I serve. One of the counties in the district I serve, Somerset County, New Jersey, spent a considerable sum of money in attempting to comply with the FCC's narrow banding order, and the county successfully moved about half of its communication equipment into the T band spectrum before the January 1st deadline. Now, due to legislation that Congress passed last year that created FirstNet, it is going to have to vacate that spectrum in order for the T band to be auctioned and to upgrade its equipment yet again. I have recently written the FCC on the matter, and I am hoping that you might be able to provide some insight into what assistance might be available to Somerset County to help it comply with the directives. We have significant concerns with how to pay for the necessary upgrades, given the fact that the county in good faith tried to do what was appropriate at the time, and I would appreciate any comments you might have regarding that and I hope to work with the FCC on this issue.

Mr. TURETSKY. We look forward to working with you on this, Congressman. To my understanding, Somerset County responded to the narrow banding requirements just as it should. After it began to respond, Congress passed a law, as you mentioned, which changed the treatment of spectrum in that band and required that it be given up. The FCC promptly issued a blanket waiver so that jurisdictions like Somerset County would not need to continue to spend money on narrow banding anymore, given that they had to give that up.

We have a notice outstanding where we are seeking comment on what the costs are going to be on moving from the T band to other bands and all related questions about what band may be a suitable place to move. As that comes in, we will continue to work with all of the stakeholders including Somerset County on these issues. The FCC, of course, doesn't have a budget to pay for this. That is not one of the things that Congress has given us.

Mr. LANCE. Are there a lot of counties in that situation?

Mr. TURETSKY. There were a number who were midstream, which is why we issued a blanket waiver.

Mr. LANCE. Thank you. What impresses me is, no good deed goes unpunished, and we want to move forward in an appropriate way and we hope that the county can recoup some of its financial losses in that regard.

On a previous panel, to you as well, Mr. Turetsky, we heard from interested stakeholders with respect to FirstNet. Your bureau is charged with public safety issues, the Commission. We have heard that the FCC has informally halted all equipment authorizations related to band 14 devices while FirstNet determines what its network architecture will look like. Given that FirstNet has no authority to determine the emissions criteria for FCC equipment authorization, when in your judgment will authorizations resume?

Mr. TURETSKY. We issued a Notice of Proposed Rulemaking in the last few days that asks questions about those very subjects.

When the record is complete, we will move expeditiously to authorize equipment for that band.

Mr. LANCE. Thank you. Is it possible for you to give us a time frame as to when that might be?

Mr. TURETSKY. It just went out for public comment. I don't know if it has actually been published in the Federal Register but it is public now. It was issued by the FCC. So when the comment period closes, we will move as expeditiously as we can.

Mr. LANCE. Is the comment period, is that 45 days or 90 days?

Mr. TURETSKY. I have to check. It is somewhere in the 45-day range. I will get back to you on exactly what it is.

Mr. LANCE. Thank you for answering the question.

Mr. Guttman-McCabe, your industry has agreed to implement a text to 9-1-1 capability despite the short messaging service's perhaps inadequacy to do the task. What real-world limitations will those seeking emergency service face when using SMS to 9-1-1?

Mr. GUTTMAN-MCCABE. Thank you, Mr. Congressman. I think first of all out of the gate, whether it is NENA or the FCC, I think the message that would come from the industry or public safety officials is at every opportunity if you can dial 9-1-1, it is sort of a last resort. The networks weren't designed—the SMS networks, the testing networks were not designed to really be real time, and for those who have sent a text and it has not been delivered in a timely manner, you understand what we are talking about. What we are trying to do is put a band-aid here until we get to Next Generation 9-1-1, and our four largest carriers realized working with NENA and APCO and Mr. Turetsky and the Commission that we could do something that could be beneficial in the short term.

But there are a number of hiccups. It involves the delay. It is a store-and-forward technology. It is designed in essence to move into the network and then get delivered. It doesn't have the same location-based service capabilities that a call, the wireless 9-1-1 calls were engineered for. So it really is a stopgap. It is designed to help some of the communities that rely on SMS, the hard of hearing or those with difficulties, and it s something we committed to. As I said, we hope that Congress will help us and step up with some form of liability protection because this is a service that we have committed to voluntarily but this is not perfect, and we obviously didn't want to let the perfect be the enemy of the good but as we move to Next Generation 9-1-1, it would be helpful to have Congress help implement some form of liability protection.

Mr. LANCE. Thank you very much for your answer.

The Chair recognizes Mr. Welch for 5 minutes.

Mr. WELCH. Thank you very much.

Vermont has been a leader on the enhanced 9-1-1 and it has been helpful. Just a couple of stories. One person sent in a one-word text "suicide" and they were able to figure out what the address was, and this person was actually in the process of following through, and we are all glad to say was saved. But then another one, and this would be a lot more common, I think. A women was getting beaten up by a drunk husband, and getting on the phone is not an option at that point, but she was able to text, and the police responded and took care of the situation. So I really applaud you all for that effort.

Mr. Turetsky, do you want to add anything that you weren't able to say in response to questions from Mr. Lance?

Mr. TURETSKY. No, Congressman, I think you have highlighted the importance of text to 9-1-1. There are at least three circumstances where it is vital, and I agree with Mr. McCabe that in general, the right course would be to make a voice call. The three circumstances where text to 9-1-1 is essential are, one, for the hearing impaired and the speech impaired, and number two, where as a matter of safety making a call is impossible, and you have given an illustration of that, and number three, sometimes in situations of network congestion, a text is more likely to go through and actually more reliable than a phone call would be.

The other aspect of this is, it also provides an opportunity for the call takers or text takers, as it is, to open up multiple texts at one time and prioritize so that they can go to the fourth one in the queue and they see that is the lifesaving emergency. So we think it is very, very important, and Vermont has been a real leader in testing this.

Mr. WELCH. Well, good. Thank you all for your work on this, and I yield back, Mr. Chairman.

Mr. LANCE. Thank you very much. We now recognize the vice chair of the subcommittee, Mr. Latta from Ohio.

Mr. LATTA. Thank you very much, and thank you very much to our panel for being here.

Mr. Guttman-McCabe, if I could ask, we are talking about the fees associated with e-911, and I am particularly interested, what is happening with these fees and are they going to where they are supposed to be going at all times?

Mr. GUTTMAN-MCCABE. Thank you, Congressman. I guess the short answer, and then I will continue after that is, unfortunately, no. They are not always going where we hope they would. Congress stepped up several years and tasked the FCC with putting together a report back to Congress on the status of their rating of e-911 funds, and we have worked with NENA and APCO in the past and for years to try to really shine a light on this, and in the most recent report that came right around the end of the year to Congress, seven states had raided the funds, and we continue to see that, and we think in an environment where there is such reliability on being able to connect with public safety through your wireless devices, it really does trouble us that there are states that continue to raid the funds. I am sure there are legitimate reasons. Some of them are as simple as budget shortfalls. But I don't think any of them rise to the level of being acceptable when you balance it versus the needs of the public safety, the PSAP community.

Mr. WELCH. Let me just follow up. Is there any idea how much that is in those states that has been diverted?

Mr. FORGETY. If I could answer, Congressman, I can give you one example in particular to just give you an idea of the scope and scale of the problem. A few years ago, the state of Arizona actually diverted over $50 million from their state 9-1-1 fund alone. We saw, I believe in the state of New York, I recently saw reports that over $150 million had been diverted over the course of some period of time. In some states, 9-1-1 fees are statutorily protected. They are not subject to appropriations for other purposes. In other

states, they aren't protected, and in some cases, what may be called a 9-1-1 fee may actually go directly to the state's general fund and then be subject to primary appropriation from the get-go, so it may never get to 9-1-1 in the first place.

Mr. LATTA. Well, Mr. Forgety, since you got the mike right now, let me ask you a follow-up and another question to you then. As your testimony indicates, our Nation's 9-1-1 call centers are not considered public safety under the definition in federal law. How will that impact your ability to participate in FirstNet?

Mr. FORGETY. Congressman, I think that is a key issue for 9-1-1. As the FirstNet board was initially formulated, there is not a distinct 9-1-1 community representative on that board, and I think adding a 9-1-1 representative would be an excellent move for FirstNet. We have been invited to participate in the Public Safety Advisory Committee, although, again, I would point out that while there are representatives, I believe it is police, fire, sheriff and EMS, to the executive committee, there is not a 9-1-1 representative. So I think just making certain that 9-1-1 has a seat at the table from the very beginning would be very beneficial to make sure that the two systems work together the way they should.

Mr. LATTA. OK. Let me follow up with one last question to you, if I may. Given the financial situation around the country, what is a realistic timeline for the text to 9-1-1 capabilities to be deployed in the PSAPs?

Mr. FORGETY. That is a very complicated question because every state is in a different posture. For example, Mr. Welch's state is already way ahead. They have a near-Next Generation 9-1-1 system already deployed. My home state of Tennessee is deploying some baseline capabilities. They will be ready to take text probably within a year or so of the carrier deployment deadline. Other states are hanging back and probably won't be prepared for 2 to 3 years at the very earliest.

Now, the text proposal that we entered into with Mr. Guttman-McCabe's members leaves open an option which is a TTY conversion option. That is an old technology primarily used now to support the deaf and hard-of-hearing communities' access to 9-1-1. That technology will make it possible for every PSAP today to take text if they are ready, willing and able. Under Justice Department regulations promulgated pursuant to the Americans with Disabilities Act, every PSAP must have TTY capability at every position. So they can do it today if they have the training, if they have the experience, circuit capacity and so forth. There are all those sorts of issues but it is going to be a few years before we have it nationwide.

Mr. LATTA. Thank you.

And just briefly, Ms. Kniowski, if I may, you mentioned in your testimony about a need out there for credentialing for folks who are out there in the field. Do any states issue credentials right now to reporters or linemen or anything like that?

Ms. KNIOWSKI. Not that I am aware of, but we do request it, and one of the reasons is, we have to get to our transmitters, we have to get to our towers, we have to have gasoline trucks come in and fill our tanks so we can stay on the air and get the information to the community in need.

Mr. LATTA. Thank you very much, Mr. Chairman, and I yield back.

Mr. LANCE. Thank you, Mr. Latta. The Chair recognizes the ranking member, Congresswoman Eshoo of California.

Ms. ESHOO. Thank you, Mr. Chairman. It is nice to see you in the chair.

Mr. LANCE. Thank you.

Ms. ESHOO. Thank you to the witnesses, and it really is a huge thanks because we have been working on the whole issue of e-911 for a long, long time now. I was a young woman when I started out on this venture, and I just thought that the entire Congress would come along because I made the most plausible case about what we needed to do, and most frankly, it took some time for the issue to mature, and I said many times, it matured during one of the great crises in our country when we were attacked, and that is when minds started opening up about what we could do, what we should do, and how to structure it, so I want to thank all of you for the roles that you have played in it. They have been significant and they are very important.

First I think to each one of you. As you know, last year's derecho storms severely disrupted 9-1-1-related communications, particularly in parts of northern Virginia. Would a NextGen 9-1-1 environment provide call centers with greater reliability and resiliency during a natural disaster? Just very quickly.

Mr. TURETSKY. Yes, it would, Congresswoman. It provides many more routes to get calls to a 9-1-1 call center, and it reduces the points of failure that would obstruct that.

Ms. ESHOO. Great. Ms. Kniowski?

Ms. KNIOWSKI. I am sorry. Could you repeat the question?

Ms. ESHOO. Sure. I was asking if NextGen 9-1-1 environment would provide call centers with greater reliability and resiliency during a natural disaster, and I used northern Virginia as an example of what happened.

Ms. KNIOWSKI. Yes, and we are in support of that and anything that can help the community and communicate with the community and the community communicate back we are in support of.

Mr. GUTTMAN-MCCABE. Yes, Congresswoman. That is certainly an expectation.

Ms. ESHOO. Great. Mr. Forgety?

Mr. FORGETY. The answer to your question is yes, it can, and at a much lower cost than can be done today.

Ms. ESHOO. I like that. That sounds very good.

It is my understanding while I have you, Mr. Forgety, that NENA has worked closely with the four largest wireless carriers to reach a voluntary agreement to make text to 9-1-1 service available. I really applaud this. It is very exciting. It is important, very important effort. Do you intend to pursue a similar process or an agreement with rural and regional and smaller carriers so that these services can be made available to all consumers?

Mr. FORGETY. Thank you for the question, Congresswoman, and thank you for your leadership as the Chair of the NextGen 9-1-1 Caucus. It has been very effective and helpful. The answer to your question is emphatically yes. NENA has already engaged with representatives from small and rural carriers and we will be con-

tinuing to do that with an eye toward crafting some form of agreement that aligns well with the FCC's Notice of Proposed Rulemaking but also with the unique needs of that carrier community.

Ms. ESHOO. That is terrific. Thank you very, very much for your leadership and what you are doing across the board but also on this last issue.

Now, last month the FCC issued a detailed roadmap to Congress on how best to advance and deploy Next Generation 9-1-1 across our country. One recommendation is to ensure appropriate liability protection for entities supporting or providing these services. From any one of you, maybe Mr. Guttman-McCabe, because you discussed this idea extensively in your testimony, do you agree that Congressional action is necessary?

Mr. GUTTMAN-MCCABE. We do, Congresswoman.

Ms. ESHOO. I don't know if this was touched on while I was out.

Mr. GUTTMAN-MCCABE. I managed to take an opportunity to slide it in there in an earlier answer, but I won't miss an opportunity to bring it up again. The original protections came about literally in the 1970s, 1980s and 1990s, and they were based obviously at that time on the telephone system, and so when you look at the state statutes and the Net 9-1-1 Act extended at the federal level those protections that existed in the states to wireless and VoIP. The problem is, a significant number of states either don't have protection or have protection that specifically is identified for telephone or voice-provided services. I mean, there are a lot of qualifiers, a lot of adjectives or descriptive adjectives in the existing state-based legislation that causes concern and so whether it is the current voluntary text to 9-1-1 effort or the future Next Generation 9-1-1, there really is significant desire for Congress to step up here and provide the same type of liability protection that they have done in the past.

Ms. ESHOO. Thank you to each one of you for what you are doing and for being instructive to us today.

Thank you, Mr. Chairman. Yield back.

Mr. LANCE. Thank you very much, Congresswoman, and our thanks to the entire panel for your expertise, very cogent answers and the hearing now stands adjourned. Thank you.

[Whereupon, at 1:09 p.m., the subcommittee was adjourned.]

[Material submitted for inclusion in the record follows:]

OhioDAS | Office of Information Technology
Service · Support · Solutions

March 13, 2013

Congressman Bob Latta
Ohio's 5th District
2448 Rayburn House Office Building
Washington, DC 20515

The Honorable Bob Latta,

I appreciate the opportunity to express my concerns regarding FirstNet and the Public Safety Broadband Network (PSBN). The majority of these concerns are around funding, communication, planning and representation. I would also like to touch on initiatives we have moving forward in Ohio.

I continue to have funding concerns relative to FirstNet, both from the State's perspective as well as the $2 Billion for planning and the anticipated raising of $5 Billion. This $7 Billion, from what I understand, at best accounts for a third of the necessary funding to implement a network of this magnitude nationally. The timing for when this funding is raised and accessible will have a significant impact on the deployment schedule for this effort.

The direction coming out of the FirstNet Board members has been inconsistent. I have yet to see a defined business case, a sustainable business model or any approach regarding a cost recovery mechanism - before building out the PSBN. Current efforts focus on obtaining a list of assets and an inventory that may be available to support the effort with FirstNet dictating its use. The ultimate design and planning aspects of FirstNet will impact existing public safety and emergency response efforts in many states. Understanding these models may limit efforts and state funding to subsidize the build out of the PSBN.

Commercial/cellular providers need to strongly consider the requirements for "mission critical" communications. Recent communication issues associated with Hurricane Sandy are a case in point. What are the options available to states if commercial carriers cannot carry mission critical voice across their platforms?

In my opinion, for FirstNet to be successful they need to focus on developing relationships with the states and include ongoing and realistic interaction in the planning, developing, piloting and ultimate roll-out of the platform. FirstNet's approach should be one of engagement, not product marketing to the states.

The states will have a major role to play in this effort and should be identified partners in FirstNet. Defined state representation on the FirstNet Board is a critical factor to ensure our concerns are addressed. Statewide efforts such as Land Mobile Radio (LMR) systems and Next Generation 911 efforts currently underway or operating in numerous states must be considered. Engaging with the states will assist FirstNet with clearly defining the states' role and responsibilities for the successful deployment of this ambitious effort. It will ensure ongoing initiatives and efforts are taken into account and leveraged.

My concerns ultimately are around existing efforts in Ohio. Ohio's land mobile radio system - Multi-Agency Radio Communications System (MARCS) - is currently providing "mission critical" voice and data for our public safety and first responders. Additionally, we are currently defining user and technical requirements for Next Generation NG-911 for Ohio. Clarity on how these efforts will be impacted by FirstNet is critical to our planning and these types of requirements must be considered in the architecting of PSBN solutions.

Thank you for time and consideration regarding these FirstNet concerns.

Sincerely,

Stu Davis, State Chief Information Officer
Assistant Director
Ohio Department of Administrative Services

NATIONAL GOVERNORS ASSOCIATION

Jack Markell
Governor of Delaware
Chair

Mary Fallin
Governor of Oklahoma
Vice Chair

Dan Crippen
Executive Director

March 13, 2013

The Honorable Greg Walden
Chairman
Energy and Commerce Committee Subcommittee on Communications and Technology
U.S. House of Representatives

The Honorable Anna Eshoo
Ranking Member
Energy and Commerce Committee Subcommittee on Communications and Technology
U.S. House of Representatives

Dear Chairman Walden and Ranking Member Eshoo:

The nation's governors were strong supporters of the public safety spectrum provisions in the Middle Class Tax Relief and Job Creation Act of 2012 and are dedicated to implementing the new broadband network for our first responders. Governors believe states will play a pivotal role in successful implementation of the network and should be treated as key partners throughout network planning, development and operation. We appreciate your committee's leadership in passing this landmark legislation and holding the March 14, 2013 hearing entitled, "Oversight of the First Responder Network Authority (FirstNet) and Emergency Communications." We respectfully request that this letter be included in the hearing record.

The public safety spectrum provisions in the Middle Class Tax Relief and Job Creation Act of 2012 provided the nation with a unique opportunity to transform first responder communications by facilitating reliable access to modern technologies, ensuring interoperability and nationwide coverage, and creating new efficiencies to help reduce costs. Because of the importance of such a system to help save lives and property, the National Governors Association (NGA) has actively engaged in efforts to implement the broadband network in a manner consistent with the needs of our public safety communities.

For example, last summer NGA submitted recommendations for appointment to FirstNet and established a new project through the NGA Center for Best Practices (NGA Center) to inform key state officials about the opportunities presented by the new law. The NGA Center also established an advisory body of governors' public safety broadband advisors, conducted national workshops and teleconferences, provided guidance to states as they organized for implementation and is preparing to co-host a series of regional meetings with FirstNet this spring. These meetings will bring together teams of state and local officials to discuss plans for the network with FirstNet and engage in an ongoing dialogue regarding states' unique requirements; infrastructure and other assets that could be leveraged to reduce costs; the utilization of public private partnerships and other important issues.

Governors remain disappointed that states were not better represented on the FirstNet board. We have requested that additional state representatives be appointed at the earliest opportunity and urge your

support for a stronger state voice on FirstNet. To help remedy this shortcoming, FirstNet honored an NGA request to establish an advisory body to address state, territorial, tribal and local concerns. This new body is a subcommittee of the required Public Safety Advisory Committee (PSAC) and is chaired by NGA. While we look forward to working through the PSAC to support state and local interests, we will continue to look for additional opportunities to involve state and local representatives.

At our recent NGA conference in February, governors were joined by FirstNet Chairman Sam Ginn and several other board members to discuss network implementation. During the meeting we emphasized that FirstNet must view states as partners in this endeavor, not only to meet the statutory requirements for consultation with states, but more importantly to ensure that key information, processes and expertise within states can be appropriately brought to bear on the full range of FirstNet activities. States have a number of well-established communications and coordination mechanisms with local and tribal governments and public safety organizations whose participation is essential to reduce costs and provide for ongoing network operations.

As you review FirstNet's activities, we strongly encourage you to promote the essential role of states in implementing the broadband network for first responders. Failure to engage early and often with key state and local officials responsible for coordination of first-responder communications will jeopardize the future success of the network. It is our hope that the PSAC and the regional meetings will serve as a catalyst for ongoing and interactive dialogue between states and FirstNet.

Thank you for the opportunity to comment on this important issue. We look forward to continuing to work with you and FirstNet to make the network a success.

Sincerely,

Governor Jack Markell

Governor Mary Fallin

Governor Martin O'Malley
Chair
Committee on Health and Homeland Security

Governor Brian Sandoval
Vice Chair
Committee on Health and Homeland Security

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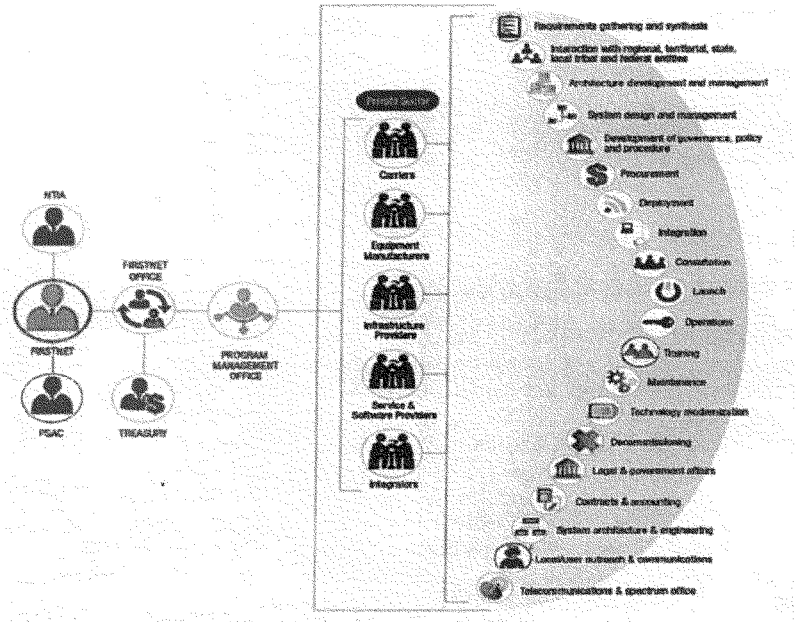
March 13, 2013

Chairman Greg Walden
Ranking Member Anna G. Eshoo
Subcommittee on Communications and Technology
House Commerce Committee
Washington, D.C. 20515

Dear Chairman Walden and Ranking Member Eshoo,

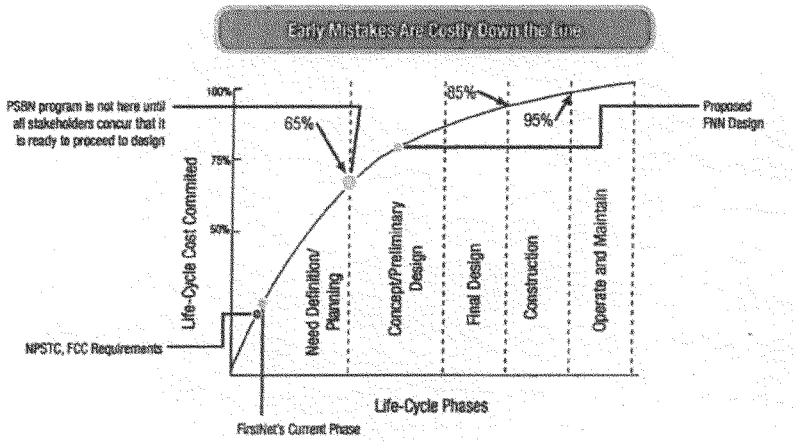
Textron Systems, Inc., a leader in federal program management and government contracting, is submitting our perspective on the importance of a single program management organization (PMO) as it pertains to the Public Safety Broadband Network (PSBN) program for the House Energy and Commerce Subcommittee's 'FirstNet Oversight Hearing' scheduled for March 14th, 2013. A PMO offers a multitude of services to support the efficient execution of programs in a transparent and accountable manner. Our team is deeply invested in the success of the PSBN and the promise it holds for the Public Safety community. We hope our unique perspective will aid the Committee, the FirstNet Board, and the Public Safety Community as they consider this important challenge.

Textron Systems has done a top to bottom analysis of the goals and challenges of the PSBN. For further detail please reference www.connectingfirstresponders.com. Conventional wisdom among all PSBN stakeholders suggests that developing the PSBN is not necessarily a technology challenge, but is an organizational, financial, governance, and integration challenge. Textron Systems, as well as many other companies like us, are highly experienced at executing government programs with similar challenges. Effective program management, based on proven principles and processes, increases the likelihood of success for new programs; speeds up the process to deployment; saves taxpayer money; provides accountability and transparency; and brings a seasoned hand to the laborious government hierarchy that can paralyze new entrants. As we have learned over our decades of experience, a program manager is many things. Most importantly, in our current austere economic environment, a program manager is financially and legally accountable—accountable to FirstNet, accountable to those on the front lines in an emergency and accountable to the taxpayers who have significant investment in the success of the PSBN. A program manager with full fiscal accountability will make sure that the financial component of this complex effort is in line—and will bear responsibility if it is not. Fortunately, a program manager is explicitly authorized in the enabling legislation, Section 6205(b) (1), however it is unclear whether or not FirstNet intends to stand up a PMO in the near term.



Program Management Functions to ensure success of PSBN

It is our view that FirstNet can achieve success by following a tried and true formula for developing large, complex systems. Our most significant recommendation is to select tasks and do them in order, based on the traditional formula for large program success (i.e. DoD 5000, Program Management Institute best practices, etc.). FirstNet sets the vision, while an experienced program manager works with the board to scope the problem and take the necessary steps to fulfill the board's vision, including the first crucial steps—soliciting requirements from public safety users, evaluating the technical design of the network and related business models, and helping the board generate a FirstNet Nationwide Network (FNN) design concept that aligns all stakeholders. Developing and publicizing a clear and prioritized plan will help ensure that all stakeholders are aware, engaged, and supportive of efforts, helping to deliver upon the promise of the PSBN.



Optimal Planning Mitigates Risks of Failure (Source: Blanchard, B.S., Design and Manage to Life Cycle Cost, Forest Grove, OR. MA Press, 1978)

FirstNet should be able to explain, in detail, why decisions have been made that may be to the perceived disadvantage of some elements of the stakeholder community but are necessary to protect the system as a whole. Our experience shows us that taking the time up front to simultaneously negotiate performance and cost almost always results in shorter timelines and lower program costs. Expensive redirects based on changing (or newly discovered) requirements can quickly lead to ballooning costs detrimental to the program.

The road from ramp-up to deployment is long and full of obstacles. FirstNet needs a committed, experienced guide, equipped with resources and armed with feedback to ensure the ultimate success of the program. In order to get the best value, the program manager must be free of any organizational conflicts of interest (OCI). The industrial community that has a potential financial stake in the PSBN is vast, and the potential dollars on the line are significant. An OCI-free program manager is critical to maintaining industry trust, competition, and an open door to traditional and non-traditional players with potentially disruptive technologies that could significantly benefit the program.

Enabling open competition in the process of building out the network will encourage vendors of all sizes to lower bids and achieve the best value for taxpayer investment. Furthermore, strong OCI requirements and

transparency rules will ensure competition is open and fair, and prevent anti-competitive deal making that could drive up the costs of the program. Although continuous competition holds the promise of keeping costs low, a program manager can prevent extended and lengthy bid cycles from introducing delays that drive costs back up. Overall, open competition will enhance the financial viability of the program.

How the command and control of the network is to be done, and who makes the command decisions controlling the modes must be supportive of local needs, but someone needs to resolve the expansion of control as an emergency grows in scale. A single Program Manager can balance this equation and establish network operating policies in a responsive manner that support the needs of the diverse localities, while still maintaining cost within an acceptable range. For example, it is likely that significant controversy and a difficult debate among users of the PSBN would result from competing, legitimate views among stakeholders in determining who has control of the modes. Fiscal controllers may have a different view than emergency personnel of how the network should be managed nationally, regionally, and locally responding to an event.

The PSBN holds great promise for the nation, but communities across the country may not be aware of FirstNet's plans for the network. State and local governments and first responders have already started to develop alternate solutions and in turn may not support local leadership investing in PSBN. Without widespread buy-in, the PSBN will weaken. Broad public support at all levels ensures a strong, consistent, and truly interoperable network that meets the goals set forth by the 9/11 Commission. The key to obtaining the buy-in from public safety users who are the "boots on the ground" responders is to clearly and definitively show what the system will do, when it will be available, and how much it will cost at the user level. This value must be communicated early and often from FirstNet in order to obtain and maintain the commitment from the user community.

The National Public Safety Telecommunications Council (NPSTC) Local Control Task Group and the FCC Technical Advisory Board for First Responder Interoperability have worked tirelessly over the past three years to define requirements for this network. These results now serve as a starting point for the requirements generation needed to design the FNN and should now be exponentially expanded to include a much wider set of public safety contributors, who have disparate and highly localized needs, not just a reflection of the views of industry or select user community representatives. Most of the requirements stated in the documents are technical instead of being performance-based. It is left to the individual reader to understand how these requirements translate to performance in support of public safety missions. Most public safety personnel are not well equipped to translate technical specifications to mission performance, making it difficult for users to understand whether the requirement clearly meets their needs or not. FirstNet should make it possible for public safety users to provide their input in the course of their busy lives and schedules, and should look to its

program manager for modern, creative ideas for the implementation of this assignment.

The PSBN is a critical system that has the potential to impact every American life. It is our view that the immediate next step is for FirstNet to hire a program manager as the prime contractor. Once in place, the "honest-broker" OCI-free program manager will guide the way through the process by providing an experienced view to each of FirstNet's many responsibilities. The program manager also brings a wealth of proven processes, resources (human, facilities, financial, technical communications, contracts, legal, managerial – to name a few) and stability. Among these processes are methods for insuring the transparency of the design, deployment and operation of the system in accordance with Federal program rules and policies, but most importantly, the expectations of the public. The program manager's most important initial step is to help FirstNet connect with as diverse and large a range of its customers as possible – the actual users of the PSBN – to best understand the necessary public safety requirements. In parallel, the program manager, with the support and guidance of FirstNet, develops viable business cases and arrangements that are congruent and mutually supportive of the technical solutions. Then the program manager, again via guidance and direction from FirstNet, establishes an open, continuously competitive environment for implementation of the designs in a structured manner across the country. Ensuring this system meets the needs of our diverse nation and the men and women who protect us will require a focused, experienced, processed base program management approach to structure an acquisition toward a best value solution.

Again, thank you for the opportunity to share our views on the value a program manager would bring to this important national effort in support of our first responder community.

Very respectfully,

Donald A. Hairston
Sr. Vice President & General Manager
Advanced Systems

September 3, 2013

The Honorable Greg Walden
Chairman
Subcommittee on Communications and Technology
Committee on Energy and Commerce
House of Representatives
Washington, DC 20515

Dear Chairman Walden:

Thank you for the opportunity to testify before the Subcommittee on Communications and Technology at its hearing on FirstNet on March 14, 2013 entitled, "Oversight of the First Responder Network Authority (FirstNet) and Emergency Communications."

Attached please find my responses to the additional questions for the record of Members of the Subcommittee. If you or your staff have any additional questions, please do not hesitate to contact me or Sara Morris, Office of Congressional Affairs, National Telecommunications and Information Administration, at (202) 482-2075.

Sincerely,

Sam Ginn

Sam Ginn

Enclosure

cc: Anna Eshoo, Ranking Member
Subcommittee on Communications and Technology

Responses of Sam Ginn to Questions for the Record

The Honorable Greg Walden

1. In your testimony you state that one of the core concepts of the public safety broadband network will be interoperability with legacy public safety networks. How does FirstNet intend to achieve interoperability with the myriad land mobile radio systems that are already deployed? How will FirstNet ensure that devices from different jurisdictions can use legacy systems when responding to emergencies outside their jurisdiction?

The First Responder Network Authority (FirstNet) will achieve interoperability with existing legacy public safety networks by working to ensure the appropriate open, standards-based interfaces are developed that will allow for communications between the different legacy public safety networks. The functionality of these interfaces will be focused on allowing a basic voice communications capability to ensure there is a base level of communications interoperability between voice land mobile radio systems and the FirstNet long-term evolution (LTE) data system. The FirstNet network is being built as a nationwide network, therefore devices from different jurisdictions should work across all areas of the FirstNet network with the proper authentication and administration.

2. FirstNet appears to be requiring recipients of BTOP stimulus grants for public safety projects to surrender assets as a condition of lifting the suspension of those grants. If the grantees refuse FirstNet's requirement to turn over state property will the public safety projects and the federal and state funds invested in them to date be stranded? Why does FirstNet believe that BTOP grantees must surrender assets to FirstNet in order to achieve interoperability?

I appreciate the opportunity to clarify this matter for the record. To date, FirstNet has reached agreement with two BTOP recipients – the Los Angeles Regional Interoperable Communications System (LA-RICS) and the State of New Mexico – on a Spectrum Manager Lease Agreement (SMLA). Neither agreement requires any transfer of assets as a term or condition of the agreement.[1] That said, a key element of FirstNet's consultation process will be to identify whatever existing assets at the state, tribal and local levels could be of benefit in our nationwide deployment plan, to help us build the network as cost-effectively as possible in light of the limited funds available

[1] The full SMLA with LA-RICS and the State of New Mexico are available, respectively, at http://www.ntia.doc.gov/files/ntia/publications/firstnet_resolution_33_approving_smla_with_la-rics.pdf, and http://www.ntia.doc.gov/files/ntia/publications/FirstNet_Resolution_37_re_NM_SMLA.pdf.

3. Unlike the BTOP jurisdictions, the States are under no obligation to use FirstNet's services. How do you intend to encourage governors that face increasing budgetary pressure to not only participate in FirstNet by using the network, but by contributing existing state assets in some way? Does FirstNet intend to compensate states for their assets?

An important element of FirstNet's ongoing consultations with state, regional, tribal and local jurisdictions and public safety entities will be to obtain the input of these stakeholders on any of their existing assets that could be utilized in the deployment and operations of the network. This aspect of our consultations will clearly impact the development of our nationwide deployment plan and the states' decisions on that plan, as well as the speed and cost-effectiveness of our deployment and the long-term sustainability of the network. Until this consultation process can be completed, it would be premature for FirstNet to make any decisions concerning contributions of state assets or compensation for such contributions.

4. You stated in your testimony that you "want to work with Congress ... to explore obvious and reasonable measures" to avoid unnecessary costs or delays. We had a brief discussion about this during my question time at the hearing, but you did not provide details on the particular things you would like changed. Could you please specifically describe for the record the changes you are seeking?

FirstNet's task is virtually unprecedented in its scope and complexity, and, as seen in recent tragedies in Boston, Texas and Oklahoma, its mission is urgent. FirstNet will need to compete for customers by offering services that meet the needs of public safety anywhere in the country and do so at an affordable price. As a federal government entity, FirstNet is required to comply with all federal laws and regulations related to procurement and staffing. To meet its challenges, FirstNet will need to negotiate agreements with potentially hundreds of vendors, including wireless carriers, equipment manufacturers and others on all aspects of the network. I have been informed by Department of Commerce and other federal acquisitions officials and experts that, even under the best circumstances, executing virtually all of FirstNet's acquisitions will require a minimum of eighteen months. If there are protests and challenges, that time could extend to nearly two years. This could result in significantly increased costs and time delays than would otherwise occur in a commercial environment.

Section 6206(b) of the Tax Relief Act requires FirstNet to issue "open, transparent, and competitive requests for proposals to private sector entities for the purposes of building, operating, and maintaining the network...." These requirements provide important and fundamental safeguards for any entity entrusted with spending public funds. My intent is to maximize, to the greatest extent possible, efficiency and effectiveness under the current framework established by the Federal Acquisition Regulation (FAR). Toward that end, FirstNet has been working with acquisition, legal, and other officials within the Department of Commerce, and consulting with officials in other agencies that have undertaken similarly large and complex acquisitions, to understand how flexibilities within current procurement laws and regulations may best be used to support FirstNet's mission. That said, we are looking at alternatives, such as the Federal Aviation Administration (FAA) procurement process, which was built on various waivers provided by Congress in the 1990s, to see if there are process

improvements that may help FirstNet operate more cost-effectively and reduce delay, while maintaining accountability and transparency.

5. One of the most common criticisms of the broadband stimulus is that grants were awarded before work was completed to determine where investment was needed. We heard testimony that FirstNet will produce its network build plans before it has finished asking states where they need additional assets. Why isn't FirstNet completing its consultation with the states before it decides where and how it will build?

FirstNet is committed, and on track, to conduct essential consultations with state, regional, tribal and local jurisdictions and public safety entities and will do so before preparing the nationwide network design. As a former CEO, this comes down to first principles: you need to meet the needs of your customers. If you don't, you will fail.

FirstNet is in its analysis stage, exploring the multiple dependencies affecting potential designs and financial sustainability for the network. A primary goal is to meet user requirements for high-speed data and make FirstNet service affordable for public safety agencies nationwide. The results of formal consultations with state, tribal and local governments, public safety and other stakeholders, which commenced in May with our regional workshops and will continue through the summer, will be crucial to drafting the nationwide network plan and engaging in a successful request for proposal (RFP) process.

6. You stated that once nationwide interoperability, security and reliability standards are in place, FirstNet is "open to states to do whatever they want." Is it your intent to encourage states to refrain from opting out by giving them the kind of flexibility they would want within the framework of the FirstNet model?

I appreciate the opportunity to clarify this statement for the record. FirstNet's fundamental mission is to deploy a *nationwide* network dedicated to public safety. Any network offering nationwide service, particularly one built to public safety-grade standards, necessarily must adhere to uniform standards for reliability, security and connectivity, and be committed to interoperating with the nationwide core network. Any RAN – whether built by FirstNet or by a state – must adhere to these standards. Beyond that fundamental requirement, however, there is substantial opportunity for flexibility, such as the locations of Network Operating Centers, network prioritizations, etc. In fact, these are aspects of RAN build-out that FirstNet intends will be tailored to each state's particular needs regardless of whether the state opts-in or opts-out, and some of the key inputs FirstNet intends to receive as part of its consultations with states and other jurisdictions.

7. Is FirstNet constructing a cost model and conducting a financial analysis to determine if your plans are financially viable?

Yes, FirstNet is conducting cost modeling and financial analysis to ensure FirstNet meets its objectives successfully.

8. FirstNet's long-term funding structure is predicated on lease fees from opt-out states and user fees from all public safety users. How do you intend to collect these fees from states? If a state finds itself unable to pay, will FirstNet terminate their service?

One very important aspect of FirstNet's ongoing consultations with its stakeholders will be gaining the insights of the states, tribes, local governments and their first responders on lease fees and other aspects of the long-term sustainability of the nationwide network. As a result, while FirstNet is working to develop and assess a number of preliminary models concerning network costs and revenues, it has reached no preliminary conclusions on such issues, nor will any decisions be made until FirstNet's stakeholder consultations are conducted. FirstNet also may gain valuable information on lease fee issues through its work with the BTOP public safety projects. While FirstNet's negotiations on spectrum lease agreements with these projects have not yet concluded, one or more of these projects may be able to generate valuable information based on their billing and collections practices with their subscribers.

9. It is my understanding that FirstNet has already contracted with at least one firm for consulting services. To my knowledge, that contract was not put out for competitive bid or made available on the NTIA website for FirstNet. How many consultants has FirstNet already retained? What process was followed to ensure that these contracts complied with federal law? Please attach to your answers to these questions any agreements with outside firms for the subcommittee to review.

Until the recent hiring of our General Manager, FirstNet as an entity has consisted of a fifteen-person Board. The urgency and complexity of our task to deploy the nationwide 700 MHz LTE public safety network demands fast action, including preliminary, technical research and analysis (e.g., technical and financial modeling; inventorying existing wireless public safety standards and requirements), determining possible paths forward with respect to the BTOP public safety projects and other early builders; and planning and executing the required consultations with state, tribal and local jurisdictions and public safety to determine their various and unique needs and challenges for the network. To begin this work expeditiously, and until FirstNet acquires its own full-time experts and staff, FirstNet, through NTIA and several DOC Contract Offices, has entered into contracts with the following firms:

> functionalIT: On September 13, 2012, the Census Bureau's Contracts Office set aside and then competitively awarded a contract to functionalIT, Inc., a professional woman-owned small business. The vendor provides advice and guidance to NTIA for management oversight and acquisition planning associated with the formation of FirstNet. The vendor helps supplement NTIA's limited staff to assist the Board with acquisition and project management support. The Census Bureau issued a Request for Proposals to small business vendors on the GSA Mission Oriented Business Integrated Services (MOBIS) Schedule that were capable of providing advisory and management support services. Approximately three consultants work under the contract but the number of hours fluctuates depending on need.
>
> The Event Planning Group: On February 28, 2013, the Department of Commerce's Office of Acquisition Management Contracts Office awarded a contract to The Event

Planning Group through the 8(a) Business Development Program of the Small Business Administration. This program helps small disadvantaged businesses access the federal procurement market. The Event Planning Group was selected for an 8(a) sole source contract, after three 8(a) firms presented their capabilities in delivering the required services. The vendor is supporting six regional workshops for FirstNet to effectively consult with the state, tribal and local jurisdictions. The contract is fixed price for labor and cost-reimbursement for meeting costs.

Workforce Resources: On November 15, 2012, the National Institute of Standards and Technology's (NIST) Contracts Office awarded a contract to Workforce Resources, Inc. to provide consulting services to NTIA in support of business and technical planning and to assist with start-up activities for FirstNet. Workforce Resources, Inc. is a firm that provides support to federal, state and local government and corporations in the area of project management and staff augmentation. This contract was awarded as a time and materials (T&M) contract for a period of up to six months with a ceiling of $4 million. NTIA was able to directly contract with Workforce Resources, Inc. through the 8(a) Business Development Program of the Small Business Administration. Up to eighteen consultants worked under this contract. Work under this contract was discontinued on March 17, 2013.

Workforce Resources II: On March 18, 2013, the NIST Contracts Office, on behalf of FirstNet, awarded a contract to Workforce Resources, Inc., to acquire subject matter expertise (SME) support for FirstNet in the areas of wireless telecommunications, business strategy, industry market research, outreach and communications. The vendor's responsibilities include recruiting and providing appropriate administration for qualified consultants with a variety of SME to assist the FirstNet Board start-up the organization, plan for the public safety broadband network, assist in wireless industry market research and consult with state, tribal, local and federal public safety organizations. This contract was awarded as a time and materials (T&M) contract for up to eight months. Workforce Resources received the second contract on a sole-source basis due to the unusual and compelling urgent nature of FirstNet's personnel needs, as a gap in service would have been detrimental to FirstNet's efforts. As of May 6, 2013, forty consultants have been authorized to work under this contract. During the period of this contract, FirstNet plans to conduct competitive acquisitions for longer term consulting services.

The Honorable Marsha Blackburn

1. Mr. Ginn, the City of Oak Ridge in my state of Tennessee is home of the Oak Ridge Y12 National Nuclear Security Administration Laboratory. The City and the Y12 Lab have come to an agreement on how to work together to deploy a Public Safety broadband system. This system will be funded locally. In October, the City of Oak Ridge filed an application with the FCC seeking an experimental special temporary authorization to test and evaluate public safety broadband. On the same day they filed this application, Oak Ridge sent you a letter asking for FirstNet's support.

I understand that Oak Ridge has been told that authorization not just from the FCC, but also from FirstNet is required for them to move forward. This matter has now been pending for 5 months despite Oak Ridge's efforts to work with you. Will FirstNet support this project? Tennesseans don't want this to become a situation where the citizens of Oak Ridge end up the losers. Can you provide me with an update on the status of this project?

FirstNet is actively engaged with the City of Oak Ridge and its federal partners in an effort to streamline the process for acquiring the various approvals needed for the City to test innovative LTE broadband public safety uses there. As you note, Oak Ridge accommodates significant nuclear assets, therefore city, state and federal officials need collaborative tools to ensure the security of the area. In addition, FirstNet informed the Federal Communications Commission (FCC) that it concurs with the proposed operation by Oak Ridge, via Special Temporary Authority (STA), on certain frequencies currently licensed to FirstNet, and on May 21, 2013, the FCC granted Oak Ridge's STA, which is effective through November 22, 2013.

The Honorable Lee Terry

1. Mr. Ginn, The conceptual network architecture that you put forth at your first Board meeting relies heavily on leveraging commercial carrier tower sites. It is my understanding that the majority of commercial carrier sites are leased from tower companies. Has FirstNet developed an estimate of these leasing costs nationwide?

The FirstNet nationwide network architectural approach has as a guiding principle the minimization of cost – to include operating costs (such as site lease costs) as well as capital costs. To achieve this objective, FirstNet foresees using a combination of state, tribal and local public safety sites, rural telecommunications and utility sites, commercial wireless carrier sites and commercial tower company sites. As we move into the detailed Radio Access Network (RAN) planning and the coverage for an area is being designed, the engineers will consider which radio sites represent the best value for FirstNet based upon a multiple variable analysis. Actual radio site selection will not begin until FirstNet has the benefit of input obtained through the state consultation process.

2. Mr. Ginn, my understanding is that most state and local tower sites are government-owned and, therefore, the costs of leveraging these sites would not necessarily have to be absorbed by FirstNet. While leveraging commercial carrier sites is certainly appropriate and something FirstNet should fully explore as contemplated by the statute, it should not do so to the exclusion of leveraging state and local infrastructure which could help stretch the $7 billion available for deployment further. As a point of reference, I note that a comprehensive study issued last year estimated that the cost to deploy a public safety broadband network within the State of Minnesota would be in excess of $300 million, even if use of existing state assets is maximized. (https://dps.mn.gov/divisions/ecn/programs/armer/Documents/Minnesota%20Funding%20Grants%20v17%20Final.pdf). Please inform me of how FirstNet intends to engage states on leveraging their sites in a timely manner when the planning grant program doesn't contemplate doing an inventory of state assets until the second phase of the program which may be two or three years off.

FirstNet fully understands the critical importance of state and local radio sites and is making a concerted effort to gather information that will allow it to leverage these assets to the maximum degree possible. Exploring the best methods to utilize state and local tower sites is a key part of our consultations with the states, which are underway, and gathering additional information on potential radio sites will be a high priority in the data request phase of our state consultation process. FirstNet also has been researching and building databases of potential radio site locations, including state and local tower site data, to be used in its radio network planning. For example, FirstNet is working with the Department of Homeland Security's Office of Emergency Communications (OEC) to access and compile information on existing local and state radio sites and government building site data for a FirstNet database, which can be further populated in the coming months as our consultation process moves forward.

The Honorable Cory Gardner

1. As you know, Adams County, Colorado is one of the public safety BTOP grantees. During the last FirstNet Board meeting, a resolution was adopted with the purpose appearing to be resolving last year's suspension of seven public safety BTOP projects in 90 days. As you are well aware, states, localities, and private companies have all have committed resources to now dormant projects in those states. While the resolution adopted at your board meeting seems encouraging, I have some questions about what I've heard regarding the "Special Award Conditions" required to end the suspensions. I understand that there may be an indemnification condition that goes beyond ensuring that any BTOP system is interoperable with the FirstNet network. Can you please explain to me what those indemnification provisions entail? Is it your intent to impose such a condition?

Earlier concerns that FirstNet might seek to impose blanket indemnification terms in its spectrum manager lease agreements (SMLAs) with BTOP projects appear to be based on some very preliminary concepts that were shared during the early stages of NTIA's work following the passage of the Act. I understand that NTIA had evaluated the possibility of obtaining indemnifications as an avenue to lift the partial suspensions prior to the appointment of the FirstNet Board. After appointment of the Board last August, FirstNet initiated direct negotiations with the BTOP public safety grantees on the terms of SMLAs. While FirstNet's negotiations on spectrum lease agreements with several of the BTOP public safety projects have not yet concluded, FirstNet has not and is not seeking to negotiate indemnification terms or conditions that are based on those earlier preliminary concepts. In fact, FirstNet has signed Spectrum Manager Lease Agreements (SMLAs) with two BTOP recipients: the Los Angeles Regional Interoperable Communications Systems (LA-RICS) and the State of New Mexico. Neither agreement contains indemnification terms or conditions.

2. I understand there may also be a condition requiring transfer of the BTOP assets to FirstNet. I have concerns that this may have the effect of forcing a state into a de facto "opt-in" position prior to being presented with a plan to make that decision as required by the law. Is it your intent to impose such a condition? Are these conditions necessary? Will this condition help achieve interoperability?

FirstNet is not seeking to require any transfers of assets as a term or condition of its Spectrum Manager Lease Agreements. In fact, neither of the two SMLAs entered into by FirstNet, with LA-RICS or the State of New Mexico, require or contemplate the transfer of assets from those jurisdictions to FirstNet. These SMLAs fully preserve the respective Governors' options to determine, once presented with the FirstNet plan, their state's participation in the nationwide network (i.e., opt-in or opt-out).

3. Existing rural telecommunications providers have invested in valuable wired and wireless infrastructure, and other technical and operational assets, to serve the most sparsely populated and remotely located areas of our country. How does FirstNet plan to ensure that it does not overbuild existing communications networks and infrastructure? Will public safety be able to roam on an existing commercial broadband network with sufficient capacity and coverage instead of creating an entirely new network?

Ensuring that FirstNet's deployment and operations meet the needs of our nation's first responders in rural and remote areas is a critical and challenging part of our mission. In developing its nationwide deployment plan, FirstNet intends to follow the Act's direction that it utilizes partnerships with existing commercial mobile providers, to the maximum extent economically desirable, in order to find cost-effective opportunities to speed the network's deployment in rural areas.

Beyond ensuring that FirstNet addresses these and other explicit requirements of the Act, reaching rural America is a top priority for FirstNet – one that we are focused on already and our efforts will be further informed through our consultations with state, tribal and local jurisdictions. Our dedicated team for rural coverage includes Tim Bryan, a FirstNet Board member, who is CEO of the National Rural Telecommunications Cooperative and who brings crucial expertise to our tasks. We also intend to collaborate closely with other rural-focused telecommunications and utilities industry groups.

The Honorable Ben Ray Lujan

1. My state of New Mexico was awarded a grant from NTIA's BTOP program for a 700 MHz LTE last mile project as well as upgrades to the state-wide microwave communications tower network that backhauls public safety communications throughout the state. After FirstNet was established, the LTE last mile portion of this project was suspended to ensure that the purchased equipment would be compatible with the FirstNet network architecture. During the last FirstNet Board meeting, a resolution was adopted to resolve the suspension within 90 days. What sort of conditions is FirstNet placing upon New Mexico and the other suspended projects before the suspensions will be lifted and when could I expect to see work resume on building this network?

As you may know, on August 13, 2013, FirstNet announced that it had approved an agreement with the State of New Mexico allowing it to lease access to FirstNet's spectrum. This is the second such agreement between FirstNet and one of the seven public safety Broadband Technology Opportunities Program (BTOP) grantees, whose funding was partially suspended following enactment of the law creating FirstNet. The key issues FirstNet intends to learn from New Mexico's project include: use of a network core located remotely; spectrum management and network use issues along the U.S.-Mexico border; and shared use of a state network with a large number of Federal users.

The agreement between FirstNet and New Mexico is the first step in the process towards lifting the project's partial suspension. New Mexico has requested that NTIA lift the suspension and extend the period of performance for the grant beyond September 30, 2013. FirstNet has formally recommended that NTIA take these actions. FirstNet anticipates a decision by NTIA in the near-term on both of these matters.

2. New Mexico is an extremely large state with a varied topography and sparse population density that presents a challenge to many communications networks. My state is also home to a number of tribal communities which have jurisdiction over an expansive amount of territory throughout the state. In your written testimony, you mention that you have undertaken a "listening tour" with tribal representatives. What lessons have you learned from this tour and how do you plan to implement them?

FirstNet is eager to listen to tribal communities about the wireless coverage and capacity they require for better public safety communications. Tribal participation is essential to FirstNet's research and the eventual design of a network that delivers crucial services to diverse American Indian and Alaska Native populations. The listening tour you referenced was conducted in in May and June, and the State of New Mexico participated in FirstNet's workshop in Denver on May 21-22, 2013, and I am pleased that Governor Martinez tapped representatives of NM tribes to participate in these meetings. During these one and a half-day workshops, members of the FirstNet Board and management team, partnering with the National Governors Association, facilitated break-out sessions to gather input, concerns and special requirements from each set of state, local and tribal representatives attending the workshop.

Importantly, this was the first of many working sessions that the FirstNet management team intends to have with state, tribal and local representatives. We anticipate gathering insights and lessons not only from the regional workshops, but from an on-going dialogue with the key state, local and tribal stakeholders over the next several months.

Also, I have recently named FirstNet Board Member Kevin McGinnis to head FirstNet's outreach and education efforts with the sovereign tribes that have a formal government-to-government relationship with the U.S. government. Mr. McGinnis is focusing on gathering tribal requirements, priorities and concerns for design of a nationwide wireless broadband network dedicated to public safety.

3. I understand that FirstNet will be deploying a nationwide network, and I'm fully supportive of that goal. I'm wondering, however, if in your view this deployment precludes states from supplementing the FirstNet network to further enhance their public safety system? For example, do you think states could purchase network control equipment that is <u>not</u> funded by FirstNet provided it's interoperable with FirstNet? And, if not, why not? This could be particularly important in a rural state like mine.

One very important aspect of FirstNet's ongoing consultations with its stakeholders will be gaining the insights of the states, territories, tribes, local governments and their first responders on how to these agencies have the necessary degree of local control on operational issues, consistent with FirstNet's operational control at the national level to ensure the network maintains nationwide interoperability. As a result, it is premature for FirstNet to be making any conclusions regarding the need for states to acquire supplemental network control equipment.

Attachment 2—Member Requests for the Record

During the hearing, Members asked you to provide information for the record. For your convenience, relevant excerpts from the hearing transcript regarding these requests are provided below.

The Honorable Anna Eshoo

1. **Is it too early, or has the FirstNet board received threat and vulnerability briefings from agencies such as DHS or NSA?**

FirstNet and its federal partners have not yet fully engaged on the range of threat and vulnerability issues that might impact the design, deployment and operations of the network. Given the progress of FirstNet's interim planning efforts, however, we are ramping up more intensive collaborations on such risks with our partners. For example, the Department of Homeland Security has recently shared its Nationwide Public Safety Broadband Network Cyber Infrastructure Risk Assessment with FirstNet, which our technical team is reviewing in detail.

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED THIRTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115

Majority (202) 225–2927
Minority (202) 225–3641

May 2, 2013

Mr. Chris McIntosh
Statewide Interoperability Coordinator
Office of Veterans Affairs and Homeland Security
Office of the Governor
Commonwealth of Virginia
1111 E. Broad Street
Richmond, VA 23219

Dear Mr. McIntosh:

Thank you for appearing before the Subcommittee on Communications and Technology on Thursday, March 14, 2013, to testify at the hearing entitled "Oversight of FirstNet and Emergency Communications."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions by the close of business on Thursday, May 16, 2013. Your responses should be e-mailed to the Legislative Clerk in Word format at Charlotte.Savercool@mail.house.gov and mailed to Charlotte Savercool, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,

Greg Walden
Chairman
Subcommittee on Communications and Technology

cc: Anna Eshoo, Ranking Member, Subcommittee on Communications and Technology

Attachment

Additional Questions for the Record

The Honorable Greg Walden

1. If FirstNet requires states to surrender state assets in order to participate in FirstNet, would Virginia be willing to do so?

2. States that opt-out will be subjected to spectrum lease fees and network user fees set by FirstNet. Given that FirstNet has unilateral authority to determine those fees, is there any set of circumstances that would lead you to recommend to your governor that you opt-out?

The Honorable Mike Rogers

1. Mr. McIntosh, in response to questions from Mr. Walden and Mr. Welch on the challenges facing FirstNet, Mr. Ginn stated that the federal acquisition rule should be changed for FirstNet because it can take 18 months to get a contract in place. You stated in your testimony that states must be allowed to follow their codified procurement procedures that are designed to maximize competition. Apart from respecting existing state laws as opposed to changing federal laws, in your view, could most FirstNet-related procurements be done more efficiently and expeditiously at the state level? Don't states have pre-negotiated and cooperative purchasing vehicles that could be leveraged to meet FirstNet's implementation objectives?

The Honorable Greg Walden

1. The willingness of the Commonwealth to surrender state assets in order to participate would depend entirely on the nature of the partnership formed between Virginia and FirstNet, and the definition of the term "surrender". This issue will be one of many specifics that will need to be negotiated and agreed upon between the Commonwealth and FirstNet prior to any decision regarding Virginia's participation in this project.

2. Exercising prudence and due process, Virginia will continuously evaluate any and all options regarding the nature of its participation with FirstNet, evaluating the FirstNet program based on two very simple criteria; (a) Does this improve the capabilities of our public safety enterprise, and if so by how much? And (b) is the program fiscally responsible and financially worthwhile? In the context of that evaluation, Virginia will examine the costs/benefits of opting out, as well as retaining the option of not participating at all and pursuing the commercial solutions that becoming increasingly available. The proposed business model, subscription fees, spectrum use fees, network use fees, and device costs will all be important data points to be considered. As stated in the submitted testimony, public safety budgets are already heavily encumbered by existing costs, we must ensure that we do not stretch those budgets beyond their capacity, affecting other core services.

The Honorable Mike Rogers

1. The states do already have pre-negotiated and cooperative purchasing agreements that could be leveraged to meet FirstNet's implementation objectives. The States must always have the right to negotiate and pursue their own contracts, as often they can, whether it's through leveraging existing contracts, circumstances unique to the state, or simply the acumen of the negotiator, achieve significant cost savings over federal contracts. Additionally, many times the states must, in accordance with their state code, provide for open competition and implement more stringent terms and conditions than federal law requires, making existing federal contracts unusable. For example, in Virginia, contracts must state that Virginia law takes precedence over any other jurisdiction. It will be challenging for any federal entity to negotiate a contract that satisfies all of the varied conditions required by individual states, making it far more feasible for FirstNet to simply pass through technical and programmatic standards, and allow the states and their partners to implement those standards contractually.

Additional Questions for the Record

Directed To: Mr. Ray Lehr
Director, Statewide Communications Interoperability Program
State of Maryland
On May 2, 2013

The Honorable Greg Walden

1. If FirstNet requires states to surrender state assets in order to participate in FirstNet, would Maryland be willing to do so?

Answer: Maryland is looking forward to working with FirstNet to make sure our state has a robust, resilient and fully covered portion of the network. To accomplish that, we have many assets such as towers, shelters, generators, fiber optic cables, microwave networks and network operation centers built to public safety standards that could potentially used to expedite the build out of the Nationwide Public Safety Broadband Network (NPSBN). Rather than "surrender", Maryland would prefer a negotiated use agreement that acknowledges the market value of such assets and uses that to offset any user fees the State of Maryland would be charged for access to the NPSBN. Maryland already uses this asset sharing model for communications assets owned by the State and local governments. Most of the assets mentioned above are owned by one agency and shared by other state, local and Federal public safety agencies under an Memorandum of Understanding (MOU) that dictates any fees, rental or "in-kind" sharing of assets.

2 States that opt-out will be subjected to spectrum lease fees and network user fees set by FirstNet. Given that FirstNet has unilateral authority to determine those fees, is there any set of circumstances that would lead you to recommend to your governor that you opt-out?

Answer: Maryland is working with our interested parties (public safety leaders, CIOs, government leaders, budget officials) to express our needs and concerns with the build-out of the NPSBN to the FirstNet Board. We remain confident that FirstNet will listen to the issues expressed by the States to make sure the decision to "opt-in" is an easy one based on costs that are equivalent to, or less than commercial services for a network that provides the level of coverage and reliability public safety requires. With the limited information available today, Maryland cannot commit to either option since so much is yet to be determined. However, we plan to take full advantage of every opportunity to express our views to our representatives on the FirstNet Board to insure that this historic opportunity meets the needs of public safety in the most cost effective manner possible.

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May 20, 2013

James Arden Barnett, Jr.

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jbarnett@venable.com

The Honorable Gregory P. Walden
Chairman, House Subcommittee on Communications & Technology
2125 Rayburn House Office Building
Washington, D.C. 20515-6115

Re: Responses to Questions for the Record from the March 14, 2013 Oversight Hearing of FirstNet and Emergency Communications

Dear Chairman Walden:

I greatly appreciate the opportunity to testify before the Subcommittee on Communications and Technology about FirstNet and to hear the questions from the members and the answers of my fellow witnesses. I am transmitting herewith my responses to the Questions for the Record that were posed to me following the hearing in your letter dated May 2, 2013, and I appreciate the additional four days after your May 16 deadline in which to respond.

Please let me know if I can ever be of assistance on this important topic or any other. Thank you for your hospitality and the consideration of your excellent staff.

Very respectfully,

James Arden Barnett, Jr.
Rear Admiral USN (Ret.)

Attachment

cc: The Honorable Anna Eshoo, Ranking Member
241 Cannon Building
Washington, D.C. 20515

Additional Questions for the Record
James Arden Barnett, Jr.
Rear Admiral USN (Retired)
Partner, Venable LLP, Attorneys at Law

May 20, 2013

The Honorable Greg Walden

1. **Assistant Secretary Strickling, in attempting to justify partial suspension of the BTOP public safety grants, cited the fact that the "network of networks" model contemplated by BTOP may not be compatible with FirstNet's statute. Your testimony seems to disagree. Could you explain how a network of networks model is consistent with a single network architecture?**

Answer:

Assistant Secretary Strickling and I agree that the network must be carefully developed to ensure interoperability. All forces tend to work against interoperability, and it is the responsibility of FirstNet and NTIA to ensure and enforce interoperability in the new network. The Middle Class Tax Relief and Job Creation Act of 2012 (the Act) provides that the nationwide public safety broadband network be based on 'a single, national network architecture'. The Act does not prescribe a single network. Indeed, the Act goes on to describe opt-out procedures that would be inimical to a single network. Consequently, the Act actually contemplates a possible network of networks, but all on a single, national architecture.

Since there is no legislative report, the clear reading of 'single, national network architecture' points to a set of rules and specifications that govern the arrangement, the interconnection between networks, interfaces, interaction, control and interdependence of the parts and elements of a conformant system to ensure interoperability. That single national architecture also should enable and permit roaming on commercial networks.

An analogy may be drawn to commercial networks, especially the larger ones, where smaller networks have been acquired and incorporated into the system. These have become networks of networks but on a single technical architecture for each carrier that ensures interoperability.

FirstNet and NTIA must continue to acquire the technical expertise and a sufficiently staffed workforce who can provide the leadership, governance and oversight of the inevitable network of networks, all on a single architecture, to ensure interoperability.

2. **You state in you testimony that "states that are deciding now to opt-in are taking a risk that FirstNet will be affordable." FirstNet has unilateral authority to set lease fees and per-user core fees for opt-out states. Are states that opt-out taking an even greater risk if FirstNet controls their fiscal fate and the state is on the hook for radio access network buildout?**

Answer:

In both opting in and opting out, the risk arises from what is unknown at this point. An assumption has been implicit in the development of FirstNet that the services it provides will be affordable to the States and public safety users, but no cost models have been released. The Act requires FirstNet to be self-funded and to repay any amounts borrowed from the Treasury against the expected revenues of the spectrum auctions established in the Act.

While FirstNet has the advantage of spectrum that has been supplied without cost for the public good, it is also required to provide service to rural areas, and Chairman Ginn has committed that FirstNet will provide coverage to every part of America and that the network will be hardened. All of these add to the cost of the network and the pressure on FirstNet in its duty to break even.

Accordingly, States need to know what the costs will be, at least in rough order of magnitude, for services offered. FirstNet, supported by NTIA, must embark on a comprehensive cost model and business plan immediately. Since NTIA is a small agency and FirstNet is not currently staffed, this function should be contracted to consultants and experts who do this as a living (of course, with substantial FirstNet input and oversight). A cost model prepared by experts and a business plan agreed upon by FirstNet must be among FirstNet's very top priorities.

The Honorable Joe Barton

1. **You were Chief of the FCC's Public Safety Bureau when the FCC approved waiver petitions from 21 different state and local jurisdictions wishing to begin early deployment of a public safety network in their respective areas, including seven that received federal BTOP awards from NTIA. These projects were subsequently suspended by NTIA over concerns that they might undermine FirstNet's efforts to build a nationwide network. While FirstNet has recently indicated a willingness to allow those projects to proceed, subject to certain conditions, their status is uncertain. What benefits, if any, do you believe would result if these projects were allowed to go forward? And, do you believe that other jurisdictions not awarded BTOP grants should be given equal consideration?**

Answer:

The primary reasons for the FCC's granting of waiver petitions to proceed with early deployment of the public safety broadband network and the cooperation with NTIA to make it possible for those jurisdictions to apply for BTOP grants are all still valid. The risk that early deployments will not be interoperable with the fully developed network is mitigated by close technical oversight and obligations on the part of those jurisdictions (and their contractors) to ensure interoperability. In fact, the FCC's waivers and NTIA's grants were all based on a set of conditions that ensured these networks would be interoperable with the nationwide public safety broadband network.

The risk that early deployers would not be interoperable, *as mitigated and monitored*, is outweighed by the benefits that both the FCC and NTIA originally identified. Early deployments would provide important, even crucial data, to the development of the full network, including understanding how LTE technology can best serve the needs of the public safety community and determining effective methods of interoperability. The early deployments would draw in additional funding for what everyone recognizes will be an underfunded network.

Finally, but just as significantly, the early deployment will aid public safety in those jurisdictions in saving lives and property and dealing with disasters, natural and man-made. FirstNet may take years to design and deploy, and early deployment can provide FirstNet with some early wins and important lessons.

Other jurisdictions should be given consideration as well. FirstNet must acquire the expert staffing and governance, through hiring and consultants, to make sure that early deployers follow its technical guidelines, but there is no technical reason why BTOP grantees should deploy and others which have other funding cannot.

The Honorable Steve Scalise

1. **It is my understanding that it will likely be years before the FirstNet network will be operational. What is the timetable for states like Louisiana that have an urgent need to move forward deploying a broadband network that's fully interoperable with FirstNet for our emergency responders? Do you believe that non-BTOP early deployments should be permitted to go forward provided they are fully interoperable with the future FirstNet network?**

Answer:

FirstNet is the best entity to address timetables for individual jurisdictions, but under the Act, Louisiana may have to wait some time to address the urgent need you describe. The Act sets forth a very deliberate, consultative process. FirstNet may not proceed with the Request for Proposal process until the consultation and the statutory planning process with each of the States and Territories has been completed. It is not clear where Louisiana (or other States and Territories) would come in that process.

However, early deployers could proceed and still be interoperable and provide interconnection with the FirstNet network when it is deployed and reaches full operation capability. Close technical oversight would have to be exercised, and FirstNet the necessary complement of experts and consultants to ensure that any early deployers do not stray from the technical standards for interoperability and interconnection. A multi-billion dollar network which has public safety as its responsibility cannot be adequately run by a handful of people, however dedicated. Sufficient numbers of experts must be hired and consultants brought in to ensure the viability and integrity of the network.

Any States or Territories which wish to deploy early must give enforceable assurances that their systems will be interoperable when FirstNet becomes operational. Early deployment would provide valuable lessons to FirstNet and would draw additional funds into the nationwide public safety broadband network. FirstNet is a national asset, and the investment in that asset provides federal, state and local first responders with a huge advantage in saving lives, preventing injury and protecting property.

The Honorable Cory Gardner

Mr. Barnett, in your testimony, you note that Congress' goal of achieving nationwide interoperability can be achieved with a network of networks approach and that, contrary to Mr. Ginn's testimony, a "national architecture" is not necessary. You observe that Congress's goal can be achieved as long as FirstNet is guided by the principle of national interoperability and local control. Could you expand on the rationale for this, including what you see as the appropriate role for FirstNet at the national level and the decisions that should be deferred to states?

Answer:

Actually, Mr. Ginn's testimony and mine agree that a national technical architecture is necessary, and in fact, such an architecture is mandated by the Act. Interconnection rules will permit BTOP recipients and other early deployers to join FirstNet seamlessly under agreed standard operating procedures. However, a network of networks is still consistent with the concept of a national architecture, and a network of networks is not a reason to stop the BTOP recipients or other early deployers. The primary purpose of FirstNet is to ensure and enforce interoperability and interconnection nationwide as its first priority, since we have several decades of evidence that interoperability will not exist unless it is given the first priority. States and local jurisdictions understandably have competing priorities and responsibilities. FirstNet must deliver interoperable communications services which are integrally a part of the network services and not subject to the vicissitudes of State and local priorities.

However, the network is for public safety at the State and local level, and the States and local governments have statutory responsibilities to their citizens. For that reason, every possible matter that does not support interoperability, operability, security, sustainability and the financial integrity of the network should be deferred to the States and local jurisdictions. Otherwise, FirstNet may find reluctant or even recalcitrant customers and users. Indeed, States and Territories have state constitutional and state statute responsibilities for public safety which may not be ceded or delegated to FirstNet.

FirstNet must establish and enforce technical interoperability, interconnection protocols and at least a baseline of applications that will be usable and used by every jurisdiction that connects to the network. It must prescribe a baseline of standard operating procedures and protocols (since only a small percentage of interoperability is technology; the remainder is human interaction).

FirstNet may want to establish a baseline for resilience and hardening, though a great deal of deference should be given to the States in this regard. Earthquake hardening may be appropriate for California, but would not be as necessary or affordable in non-earthquake prone areas, for example.

States should be given the ability to set services and service levels, to control access and priority and what other applications will be allowed other than the baseline.

The Honorable Mike Doyle

1. **According to the National Broadband Plan wireless backhaul is "critical to the deployment of wireless broadband and other wireless services," particularly "[w]hen fiber is not proximate to a cell site." I understand that the existing wireless backhaul networks face a number of regulatory and technological constraints that limit their potential capacity. These independently-powerable backhaul services are important to undergird FirstNet, the national first responder network.**

   How did public safety and mobile networks perform during natural events, like Hurricane Sandy, and man-made events, like 9/11?

Answer:

I will divide my answer into parts, public safety and then commercial mobile cell service, and I will address both operability (your question on performance) as well as interoperability.

Public safety networks, by and large, remained operational during and after Hurricane Sandy due to the hardening of these networks beyond what is generally commercially viable. During Hurricane Katrina, the entire communications infrastructure was devastated, both public safety and private, so the lesson learned from that disaster is that satellite back up and satellite emergency alert systems should be integrated into any public safety network. During 9/11, some public safety communications facilities were damaged, but mostly public safety communications remained operable. However, several technical and procedural problems were identified after 9/11 regarding the interoperability of public safety communications.

With regard to cell phones, Hurricane Sandy also was devastating to the infrastructure, but power was actually a larger factor than was damage to cell sites. During 9/11, cell sites on and around the Twin Towers were damaged or destroyed, but primarily cell service was impacted by the extremely high usage.

2. **Can public safety networks and mobile networks work without backhaul?**

Answer:

No, public safety networks and mobile networks cannot really work without backhaul. On the scene of an incident, technology does exist to allow public safety officials to set up mobile ad hoc mesh networks that would allow the teams in that area to communicate with each other even if no backhaul to the network is available. However, communications would be limited to that mobile ad hoc mesh network and whatever data and applications it had available until a connection could be established or re-established. In that instance, there would be no connection to the Internet, telephone systems or other networks.

3. **If the FCC ultimately reclaims spectrum in the 24 and 39 GHz range, how long will it take, including the necessary legal proceedings, for a new**

wireless backhaul provider to build-out a backhaul service with the seized spectrum?

Answer:

I do not have the answer to your question.

Thank you for the opportunity to testify and to respond to your questions.

Questions for the Record

David S. Turetsky
Federal Communications Commission
Public Safety and Homeland Security Bureau

Before the
Subcommittee on Communications and Technology
U.S. House of Representatives

May 16, 2013

The Honorable Henry Waxman

1. The Public Safety and Spectrum Act requires public safety users to vacate the T-Band in 11 years. First responders in Los Angeles rely heavily on the T-Band and tell me they have no reasonable alternative for voice communications at this time. LA-RICS, a coalition of Los Angeles public safety agencies, recently filed a waiver request with the FCC seeking permission to apply for new voice channels to ensure that first responders in the LA market have the ability to communicate after they are required to vacate the T-band.

I am pleased that the FCC sought comment on the LA-RICS waiver request.

Can you provide an update on the status of that proceeding? More specifically, when do you anticipate that the FCC will make a decision in regard to the LA-RICS waiver request?

The Commission has received comments and reply comments from interested parties in response to the Commission's *Public Notice* on the LA-RICS waiver request. Commission staff also met with LA-RICS representatives on May 8, 2013 to discuss the details of the proposed waiver. In addition, LA-RICS' proposal for use of 700 MHz reserve channels is being addressed in a *Notice of Proposed Rule Making* released on April 1, 2013. Comments in that rulemaking proceeding are due on June 18, 2013, and reply comments on July 18, 2013. Staff is working diligently to complete its review of the record in the proceeding, and is cognizant of LA RICS' need for resolution in a timely manner.

2. As you may be aware, last Congress several Democratic members of this committee wrote Chairman Upton and Chairman Walden to request a hearing on issues related to "superstorm" Sandy. Simply put, communications services failed to perform as needed during and after the storm. We thought it was important to examine the impact of the storm and reliability of communications services, especially in the larger context of our transition to wireless and IP networks.

Although we cannot predict the next disaster, we know that these kinds of events are on the rise. So we need to consider whether we need to take additional steps to prepare our networks for this more common occurrence.

We were pleased that the FCC decided to examine this issue in more detail.

What can you tell us about the FCC's field hearings on this topic? What new information about network reliability and resiliency has come to light as a result of these hearings?"

The Commission convened two field hearings to examine challenges to the nation's communications networks during natural disasters and in other times of crisis. The first, held in New York City and Hoboken New Jersey on February 5, 2013, explored, among other issues, lessons learned from Hurricane Sandy. The second hearing, held at NASA's Ames Research Center in California, built upon information received at the first hearing and examined innovative technologies to improve network resiliency in times of disaster.

Testimony taken during the first hearing emphasized the critical link between the electric grid and telecommunications networks. While this link was previously recognized, the event dramatically underscored its importance. A substantial portion of telecommunications network outages were due to the widespread power outages caused by the storm. Additional testimony demonstrated the critical role that broadcasters play in ensuring the dissemination of information to the public during such events, the growing role of social media in enhancing communications during such events, and an interest in obtaining further information about outages of service providers' wireless networks in disasters.

The Commission is evaluating what additional steps may be appropriate in light of the issues discussed in the hearings. The Commission has an open proceeding regarding network reliability and resiliency (*see* Reliability and Continuity of Communications Networks, Including Broadband Technologies, Notice of Inquiry, 26 FCC Rcd 5614 (2011)). The transcripts from both hearings have been placed in the record of that proceeding.

The Honorable John Dingell

1. What percentage of calls to E911 emergency dispatchers are made using wireless devices?

While the Commission does not track the information requested, we can provide an estimate using publicly available data. According to the National Emergency Number Association (NENA), an estimated 240 million calls are made to 9-1-1 in the U.S. each year.[1] CTIA – The Wireless Association estimates that approximately 400,000 E911 calls were placed per day by wireless devices during the month of December 2012.[2] Extrapolating the CTIA data - approximately 146 million wireless calls were made to 9-1-1 in 2012. Therefore, an estimated 61 percent of calls to 9-1-1 are originating from wireless devices.

2. Does GPS allow E911 dispatchers to locate wireless callers indoors?

[1] National Emergency Number Association, 9-1-1 Statistics, available at http://www.nena.org/?page=911Statistics.
[2] CTIA – The Wireless Association, Wireless Quick Facts, available at http://www.ctia.org/advocacy/research/index.cfm/aid/10323.

Generally, the Global Positioning System (GPS) is designed to provide geographic location as measured by a wireless device's latitude and longitude. A GPS receiver in a wireless device relies on line of sight to the constellation of satellites used to determine location of the device. Typically, the effectiveness of GPS is limited indoors because the GPS satellite signal cannot reach handsets inside many buildings. Indoor environments can also dramatically attenuate, or weaken signal strength, of Radio Frequency (RF) transmissions, in particular GPS signals. When wireless customers take their mobile device to an indoor location, the radio signals that the device receives and transmits (both GPS and cellular) are subject to degrading interference, including additional RF attenuation, scattering (diffusion of signal), and multi-path propagation (fading of signal). The extent of signal degradation depends on the nature of the building's construction materials and the layers of construction obstructing the various signal paths. Consequently, indoor environments, such as office buildings and complexes, condominiums and apartment buildings, college dorms or hotel rooms, present significantly more challenging circumstances than outdoor environments for wireless carriers attempting to generate accurate location estimates of 9-1-1 calls made by their customers.

3. Similarly, are the FCC's location accuracy standards for Phase II of E911 applicable to indoor environments?

Generally, the FCC's Phase II location accuracy standards are not applicable to indoor environments. In September 2010, the Commission adopted new rules requiring CMRS wireless carriers to provide more specific automatic location information to 9-1-1 call centers in areas where they had not done so in the past. In doing so, the Commission recognized the impediments that wireless carriers face in transmitting location information for indoor 9-1-1 calls. Specifically, because indoor use poses unique obstacles to both handset-based and network-based location technologies, the Commission clarified that the amended location accuracy standards for CMRS wireless carriers apply to outdoor measurements only.

4. NextNav/Progeny are currently awaiting FCC approval before they can begin providing indoor position location services to support emergency first responders. When does the Commission expect to grant or deny NextNav/Progeny's request?

Under our rules, NextNav/Progeny (Progeny) must demonstrate that its use of spectrum within the Part 15 band would not cause unacceptable levels of interference to other Part 15 spectrum users. An order addressing Progeny's request has been placed on circulation and is currently awaiting decision by the Commissioners.

5. Additionally, please describe the approval process for NextNav/Progeny's request?

On March 10, 2011, the Wireless Telecommunications Bureau (WTB) released a public notice seeking comment on a request by Progeny seeking waiver of certain of the Commission's rules relating to Multilateration Location and Monitoring Service (M-LMS). On December 20, 2011, the WTB and Office of Engineering and Technology jointly adopted an order granting a waiver to Progeny conditioned on Progeny conducting field testing prior to commercial operation of its network sufficient to demonstrate that it does not cause unacceptable levels of interference to other Part 15 users of the spectrum. On January 27, 2012, Progeny submitted test results in support of its claims that its network does not cause unacceptable levels of interference to Part 15 devices. Following Progeny's submission of test results, on February 14, 2012, WTB and

OET released a *Public Notice* seeking comment on Progeny's field testing report. At the request of the Commission, Progeny conducted additional testing on a joint basis with three Part 15 spectrum users and filed three test reports with the Commission. On November 20, 2012, WTB and OET placed the second set of test results on public notice. The comment period ended on January 11, 2013. Recently an order addressing Progeny's request has been placed on circulation and is currently awaiting decision by the Commissioners.

The Honorable Mike Doyle

1. According to the National Broadband Plan wireless backhaul is "critical to the deployment of wireless broadband and other wireless services," particularly "[w]hen fiber is not proximate to a cell site." I understand that the existing wireless backhaul networks face a number of regulatory and technological constraints that limit their potential capacity. These independently-powerable backhaul services are important to undergird FirstNet, the national first responder network.

How did public safety and mobile networks perform during natural events, like Hurricane Sandy, and man-made events, like 9/11?

During Hurricane Sandy 9-1-1 communications performed remarkably well. Although calls to many 9-1-1- Call Centers were rerouted to other 9-1-1 Call Centers, there were almost no instances where it was impossible for a Call Center to receive a 9-1-1 call. Most land mobile radio public safety systems worked well. Commercial wireless networks were affected by loss of commercial power at the cell towers and loss of backhaul from the cell towers to the Mobile Switching Centers. Approximately 25 percent of cell sites within a 164-county area (across 10 states and Washington, D.C.,) were out of service. In the hardest hit areas like New Jersey, the percentage of cell site outages was considerably higher and more than double in some counties.

2. Can public safety networks and mobile networks work without backhaul?

Mobile communications use backhaul to access the network for handling user traffic to reach the Internet or other users on the same or different networks, e.g., the Public Switched Telephone Network, as well as signaling traffic needed to authenticate, control and manage the call. We are not aware of any deployments for mobile cellular networks that deviate from this principle. Standards-setting bodies are working to provide near proximity direct device- to- device communication without transporting user data over the backhaul to the network; however, these capabilities are not available currently.

Generally, when backhaul of some kind is not available, calls cannot get through. There are two ways to fix this problem: 1) repair the backhaul or 2) set-up alternate backhaul arrangements. It is always preferable to repair the backhaul as long as the repairs can be done in a reasonable time. This is what most of the carriers did as a result of damage from Hurricane Sandy.

Current public safety network deployments are based on narrowband LMR (Land Mobile Radio) technologies. These networks, while local or regional in nature, also use backhaul connections

to expand the reach of the network. LMR user devices also support direct communication (also known as talk around) which allows users to communicate directly without any use of the network or backhaul in a limited area.

3. If the FCC ultimately reclaims spectrum in the 24 and 39 GHz range, how long will it take, including the necessary legal proceedings, for a new wireless backhaul provider to build-out a backhaul service with the seized spectrum?

The Commission recognizes the importance of freeing up additional spectrum to support the growing demand for wireless services, including the backhaul services that constitute a critical element of our nation's wireless infrastructure. At this time the Commission has not initiated any proceeding to reclaim spectrum in either of these bands. Nor has the Commission initiated any proceedings seeking information on the timetable for building out in these bands in the circumstances you address.

The Honorable Ben Ray Lujan

1. The danger of cyber threats to our emergency networks could cripple the ability of our responders to react to an emergency and bring additional harm. In your written testimony, you describe the FCC's efforts to work with communications providers to develop voluntary cybersecurity measures and best practices as well as educate shareholders on threats. My district is home to Los Alamos National Laboratory, which provides some of our nation's leading work on supercomputing and cybersecurity. Has the FCC considered consulting with the lab on these cyber threats?

At the Commission, we are very interested in consulting with leading experts in the field of cybersecurity in an effort to improve the availability, reliability, and resiliency of our nation's communications networks. We are aware of Los Alamos National Laboratory's focus on national security threats to the nation's cyber infrastructure. We are aware of the lab's research and papers regarding the development of innovative technologies for detection, response, and predictive vulnerability analysis that can be used by service providers and enterprise networks to defeat today's intrusions into both government and critical infrastructure systems as well as to predict and prepare for potential attacks in times of conflict.

At the Commission, our cybersecurity focus has been concentrated on reducing the public communications infrastructure vulnerabilities associated with domain name fraud, Internet route hijacking, and botnets. We do plan to reach out and consult with the National Laboratories that responded to the recent NIST Request for Information concerning the development of a framework to improve critical cybersecurity infrastructure as part of the Department of Homeland Security consultative process.

We look forward to other opportunities of mutual benefit to engage the National Labs and seek their expert advice regarding cybersecurity threats to the nations' public networks, and recommendations for improving the resilience of the networks to these threats.

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