

**Statement of
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**Interoperable Emergency Communications: Does the National Broadband Plan Meet the
Needs of First Responders?**

**Before the
Subcommittee on Emergency Communications, Preparedness, and Response**

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Good morning Chairwoman Richardson, Ranking Member Rogers, and Members of the Subcommittee. I appreciate this opportunity to appear before you today on this issue of national importance.

Over the past decade, this Nation has endured man-made and natural disasters that have tested our mettle, our resiliency, and our resolve. The attacks of September 11, 2001, were some of the most horrific events in our Nation's history. Hurricanes Katrina and Rita, the Midwest floods, the Kentucky ice storms, the California wildfires and countless other natural disasters have taxed our resources, our disaster planning and response, and our public safety personnel. The communications failures that occurred during and after these events cost the lives and livelihoods of our citizens, and of many brave men and women in uniform.

In the wake of these events, we became smarter about why these communications failures occurred, and what can be done to better prepare our physical communications networks and governance protocols to work more effectively during a crisis. The Department of Homeland Security, the National Telecommunications and Information Administration, the Department of Justice, the FCC and others have worked hand in hand with the public safety community to examine our legacy public safety networks, and to put in place the legal, regulatory, governance and technical rules that will facilitate interoperability and survivability.

The fact that we can look back on these events and show some progress speaks to the dedication of our Nation's emergency personnel, and of the agencies that work to solve these problems. But make no mistake; this progress has been very slow, and those on the front lines of America's emergency response continue to lack access to basic communications tools that many commercial consumers take for granted. Our Nation's legacy narrowband voice public safety communications networks remain hamstrung by outdated, proprietary technologies that were not

designed to work together, as well as a public safety network construction mindset that values control over coordination, and relies on local projects and local funding, which are often inconsistent or nonexistent.

But the communications landscape is undergoing a sea change – a shift to advanced 4G wireless broadband technologies like Long Term Evolution (LTE) that have the potential to revolutionize the way public safety communicates and executes its critical mission, from the big city cop on the beat to the small town volunteer fire fighter to the suburban emergency medical technician. If, however, public safety is going to ride the wave of this technological roll out, we have a limited opportunity to act.

If we act at the very inception of 4G technology, and employ an inclusive, well-reasoned, and achievable plan for deploying – and funding – a 4G public safety wireless broadband network, we can reach at least 99% of the population and catch the technological wave as commercial 4G networks are built. Otherwise, America runs the risk of not being able to afford a nationwide, interoperable public safety network and it will never be deployed.

As the images of 9/11 fade from our everyday consciousness, I am concerned that we may have lost the urgency to act. But as we approach the ninth anniversary of those events, I am here today to explain why we must regain that urgency, that drive to act, and why the FCC's National Broadband Plan recommendations are a comprehensive solution to the communications problems highlighted by all of this and other recent national tragedies.

The National Broadband Plan's Comprehensive Approach

The approach that the FCC recommended in the National Broadband Plan, which was developed with significant public input from all quarters, provides a realistic, achievable roadmap to successful deployment and operation of this system. Indeed, the vast majority of the

plan enjoys broad support from across the public safety community, industry, and others. For example, there is broad general agreement on the need for:

- The adoption of new, common open-standard LTE technology;
- Priority access for public safety on commercial networks;
- The ability to roam onto commercial networks and other public safety networks;
- An emergency response interoperability center, to ensure interoperability across the network; and
- Consumer-priced device components that “see” the relevant bands, are “ruggedized” for public safety, and correspondingly priced network equipment.

We also all agree that the public safety network should not be an isolated technological island, so that it can continue to evolve, on a cost effective basis, as commercial technology improvements are made. Members of the public safety community agree that there needs to be sufficient public funding for the network to ensure that it is built, that it is hardened, and that it extends to rural areas.

The one area where we have witnessed disagreement is the amount of spectrum that should be allocated to public safety to make the network fully functional. There are many in the public safety community that would like the 10 MHz of the D Block added to the 24 MHz of spectrum already dedicated to public safety in the beachfront 700 MHz band. Others believe that auctioning the spectrum to commercial licensees is the better approach. During the preparation of the Plan, we examined both sides, and sought the best advice from engineers, economists, policymakers, and a wide array of wireless providers and manufacturers seeking to partner with public safety to bring 4G technologies to all parts of the country.

From this input, we were able to develop a list of attributes that the public safety broadband network must include:

1. **Nationwide.** The network must provide coverage for public safety to everywhere, with the eventual goal of 99% coverage of the population.
2. **Interoperable.** The network must interoperate across all geographies and public safety agencies.
3. **Capacity and Performance.** The network must have the capacity and performance to reliably support public safety day-to-day and on an emergency basis, as well as provide contingencies for operations during the worst disasters, through hardening and opportunities for access to redundant networks.
4. **Cost-effective.** The network and its devices must be affordable to deploy, operate, utilize and upgrade.
5. **Technologically advanced.** The network must utilize the latest technology and with cost effective technological evolution built in. Public safety cannot be trapped in expensive, out-dated old technologies that cannot be upgraded without considerable expense and that threaten interoperability.

In the past, we have raised concerns about plans to simply reallocate the D Block for public safety use. Taken by itself, such reallocation will likely fail to:

1. Fund network build out and operations;
2. Make it affordable for public safety to use, maintain and upgrade, allowing public safety to benefit from continued innovation;
3. Provide operability and coverage in all parts of the country;
4. Promote interoperability;

5. Provide sufficient capacity for the worst emergencies; and
6. Provide for build out in the near term.

Therefore, regardless of how much spectrum the public safety network employs, there are vital issues that need to be considered apart from the basic question of reallocation. I will address each of these considerations in turn.

Funding Network Build Out Throughout the Country

The National Broadband Plan recognizes that without a comprehensive public funding mechanism for both capital and operating expenses, an interoperable broadband network will be unaffordable for significant portions of the country, and particularly for rural America. Our cost model demonstrates under an incentive-based partnership approach, which fully leverages commercial technologies and infrastructure and covers 99% of the U.S. population, capital expenses for a fully hardened network will cost approximately \$6.5 billion over 10 years. Operating expenses for this network will cost for the same 10-year period between \$6 and \$10 billion. With this funding in place and based on the FCC's roadmap, nearly all Americans, regardless of where they live, will be covered by a nationwide, interoperable public safety broadband network when an emergency strikes.

Conversely, simply reallocating the D Block to public safety will not provide funding for network deployment or operations. It has been suggested that public safety could "self fund" network build out, either through traditional local funding methods or by leasing excess spectrum capacity to others. With respect to the former, as we have seen, traditional local funding methods are unreliable, inconsistent, and subject to tremendous variation depending on the relative resources of the local community. This approach threatens to create a patchwork of "haves" and "have nots," with many small and rural communities left out. And when times get

tough, as we have seen from the diversion of funds in the E-9-1-1 context, local monies slated for public safety can be diverted or eliminated in order to meet budgeting constraints. In an environment where local communities must lay off or furlough public safety personnel, the prospect of identifying local funding for broadband network construction is grim.

With respect to the prospect of public safety becoming a spectrum broker for secondary access, nothing in our record demonstrates that enough revenue could be generated to meet capital and operating expenses of the network. The likely result is that public safety would have no choice but to build fewer towers in rural areas to save money, or simply would not build at all. Moreover, when the FCC attempted to broker a mandatory partnership with significant public safety obligations on the designated commercial provider, there were no buyers. Thus, if the D Block were to be reallocated to public safety, we have no assurance that any potential buyers would be willing to pay sufficient leasing fees to fund a viable nationwide network. Sufficient public funding, with appropriate spending safeguards, is therefore imperative regardless of how much spectrum is involved.

The Need for Network Affordability and Keeping Pace with Innovation

The National Broadband Plan and supporting FCC White Papers demonstrate that capitalizing on the 4G deployment schedules of commercial carriers will be significantly less expensive than building a stand-alone public safety system. Under the FCC's plan public safety will have its own spectrum, its own network, and control over key operational components, but in most areas public safety can share infrastructure that already exists or is being supplemented by commercial service providers now. In this way, public safety will save approximately **\$9 billion** for network construction and save potentially tens of billions in operating costs.

Reallocating D Block will make it more difficult for public safety to enter into commercial partnerships that capture the economies of scale that commercial carriers enjoy by virtue of their larger customer bases. If public safety is unable to leverage the commercial marketplace, the cost of the public safety network could easily rise from approximately \$6.5 billion for construction costs and approximately \$8-10 billion in operating costs to an estimated combined total of \$35-\$48 billion over ten years, a **three to four times increase**.¹

Reallocating the D Block therefore threatens to come at a price that may put the network out of reach for many communities. Moreover, if the D Block is reallocated, instead of taking 10 years it is more likely that nationwide network deployment will take 20 to 25 years, if it happens at all. Delaying deployment may also damage any ability to leverage commercial deployments now or in the future, and it will be more likely that nationwide interoperability will not be achieved in any reasonable amount of time. Further, the D Block and the public safety broadband spectrum make up what is called “Band 14” in the 700 MHz band. Without a commercial carrier in Band 14, the pool of potential users in Band 14 is reduced dramatically, providing less incentive for equipment manufacturers to develop or upgrade products. Without the ability to capitalize on commercial research and development, and choose from a broad array of commercial equipment manufacturers, public safety users will be saddled with disproportionately high costs for communications equipment and handsets that are rapidly outdated and not readily replaceable. Once again, public safety will be left behind and simply providing more spectrum alone does not solve this concern.

¹ Federal Communications Commission, A Broadband Network Cost Model: A Basis for Public Funding Essential to Bringing Nationwide Interoperable Communications to America’s First Responders, OBI Technical Paper No. 2, at 4-6 (May 2010), available at <http://www.fcc.gov/pshs/docs/ps-bb-cost-model.pdf> (Cost Model).

Guaranteeing Coverage in Urban, Suburban and Rural Areas

Under the National Broadband Plan, the FCC proposes a comprehensive cost and leveraged deployment strategy that will economically and expeditiously reach 99% of the population.

If the D Block is reallocated, the increased expense of the network and user devices will make it more difficult to achieve nationwide coverage, and could leave portions of the country without access to these critical public safety communications services. In essence, these areas will be left behind with the vestiges of legacy, narrowband fragmented networks which encumber our Nation today. And it is most likely the rural and economically challenged areas of the country that will be stuck on the sidelines.

Guaranteeing Interoperability

Another critical requirement for this network is to ensure that it is interoperable. This means that no matter the jurisdiction or the uniform, when a first responder picks up a radio he should be able to communicate with the right people and have the right information instantaneously.

In April of this year the FCC took a dramatic step forward to ensure interoperability when we established the Emergency Response Interoperability Center or ERIC. ERIC's mission, with the help of experts from the Department of Homeland Security and our other Federal partners, is to develop technical requirements to ensure that the 700 MHz public safety broadband wireless network will be fully operable and interoperable on a nationwide basis, both day-to-day and during times of emergency. The impact of ERIC is already being seen. This May, the FCC conditionally granted 21 waiver petitions for early deployment of regional, state, and local public safety broadband networks.² In these initial grants, the FCC adopted baseline requirements as a

² These include the City of Boston; the City and County of San Francisco, City of Oakland, City of San Jose CA; State of New Jersey; City of New York; City of San Antonio TX on behalf of the San Antonio Urban Area Security Initiative Region; City of Chesapeake, VA; State of New Mexico; City of Charlotte, NC; State of New York; District of Columbia; County of Maui, County of Hawaii, County of Kauai, City and County of Honolulu, and the

first step towards to ensure day one interoperability for the network. In June, we appointed twenty experienced, public safety practitioners to be members of ERIC's Technical Advisory Committee, and we are in the process of developing an additional advisory body with broader participation. Together with input from the public safety community and our Federal partners, the experience we gain with these initial deployments will be instrumental as the FCC adopts its final technical rules. As our recent actions demonstrate, the FCC is committed to ensuring that as deployment begins on this network, interoperability is fully achieved.

And this work must continue, regardless of the amount of spectrum the public safety network uses. However, reallocating the D Block to public safety may make this work even more complex for several reasons. First, if the network is not nationwide, significant portions of the country would not be able to interoperate with each other. Second, without the ability to capitalize on a robust commercial equipment market using open standards, the potential for proprietary solutions and applications may also endanger interoperability. The use of proprietary equipment and standard are part of the reason interoperability has been elusive with our current narrowband public safety systems. So, regardless of how much spectrum is allocated to public safety, it is imperative that the FCC, with its Federal partners, continue our work through ERIC to ensure the public safety network does not begin on a flawed foundation.

Ensuring Sufficient Capacity on the Worst Days

FCC engineers, experts and technical staff have spent hundreds of hours performing engineering analysis to determine whether the 10 MHz of dedicated spectrum allocated to public safety will provide more than adequate capacity and performance for day-to-day and emergency

State of Hawaii; City of Seattle, WA; Adams County, CO Communications Center; City of Pembroke Pines, FL; Los Angeles Regional Interoperable Communications System; Iowa Statewide Interop. Comms. System Bd.; Calumet, Outagamie and Winnebago Counties, WI; Mississippi Wireless Communications Commission; City of Mesa AZ and the TOPAZ Regional Wireless Cooperative; State of Oregon; and State of Alabama.

communications. We have shown that a public safety network built on the 10 MHz of dedicated spectrum supports these critical communications requirements.

Network capacity and performance are affected by spectrum, but other important factors include the type of architecture employed, the number of cell sites in operation, the number of sectors per cell, sound network and spectrum management, and the specific technology that the network utilizes.³ By deploying advanced, 4G wireless technologies and cellular network architectures, public safety can achieve much greater capacity than they have achieved in the past. Indeed, moving from today's Land Mobile Radio (LMR) technology to LTE or even pre-LTE technologies could increase capacity per megahertz by a factor of 16.⁴ In fact, 10 megahertz of capacity on a cellular network would be the equivalent of **160 megahertz** on an LMR-type network.⁵

But we must also plan for the major disasters and emergencies that may challenge the public safety spectrum. To that end, the Plan recommended considering requiring commercial operators across the 700 MHz band, and possibly other bands, to provide public safety with roaming and priority access on their networks at reasonable rates in times of critical need. In this respect, advanced 4G technologies like LTE employ more than a dozen levels of priority, which will allow public safety "packets" to bypass other packets of information. Like an ambulance with its sirens on, priority access will allow public safety to speed ahead of everyone else, who must slow down and pull to the side to provide public safety with the right of way. And under the FCC's proposal public safety would have access to nearly 70 MHz of additional

³ The Public Safety Nationwide Interoperable Broadband Network: A New Model for Capacity, Performance and Cost, at 5 (June 15, 2010), available at http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-298799A1.pdf (Capacity White Paper).

⁴ *Id.* at 8.

⁵ J.M. Peha, "How America's Fragmented Approach to Public Safety Wastes Money and Spectrum," *Telecommunications Policy*, Vol. 31, No. 10-11, 2007, p. 605-618.

spectrum in the 700 MHz band—far more than 10 MHz or 20 MHz, either of which would be inadequate in the worst emergencies. Moreover, as technology evolves to allow priority roaming in other commercial bands, public safety could potentially have access to hundreds of megahertz—orders of magnitude greater than the alternative that has been proposed.

Further, roaming and priority access will provide public safety with access to redundant networks in case their network is unavailable. If the FCC concept is employed, if necessary police, fire and emergency medical communications could simply roam over onto public safety's choice of one or more commercial networks, with priority, and still continue their public safety work. This level of resiliency and redundancy has important benefits for public safety and for homeland security. Simply reallocating spectrum does not provide this level of redundancy; roaming and priority access are vital no matter what.

There are additional pieces to ensure adequate capacity and performance recommended by the Plan. Our cost model recognizes and captures the need for deployable caches of communications equipments, such as cell towers on wheels, to supplement the network during the worst emergencies. We have also recommended that states and localities should include in their building codes requirements for the installation of in-building transmitters. This will ensure that communications is extended to deep within buildings.

In our expert opinion, many these elements could be at risk if the D block is simply reallocated to public safety. Ten megahertz of additional spectrum cannot provide public safety with the capacity it may require in the worst emergencies, or the redundancy and dependability of roaming and priority access on multiple commercial networks. Accordingly, pursuing roaming and priority access remain vital considerations for disaster planning irrespective of whether the core public safety network employs 10 or 20 megahertz.

Providing Opportunities for Immediate Deployment

Finally, let me end where I began—urgency. Regardless of whether or not the D Block is reallocated, if we delay too long in taking action, we lose the chance to capitalize on commercial 4G deployments; we lose the chance to save the country tens of billions of dollars; we lose the chance to bring this network to rural parts of the country; and we lose the chance to make this network a reality in the near term. These opportunities are available to us now, if we can muster the courage and the urgency to act.

Conclusion

Our mission is to ensure that public safety agencies in **all** areas of the country have the can successfully access an advanced, wireless broadband network. We have a singular opportunity to ensure that public safety has a nationwide interoperable broadband network. Our Plan carefully balances the input of all stakeholders, and takes advantage of this opportunity by offering a sustainable, long-term, cost-efficient model that provides first responders with the state-of-the-art, affordable, and interoperable broadband communications networks they deserve. We have one chance to solve the 9/11 interoperability problem and we must seize the opportunity while we can.

Thank you for your time and attention. I am very happy to take any questions you may have.