

Building a 21st Century Public Safety Communications Infrastructure

I. Introduction and Summary

The need for improved public safety communications has been clear since the tragedies of 9/11 and Hurricane Katrina and has been a goal of policymakers for years. The inability of public safety users to communicate effectively across departments and jurisdictions impairs the ability of the United States to respond to large-scale natural disasters and national security incidents and impedes the day-to-day work of public safety agencies. Thus, as the 9/11 Commission concluded, the absence of “compatible and adequate communications among public safety organizations at the local, state, and federal levels” is a problem of the highest order.¹ Congress has designated a portion of the spectrum made available through the digital television transition for public safety uses and charged the FCC and DHS with addressing the inadequacies in the ability of first responders and other public safety users to communicate with one another. But in the years since 9/11, we have made virtually no progress, and the nation is nowhere close to a nationally interoperable public safety communications system.

The lack of progress stems from the absence of a coherent and realistic national plan. The FCC has attempted, without success, to create a national wireless broadband network for public safety, without the expenditure of public funds, through a public-private partnership between a single public safety licensee (the Public Safety Spectrum Trust or PSST) and a single commercial carrier. The PSST was selected by the FCC as the national licensee for a block of spectrum allocated for public safety use and was to be the “public” side of the public-private partnership envisioned by the FCC. The private partner was to have been the carrier who prevailed in an auction to gain shared access to additional spectrum to be used for this purpose (the so-called “D Block”) in exchange for building and operating the network. Because, among other things, the FCC’s approach was not economically feasible for carriers—the cost of build-out vastly exceeded the value of the shared access—and was fraught with uncertainty, not a single carrier stepped up to bid at the auction. In the interim, major cities—New York, Boston, San Francisco, and Washington, DC—have been developing plans to build their own wireless broadband networks in the absence of federal guidance. Indeed, a number of these cities have sought waivers from the FCC to permit them to begin building broadband networks for public safety use before a national plan is formulated, and the PSST, among others, has supported such requests.

Because these efforts have not yielded an actual national solution, new ideas have come to the fore. Several points have now emerged in discussions among key stakeholders that can form the basis for an effective and practical plan:

- A nationally interoperable wireless broadband system should be developed as a “network-of-networks,” allowing a combination of dedicated and shared networks in different regions depending on the needs of a particular area.
- All the needed spectrum should be licensed directly to public safety on a regional basis so that it can control the use of the spectrum to meet its needs.

¹ National Commission on Terrorist Attacks Upon the United States, *The 9/11 Commission Report*, 397 (2004).

- Those networks should be subject to a national framework that sets minimum technical and operational standards and ensures interoperability across jurisdictions and departments, thus yielding “a network of networks.”
- Any solution should promote the use of public/private partnerships to leverage whichever commercial infrastructure is strongest in each locale.
- These partnerships should be formed through competitive “requests for proposal” (RFP) or similar process run on a regional basis rather than auctions to provide public safety with greater flexibility to select commercial partners based on a variety of criteria—e.g., ability to meet particular law enforcement needs in the area—in addition to just price.
- Federal funding should be authorized to support the construction and operation of the interoperable system in certain rural and other high-cost regions where it would not otherwise be economically viable to construct and operate such a system.

II. The Path Forward

To be effective, any public safety communications solution must satisfy the current and future needs of public safety users. These include: providing voice, data, and other broadband services to first responders where and when they are needed; ensuring interoperability across multiple departments and jurisdictions; enabling nationwide roaming and access to the public switched telephone network; and providing reliable, redundant networks that are “hardened” to meet the mission-critical needs of public safety and withstand national security events and natural disasters.

In theory, these goals could largely be met through the construction of a new national network designed for public safety’s use. Indeed, that has been a key assumption of the FCC’s approach up to this point. However, as the failure of the FCC to attract any bidders in its attempted auction of the D Block spectrum illustrates, the cost of such an approach is likely prohibitive. And, based on the comments that the FCC has received since the conclusion of the auction, another auction based on more economically realistic requirements may not satisfy all of public safety’s needs. The experience of the FCC and DHS (in connection with its efforts under the Safecom program) and continued discussion among public safety and other key stakeholders has yielded an emerging consensus that can form the basis for a practical plan. Such a plan would contain the following elements:

Utilize a network-of-networks approach. A network-of-networks approach offers a number of benefits that would address the significant problems under the centralized national model that the FCC has pursued. The needs of public safety are varied, and a top-down, one-size-fits-all approach will not meet these varying needs. For example, public safety agencies in certain large metropolitan areas such as New York, Washington DC, San Francisco, and Boston have made clear that they have a need for networks dedicated solely to public safety use. Public safety users in many other areas of the country—e.g., in rural areas—are likely to find that networks shared with commercial users are more cost-efficient and fully meet their needs. But even in such cases, their needs may vary based on factors such as geography, population distribution, and existing commercial deployment. A network-of-networks approach would provide the flexibility to tailor public-private partnerships to these varying circumstances. In

addition, a network-of-networks approach would reduce the commitment required by any given commercial carrier and thereby allow participation by the commercial carriers best positioned to serve each region's needs, opening the door to leveraging the assets and infrastructure of multiple commercial partners that are unwilling or unable to undertake build-out on a national scale or outside of their core regions. This would maximize coverage and reduce the vulnerability of the network as a whole to the problems of any one commercial carrier.

License the required spectrum directly to public safety on a regional basis. Any network solution must include a sufficient amount of spectrum to satisfy public safety's current and future communications needs. As it stands, half the spectrum allocated for public safety use is in the hands of public safety and the FCC has been trying to auction off the other half to a commercial carrier. Splitting the spectrum in this way does not make sense. The spectrum put up by the FCC in its failed auction should be reallocated directly to public safety so that those who need the spectrum will have control and can make use of the spectrum in a coordinated way.

Further, just as implementation and operation of the networks should be done on a state or regional basis, the spectrum should be licensed on the same state or regional basis. That is the best way to ensure that the spectrum is used in a manner that most effectively meets public safety users' particular needs in a specific area and enables them to select a partner that can best address those needs. As noted above, certain areas with significant public safety communications needs may well need all or much of the spectrum on a dedicated basis, and there is no reason public safety groups in those regions should not directly control all of that spectrum. In others areas, public safety users may not need all the capacity of the spectrum, and it likely will make sense to allow shared commercial use of the spectrum (subject to a right of preemption by public safety users as needed). Among other things, such shared commercial use could generate revenue that could be used to offset the cost of serving public safety. Again, however, putting public safety in those areas in control of the spectrum is the best way to ensure that it will obtain the needed preemption rights and can negotiate the best deal for shared commercial use.

Establish a national framework to ensure interoperability and minimum technical and operational standards. As the aftermath of 9/11 made clear, any effective public safety communications solution must ensure interoperability across multiple departments and jurisdictions. The technical capabilities to resolve this issue for broadband networks exist today. Software and hardware solutions using IP standards can enable agencies in different places and using different networks or providers to talk to one another, just as a wireless caller using one carrier can talk to someone who subscribes to another carrier. In addition, to ensure that a first responder in one location could travel to another area (e.g., in the aftermath of a national disaster) and seamlessly communicate with those already there, networks could be based on a common technology standard and/or public safety users could be equipped with multi-mode handsets. The FCC and/or DHS could set a basic national framework (with input from affected stakeholders) that would set parameters to ensure national interoperability and could condition spectrum licenses on compliance with those standards. Similarly, they could set baseline technical and operating parameters to ensure that public safety's needs were met. And they would need to work with localities on a regional basis to ensure that implementation occurs in a timely way.

Leverage commercial infrastructure through public/private partnerships. A national public safety communications solution should use public/private partnerships to leverage as much as possible the extensive commercial infrastructure and facilities that are already in place or planned to be built. The advantages of this approach are clear: it will save enormous amounts of money at a time when there are overwhelming competing needs for public funding. It also will save time. Constructing a new network will be a multiyear endeavor. But commercial networks have already been constructed. And, while various enhancements to those networks will be necessary, that can be done much more quickly than building a network from scratch. Moreover, public safety use of standardized technologies commonly employed in the commercial telecommunications sector will provide improved capabilities because public safety will obtain the benefits of commercial innovation at the same time as other users rather than having to wait for those innovations to be deployed on a separate public safety network.

Form public/private partnerships through an RFP or similar competitive process. An auction requires public safety to commit to a single model, specify the key details before the auction, and then partner with the highest bidder. In contrast, a “request for proposal” (RFP) approach would allow greater flexibility. Public safety could establish priorities and determine the technical, coverage, and other requirements necessary to satisfy public safety’s needs in the region. Prospective commercial partners could tailor their proposals based on factors such as their ability to leverage existing infrastructure in the region and their desire to augment their own existing network infrastructure through investments in the partnership. The public safety licensee could then evaluate bids on a broad range of selection criteria – not just cost – and then partner with the provider that has the most attractive overall proposal.

Authorize public funding to support deployment in rural and other high-cost areas. No matter what solution is adopted, some public funding is going to be needed to bridge the gap between what is commercially viable on its own and what is needed to deploy facilities and meet public safety’s reliability and other technical requirements in certain rural and high-cost areas. One of the reasons the FCC’s auction failed was that no carrier thought it was commercially viable to build out and operate a national network built to public safety’s requirements in exchange for the value of the spectrum and revenues that would be generated from public safety users and by commercial use of any shared infrastructure. Though the system outlined here would require less additional funding than would have been required to make the FCC’s auction work, some federal funding will be needed to make it economically justifiable to build out facilities in certain rural and other high-cost areas. Such funding would also advance the goal of providing broadband coverage to those communities that do not now have it.

III. Action Needed

Even as stakeholders in the public safety community and industry have begun to reach consensus on key elements of a plan to solve the problems with public safety communications capabilities that were laid bare by 9/11 and Katrina, there needs to be action by the federal government to make such a plan reality. Congress needs to pass legislation that would reallocate the D Block spectrum to public safety, authorize the requisite public funding, and assign responsibilities to one or more federal agencies to develop national interoperability standards and oversee the assignment of spectrum licenses to public safety entities. Just as important, we need leadership at the federal level to present and act on a clear and achievable vision for how to get to the end goal in a reasonable time period.

Public Safety 700 MHz Waiver Requests

Various states and local municipalities have asked the FCC to waive its D Block rules so they can construct and operate a 700 MHz broadband public safety network in their respective areas. Waiver requests have been filed by:

City of Charlotte, North Carolina
City of Chesapeake, Virginia
City of Boston, Massachusetts
City of New York, New York
City of Oakland, California
City of San Antonio, Texas
City of San Francisco, California
City of San Jose, California
District of Columbia
State of Iowa
State of New Jersey
State of New York
State of New Mexico
State of North Dakota

- The waivers demonstrate public safety's immediate need for access to a mobile broadband network that meets their critical communications needs.
- Some waivers contemplate a private network dedicated for public safety's use; others plan to deploy a shared network through a public-private partnership that will also serve commercial users; and still others envision some hybrid approach that would include a mix of these network types.
- The waivers seek immediate access to the 10 MHz Public Safety Broadband License (763-768 MHz and 793-798 MHz), but also contemplate future use of the adjacent D Block license (758-763 MHz and 788-793 MHz) if that spectrum is reallocated to public safety.
- The waivers demonstrate a commitment to deploy a standardized LTE network in each area and to ensure that the network is compatible and interoperable with other networks, consistent with a "network-of-networks" approach. (Note: The National Public Safety Telecommunications Council is developing requirements that would ensure interoperability under this approach).