

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	
Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010	)	WT Docket No. 96-86
	)	

**COMMENTS OF FRONTLINE WIRELESS, LLC**

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February 26, 2007

## **SUMMARY OF THE FRONTLINE PLAN**

Frontline Wireless, LLC (“Frontline”) presents in these comments a plan that enables the Commission to trigger the construction of a nationwide, interoperable broadband network for the public safety community – at the willing expense of a national commercial licensee, consistent with current authority and without a single day’s delay of the 700 MHz auction. Through this Plan and its participation in the 700 MHz auction, Frontline seeks to build upon the Commission’s strong leadership in serving the communications needs of the public safety community.

Most notably, in an affordable, timely and easy to adopt manner, Frontline’s Public Safety Broadband Deployment Plan serves the five key communication needs of the public safety community:

- **Additional Spectrum**. By giving public safety agencies priority, emergency access to at least a 10 MHz nationwide block of additional, adjacent commercial spectrum, the Frontline Plan creates an essential spectrum reserve for public safety’s most critical communications. This nationwide “E” Block, combined with the 12 MHz of broadband public safety spectrum proposed by the *Ninth NPRM*, ensures a minimum of 22 MHz for public safety’s broadband network – all without disturbing or otherwise interfering with the existing 12 MHz allocation for narrowband voice communications. In sum, the public safety community will enjoy access to at least 34 MHz of spectrum in the “beachfront” Upper 700 MHz band.
- **Free Buildout**. The Plan gives public safety on-demand access to a swath of broadband spectrum with no build-out expense. The E Block licensee will accept the legal obligation to build out to specific milestones a nationwide broadband network that meets public safety requirements for interoperability, security and robust platforms. In exchange, the E Block licensee will gain access to excess capacity on the 12 MHz of broadband spectrum allocated to public safety – ensuring that the licensee’s business incentives track its legal obligations. Public safety will no longer have to worry about funding the timely build out of a broadband network.
- **Maximum Equipment Choice**. The E Block will be allocated for IP-based, open access architecture, ensuring that public safety agencies can use *any* equipment they choose subject to a minimum, “do-no-harm” requirement. Public safety can take advantage of state-of-the-art technology from a variety of vendors and use it on this IP network.

- **Local Control.** Because it will be built using flexible, IP-based technology, the nationwide broadband network will allow local, regional, and national public safety agencies to create localized, virtual private networks or Intranets to suit their unique communications needs.
- **Nationwide Interoperability Among All Networks.** By its nature, the IP-based, open access network built by the commercial licensee will ensure that first responders and other public safety officials can communicate interoperably when and how they choose.

The Frontline Plan also delivers benefits to other important stakeholders. The commercial licensee will be required to operate the network according to open access principles, allowing consumers freedom to connect devices of their choosing. Also, it will provide commercial operations solely as a wholesale network “utility”, producing capacity that can be resold to retail-oriented service providers, including rural telephone companies and cellular companies not adequately served by the current roaming regime. Indeed, a variety of companies seeking to provide broadband service will be able to rely on this nationwide broadband network to offer service across key parts of their market.

The 700 MHz band represents the last and best opportunity to meet public safety’s critical spectrum needs. Seizing upon that opportunity, Frontline looks forward to working with the Commission, the public safety community and all other stakeholders to improve wireless broadband network availability for public safety users and consumers alike, including in rural markets.

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**COMMENTS OF FRONTLINE WIRELESS, LLC**

Frontline Wireless, LLC (“Frontline”) proposes in these comments that the Commission adopt a “Public Safety Broadband Deployment Plan” that would provide the nation’s public safety community with:

- *More broadband spectrum* through priority access to commercial 700 MHz spectrum in an emergency;
- *Free build-out* of a nationwide public safety broadband network, because the adjacent commercial licensee will fund the billions of dollars in build-out costs;
- *Maximum equipment choice*, with robust, high functionality and affordable, commercially-available equipment;
- *Total public safety “unit level” command and control* over local agency networks; and
- *Nationwide interoperability* among all broadband networks with security, authorization and authentication controlled at national, regional, and local levels.

These comments, submitted in response to the *Ninth NPRM*, take many of the innovative proposals included in that document and fashion a plan to accomplish the Commission’s important goals in a timely, cost-effective, and readily achievable manner.<sup>1</sup>

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<sup>1</sup> *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Ninth Notice of Proposed Rulemaking, 21 FCC Rcd 14837 (2006) (“*Ninth NPRM*”).

Frontline has been organized to construct a nationwide broadband network by forming a bidding group for the Commission's upcoming auction of Upper 700 MHz spectrum and providing innovative broadband services on that spectrum.<sup>2</sup> The Commission has a critical opportunity and obligation to use its spectrum allocation authority in the Upper 700 MHz band – the last available band in the near future – to provide public safety with the broadband wireless communications tools it needs. The Frontline Plan fulfills these goals without the need for a delay in the auction date or a change in law.

It is noteworthy that the Frontline Plan will create a national, wholesale wireless broadband provider that itself would not compete with any retail carrier and that would use only one-third of the commercial spectrum to be auctioned in the Upper 700 MHz band plan. At the same time, it will comprehensively and uniquely address the critical communications needs of the public safety community.

## **I. INTRODUCTION**

The Commission has a unique opportunity to clear the way for establishing a state-of-the-art, nationwide, interoperable wireless broadband network for public safety communications. Congress adopted legislation setting a “hard date” for the digital television transition; after this hard date – February 17, 2009 – all incumbent broadcast stations must cease operating in the 700 MHz band, thus clearing spectrum that is very well-suited for mobile wireless broadband services.<sup>3</sup> It will likely be decades before such a large amount of spectrum suitable for mobile

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<sup>2</sup> Based in Greensboro, N.C. and with offices in Washington, D.C., Frontline is organized for the purpose of building a nationwide public safety broadband network and is committed to providing innovative solutions for public safety and commercial users alike. More information on Frontline's plans can be found at [www.frontlinewireless.com](http://www.frontlinewireless.com).

<sup>3</sup> See 47 U.S.C. § 309(j)(14)(A), as amended by § 3006(a) of the Digital Television Transition and Public Safety Act of 2005, Title III of the Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006) (“DTV Act”).

communications becomes available again. In addition, innovative, fourth-generation (“4G”) technologies, based on Internet Protocol (“IP”) standards, will be available to provide an efficient, flexible platform for a public safety mobile broadband network in the 700 MHz spectrum. Consistent with its demonstrated commitment to the nation’s public safety community, the Commission should take creative advantage of this last, best chance to meet public safety’s broadband needs.

With the changes proposed by Frontline, the Commission’s laudable efforts to serve the public safety community can produce historic changes in the communications capabilities of police, fire departments, and other first responders. Simply put, the Commission has a chance to make history and it can do so without even a single day’s delay in the auction process.

The Commission has launched a broad range of proceedings to ensure that its licensing policies and spectrum band plans for the entire Upper 700 MHz band maximize the exciting opportunities created by these developments. Primary among these is the *Ninth NPRM*, which recognizes the critical need for a nationwide, interoperable public safety broadband network as well as the obstacles to deploying such a network. The Commission enunciates important principles in the *Ninth NPRM* that will help overcome these obstacles, including establishing a public/private partnership that would generate private funds to construct a nationwide public safety network. The proposals show a commendable commitment by the Commission to find solutions to those problems, and Frontline was specifically formed in order to be part of the problemsolving. Frontline believes, however, that the Commission’s goals can only be fulfilled by addressing in straightforward rules a number of chronic communications problems for public safety in the United States.

*First*, because public safety will not have access to adequate funding (generally estimated at billions of dollars) to build its nationwide, interoperable public safety broadband network, the Commission must ensure that a commercial licensee will have the incentive to build such a network. *Second*, public safety must have sufficient wireless broadband spectrum capacity during emergencies; 12 MHz of public safety broadband spectrum will not suffice. *Third*, local public safety agencies using 700 MHz public safety broadband spectrum need total “unit level” command and control over the broadband network. *Fourth*, the nationwide broadband network should be constructed so as to give public safety freedom of choice in buying affordable, robust equipment. In addition to the fifth, crucial interoperability factor identified by the *Ninth NPRM*, each of these factors is necessary to the provision of the broadband capabilities our first responders need and deserve.

Combined with service rules that will soon be set forth by Frontline in a companion brief in the pending 700 MHz service rules proceeding, the Public Safety Broadband Deployment Plan proposed in these comments presents a practical, easy-to-adopt, and efficient solution to meet each of these five critical needs. It would create a mechanism for privately funding the entire cost of building a nationwide infrastructure for a 4G, interoperable public safety broadband network, and would also provide additional spectrum capacity for public safety broadband communications in emergencies. It would give public safety agencies affordable equipment choices that meet their specific needs, and also give them complete control over the use and security of their communications over the network.

The critical element of the Plan requires the Commission to exercise its existing spectrum allocation authority to establish an Upper 700 MHz commercial block dedicated to a public-private partnership. Under this partnership, the licensee of this commercial block will have the

necessary incentive to deliver each of the benefits described above to public safety. This key step will have no effect on the timing of the 700 MHz auction, and it requires only that the order in this proceeding be integrated with the revised service rules for the Upper 700 MHz spectrum (which have yet to be released).

Specifically, to comply with applicable service rules and license conditions, the licensee of the adjacent commercial block would be required to (1) fund the construction of a nationwide broadband infrastructure that satisfies public safety's need for an interoperable, secure, and robust wireless broadband network, (2) provide public safety with priority access to its commercial broadband spectrum during emergencies, (3) deploy its commercial broadband network based on open access principles, (4) commit to making its capacity available on a wholesale basis, thereby promoting broadband delivery to rural areas and ensuring that the commercial licensee remains focused on the provision of robust network services to public safety agencies and the commercial customers that will be using the common broadband facilities, and (5) enable roaming to help rural and smaller carriers. Any entity applying to bid on this commercial spectrum block would certify its commitment to abide by these requirements, which would run with this spectrum (*i.e.*, any future assignee would be bound by the same commitments). In return, the winning bidder would receive a license for the commercial block to provide commercial wireless broadband services on the common infrastructure it constructs to support the broadband public safety network. In addition, the winning bidder would have the exclusive right to use the excess capacity of the public safety broadband spectrum on a secondary, unconditionally preemptible basis.

The Commission can readily implement the Public Safety Broadband Deployment Plan using its existing statutory authority. It also has open proceedings involving a wide range of

issues affecting the public safety, commercial, and guard band spectrum in the Upper 700 MHz band which already provide it the procedural basis for implementing the Plan.<sup>4</sup> As detailed in these comments, the Commission should adopt a modified band plan based on proposals currently pending before it. This involves the straightforward step of adopting proposals made by many parties to divide the current D Block in half, thus creating three 10 MHz (each with paired 5 MHz blocks) commercial blocks in the Upper 700 MHz band. It also involves establishing a broadband public safety block in the 700 MHz public safety spectrum, as the Commission itself proposed in the *Ninth NPRM*, with support from many public safety and other parties. After splitting the D Block in two, the Commission would allocate the 10 MHz block closest to the public safety broadband spectrum to commercial use, in accordance with the conditions described above, including the build-out and other requirements designed to ensure public safety broadband needs are satisfied.

If adopted, Frontline's proposal will also bring about significant efficiencies. It will save billions of dollars in construction costs by establishing a common infrastructure to serve as a platform for both public safety and commercial broadband networks. It will further reduce construction costs by providing public safety additional spectrum capacity, thereby reducing the number of cell sites that need to be constructed to produce the network capacity to meet public safety's broadband needs in emergencies. Frontline's proposal should substantially reduce the cost of public safety handsets and other communications devices by using an IP-based

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<sup>4</sup> See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Notice of Proposed Rulemaking, Fourth Notice of Proposed Rulemaking, and Second Further Notice of Proposed Rulemaking, 21 FCC Rcd 9345 (2006) ("*700 MHz Commercial Service Rules NPRM*"); *Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules*, Notice of Proposed Rulemaking, 21 FCC Rcd 10413 (2006) ("*700 MHz Guard Band NPRM*"); *The Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010*, Eighth Notice of Proposed Rulemaking, 21 FCC Rcd 3668 (2006) ("*Eighth NPRM*").

architecture and a band plan that promote economies of scale, and also by establishing an “open access” model for the adjacent commercial broadband block. Frontline’s proposal will also maximize the efficient use of the 700 MHz spectrum by permitting secondary commercial use of excess capacity on the public safety broadband spectrum.

Congress has established deadlines for auctioning the Upper 700 MHz commercial spectrum, including the requirement that the Commission commence the auction by January 28, 2008. Frontline’s proposed Public Safety Broadband Deployment Plan will in no way interfere with the Commission’s ability to meet these deadlines, nor will it reduce the amount of 700 MHz spectrum to be auctioned. It is imperative, however, for the Commission to first resolve the pending issues concerning the need for a broadband public safety network in the 700 MHz band. Failure to do so would risk losing a unique opportunity to provide the nation’s first responders with the communications tools they critically need to serve the public. Frontline’s proposed Public Safety Broadband Deployment Plan provides the Commission with a way to seize this once-in-a-generation opportunity.<sup>5</sup>

## **II. THE COMMISSION’S PROPOSED FRAMEWORK ESTABLISHES IMPORTANT PRINCIPLES FOR PROMOTING PUBLIC SAFETY BROADBAND COMMUNICATIONS, BUT SHOULD BE AUGMENTED IN SEVERAL KEY RESPECTS.**

### **A. The Ninth NPRM’s Guiding Principles.**

Harlin R. McEwen, a leading public safety official and Chairman of the Communications & Technology Committee of the International Association of Chiefs of Police, recently stated that “[o]ur public safety users who should have the best, most advanced, and most robust capabilities too often must rely on systems that are inadequate for their needs today, much less

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<sup>5</sup> As noted above, the accompanying modifications to the Upper 700 MHz service rules will be separately laid out in a companion brief which Frontline will file in the open service rules proceeding, WT Docket No. 06-150.

the expanded responsibilities with which they will continue to be charged in the future.”<sup>6</sup>

Frontline fully agrees with and supports IACP Committee Chairman McEwen’s statement. The public safety community has shown strong leadership in seeking to remedy this problem and establish a nationwide, interoperable, wireless broadband public safety network. Chairman Martin and his fellow Commissioners have similarly emphasized the importance of these issues with astute and public-spirited remarks on many occasions, and have taken action to address them by, among other things, issuing the *Ninth NPRM* – the single most important public safety item ever issued by the FCC.<sup>7</sup> Frontline strongly agrees that it is vital to develop a solution that funds the construction of a modern public safety broadband network, provides public safety with access to sufficient broadband spectrum, promotes affordable and flexible equipment choices for public safety, and provides regional and local public safety agencies with localized, virtual

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<sup>6</sup> Written Testimony of Harlin R. McEwen, Chairman, Communications and Technology Committee, International Association of Chiefs of Police, Before the Committee on Commerce, Science and Transportation, United States Senate, February 8, 2007, at 2, *available at*: [http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing\\_ID=1813&Witness\\_ID=4431](http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=1813&Witness_ID=4431) (“*McEwen Testimony*”).

<sup>7</sup> *See, e.g.*, Written Statement of The Honorable Kevin J. Martin, Chairman, FCC; Before the Committee on Commerce, Science and Transportation, United States Senate, February 1, 2007, at 9 (“[P]ublic safety has been and will continue to be one of the Commission’s and my top priorities. We must make sure that the public has the tools necessary to know when an emergency is coming and to contact first responders.”); Statement of Commissioner Jonathan S. Adelstein, Federal Communications Commission, Before the Committee on Commerce, Science, and Transportation, United States Senate, February 1, 2007 (“[T]he communications needs of our public safety and national security communities must remain at the forefront.”); Testimony of FCC Commissioner Michael J. Copps, Hearing on Accessing the Communications Marketplace, Committee on Commerce, Science and Transportation, United States Senate, February 1, 2007, at 1 (“[D]espite the searing lessons of 9/11 and Katrina, we still are not ready for the next man-made or natural disaster.”); Written Statement of Deborah Taylor Tate, Commissioner, Federal Communications Commission on “Assessing the Communications Marketplace: A View from the FCC”; Before the Committee on Commerce, Science, and Transportation, United States Senate, February 1, 2007, at 6 (“[W]e must also learn from our experience and equip the nation and our citizens to be able to communicate more effectively [during emergencies].”); *available at*: [http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing\\_ID=1809](http://commerce.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=1809); Separate Statement of Commissioner Robert M. McDowell, *Ninth NPRM* (“I have said many times that I am fully committed to ensuring that the Commission takes advantage of *all* opportunities to spur technological innovation and increased access to broadband services by emergency response providers.”).

private networks or Intranets that are private, secure, and controlled exclusively by each regional or local agency.

The *Ninth NPRM* represents an important step toward meeting these objectives by embracing several key principles:

- ***Create conditions that generate private funding to build a nationwide public safety broadband network.*** The *Ninth NPRM* states that “[a]ny proposal for improving public safety communications should address potential new sources of funding,” and seeks comment on creating “public/private partnerships to overcome the traditional funding problem associated with creation of large-scale public safety communications networks.”<sup>8</sup> The lack of adequate funding has been a major impediment to the construction of public safety wireless broadband networks. If properly implemented, this problem can be solved by a public/private partnership to construct the public safety wireless broadband network.
- ***Provide public safety with affordable, flexible, modern equipment.*** The *Ninth NPRM* recognizes the need to make more cost-effective equipment options available to public safety, as well as the advantages of using a flexible modern architecture, based on Internet Protocol (“IP”) networking, for the broadband public safety system.<sup>9</sup> This approach will provide far greater flexibility, efficiency, and extensibility.<sup>10</sup> It will also parallel the architectures used on modern commercial broadband networks, and thus promote economies of scale that will lower the cost of public safety broadband networks and devices.<sup>11</sup>
- ***Permit public safety to lease its excess spectrum capacity to commercial operators on a secondary, unconditionally preemptible basis.*** The availability of sufficient spectrum for public safety wireless communications during times of emergency is critical and of primary importance. While public safety’s emergency wireless uses are spectrum intensive, its day-to-day wireless uses are less intensive.<sup>12</sup> To maximize the efficient use of the highly valuable 700 MHz band, there should be regulatory flexibility that ensures public safety has access to all the spectrum capacity it needs during an emergency, but

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<sup>8</sup> *Ninth NPRM* ¶¶ 14, 43.

<sup>9</sup> *Id.* ¶¶ 15, 18.

<sup>10</sup> See Aspen Institute, “Clearing the Air: Convergence and the Safety Enterprise,” at 12 (2006), available at: <<http://www.aspeninstitute.org/atf/cf/%7BDEB6F227-659B-4EC8-8F84-8DF23CA704F5%7D/C&S%20FINALAIRSREP06.PDF>> (“*Clearing the Air Report*”).

<sup>11</sup> *Ninth NPRM* ¶ 22.

<sup>12</sup> See The Spectrum Coalition for Public Safety, “Public Safety Spectrum: How Much Do We Need for Data?,” at 7 (Oct. 25, 2005) (“*Spectrum Coalition White Paper*”), attached to letter from Bill Butler, Spectrum Coalition for Public Safety, to Marlene H. Dortch, FCC Secretary, WT Docket No. 05-157 (Oct. 27, 2005).

permits other uses at other times. The Commission takes a step toward achieving this balance in proposing to allow the national public safety licensee to lease its excess spectrum capacity to a commercial provider on an unconditionally preemptible, secondary basis.<sup>13</sup>

- ***Establish a single nationwide public safety broadband licensee.*** Frontline supports the establishment of a single nationwide public safety licensee of 700 MHz public safety broadband spectrum, provided it can be done in a way that preserves local licensing control over local public safety agency use of the broadband network. For the reasons set forth in the *Ninth NPRM*,<sup>14</sup> this will help achieve the goal of creating a nationwide public safety wireless network with interoperability and broadband capabilities.

## **B. Developments Needed to Implement the Commission’s Proposal for a Public Safety Broadband Network.**

Frontline also agrees with IACP Committee Chairman McEwen’s recent statement that “a nationwide [public safety] broadband network solution need[s] to address both spectrum and funding, and to address them both at the same time and in the same context. The latter is just as critical as the former and requires an innovative approach given the extraordinary costs associated with building and operating a truly nationwide broadband network.”<sup>15</sup> It is also important to ensure that regional and local public safety agencies maintain local, secure control over their communications networks, and to promote affordable, flexible equipment choices of public safety. The *Ninth NPRM* establishes a number of important guiding principles, notably including interoperability. These principles should be augmented by practical means to achieve public safety’s funding, spectrum capacity, control, and equipment requirements.

### **1. Funding for Buildout.**

It will be extremely costly to construct a nationwide public safety wireless broadband network and the funds must be generated up-front. There is evidence in the record that these up-

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<sup>13</sup> *Ninth NPRM* ¶¶ 19, 41.

<sup>14</sup> *Id.* at ¶¶ 20-26.

<sup>15</sup> *McEwen Testimony* at 6.

front costs could exceed \$8 billion.<sup>16</sup> Other estimates suggest that the cost could be considerably higher.<sup>17</sup> There has been *no* congressional appropriation, however, to finance these large up-front costs. At the present time, no such appropriation should be or could be expected. Thus, without further Commission action, public safety is faced with no practical means of funding the construction of a 700 MHz broadband network that meets public safety's needs. Frontline offers the Commission a market-based solution by which it can solve these otherwise intractable problems.

The *Ninth NPRM* asks whether the construction costs can be funded by leasing excess capacity of the public safety broadband spectrum to commercial operators on a secondary, unconditionally preemptible basis. The prospect of such use, however, will create insufficient incentive to commercial operators to underwrite the upfront billions of dollars it will cost to build a nationwide network. There is simply too much uncertainty and too little potential benefit in taking on such a large, capital investment in return for gaining access to an unpredictable and conditional amount of excess capacity on the public safety network.

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<sup>16</sup> See Declaration of Dr. Stagg Newman, attached to Comments of Access Spectrum, L.L.C., Columbia Capital III, LLC, Pegasus Communications Corporation and Telcom Ventures, LLC, WT Docket Nos. 06-150 and 01-309 and CC Docket No. 94-102, ¶ 1 (Sept. 29, 2006) ("Newman Decl.") (estimating that "the cost to Public Safety of an exclusive network covering 90% of the landmass of the continental United States would be \$4.0 billion for a coverage only network and \$8.4 billion for a network with the capacity to support the peak demand per cell site needed by Public Safety as defined by the Spectrum Coalition White Paper," citing *Spectrum Coalition White Paper*).

<sup>17</sup> See Written Statement of the Honorable Karen Evans, Administrator for Electronic Government and Information Technology, Office of Management and Budget, Before the Committee on Government Reform, U.S. House of Representatives, Nov. 6, 2003 ("There is insufficient funding in place to solve the nation's interoperability problem. Cost estimates are commonly estimated at over \$15B and do not always include the costs of retraining, new infrastructure, or essential maintenance of new systems."), available at: <[http://www.whitehouse.gov/omb/legislative/testimony/evans/print/031106\\_evans.html](http://www.whitehouse.gov/omb/legislative/testimony/evans/print/031106_evans.html)>. See also The First Response Coalition, "It's Time to Talk: Achieving Interoperable Communications for America's First Responders" (Oct. 2004), available at: <[http://www.firstresponsecoalition.org/docs/Interoperability\\_White\\_Paper.pdf](http://www.firstresponsecoalition.org/docs/Interoperability_White_Paper.pdf)>.

The Commission's experience in regulating the 2.5 GHz band is instructive. In this band, Educational Broadcast Service ("EBS") licensees use their spectrum to transmit educational programming to students, but may also lease excess spectrum capacity to commercial operators. Over many years, the Commission has seen the need to expand commercial operators' access to the 120 MHz of EBS spectrum to give them greater incentives to build out systems in the 2.5 GHz band. Indeed, EBS licensees are now permitted to negotiate lease agreements that grant commercial operators unfettered, *non-preemptible* access to 95% of the EBS licensee's channel capacity.<sup>18</sup> These incentives have provided sufficient incentives for some commercial operators to fund the construction of EBS facilities and to make lease payments to EBS licensees, but only *after* commercial operators struggled for years to establish viable businesses in this band. With only secondary access to less than one-tenth of the amount of spectrum (12 MHz of public safety broadband spectrum compared to 120 MHz of EBS spectrum), a commercial operator is very unlikely to solely undertake the large capital investment involved in constructing a 700 MHz public safety broadband network.<sup>19</sup>

The *Ninth NPRM* also explores whether a usage fee charged by the national licensee of the public safety broadband spectrum could viably fund the construction of the network.<sup>20</sup> The network, however, must be constructed and operational before the usage fees can be generated, and it is unclear how this usage fee program would afford the national licensee the means to raise

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<sup>18</sup> *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165, ¶ 12 (2004).

<sup>19</sup> *See Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, Report and Order, 13 FCC Rcd 19112, ¶ 88 (1998) (quoting BellSouth as stating that "capacity encumbered by recapture rights is inherently less valuable to the operator than unencumbered capacity").

<sup>20</sup> *See Ninth NPRM* ¶¶ 28, 30.

the amount of capital necessary to fund the up-front construction costs. Compared to a commercial entity, a non-profit, national public safety licensee is less likely to have the expertise and ability to raise capital efficiently through the private capital markets, absent a significant government subsidy to investors. More importantly, attempting to finance network construction with usage fees means that public safety will be saddled with the up-front cost of the build-out – precisely the primary obstacle that has to date undermined the deployment of a nationwide, interoperable public safety network. IACP Committee Chairman McEwen is right that the funding issue is just as critical as the spectrum problem, and therefore the Frontline Plan gives the Commission a clear path to finance a public safety broadband network.

## **2. Access to Sufficient Spectrum.**

At a time when a public safety network is most necessary, it is crucial that public safety have access to sufficient spectrum for emergency operations. The 12 MHz public safety broadband block described in the *Ninth NPRM* provides the foundational allocation, but the record shows that more spectrum is necessary during the “rush hour” demands that will be placed on the broadband network during emergencies.<sup>21</sup>

Specifically, by providing public safety with access to more than the foundational 12 MHz block, the Commission will allow the network to be constructed with a relatively small number of cell sites yet still offer necessary capacity during peak usage time (*i.e.*, emergencies). In contrast, the only way to meet peak demand over a 12 MHz block is by the deployment of a

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<sup>21</sup> The Public Safety Wireless Advisory Committee, as well as several public safety agencies and private companies, have made clear that more than 12 MHz is necessary for public safety broadband operations. *See, e.g.*, Final Report of the Public Safety Wireless Committee to the Federal Communications Commission and the National Telecommunications and Information Administration, Public Safety Wireless Committee, at 20-21 (Sept. 11, 1996), *available at*: [http://pswac.ntia.doc.gov/pubsafe/publications/PSWAC\\_AL.PDF](http://pswac.ntia.doc.gov/pubsafe/publications/PSWAC_AL.PDF); *see also Spectrum Coalition White Paper* at 4.

very large number of cell sites. In other words, with more spectrum the network will be able to take advantage of the efficiencies made possible by the superior propagation characteristics of the 700 MHz spectrum.

Public safety access to more spectrum will also further the Commission's goal of minimizing the cost of building out the public safety network. Indeed, a study filed with the Commission confirms this, and also finds that if public safety is given priority access to an additional 11 MHz of adjacent commercial block spectrum using a common infrastructure, it would "reliev[e] the need to split cells to provide an adequate capacity cushion to Public Safety, resulting in approximately 35-40% reduction in cell site count . . . . This double effect of reduced site count and lower per-site capex causes the incremental cost of [building the] public safety network . . . to drop by about 70-90 percent, depending on the desired coverage footprint."<sup>22</sup>

Providing a national public safety licensee with secondary access to the other 12 MHz of public safety spectrum would, unfortunately, not be tenable.<sup>23</sup> Broadband transmissions in the narrowband blocks would create a substantial risk of interference with public safety narrowband communications, limiting the effectiveness of both the broadband and narrowband systems. The *Ninth NPRM* explores whether cognitive radios could address these interference concerns; however, cognitive radio technology, while promising, is not yet a proven method for addressing the problem, and is not commercially available. In addition, any time a nearby narrowband signal is sensed by the cognitive radio, the entire broadband channel would have to cease operating or at least operate at reduced power levels, which could result in very frequent service

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<sup>22</sup> Newman Decl. ¶ 14 (emphasis in original).

<sup>23</sup> *Ninth NPRM* ¶ 19.

degradation or outage to the broadband users. It would be imprudent to rely on such nascent technology to prevent interference to critical public safety radio communications.

Even if secondary access to the other public safety spectrum were technically feasible, it would drive public safety broadband toward the use of highly specialized, expensive equipment not used in the commercial market and thereby undermine the Commission's goal of reducing the cost of public safety equipment. The open access nature of the Frontline Plan, as discussed below and in a companion service rules brief to be filed shortly, creates an open door to cognitive and other new technology without mandating the use of any particular class of device.

### **3. Local Public Safety Control.**

In addition to a funding mechanism and access to sufficient spectrum, the nationwide public safety broadband network at 700 MHz must enable localized networks that meet the broadband communications needs of regional and local public safety agencies. The public safety network should use existing, IP-based technology to enable nationwide, statewide, and local "logical" networks that operate within the same spectrum. Indeed, existing technology even permits the flexible creation of "*ad hoc*" cross-agency and cross-jurisdictional networks when needed, *e.g.*, for special interagency task-forces. The U.S. military is already using this type of technology to supply command and control capabilities and highly secure communications suitable for individual field deployments. Local public safety agencies must be given the same tools to control their own local networks on the public safety broadband spectrum.

### **4. Public Safety Equipment Choices and Open Access.**

The *Ninth NPRM* recognizes the importance of creating economies of scale and production in the design and manufacture of public safety communications equipment, as well as the efficiencies that can be gained by using a common infrastructure to deliver both public safety

and commercial broadband services in the 700 MHz band.<sup>24</sup> The Commission also notes that using an IP-based architecture can reduce costs and provide public safety with greater flexibility.<sup>25</sup>

The Commission should consider ways to maximize these efficiencies and flexibility to give public safety freedom in choosing affordable equipment that meets its needs. Public safety agencies have traditionally had no choice but to purchase proprietary, specialized equipment designed only to operate on public safety spectrum, and that has increased public safety communications costs. The Commission should aggressively pursue a slightly but importantly modified model in this proceeding. As proposed in the *Ninth NPRM*, the Commission should establish an IP-based, common infrastructure for both public safety and a commercial operator. It should also promote greater “freedom to connect” to 700 MHz commercial broadband networks, in terms of both the devices end users can use and the applications they can access on the network. This openness will generate even greater efficiencies and innovation, which public safety will be able to take advantage of in meeting its own wireless broadband communications needs.

### **III. THE PUBLIC SAFETY BROADBAND DEPLOYMENT PLAN: LEVERAGING THE COMMISSION’S AUTHORITY OVER THE ADJACENT COMMERCIAL SPECTRUM TO FUND THE DEPLOYMENT OF A NATIONWIDE PUBLIC SAFETY BROADBAND NETWORK.**

Frontline’s Public Safety Broadband Deployment Plan builds on the forward-thinking principles set forth in the *Ninth NPRM* and augments them to create a viable plan that will meet the critical communications needs of the public safety community, as follows:

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<sup>24</sup> *Id.* at ¶¶ 15, 22, 42.

<sup>25</sup> *Id.* at ¶ 18.

- **E Block.** Using its existing spectrum allocation authority, the Commission should allocate the broadband commercial block adjacent to the public safety spectrum (creating an “E” Block) to generate the means for privately funding the construction of a 4G, IP-based broadband infrastructure to be used to provide a nationwide public safety communications network.
- **Build-out of broadband network.** Consistent with the allocation of the spectrum, the licensee of the E Block would fund the build-out of the nationwide broadband network infrastructure according to benchmarks established by the Commission. The network would be designed to meet public safety specifications for robustness, security, redundancy, and interoperability. It would be designed to give total unit-level control to each nationwide, regional, and local public safety agency using the network.
- **Reconfigured Upper 700 MHz band.** Consistent with proposals already before it, the Commission should reconfigure the Upper 700 MHz band to establish a public safety broadband block in the public safety spectrum and to divide the current commercial D Block in half, thereby creating a 2 x 5 MHz (*i.e.*, paired 5 MHz) block for the E Block.
- **Single public safety licensee.** Consistent with the proposal in the *Ninth NPRM*, a single public safety licensee (“National Public Safety Licensee”) would hold the nationwide license for the public safety broadband block. The National Public Safety Licensee would be representative of the public safety community, and would work with the E Block licensee to ensure the network is designed to meet public safety needs. The National Public Safety Licensee would be authorized to charge public safety agencies a fee for use of the broadband network.
- **Common broadband infrastructure.** The E Block licensee would use the common broadband infrastructure to provide commercial broadband services using its paired 5 MHz commercial blocks. It would also have secondary, unconditionally preemptible access to excess capacity on the public safety broadband block pursuant to terms negotiated with the National Public Safety Licensee.
- **Priority access for public safety.** The E Block licensee would be required and authorized to provide priority access to its spectrum for public safety agencies during emergencies.
- **Maximum choice of equipment.** The E Block licensee would be required to operate pursuant to certain open access principles such that any public safety device that meets open, published protocols could access the network via the E Block in addition to the public safety broadband spectrum.
- **Wholesale network.** The E Block licensee would be required to operate as a wholesale “network utility” for commercial purposes, thereby ensuring its singular focus on providing robust, reliable broadband wireless access.

- **Nationwide roaming.** The E Block licensee would be required to provide roaming on its nationwide commercial license to other commercial service providers, including rural wireless operators, that utilize devices compatible with the network's published, open protocol interface.

Also, Frontline's proposed Public Safety Broadband Deployment Plan will achieve the seven important objectives set forth in the *Ninth NPRM*: (1) It provides public safety with a state-of-the-art wireless *broadband* network. (2) It will allow first responders in different jurisdictions to communicate with each other through a *nationwide, interoperable network*. (3) It brings about a *viable means of funding* the construction of the nationwide network by leveraging the Commission's allocation authority over the adjacent E-Block spectrum. (4) It provides a *cost effective solution* by using a band plan and system architecture that will promote economies of scale and scope, as well as promoting competition in the supply of infrastructure and wireless devices to be used by public safety personnel. (5) It promotes more *efficient spectrum use* by using a band plan that better accommodates broadband communications, and by using more spectrum-efficient technologies. (6) It ensures *robustness* of the public safety broadband system by building the network according to public safety specifications. (7) Finally, it will promote the use of a *flexible modern architecture* using IP-based 4G technology.<sup>26</sup>

This Section III elaborates on these critical public interest benefits and the seven steps needed to implement the Public Safety Broadband Deployment Plan. These steps include adopting a new Upper 700 MHz band plan and allocating the E Block spectrum to create private funding to construct a new nationwide broadband infrastructure that meets public safety's wireless broadband needs. Frontline's proposal closely parallels many of the proposals contained in the *Ninth NPRM* and builds upon other proposals made in the various pending proceedings concerning the 700 MHz band. The Commission has the statutory authority to

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<sup>26</sup> *Id.* at ¶¶ 12-18.

implement the Public Safety Broadband Deployment Plan, and the necessary rules to implement the Plan can be developed within the statutory deadlines for conducting the auction of the Upper 700 MHz commercial spectrum.<sup>27</sup>

**A. Reconfiguring the Upper 700 MHz Band Plan to Accommodate Commercial and Public Safety Broadband Networks.**

The Commission's *Eighth NPRM* in this proceeding sought comment on how best to reconfigure the 24 MHz of Upper 700 MHz spectrum currently allocated for public safety so that a public safety broadband network can be deployed on a portion of this spectrum.<sup>28</sup> Also pending are various Commission proceedings regarding various proposals to reconfigure the remaining 36 MHz of Upper 700 MHz spectrum, including the A and B Block Guard Band blocks.<sup>29</sup> These pending proceedings offer a timely, straightforward opportunity to establish the foundation for implementing the Public Safety Broadband Deployment Plan.

*First*, the Commission should divide the existing 20 MHz D Block in half. This step of dividing a larger block into two smaller spectrum blocks is routine in preparation for an auction and will not slow down the 700 MHz auction by so much as a day. It will create three 10 MHz commercial blocks (each with 2 x 5 MHz configurations) in the Upper 700 MHz band: the current C Block, an equally sized D Block, and a new E Block. As described in more detail in Section III.B below, the E Block would be allocated for the purpose of creating a public-private partnership to implement the Public Safety Broadband Deployment Plan. Under this allocation, the winning bidder of the E Block would construct a common infrastructure to support both a 4G

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<sup>27</sup> The Commission must commence the auction of this spectrum no later than January 28, 2008 and deposit the proceeds of the auction no later than June 30, 2008. *See DTV Act* §§ 3003(a); *700 MHz Commercial Service Rules NPRM* ¶ 9.

<sup>28</sup> *Eighth NPRM* ¶¶ 1, 4.

<sup>29</sup> *See 700 MHz Commercial Service Rules NPRM* and *700 MHz Guard Band NPRM*.

broadband public safety network and the E Block licensee's own commercial broadband network. The proposal to divide the D Block in half to create three 10 MHz Upper 700 MHz commercial blocks is already pending before the Commission, and has received support from a large number of parties representing the interests of rural and smaller carriers.<sup>30</sup>

*Second*, the Commission should reconfigure its Upper 700 MHz band plan to establish a public safety broadband block. Frontline supports the Broadband Optimization Plan ("BOP") to accomplish this goal. The Commission has sought comment on the BOP,<sup>31</sup> which has been proposed by a group of A and B Block 700 MHz Guard Band licensees.<sup>32</sup> The public safety community has recently expressed support for the BOP and the technical filings that have been submitted regarding the BOP.<sup>33</sup> The BOP would free up more than 2 MHz of additional spectrum for the public safety broadband block, compared to the public safety broadband

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<sup>30</sup> *Id.* at ¶¶ 49, 51-52; Letter from Multiple Parties to Marlene H. Dortch, FCC Secretary, WT Docket No. 06-150 (Oct. 20, 2006) (filing submitted on behalf of twenty-one rural interests, including Alltel Corporation, Leap Wireless International, Inc., National Telecommunications Cooperative Association, Rural Cellular Association, and United States Cellular Corporation).

<sup>31</sup> *700 MHz Guard Band NPRM* ¶¶ 16-17, 40-48.

<sup>32</sup> *See* Comments of Access Spectrum, LLC, Columbia Capital III, LLC, Intel Corporation and Pegasus Communications Corporation, WT Docket No. 96-86 (June 6, 2006); Comments of Access Spectrum, LLC, Columbia Capital III, LLC, Pegasus Communications Corporation and Telcom Ventures, LLC, WT Docket Nos. 06-150 and 01-309 and CC Docket No. 94-102, at 11 (Sept. 29, 2006) ("*Sept. 2006 Comments of Guard Band Parties*"); Comments of Access Spectrum, LLC and Pegasus Communications Corporation, WT Docket Nos. 96-86 and 06-169 (Oct. 23, 2006) ("*Oct. 2006 Access/Pegasus Comments*"). *See also* *700 MHz Guard Band NPRM* ¶¶ 42-44.

<sup>33</sup> *See* Letter from Vincent Stile, Chair, National Public Safety Telecommunications Council, to Marlene Dortch, FCC Secretary, WT Docket No. 06-169 (Feb. 22, 2007). An open technical working group made up of public safety representatives, equipment manufacturers, and commercial licensees ("700 MHz Technical Working Group") has submitted reports explaining that the BOP can be implemented without undue disruption to public safety or other incumbent licensees. *See* Report of the 700 MHz Technical Working Group (Oct. 23, 2006), transmitted by letter from Ruth Milkman, Counsel for Access Spectrum, LLC, and Kathleen Wallman, Adviser to Pegasus Communications Corp., WT Docket Nos. 06-169 and 96-86 (Oct. 23, 2006) ("*First Report of the 700 MHz Technical Working Group*"); Second Report of the 700 MHz Technical Working Group (Jan. 26, 2007), transmitted by letter from Ruth Milkman, Counsel for Access Spectrum, LLC, and Kathleen Wallman, Adviser to Pegasus Communications Corp., WT Docket Nos. 06-169 and 96-86 (Jan. 26, 2007) ("*Second Report of the 700 MHz Technical Working Group*").

proposals described in the Commission's *Eighth NPRM*. Equally important, the BOP would make possible a band plan configuration that would be far more suitable for high capacity, high performance modern communications systems for public safety.<sup>34</sup> It would also substantially reduce the amount of spectrum that must be dedicated to guard bands.<sup>35</sup> Frontline accordingly encourages the Commission to adopt the BOP as soon as possible and certainly not later than issuance of modified 700 MHz service rules. Such action will serve the interests of public safety and create further incentive for a market-based solution to the communications needs of the public safety community.

The Commission can create significant efficiencies by establishing three 2 x 5 MHz commercial blocks and a public safety broadband block of similar size and configuration. This configuration will support a variety of innovative broadband technologies.<sup>36</sup> It will also give public safety agencies the opportunity to purchase commercial, "off-the-shelf" portable and mobile devices. The resulting economies of scale and scope in the production of this equipment will greatly lower public safety equipment costs.<sup>37</sup> This will promote the cost effectiveness objective emphasized in the *Ninth NPRM*.<sup>38</sup>

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<sup>34</sup> See *Second Report of the 700 MHz Technical Working Group* at 1, 8 and Appendix A.

<sup>35</sup> *First Report of the 700 MHz Technical Working Group* at 5 (estimating that the BOP reduces the amount of spectrum dedicated to guard bands from 10 MHz to 3 MHz). The BOP would also provide a basis for eliminating technical and service rules that have restricted the use of the current A and B Block spectrum. See *Sept. 2006 Comments of Guard Band Parties* at 9, 31-35.

<sup>36</sup> See, *Oct. 2006 Access/Pegasus Comments* at 3, 5-6.

<sup>37</sup> See, e.g., *Sept. 2006 Comments of Guard Band Parties* at 20, 37.

<sup>38</sup> *Ninth NPRM* ¶¶ 4, 15.

**B. By Adopting Innovative Policies Using its Existing Authority, the Commission Can Generate Private Funding of a Nationwide Broadband Public Safety Network to the Benefit of Public Safety Users and Consumers Alike.**

The Commission has broad authority in regulating the electromagnetic spectrum. It has the authority – indeed, the duty – to “promot[e] safety of life and property through the use of wire and radio communication.”<sup>39</sup> It has extensive authority to allocate spectrum and establish rules for spectrum use that promote the public interest.<sup>40</sup> Moreover, “when it is fostering innovative methods of exploiting the spectrum, the Commission ‘functions as a policymaker and, inevitably, a seer – roles in which it will be accorded the greatest deference by a reviewing court.’”<sup>41</sup>

The Commission has a unique opportunity in its pending 700 MHz proceedings to use this broad statutory authority to give the commercial licensee that will be adjacent to the public safety broadband block the appropriate incentive and obligation to construct nationwide, state-of-the-art broadband facilities for public safety. By exercising this authority to adopt the Frontline Plan, the Commission will augment the proposals advanced in the *Ninth NPRM* by generating sufficient funds to build the public safety broadband network; providing sufficient spectrum for this network during emergencies; ensuring “unit level” command and control over national, regional, and local agency networks; and promoting affordable, “off-the-shelf” equipment suitable for public safety’s specific needs.

The Commission, accordingly, should allocate the E Block to establish a public-private partnership that achieves these critical objectives. Pursuant to applicable service rules, the E

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<sup>39</sup> 47 U.S.C. § 151.

<sup>40</sup> 47 U.S.C. §§ 303, 308, 309.

<sup>41</sup> *Teledesic LLC v. FCC*, 275 F.3d 75, 84 (D.C. Cir. 2001), citing *Telocator Network of Am. v. FCC*, 691 F.2d 525, 538 (D.C. Cir. 1982).

Block licensee would be required to (1) consistent with buildout requirements, construct a nationwide infrastructure to support a wireless broadband network for public safety; (2) meet public safety performance requirements at the national, regional, and local level; (3) manage the network; (4) ensure public safety's priority access to E Block spectrum in emergencies; (5) operate as a wholesale provider; (6) pursuant to open access principles, allow users to attach any device to the network that meets minimal do-no-harm requirements; (7) comply with technical rules to prevent interference and to facilitate coverage of rural areas; (8) extend coverage beyond the buildout requirements in accordance with any applicable bidding credits used by the winning E Block bidder; and (9) offer nationwide roaming to any provider utilizing devices compatible with the published, open protocol interface of the E Block network.

The Commission should issue a single national license for the E Block spectrum subject to these conditions, and, like the C and D blocks, auction the spectrum to the highest bidder.<sup>42</sup> Bidders for the E Block would have to accept these commitments and abide by the service rules described above. The winning bidder of the E Block would receive a license for the paired 5 MHz blocks for its commercial broadband service.<sup>43</sup> In addition, the Commission would grant the E Block licensee the exclusive right to lease excess capacity on the public safety broadband spectrum on a secondary, unconditionally preemptible basis pursuant to terms negotiated with the National Public Safety Licensee of that spectrum. Although public safety must have unconditional priority to its broadband spectrum (as well as additional E Block commercial

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<sup>42</sup> Frontline plans to bid on the E Block and possibly other 700 MHz licenses if the Commission adopts the proposals set forth in these comments.

<sup>43</sup> Under the BOP, described in Section III.A, 3 MHz (paired 1.5 MHz blocks) of the former A and B Block Guard Band spectrum would be made available for commercial broadband services. This spectrum would be situated between the E Block and the public safety broadband block. The Commission should seek to integrate this 3 MHz block into the E Block to create an expanded 6.5 MHz Block. This would require compensating existing Guard Band licensees for their spectrum rights. *See Sept. 2006 Comments of Guard Band Parties* at 28-31.

spectrum) during emergencies, there will be times when public safety traffic will fall below these peak needs. By providing the E Block licensee secondary, unconditionally preemptible access, the Commission will assure optimal, efficient use of this highly valuable spectrum.<sup>44</sup>

These combined spectrum rights – a license for paired 5 MHz broadband commercial blocks and secondary access to the public safety broadband block – will give a commercial operator sufficient incentive to build-out a public safety broadband network and comply with other obligations to promote public safety broadband services, as detailed in the sections that follow.

### **1. Build-Out of Broadband Facilities.**

As a condition of its license, the E Block licensee would be required to fund the construction of a common network infrastructure which can be used by both the public safety broadband network and the E Block licensee's commercial network. The facilities will use a modern IP-based system architecture because of the flexibility and technological innovation such architectures permit.<sup>45</sup> The constructed facilities would include all necessary antennas, transmitters, tower sites (leased or owned), routers and switching centers, control layers, and backhaul facilities. In addition, the E Block licensee would be required to satisfy the following build-out benchmarks, which would allow the public safety broadband network to cover approximately 99% of the nation's population within ten years of the grant:

- 25% geographic coverage of the continental United States within four years of license grant;

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<sup>44</sup> See *Clearing the Air Report* at 29-30 (recommending allowing public safety systems to lease their excess spectrum capacity).

<sup>45</sup> See *Ninth NPRM* ¶ 18 (explaining that: (1) an IP-based wireless system architecture would have advantage in terms of flexibility, cost and compatibility with existing IP-based networks; (2) an IP-based public safety system could be integrated with legacy public safety and other wireless non-IP systems; and (3) an IP-based architecture offers flexibility in combining multiple services on a common infrastructure and into the same device).

- 50% geographic coverage of the continental United States within seven years of license grant, and
- 75% geographic coverage of the continental United States within ten years of license grant.

The Public Safety Broadband Deployment Plan will not only generate private funding for the construction of the public safety broadband network, it will do so in a highly cost effective way. In particular, there will be significant cost savings and economies of scale generated by the fact that a common infrastructure will be used to support both the public safety broadband (radio access) network and the E Block licensee's commercial (radio access) network. The two networks, for example, will be able to use the same tower facilities throughout the country. Put another way, any given tower could host public safety radio carriers (using the public safety allocation) and the commercial radio carriers (using the E Block). Capacity from these radio carriers could be dynamically allocated using network control software so that public safety agencies have the capacity they need for any situation, including peak-demand capacity from the commercial radio carriers. It has been estimated that the use of such a common infrastructure would reduce costs by over 50%, eliminating billions of dollars of dead weight economic loss (i.e., producing billions in cost savings).<sup>46</sup>

Moreover, this approach would solve the "near-far" problem likely to occur if non-coordinated public safety and commercial broadband networks are deployed on neighboring bands.<sup>47</sup> This problem generally occurs among non-coordinated users when a receiver for one network is overwhelmed by strong signals from the other network's nearby tower sites and thus cannot receive a desired, weaker transmission from its own more distant tower site. Because the

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<sup>46</sup> See Newman Decl. ¶ 11 and Table 6.

<sup>47</sup> See *Second Report of the 700 MHz Technical Working Group*.

Frontline Plan will support both public safety and commercial users with a common infrastructure, the near-far problem will not be an issue.

## **2. Meeting Public Safety Performance Requirements at the National, Regional, and Local Level.**

As the Commission has recognized, public safety communications networks must be robust, redundant, and secure.<sup>48</sup> The 700 MHz public safety broadband network must also be interoperable, allowing first responders from different agencies and different parts of the country to communicate with each other easily and quickly when necessary. The E Block licensee would be responsible for constructing the public safety network facilities to meet each of these requirements. The protocols, quality of service guarantees, and specifications that define these requirements will be driven by the National Public Safety Licensee of the 700 MHz public safety broadband spectrum. As explained in Section III.B.3 below, this entity would be established by the public safety community and therefore will have the experience and expertise necessary to ensure that the 700 MHz public broadband network will be built to its specifications.

As the Commission has shown that it well understands, IP-based infrastructure makes it possible for a common infrastructure to support both the E Block licensee's commercial network *and* a public safety network that meets public safety's unique communications needs. The network would use core application services that can be programmed to include a system of "rights management" that ensures public safety communications are robust, secure, and interoperable.<sup>49</sup>

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<sup>48</sup> See, e.g., *Ninth NPRM* ¶¶ 20, 26, 32, 36; FCC, Report to Congress on the Study to Assess the Short-Term and Long-Term Needs for Allocations of Additional Portions of the Electromagnetic Spectrum for Federal, State, and Local Emergency Response Providers, Submitted Pursuant to Public Law No. 108-458, ¶¶ 12, 17, 20, 26, 29, 33, 49, 75 (Dec. 19, 2005), available at: <[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/ DOC-262865A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-262865A1.pdf)>.

<sup>49</sup> See generally Clearing the Air Report at 16.

This same technology makes possible another significant benefit: “logical” broadband networks for individual national, regional and local public safety agencies. These logical networks would use the same public safety broadband spectrum and effectively create virtual private networks or Intranets that would be controlled by each individual public safety agency. The rights management technology would allow each such agency to have the necessary command and control capabilities, including authentication features and authorizations necessary for secure communications. Additionally, private networks could be created to support cross-agency collaboration. The Public Safety Broadband Deployment Plan would thus bring about a privately funded wireless broadband network that meets national, regional, local, and interoperable public safety needs.

### **3. Managing the Network.**

In addition to constructing the public safety broadband network, the E Block licensee would be responsible for managing and operating it. It would be permitted to collect a reasonable network management fee from the National Public Safety Licensee to cover those reasonable costs of maintaining or upgrading the network that are attributable to public safety’s use of the network infrastructure. This fee would be much lower than the public safety spectrum usage fee under the *Ninth NPRM*’s proposal because, under the Public Safety Broadband Deployment Plan, public safety would not be funding the up-front costs of constructing the nationwide infrastructure, and the commercial operator would share in the costs of operating and maintaining the broadband facilities. The public safety licensee and the E Block licensee would negotiate an agreement governing this fee and the terms and conditions governing the E Block licensee’s management of the network. The National Public Safety Licensee could cover its

share of the ongoing network management costs by collecting usage fees from individual public safety users of the broadband network, as explained in Section III.C.

#### **4. Public Safety's Priority Access to the E Block Spectrum in Emergencies.**

The E Block licensee would be required to provide priority access to affected public safety broadband operations during times of emergency. This priority access would be based on the current Commercial Mobile Radio Service ("CMRS") priority access rules,<sup>50</sup> but goes much further by offering substantial advantages over those rules. First, public safety priority access to the E Block would be *mandatory*, rather than voluntary. Second, priority access to the E Block means that public safety will be able to operate on a 4G wireless broadband network. Finally, unlike the CMRS priority access regime, public safety agencies would be *entitled to interrupt or degrade existing commercial traffic* on the E Block licensee's commercial network during emergencies.

This enhanced priority access establishes a spectrum reserve for public safety. Access to such additional broadband spectrum will be essential during a local, regional, or national crisis when public safety channels become congested and first responders need expanded capacity (e.g., when local emergency workers need to exchange real-time "on-the-ground" video to address a dangerous chemical spill). This substantially improves upon the *Ninth NPRM's* proposal to provide public safety with *secondary* access to the "white space" in the 700 MHz public safety narrowband spectrum. In addition, by giving public safety access to additional spectrum capacity during emergencies, Frontline's proposal will greatly reduce the amount of

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<sup>50</sup> See 47 C.F.R. § 64.402; see also *The Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010; Establishment of Rules and Requirements For Priority Access Service*, Second Report and Order, 15 FCC Rcd 16720 (2000).

costly cell-splitting that would otherwise be necessary to generate the capacity that public safety needs during peak times.<sup>51</sup>

### **5. Wholesale Utility Operating Model.**

The E Block should be allocated exclusively for a wholesale network provider whose sole focus is to operate the continuously reliable and robust network services that public safety needs. Commercial operators have many competing demands on management focus and investment resources, including management of large distribution networks, sophisticated retail marketing operations, ancillary consumer-focused features, and similar activities. Construction and operation of a broadband public safety network are tasks simply too important to compete with the hard job of succeeding in the retail marketplace.

Requiring the E Block licensee to operate as a wholesale provider avoids this issue entirely and places the entire focus on building and operating a high quality wireless broadband network. That network can make available commercial capacity that can be resold to retail-oriented service providers, including those that may have some facilities but need to fill gaps or offer roaming capability using devices that are compatible with the network's open protocol interface. In this way, the wholesale requirement completely aligns the dual public safety and commercial objectives and incentives of the E Block licensee. The E Block licensee has a single purpose – to provide best-in-class broadband IP service – that meets the requirements of both public safety and wholesale commercial customers.

### **6. Establishing an Open Access Network to Promote Innovation and Public Safety Communications.**

Frontline proposes that the E Block license be used for an open access network to ensure greater access and innovation in the provision of wireless broadband services to consumers and

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<sup>51</sup> See Section II.B.2, *supra*.

the public safety community.<sup>52</sup> Specifically, the Commission should require the E Block licensee (including any commercial entity leasing E Block spectrum) to:

- ***Open Devices***: allow the attachment of any device (or multiple devices) to a network account subject only to minimal “do-no-harm” requirements as set forth in a publicly available interface specification
- ***Open Services and Content***: not block users from accessing IP services (including voice services) or content provided by unaffiliated parties, or otherwise engage in unreasonable discrimination against such services or content, except with the consent of the user or as required by law.
- ***Open Offerings***: make its network services (including Application Programming Interfaces and quality of service guarantees) available on a wholesale or roaming basis at commercially reasonable rates.

As noted above, Frontline will be submitting a more detailed explanation of these proposed requirements and how they would substantially promote and enhance the public interest in the Commission’s pending Upper 700 MHz service rules proceeding. It should be emphasized here, however, that these requirements would promote public safety communications. They would help maximize efficiencies that will reduce public safety equipment costs and assure full freedom to the public safety community to use the devices and applications that will meet its broadband needs. For example, public safety agencies can take advantage of the innovations and greater competition in equipment designs and in the development of new applications that would result from an open access network in the E Block. An open access network would also facilitate the ability of public safety agencies quickly and efficiently to gain priority access to the E Block licensee’s network in emergencies. It will help ensure that in such instances public safety agencies will have unfettered and prompt end-to-end access to edge-based IP applications developed for public safety communications.

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<sup>52</sup> See also Skype Communications, S.A.R.L. Petition to Confirm a Consumer’s Right to Use Internet Communications Software and Attach Devices to Wireless Networks (filed Feb. 20, 2007) (requesting that the Commission apply *Carterfone* principles to the wireless industry and ensure both that consumers retain a right to run the applications of their choosing and attach all non-harmful devices to the wireless network).

In addition, all spectrum holdings of the E Block licensee will be subject to certain basic requirements (*e.g.*, open access, roaming). This provision ensures that the E Block licensee does not have an incentive to discriminate against customers based on whether they use the E Block spectrum or other spectrum also licensed to the E Block licensee.

### **7. Technical Rules to Prevent Interference and to Facilitate Coverage of Rural Areas.**

The Commission should consider altering power limits in the Upper 700 MHz band to permit greater coverage in rural areas, especially for transmissions from end user devices to network base stations.<sup>53</sup> This would promote deployment of the nationwide public safety wireless broadband network to sparsely populated areas. For example, the Commission could apply the higher power limits for rural areas that now apply to the cellular service, Personal Communications Service, and Advanced Wireless Service.<sup>54</sup> In very remote areas, where there may be little communications service, the Commission should consider further relaxing power limits to the maximum possible degree. Safeguarding public safety systems from interference should remain paramount, but relaxing power limits where possible would expand the reach of both 700 MHz public safety and commercial broadband services, particularly in rural areas.<sup>55</sup>

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<sup>53</sup> Frontline will be submitting a more detailed discussion of this power limit issue in the Commission's pending *700 MHz Commercial Service Rules* proceeding.

<sup>54</sup> *See, e.g.*, Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services; 2000 Biennial Regulatory Review Spectrum Aggregation Limits For Commercial Mobile Radio Services; Increasing Flexibility To Promote Access to and the Efficient and Intensive Use of Spectrum and the Widespread Deployment of Wireless Services, and To Facilitate Capital Formation, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 19078, ¶ 86 (2004) (“[W]e believe that, in principle, increasing power limits in rural areas can benefit consumers in rural areas by reducing the costs of infrastructure and otherwise making the provision of spectrum-based services to rural areas more economic.”). *See also* Comments of AT&T Inc., WT Docket No. 06-150, at 12 (Oct. 5, 2006) (urging the Commission to consider increasing power limits in rural areas for 700 MHz band licensees).

<sup>55</sup> The E Block licensee and the National Public Safety Licensee could also work with Mobile Satellite Service licensees to provide satellite coverage to cover gaps in rural areas in the terrestrial 700 MHz public safety broadband network.

## **8. Bidding Credits to Promote Service to Rural Areas**

Under the build-out requirements described in Section III.B.1 above, the E Block licensee would be required, within ten years of its license grant, to construct the wireless broadband network so that it delivers signal coverage to 75% of the geographic area of the continental United States. *This coverage footprint is much larger than the footprint of any existing commercial wireless operator and would cover well over 99% of the U.S. population.* Providing coverage beyond this benchmark is likely to be highly burdensome in these very sparsely populated areas. The Commission should consider creating bidding credits in its auction of the E Block spectrum that would help overcome these economic obstacles. The bidding credit could be based on a commitment in the winning bidder's long-form application for the E Block license to extend coverage beyond the 75% benchmark. The bidding credit could be similar to the one the Commission has adopted for tribal lands,<sup>56</sup> designed to allow a winning bidder of a rural area to build out the infrastructure and operate the rural network without a loss. Alternatively, the bidding credit could possibly be derived from the \$/MHz-pop valuations placed by winning bidders on the 700 MHz licenses, particularly licenses for more rural service areas. Such bidding credits could promote an important public interest by encouraging the build-out of the 700 MHz public safety network to remote areas of the country.

## **9. Nationwide Roaming to Small and Rural Wireless Operators.**

As the wireless industry has matured, access to reasonable nationwide roaming has become increasingly challenging for small and rural operators.<sup>57</sup> Given the wide-scale coverage inherent in the network build requirements, Frontline submits that the E Block licensee should be

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<sup>56</sup> See 47 C.F.R. § 1.2110(f)(3).

<sup>57</sup> See, e.g., Comments of Leap Wireless International, Inc., WT Docket No. 05-265 (filed Nov. 28, 2005).

required, as a condition of its license, to offer roaming to any provider with customers utilizing devices compatible with the open protocol interface of the E Block network. This proposal affords the Commission an opportunity to proactively address the “roaming problem” through a simple requirement attached to a small portion of the 700 MHz spectrum.

### **C. Licensing the Public Safety Broadband Spectrum**

Under the Public Safety Broadband Deployment Plan, the Commission would assign the public safety broadband block to a single national public safety broadband licensee – the National Public Safety Licensee – as wisely proposed by the *Ninth NPRM*.<sup>58</sup> The identity and governance of the National Public Safety Licensee should be determined by the public safety community. The organization should include members with a comprehensive knowledge and understanding of public safety wireless communications needs and challenges. It should also include members with experience in managing large communications networks, since these skills will be critical for working with the E Block licensee to develop the public safety broadband network.

The National Public Safety Licensee would not be obligated to take the service offered by the E Block winner. But that winner would be obliged, under the terms of its license and related service rules, to offer such service to the adjacent public safety users on its spectrum. It would also have an obligation to place unique antennae on its bay stations to benefit public safety upon demand under commercially reasonable service contracts.

Of course, both the E Block licensee and the National Public Safety Licensee would have strong, mutually reinforced incentives to successfully complete negotiations; that is, the E Block licensee will want to assure secondary access to excess capacity on the public safety broadband

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<sup>58</sup> *Ninth NPRM* ¶ 4.

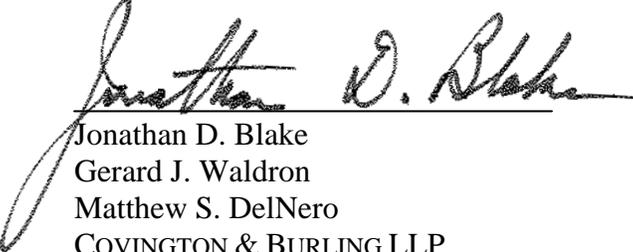
spectrum and the National Public Safety Licensee will want to assure that public safety users have emergency, “peak” access to the E Block spectrum. These issues will be discussed more fully in Frontline’s companion filing in the pending service rules proceeding.

Also consistent with the proposals set forth in the *Ninth NPRM*, the National Public Safety Licensee would use its assigned spectrum to provide public safety entities with wireless broadband services (either on its own or through a third-party contractor) on a fee-for-service basis. The National Public Safety Licensee would also negotiate arrangements for “logical” broadband networks controlled by individual national, regional, and local public safety agencies. Revenues generated from these arrangements and the fees-for-service could be used by the National Public Safety Licensee to cover its share of the management and upgrade costs of the network (as described above) as well as for other initiatives that promote public safety communications.

**CONCLUSION**

For the foregoing reasons, Frontline urges the Commission to adopt rules governing the public safety and commercial 700 MHz spectrum that will facilitate the construction of a nationwide, interoperable, wireless broadband network for public safety consistent with the proposals contained herein.

Respectfully submitted,

A handwritten signature in black ink, reading "Jonathan D. Blake". The signature is written in a cursive style with a long, sweeping underline that extends to the left and under the first name.

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February 26, 2007