

**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
)	

REPLY COMMENTS OF FRONTLINE WIRELESS, LLC

INTRODUCTION AND SUMMARY

The comments filed in response to the Commission’s Ninth Notice of Proposed Rulemaking (“*Ninth NPRM*”) highlight the benefits that Frontline’s Public Safety Broadband Deployment Plan (“*Plan*”) will provide to the public safety community.¹ Despite the diversity of the commenting parties, the comments consistently identify many of the same communications problems and needs faced by our dedicated public safety community. Frontline’s Plan addresses these critical communications needs and provides market-based solutions for them — solutions that will not delay the auction, that are consistent with existing authority, and that avoid burdensome regulatory regimes. Specifically, the Plan solves the problems cited in the comments by offering the following to our public safety community:

- (1) *Free build-out* of a nationwide public safety broadband network;
- (2) *Increased spectrum* in emergencies through priority access to the E Block licensee’s 2 x 5 MHz in the 700 MHz band;

¹ See Comments of Frontline Wireless, LLC, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229 (Feb. 26, 2007) (*Frontline Comments*).

- (3) *Local control* over public safety networks;
- (4) *Nationwide interoperability* among all broadband networks with security and authorization controlled at national, regional, and local levels;
- (5) *Maximum equipment choice* with the use of open network standards.

The Spectrum Coalition for Public Safety (“SCPS”) in its comments “encourage[d] serious commercial entities that desire to build this type of infrastructure to step forward.”² Frontline has enthusiastically done so. Its Plan not only provides solutions to the build-out challenges identified by commenters like SCPS, but also provides public safety with other important benefits such as greater freedom of equipment choice — a freedom specifically requested in the comments by public safety officials such as the Missouri State Highway Patrol.³ At the same time, the Plan benefits consumers by encouraging innovation, promoting competition, and enhancing service in rural areas.

I. THE COMMENTS ILLUSTRATE WHY THE COMMISSION SHOULD ADOPT FRONTLINE’S PUBLIC SAFETY BROADBAND DEPLOYMENT PLAN.

A. The Comments Confirm the Need For a Build-Out of the Public Safety Broadband Network at No Cost to Taxpayers.

The comments recognized the importance of securing sufficient funding for both the construction and operation of the public safety broadband network. Several commenters therefore applauded the Commission’s willingness in the *Ninth NPRM* to explore commercial partnerships as a means of subsidizing public safety’s broadband network.⁴ The Association of

² Comments of the Spectrum Coalition for Public Safety, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 8 (Feb. 26, 2007) (*SCPS Comments*).

³ See *infra* Section I.E.

⁴ See e.g., Comments of APCO, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 10 (Feb. 26, 2007) (*APCO Comments*); Comments of the Enterprise Wireless Alliance, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 5 (Feb. 26, 2007) (*EWA Comments*); Comments of Sprint Nextel Corporation, *Implementing a Nationwide, Broadband,*

Public-Safety Communications Officials-International, Inc. (“APCO”), for instance, stated that “contracts with commercial entities to construct and maintain [network infrastructure] could be a principal benefit of designating a single licensee.”⁵ At the same time, however, commenters expressed skepticism that public safety could obtain sufficient funding for the costs — the large, fixed, up-front costs — that network construction would require. As the National Public Safety Telecommunications Council (“NPSTC”) explained, “[w]ithout commercial investment to support the build-out and maintenance of the network, the burden will fall to state and local governments under the pay-as-you-go format. . . . [T]his is neither realistic nor achievable.”⁶ APCO agreed, stating that “the absence of a clear model for funding is a major concern.”⁷

Frontline’s Plan addresses these commenters’ concerns by providing for construction of a nationwide infrastructure that would support an interoperable public safety broadband network at no cost to taxpayers. As explained in Frontline’s initial comments, the Plan would achieve this important goal by requiring the new E Block licensee, as a condition of its commercial license, to build a nationwide infrastructure that would support the public safety network.⁸

Frontline’s build-out proposal — enforced by specific construction deadlines — would benefit the public safety community in a number of ways. Most obviously, public safety — and taxpayers — would be relieved of the formidable build-out costs that many local and state

Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, at 5 (Feb. 26, 2007) (*Sprint Comments*).

⁵ *APCO Comments* at 10.

⁶ Comments of the National Public Safety Telecommunications Council, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 8 (Feb. 26, 2007) (*NPSTC Comments*).

⁷ *APCO Comments* at 11.

⁸ *Frontline Comments*, at 22-23.

public safety agencies cannot bear. A common infrastructure would also generate significant cost savings in both the construction and operation of the network. Finally, the Frontline Plan directly tackles the pressing challenge of interoperability by offering an open IP platform to public safety that can carry traffic from many sources that meet standard published open specifications. Moreover, by using one or more of the standard technologies, public safety agencies can benefit from the scale and scope of commercial technology production and thus procure equipment with greater functionality and lower costs.

B. The Comments Confirm the Public Safety Community's Need for Additional Spectrum.

Another commonly-cited concern in the comments was that 12 MHz is insufficient for a national public safety broadband network.⁹ Some commenters focused on operational concerns, arguing that spectrum demand would exceed 12 MHz. For instance, the State of California “does not believe that 12 MHz is an adequate amount of spectrum to handle the expected load.”¹⁰ Other commenters cited financial concerns, contending that 12 MHz was an insufficient amount of spectrum to attract commercial investment for the public safety broadband network. As Northrop Grumman explained, “the 12 MHz available for broadband is not enough to meet the needs of public safety while yielding capacity and material economic

⁹ See, e.g., *APCO Comments*, at 6; Comments of GeoCommand, Inc., *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 9-14 (Feb. 26, 2007) (*GeoCommand Comments*); Comments of Northrop Grumman Information Technology, Inc., *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 6 (Feb. 26, 2007) (*Northrop Grumman Comments*); *NPSTC Comments*, at 8; *SCPS Comments*, at 4-5; Comments of the Software Defined Radio Forum, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 12-13 (Feb. 23, 2007) (*SDR Forum Comments*).

¹⁰ Comments of the State of California, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 2 (Feb. 26, 2007) (*California Comments*).

value for any commercial carriers.”¹¹ GeoCommand added that “the FCC must allocate sufficient spectrum to a nationwide interoperable broadband public safety network to ensure that commercial operators will feel vested in the network and participate on a true partnership basis.”¹² Indeed, the Commission’s *Ninth NPRM* voiced similar concerns in seeking comment on the “viability and adequacy” of such proposals.¹³

Frontline’s innovative network-sharing proposal addresses both of these concerns. With respect to operational capabilities, Frontline’s proposal roughly doubles the amount of peak spectrum capacity available to public safety communications by requiring the E Block licensee to provide priority access to public safety broadband operations on its own 10 MHz of commercial spectrum during emergencies.¹⁴ With respect to the financial incentives for the E Block licensee, it would not only have access to its own 10 MHz of commercial spectrum, but would have secondary, preemptible access to public safety’s excess capacity in its 12 MHz of spectrum. As a result of these shared arrangements and infrastructure, the Plan will improve

¹¹ *Northrop Grumman Comments*, at 6.

¹² Comments of GeoCommand, Inc., *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 14 (Feb. 26, 2007) (*GeoCommand Comments*).

¹³ Ninth Notice of Proposed Rulemaking, *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*, PS Docket No. 06-229 at ¶ 29-30 (2006) (*Ninth NPRM*).

¹⁴ The Commission can nearly double the peak spectrum available to public safety by simply dividing the existing D block in half to create the new 2 x 5 MHz E Block. Furthermore, an additional 3 MHz (paired 1.5 MHz blocks) of the former A and B Block Guard Band spectrum could be made available for commercial broadband services if the Commission adopts the Broadband Optimization Plan (“BOP”), which Frontline supports. Adding the additional 3 MHz freed up for commercial use by the BOP to the E Block, thereby creating paired 6.5 MHz blocks, would fully double the peak spectrum available to public safety. *See, e.g.*, Comments of Access Spectrum, LLC, Columbia Capital III, LLC, Intel Corporation and Pegasus Communications Corporation, WT Docket No. 96-86 (June 6, 2006). In addition to the BOP, there may be other similar proposals that meet the Commission’s public safety objectives.

public safety's emergency communications capabilities while simultaneously ensuring that the E Block license will attract maximum capital investment.

Frontline's proposal to increase the amount of spectrum available to public safety is further supported by the technical concerns that several commenters expressed about the commercial availability of cognitive radio technology.¹⁵ In the *Ninth NPRM*, the Commission asked whether cognitive radio might be used to augment a 12 MHz broadband allocation by "borrowing" spectrum from the narrowband portion of the existing public safety allocation.¹⁶ Although cognitive radio is a promising technology that may one day significantly reduce spectrum demands, many commenters agree that it is premature to rely on this technology to increase the amount of spectrum available to support mission-critical public safety needs. Even strong supporters of cognitive radio such as the Software Defined Radio Forum ("SDR Forum") urge caution in this respect:

Secondary operation of broadband protocols in narrow band Public Safety spectrum represents a significant technological challenge. Under circumstances where there is no planned use of narrow band communications, no problem exists. But no technology currently is available to overcome the problems that arise when both uses are attempted in close frequency and spatial proximity.¹⁷

¹⁵ See, e.g., *APCO Comments*, at 12; *SCPS Comments*, at 14.

¹⁶ *Ninth NPRM*, at ¶ 38.

¹⁷ Comments of the Software Defined Radio Forum, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 7 (Feb. 23, 2007) (*SDR Forum Comments*). A broadband channel is typically 1 MHz to 5 MHz wide and shared between many users, while a narrow public safety channel is typically 6.25 KHz or 25 KHz wide and supports only a single user. Thus, assume (a) that a cognitive radio sensed that a broadband channel were available because no narrowband users were using the spectrum, (b) it started to use the channel, and (c) a single narrowband user public safety user sought to use a 6.25 KHz frequency within the spectrum and that mission-critical voice traffic was entitled to take priority. In that situation, the entire broadband channel would have to be powered down or shut off instantaneously, disrupting many users. In light of these and other concerns, the SDR Forum "recommends caution in deployment of new technology to ensure a smooth introduction." More generally, these technological concerns provide an additional reason why the Commission should consider consolidating the narrowband spectrum.

The SDR Forum goes on to endorse a “single network model,” where “the same network would be used by both the Public Safety users and commercial users in the allocated spectrum. Under this situation, network control functions can determine when commercial communications needed to be pre-empted or blocked based on Public Safety requirements.”¹⁸ The SDR Forum notes that “[t]echnologies are in place to implement this single network model. In fact, such systems exist today.” This is *precisely* the same premise that underpins Frontline’s proposal: the availability of commercial-off-the-shelf technology can provide a single network that would enable dynamic capacity-sharing across both a public safety broadband allocation and the proposed commercial E Block with strict prioritization to public safety.

C. The Comments Confirm the Importance of Local Control.

Several commenters — particularly those representing public officials — strongly emphasized the importance of ensuring local control of emergency network communications. As the City of Philadelphia stated, “[u]ltimately, local and regional agreement, and therefore local and regional control, is vital in establishing an effective public safety interoperability model.”¹⁹ APCO similarly stressed the need to “allow for local autonomy where appropriate and [to] accommodate current public safety data network plans.”²⁰

Frontline’s Plan recognizes the importance of ensuring that local and regional agencies maintain total “command and control” over their own local networks during emergencies. It, therefore, requires the E Block licensee to use modern, IP-based technology that enables nationwide, statewide, and local “logical” public safety networks that can operate within

¹⁸ *Id.*

¹⁹ Comments of the City of Philadelphia, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229, at 3 (Feb. 26, 2007) (*Philadelphia Comments*).

²⁰ *APCO Comments*, at 6.

the same spectrum. This technology will — and must — allow these agencies to create virtual private networks or Intranets that would be controlled by the local or regional public safety agencies to ensure their security.²¹

D. The Comments Confirm the Need for Nationwide Interoperability.

To better understand how public safety would benefit from the type of interoperable, open access network that Frontline proposes, the Commission need only look at the comments filed by the Missouri State Highway Patrol (“MSHP”).²² The MSHP comments explain in detail how the National Law Enforcement Telecommunications System that MSHP uses promotes inter-agency communications and cooperation through open access network principles. The MSHP explains that this same open access approach could be used to support “a nationwide public safety network using IP technology . . . that is standardized at the network layer rather than at the physical layer.”²³ The MSHP goes on to describe the additional benefits provided to public safety officials:

[Under this open access approach], a national public safety network can be developed that delivers the operability necessary for its community for both voice and data networks using technology that best suits their needs[.] . . . It is these “network layer technologies” that allows users of today’s cellular systems . . . with disparate devices operating in multiple frequency bands to communicate with each other. . . . A public safety national data network initiative can borrow from this approach and begin to

²¹ The network operator would provide and enable authentication, authorization, and accounting functionality similarly to the Internet standards currently used in highly reliable enterprise and military networks.

²² Comments of the Missouri State Highway Patrol, *Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band*, PS Docket No. 06-229 (Feb. 26, 2007) (*MSHP Comments*).

²³ *Id.*, at 14.

emphasize network based connectivity and the interoperable benefits inherent in the technology for voice and data.²⁴

The interoperable, open access network that the MSHP describes is exactly the type of network that Frontline proposes. As the MSHP correctly notes, promoting interoperability by operating an IP-based network would significantly improve the ability of first responders from different agencies and different parts of the country to communicate with each other easily and quickly. Indeed, the lack of this type of interoperability was cited by the Independent Panel reviewing the communications breakdown in the aftermath of Hurricane Katrina as one of the primary communications problems that public safety faced.²⁵

E. The Comments Confirm the Need to Promote Maximum Equipment Choice.

Commenters also recognized that an open access network would benefit public safety by promoting freedom of equipment choice, which will allow agencies and officials to take advantage of affordable, state-of-the-art technology from a variety of vendors in response to their individualized needs. For instance, the MSHP notes that an open access approach will allow public safety to “us[e] technology that best suits their needs.”²⁶ This position echoes the Commission’s previously-expressed objective to promote “the development of competitive equipment markets.”²⁷

²⁴ *Id.* at 13-14.

²⁵ *See, e.g., Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, Report and Recommendations to the Federal Communications Commission, at 26 (2006) (“[I]ncreased ability to interoperate with other agencies would have provided greater redundant communications paths and a more coordinated response.”).

²⁶ *MSHP Comments*, at 14.

²⁷ Eighth Notice of Proposed Rulemaking, *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, 21 FCC Rcd 3668, at ¶ 2 (2006).

Frontline's Plan responds to these important objectives by promoting freedom of equipment choice. Giving public safety officials the freedom to choose equipment that best suits their individual needs will not only improve emergency preparedness, but will spur investment and innovation in the equipment sector — developments that will ultimately benefit commercial users as well.

CONCLUSION

For the reasons stated above and in its initial comments, Frontline urges the Commission to adopt the Public Safety Broadband Deployment Plan to facilitate the construction of a nationwide, interoperable, wireless broadband network for public safety.

Respectfully submitted,



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