Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	WT Docket No. 06-150
	)	
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 the Public Safety Spectrum Trust Corporation

Public Safety Spectrum Trust Corporation
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June 20, 2008

EXECUTIVE SUMMARY

The Public Safety Spectrum Trust Corporation ("PSST"), pursuant to Section 1.415 of the Federal Communications Commission ("FCC" or "Commission") Rules and Regulations, 47 C.F.R. § 1.415, hereby respectfully submits its comments in response to the Commission's *Second Further Notice of Proposed Rulemaking* ("Second FNPRM")[1] on implementing a nationwide, broadband interoperable public safety network in the 700 MHz band. In the instant proceeding, the FCC has reaffirmed its commitment to work with the public safety and commercial wireless communities in crafting rules for a mutually beneficial and sustainable 700 MHz Public/Private Partnership. In both the Second Report and Order ("Second R&O") in this proceeding[2] and, again, in the instant Second FNPRM, the Commission correctly concluded that a nationwide shared wireless broadband network ("SWBN") serving the advanced communications needs of both public safety and commercial users will fulfill essential public interest objectives. The PSST welcomes this opportunity to work with the Commission and with commercial entities that understand the critical importance of ensuring a balanced relationship that properly recognizes both public safety and commercial needs with respect to the SWBN. It is that commitment that guides the PSST's comments in response to the Second FNPRM.

First and foremost, this proceeding offers the Commission a valuable opportunity to ensure that the PSST, as the Public Safety Broadband Licensee ("PSBL"), has the tools it needs to fulfill its important mission. The Commission should grant the PSST the authority necessary

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[1] In the Matter of Service Rules for the 678-746, 747-767 and 777-792 MHz Bands, *Second Further Notice of Proposed Rulemaking*, WT Docket No. 06-150, 83 FR 29,582 (2008).
[2] Service Rules for the 678-746, 747-767 and 777-792 MHz Bands, *Second Report and Order*, WT Docket No. 06-150, 22 FCC Rcd 15,289 (2007).

to monitor and enforce the D Block licensee's compliance with the FCC's rules and promote use of the SWBN. In addition, the Commission should ensure that the PSST has broad authority with respect to public safety use of the SWBN, such as incident management, the assignment of priority access rights, and the discretion to determine what constitutes an "emergency" for purposes of preemptive use of the SWBN.

This proceeding also offers the Commission the opportunity to ensure that the PSST, as the PSBL, will be adequately funded. The Commission should allow the PSST to negotiate lease fees with the D Block licensee in the NSA, and it should modify its rules as needed so that universal service funds are available to the D Block licensee to support the SWBN. These measures are necessary because the PSST already is subject to strict restrictions limiting its access to funds. Any additional limits on funding or commercial relationships will likely impede the PSST's ability to carry out its important public safety mission.

At the same time, the PSST recognizes that the Commission must strike a balance between the PSBL's needs and ensuring adequate commercial interest in the D Block license, one that may not have been achieved in the initial rules governing the Public/Private Partnership. The PSST believes that increasing certainty for potential bidders will help achieve this objective. To ensure that potential bidders have sufficient details to inform their decision-making process, the PSST recommends that the FCC provide more information with respect to the SWBN requirements and obligations of the D Block licensee. The PSST encourages the FCC to specify technical requirements of the SWBN based on the record in this proceeding, in advance of the re-auction. To that end, the PSST has provided, as an attachment to these Comments, a revised technical analysis of the network requirements based on input from the public safety

organizations it represents. The PSST has provided this information in the hopes that the re-auction will result in a successful Public/Private Partnership.

The PSST has outlined several other recommendations to provide greater specificity concerning the SWBN requirements and the D Block licensee's obligations. For example, the PSST urges the Commission to maintain the requirement that the D Block licensee make more than 10 MHz of network capacity available for priority access in the event of an emergency, while noting that it is reasonable to limit priority access for public safety to 70% of the overall SWBN network capacity. The PSST also urges the Commission to refrain from allowing the D Block licensee to recoup its construction costs from public safety users. With respect to service fees paid by public safety users, the Commission should rely on the NSA negotiation process instead of setting fees before knowing the identity and business model of the successful D Block bidder prior to the build-out of the network. Moreover, the PSST believes the Commission should not mandate SWBN use by public safety agencies, and should rely instead on the efforts of the PSST to encourage use of the SWBN. In its consideration of technical requirements for the SWBN, the Commission should facilitate interoperability with legacy land mobile public safety systems in use throughout the country. Finally, the PSST asks the Commission to continue to ensure a timely relocation of narrowband equipment out of the spectrum allocated for public safety broadband communications, while raising the current cap on the D Block licensee's reimbursement obligation to reflect the higher anticipated costs of relocation.

The PSST recognizes that the Commission may need to modify certain requirements on the D Block license to promote interest by prospective bidders. The PSST supports certain adjustments to the construction requirements, such as an extension of the license term with a corresponding extension of current construction requirements, or a reduction in the final build-

out requirement from 99.3% to 98% population coverage. The PSST has provided sample coverage maps along with these Comments, demonstrating the impact of such adjustments to the construction requirements. In addition, the PSST suggests that the Commission eliminate or significantly reduce the D Block license reserve price in the re-auction. Should the Commission decide to retain a reserve price, the PSST recommends that the Commission set it at a level comparable to the minimum opening bid, as it has done in several previous auctions. The PSST believes strongly that the D Block should remain a single, nationwide license in order to facilitate nationwide interoperability and maintain the integrity of the Public/Private Partnership between the PSST and a single D Block licensee, but supports encouraging participation by bidding consortia or joint ventures. The PSST also urges the Commission to revise the default provisions for the D Block license to provide that the license shall be offered to the second highest bidder in the event of a default where there has been a good faith negotiation process. This measure will be more effective than a financial penalty in deterring disruption in the negotiation of the NSA, and will maintain incentives for the winning bidder to negotiate an NSA in good faith.

With respect to the PSST's organization and governance, the PSST recommends that the Commission rely on its existing rules, with which the PSST fully complies. Maintaining the integrity of the PSBL will preserve certainty and facilitate bidding on the D Block license, as parties are already familiar with the needs of public safety agencies because of the work the PSST has done to date. Additionally, public safety agencies nationwide and the Commission itself have already expended significant resources in the selection of the PSST as the PSBL, and the PSST and its individual members have contributed enormous efforts to the establishment of the PSST and its related infrastructure.

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Comments of the Public Safety Spectrum Trust Corporation

I. ABOUT THE PSST

The PSST was formed in June 2007 for the express purpose of seeking Commission approval as the PSBL. Consistent with the FCC's rules, it is a non-profit corporation organized under the laws of the District of Columbia. Its Articles of Incorporation and Bylaws both conform to the requirements established by the FCC[3] and were submitted for Commission review as part of the PSST's application to hold the Public Safety Broadband License.[4]

The organizations that have appointed representatives to the PSST Board of Directors ("Board") represent an appropriately broad range of public safety and other non-Federal

[3] *See* Second R&O at ¶¶ 373-77; Implementing a Nationwide, Broadband Interoperable Public Safety Network in the 700 MHz Band, *Order*, PS Docket No. 06-229, 22 FCC Rcd 20,453 (2007) (granting the PSST's application to be the PSBL).

[4] Application of the Public Safety Spectrum Trust Corporation to be the 700 MHz Public Safety Broadband Licensee (filed Oct. 10, 2007).

governmental agencies.[5] They came together in the PSST for one and only one reason: to assume responsibility for working with the entire public safety community to ensure that its unique requirements were addressed in the construction, operation, and consistent improvement of the SWBN pursuant to a partnership arrangement that also would create a viable commercial opportunity for a D Block licensee. The PSST appreciated from the beginning that careful balancing would be required to satisfy these sometimes competing interests, but the Board remains confident that the mutual benefits of a Public/Private Partnership are sufficiently compelling that appropriate accommodations will be achieved.

It is also important to keep in mind the scope of the entirely voluntary commitment needed to fulfill the PSST's primary responsibility to the public safety community. The PSST's Board is comprised of individuals with numerous other important responsibilities. They have dedicated their time to this undertaking on a purely voluntary basis and have contributed extensively to the establishment of the PSST as a non-profit, tax-exempt organization, including crafting the PSST's Bylaws, electing officers, preparing operating procedures, adopting travel regulations, implementing expense and reimbursement rules, and approving conflict of interest safeguards. No governmental monies were made available to assist the PSST or finance the very substantial and time-consuming work that already has been devoted by the PSST, for example, to the 700 MHz narrowband relocation issue, numerous meetings with potential D Block bidders,

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[5] The current Board members are Harlin McEwen (International Association of Chiefs of Police) (PSST Chairman), Kevin McGinnis (National Association of State Emergency Medical Services Officials) (PSST Vice-Chairman), Alan Caldwell (International Association of Fire Chiefs) (PSST Secretary-Treasurer), William Brownlow (American Association of State Highway and Transportation Officials), John Collins (American Hospital Association), Craig Jorgensen (Association of Public-Safety Communications Officials-International), Paul Leary (Forestry Conservation Communications Association), Mark Ryckman (International City/County Management Association), Douglas Aiken (International Municipal Signal Association), Richard Taylor (National Association of State 9-1-1 Administrators), Jason Barbour (National Emergency Number Association), David Hiller (National Fraternal Order of Police), John Contestabile (National Governors Association), and Paul Fitzgerald (National Sheriffs' Association). The National Emergency Management Association does not currently have a representative serving on the PSST Board.

the preparation of the Bidder Information Document ("BID"), and for the negotiation of the Network Sharing Agreement ("NSA") with the D Block winner that will determine the features available to public safety from the SWBN. Yet all are considerable undertakings demanding expertise and time commitments beyond that available from the PSST's entirely volunteer Board.

The members of the Board understood the obligations they were assuming and the absence of governmental funding when they accepted the Commission's directive to participate, thus demonstrating both the critical importance of the SWBN and their commitment to the public safety community. The Commission can be confident that the persons selected to participate on the PSST Board would not compromise their responsibility to represent the best interests of public safety with respect to the SWBN, including when addressing the critical need for funding at this very early stage.

Consistent with its representation of public safety, the PSST has identified the following as the most important public safety outcomes for this endeavor:

1. A Public/Private Partnership that will enable the development and implementation of the SWBN.
2. Commercial investments through the Public/Private Partnership to engineer, build, deploy, operate, maintain, and upgrade the SWBN.
3. A single D Block licensee that would be the private commercial partner (a single entity or a consortium of entities that become the D Block licensee).
4. Network reliability and security greater than current commercial services.
5. Public Safety access to evolving wireless technologies and services.
6. Priority access for public safety to the SWBN.
7. Coverage greater than that currently provided by any commercial carriers.
8. A satellite component that provides coverage when terrestrial service is disrupted or not available.

The PSST has addressed numerous issues raised by the Commission in these Comments, all from the perspective of advancing these outcomes and thereby meeting the urgent need for improved, interoperable communications among the nation's emergency first responders.

II. THE PUBLIC/PRIVATE PARTNERSHIP REMAINS THE BEST MEANS OF ADVANCING THE FCC'S PUBLIC SAFETY GOALS

There is no serious debate about the critical need to provide for technologically advanced, interoperable public safety communications in this country. The call to address this urgent problem has been sounded repeatedly since the events of 9/11 and more recently echoed in the aftermath of Hurricane Katrina as well as in numerous, more localized incidents requiring coordination of public safety entities. Reports examining the aftermath of 9/11 and Hurricane Katrina and evaluating measures that can be taken to improve this nation's emergency response capabilities have underscored the need for improved interoperability among public safety entities nationwide.[6] Meeting this need is consistently identified as a top public priority by governmental leaders and private citizens and finally is within our technical capabilities.

There also is no question about the primary obstacle that heretofore has prevented the deployment of this critically important network: "the limited availability of public funding."[7] It was this reality that originally prompted the Commission to explore the alternative Public/Private Partnership approach. As stated by Chairman Martin:

> [O]ur decision [in this proceeding] must also be informed by the continuing need for a truly nationwide interoperable broadband network for public safety agencies to use during times of emergency. In the absence of the financial resources for

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[6] *See, e.g.*, The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States, 391-98 (Jul. 2004) ("9/11 Report"); The Federal Response to Hurricane Katrina, Lessons Learned, 55-56 (Feb. 2006) ("Katrina Report"); Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks, Report and Recommendations to the Federal Communications Commission (Jun. 12, 2006).

[7] Second R&O at ¶ 396.

> public safety to build out their own network, however, I believe we should continue to try to explore ways in which we can help facilitate a tool to achieve a nationwide interoperable public safety network.[8]

Commissioner Copps also described the situation in his separate Statement:

> As I have stated before, I believe the nation's most prudent response in the terrifying days following 9/11 would have been to build a dedicated, federally-funded, interoperable national broadband network for first responders. However…that option is no longer on the table. So I believe the FCC is left with the sobering conclusion that a public-private shared model represents the last, best chance we have at using the 700 MHz spectrum band to improve communications for state and local public safety users.[9]

The PSST urges the Commission to retain the Public/Private Partnership concept as it prepares to again offer the D Block license for auction. Addressing public safety's urgent need for a nationwide, interoperable broadband network was the FCC's primary goal in providing for a Public/Private Partnership, and that need has not changed. The partnership between the PSBL, a role the FCC has conferred upon the PSST, and the D Block licensee addresses this need by assigning the obligation to build and operate the SWBN to the D Block licensee while allowing secondary commercial access to the PSBL spectrum.

Absent further legislative action, the Public/Private Partnership is the only viable means of ensuring the rapid construction of a nationwide, interoperable broadband network that meets public safety's needs. Moreover, the partnership has the potential to harness the powerful engines of commercial wireless market penetration and technological innovation in order to propel public safety communications into the 21st century in an economically sustainable model. By combining 10 MHz of 700 MHz broadband spectrum from each of the D Block licensee and the PSBL, the partnership provides enhanced spectrum efficiencies that will benefit public safety

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[8] Second FNPRM, Statement of Chairman Kevin J. Martin at 1.
[9] Second FNPRM, Statement of Commissioner Michael J. Copps at 1.

users on the SWBN during emergencies (when access to additional capacity may be essential) and will benefit commercial subscribers routinely (during those times when public safety does not require full use of its own 10 MHz).[10] Further, the partnership will facilitate cost-effective technological innovations that could become available to all SWBN users as their collective requirements drive research and development investments and, thereby, advances in wireless communications.[11] Although the PSST was disappointed that there was no qualified D Block winner in the initial 700 MHz auction, it remains committed to the adoption of rules that will produce a successful D Block re-auction, thus addressing the increasingly urgent need of arming the nation's first responders with the communications tools they need to protect the people of this nation.

III. THE COMMISSION MUST ENSURE AN APPROPRIATE BALANCE FOR THE PUBLIC/PRIVATE PARTNERSHIP

The FCC's Public/Private Partnership concept is a novel undertaking. The stakes are high, both in terms of public policy and economics. Thus, it is critical that the Commission continue to support its aim in the Second R&O where it designed the framework to "strike the appropriate balance such that the maximum benefits accrued to both parties."[12] Any re-examination of the Public/Private Partnership framework should be consistent with the principles and goals set forth in the Second FNPRM:

- To identify concerns in the existing structure of the 700 MHz Public/Private Partnership;
- To promote wireless innovation and broadband network penetration while meeting the communications needs of the first responder community in a commercially viable manner;

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[10] *See* Second R&O at ¶ 396.
[11] *See id.*
[12] Second FNPRM at ¶ 5.

- To facilitate public safety access to a nationwide, interoperable broadband network in a timely manner;
- To identify funding opportunities for the public safety community to realize the promise of a broadband communications infrastructure with a nationwide level of interoperability; and
- To maximize the commercial and public safety benefits of this unique piece of 700 MHz spectrum.[13]

In all partnerships, it is essential that the relationship between the parties and the delineation of their respective roles and responsibilities be clearly and correctly defined. An imbalance in that definition can prevent the partnership from forming or can doom it to failure. Although the PSST represents the public safety community, it has a keen appreciation for the importance of ensuring a viable commercial opportunity if the SWBN is to be built at all. Of course, critical public safety requirements cannot be abandoned — a network meeting the needs of this nation's emergency responders and the public they serve is one of the key goals of the partnership. The right balance of technical and operational standards will serve both public safety and commercial interests and should be the goal of all parties to this proceeding.

Attachment A is a financial analysis describing how the Public/Private Partnership envisioned by the Commission could work ("Financial Analysis").[14] This model takes into account input from a variety of commercial operators with whom the PSST has discussed the SWBN concept both prior and subsequent to Auction 73 and is based on the assumptions identified in the Attachment. The PSST recognizes that any significant alteration of those assumptions will result in different conclusions, but it is satisfied that those applied in the analysis are reasonable and consistent with those used in the commercial wireless industry. The

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[13] *Id.* at ¶ 6.
[14] *Id.* at ¶ 116.

PSST would be pleased to discuss the Financial Analysis in greater detail with any interested party.

A. **The Roles of the PSST and the D Block Licensee in the Public/Private Partnership Must Reflect Their Respective Responsibilities**

The Second R&O described certain responsibilities that the FCC imposed on both the D Block licensee and the PSBL with respect to the SWBN.[15] Paramount among the D Block licensee's roles was "the exclusive right and obligation to build out the shared network,"[16] as well as the responsibility to operate the SWBN once constructed, on terms either established in the FCC rules or to be negotiated in the NSA between the PSST and the D Block winner. The D Block licensee was granted the right to provide commercial service on its own 700 MHz spectrum and on the 10 MHz of spectrum licensed to the PSBL on a secondary, preemptible basis pursuant to a spectrum lease to be negotiated by the parties.

The PSST is the PSBL, and is an equal partner to the D Block licensee. The PSBL's overarching responsibility is an obligation to represent the interests of the public safety community *vis-à-vis* the SWBN and to ensure that the network meets public safety requirements. In furtherance of that charge, the FCC assigned to the PSBL a number of specific tasks, including the following:

- Negotiation of the NSA with the winning bidder at auction for the Upper 700 MHz Band D Block license.
- General administration of access to the national public safety broadband network by individual public safety entities, including assessment of usage fees to recoup its expenses and related frequency coordination duties.
- Regular interaction with and promotion of the needs of the public safety entities that would utilize the national public safety broadband network, within the technical and operational confines of the NSA.

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[15] Second R&O at ¶ 405.
[16] *Id.* at ¶ 399.

- Use of its national level of representation of the public safety community to interface with equipment vendors on its own or in partnership with the D Block licensee, as appropriate, to achieve and pass on the benefits of economies of scale concerning network and subscriber equipment and applications. Any partnership with the D Block licensee in conjunction with this responsibility shall not limit or alter the [PSBL's] right to determine and approve the specifications of public safety equipment that is used on its network.
- Sole authority, which cannot be waived in the NSA, to approve, in consultation with the D Block licensee, equipment and applications for use by public safety entities on the public safety broadband network. State and local public safety entities must obtain approval from the PSBL prior to employing any equipment or applications on the public safety broadband network.
- Coordination of stations operating on public safety broadband spectrum with public safety narrowband stations, including management of the internal public safety guard band.
- Oversight and implementation of the relocation of narrowband public safety operations in channels 63 and 68, and the upper 1 megahertz of channels 64 and 69.
- Exercise of sole discretion, pursuant to Section 2.103 of the Commission's rules, whether to permit Federal public safety agency use of the public safety broadband spectrum, with any such use subject to the terms and conditions of the NSA.
- Responsibility for reviewing requests for wideband waivers and including necessary conditions or limitations consistent with the deployment and construction of the national public safety broadband network, consistent with the procedures and restrictions [established] in connection with such waivers in the Second Report and Order.
- Responsibility to facilitate negotiations between the winning bidder of the D Block license and local and state entities to build out local and state-owned lands.[17]

To complete these tasks, the PSST, at a minimum, will need to have an active role in:

- Establishing standards for the construction of a SWBN with specific features and services for the benefit of public safety;
- Developing the priority and preemption ability for public safety contemplated by the Second R&O;
- Ensuring enforcement of the performance of the D Block licensee, including meeting quality and level of service requirements, as well as build-out and other milestones;

[17] Second FNPRM at ¶ 43. In the Second FNPRM, the FCC suggests that the PSST would function much like the 700/800 MHz regional planning committees ("RPCs"), albeit on a nationwide basis. *Id.* at ¶ 122. The PSST believes that the responsibilities of the PSBL in the Commission's Public/Private Partnership are distinct from the also vital spectrum allocation services provided by the RPCs.

- Negotiating arrangements for the purchase of equipment from vendors (under master agreements for the benefit of public safety users), and renegotiating these agreements on an ongoing basis to reflect the latest market developments; and
- Being a strong advocate for public safety, assisting users in obtaining the benefits of the SWBN, and conducting education programs and outreach to public safety on the benefits of using the network.

The Commission can assist the PSST in fulfilling these requirements by ensuring that the use of the network by public safety can be implemented on a user-by-user basis, in a manner that allows the PSST to maintain a relationship with those entities that respond to and protect the safety of life, health, or property and require priority access rights on the shared network. Such a relationship will allow those authorized agencies acting under the umbrella of public safety to take advantage of whatever arrangements have been reached between the PSST – acting on behalf of the entire public safety community – and the D Block licensee.

The FCC recognizes that the PSST is a licensee (and therefore is entitled and required to enter into arrangements regarding use of its spectrum) and must be an "equal partner" in the Public/Private Partnership. Because the FCC has made the PSST responsible for the public safety user experience on the SWBN, it also must provide the PSST with a mechanism that permits the PSST to fulfill that responsibility on an ongoing basis after negotiating the NSA. The PSST will need to be involved in and able to enforce the contracts between public safety users and the D Block licensee in order to ensure contract compliance and obtain redress on behalf of public safety users, without being reduced to an ineffectual committee preparing reports on NSA compliance. The PSST recognizes that many of the details of the relationship between the D Block licensee and the PSST will be left to the negotiation of the NSA and subject to the FCC's oversight.

In the Second R&O, the FCC directed the PSBL to administer public safety users' access to the SWBN and ensure that their operation on the SWBN satisfies essential public safety requirements.[18] The FCC imposed a corollary obligation on the D Block licensee to provide the PSBL with operational control of the SWBN to the extent necessary to ensure that those directives were satisfied.[19] The PSST concluded that this responsibility for the public safety user experience on the SWBN required it to assume primary customer responsibility for the discrete subset of users that will require priority access on the network (including customer care, network monitoring, and related functions), using operations and data centers owned and operated by the PSST.

The FCC subsequently clarified that it did not anticipate the PSST assuming such an active role. In large measure, the FCC's position appears to be driven by a belief that the contemplated relationship between the PSST and public safety SWBN users "may otherwise permit 'for profit' incentives to influence the operations of the [PSBL],"[20] a subject that is addressed more fully below. The position also reflects a concern that the PSST not duplicate activities that the D Block licensee will be undertaking and thereby increase total network costs or divert gross network revenue that otherwise would flow to the commercial D Block operator.[21]

Although the PSST accepts the FCC's view that the PSST should not have such an active role in the "business" of managing the public safety user experience on the SWBN, despite the PSST being the PSBL and an equal partner, it does not agree that the D Block licensee should

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[18] Second R&O at ¶ 383.
[19] *Id.* at ¶ 405.
[20] Second FNPRM at ¶ 125.
[21] *Id.* at ¶ 124.

have sole control over all of the traditional network service provider operations, including those associated with the spectrum for which the PSST is the licensee.[22] Ceding sole control over these important functions to the D Block licensee would seriously impair, not "better enable," the PSBL's ability to "administer access to the national public safety broadband network by individual public safety entities, coordinate frequency usage, assess usage fees, and exercise its sole authority to approve equipment and applications for use by public safety entities."[23] It is clear to the PSST that for the PSST to "administer" network access it will need some form of direct relationship with public safety users on the network. In any event, the PSST does not view the enumerated responsibilities as inconsistent with the PSST also assuming a broader role *vis-à-vis* public safety operations on the SWBN.

Allowing the D Block licensee to assume sole control of all traditional network service provider operations on PSBL spectrum would be even more problematic should the FCC authorize a wholesale-only model for the D Block licensee.[24] Under a wholesale-only approach, it is not at all clear who would deliver the necessary services to public safety agencies, including ensuring that the primary goal of interoperability is satisfied in an environment where different services might be made available by individual retail providers in different markets, or even in the same market.[25] Thus, while the PSST does not believe the D Block licensee should be

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[22] *See, e.g.*, 47 C.F.R. § 90.1440 (establishing reporting obligations on both the D Block licensee and the PSBL); *see also* 47 C.F.R. §§ 1.9010, 1.9020 (stating the requirements for a licensee to maintain *de facto* control over its license under a spectrum manager lease, including maintaining responsibility for: (1) lessee compliance with the Commission's policies and rules; and (2) interactions with the Commission, including all filings required under the license authorization and applicable service rules related to the leased spectrum).

[23] Second FNPRM at ¶ 115; *see also* Second FNPRM at Appendix, Section II.

[24] Second FNPRM at ¶¶ 166, 187.

[25] For example, under a wholesale-only approach, the D Block licensee presumably would not establish its own channels for acquiring customers and distributing subscriber devices or provide billing, customer care, and other backroom and support service to network users. Instead, it would make access to the SWBN available on an indiscriminate basis to third parties, each of which would undertake those tasks for a market segment that it wished to attract.

compelled to operate on an exclusively wholesale or open access basis, if the winning bidder elects that model, the PSST and the FCC will need to be confident that the specific needs of public safety users nonetheless will be met. Moreover, the PSST wishes to reaffirm that, contrary to statements made by bloggers and other parties, the PSST customer care model labeled by some as a mobile virtual network operator ("MVNO") always was to be operated by the PSST itself, not by Cyren Call Communications Corporation ("Cyren Call"), a PSST advisor, or any by other third party. This fact was set out clearly in the BID published by the PSST prior to the initial D Block auction and should not have been a matter of confusion.

The PSST has focused its immediate efforts on identifying a role that will permit the PSST to fulfill duties that cannot properly be delegated to the D Block licensee, but to do so in a way that is effective, efficient, and consistent with the FCC's view that the PSST should not be involved in a spectrum-based "business." Primary among these is public safety's exclusive responsibility for managing the highest levels of SWBN priority access. This responsibility is critical for assigning appropriate priority levels to defined categories of users, an essential tool for incident management during emergencies, whether carried out at the local, state, regional or national level. The PSST also needs to monitor the D Block licensee's compliance with the terms of the NSA between the PSST and the D Block winner and FCC rules applicable to the D Block licensee's obligations involving public safety operations on the SWBN and, further, needs to promote network usage by public safety entities. Each of these critical functions requires that the PSST not be passive or entirely dependent on the activities and assurances of the D Block operator, however carefully the D Block operator's obligations are spelled out in the rules or the NSA.

B. A "Cooperative" Licensee Approach Could Provide a Model for Appropriate Relationships Between the PSST, the D Block Licensee, and Public Safety Users

To meet its license requirements, the PSST must be an official representative of public safety and must remain empowered to take actions on behalf of all public safety users. The PSST believes it can fulfill its responsibilities if it is considered to operate in a manner comparable to a "cooperative" licensee.[26] The cooperative status permits a single entity to hold the authorization for spectrum that will be utilized by multiple users on a non-profit, cost-shared basis when each user is independently eligible to operate on the spectrum. That is effectively the same as the arrangement established by the FCC when it designated the PSBL as the exclusive licensee of the 10 MHz of 700 MHz broadband public safety spectrum on behalf of multiple public safety agencies. Those users will operate wireless devices on the SWBN pursuant to the PSBL authorization and under an arrangement that will be non-profit and tax-exempt in nature since the PSBL is required by the FCC's rules, and also by Internal Revenue Service ("IRS") requirements, to operate strictly on a non-profit and tax-exempt basis.

Treating public safety SWBN users as cooperative members will permit the establishment of a direct relationship between the PSST and the users it is charged with representing. It will facilitate the PSST's efforts to ensure an acceptable public safety SWBN experience in the areas detailed below. The cooperative approach should provide the PSST with a direct enforcement right to obtain redress on behalf of public safety users as well as a direct right to ensure that the highest levels of SWBN priority access are only used for public safety authorized purposes. Moreover, the PSST would be able to ensure that arrangements between

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[26] *See* 47 C.F.R. § 90.179.

the D Block licensee and public safety users take advantage of the public safety benefits negotiated by the PSST in the NSA.

Utilizing a cooperative-like structure for the PSST authorization with public safety SWBN users as its members would have a number of additional advantages. A primary benefit of any cooperative arrangement is that it permits each of its members to enjoy the economic advantage of the combined purchasing power of all participants. This was one of the numerous goals the Commission articulated with respect to the role of the PSBL. Indeed, the goals articulated by the Commission appear to assume many of the benefits inherent in a cooperative framework, such as a broad role for the PSST to negotiate bulk pricing for co-op members purchasing SWBN airtime from the D Block licensee, negotiate favorable terms with equipment vendors for subscriber devices, and enter into other contractual arrangements in support of this cooperative venture, consistent with its non-profit, tax-exempt status under both FCC and IRS rules.

C. The PSST Must Have Broad Authority on Crucial Public Safety-Related SWBN Matters Such as Incident Management, D Block Compliance, and Promoting Public Safety Usage

Most important, the FCC already has determined that the PSST must have operational control of the SWBN to the extent required to ensure that public safety requirements are met, a responsibility that is critical during incident management. The PSST acknowledges that this can be accomplished without the PSST establishing Network Operating Centers ("NOCs") or other network elements that could be considered parallel to or duplicative of those maintained by the D Block licensee. This assumes, of course, that Service Level Agreements ("SLAs") or other contractual arrangements are in place and require the D Block licensee to utilize its network capabilities and its other available resources to provide public safety-grade service, both from an

operational and customer care perspective.[27] However, the PSST's right to an appropriate level of control dictates that it must have the exclusive right to manage the assignment of the highest priority levels on the SWBN.[28]

Wireless networks are designed to accommodate multiple levels of priority access. The highest levels on the SWBN must be controlled by public safety and assigned to emergency responders, to other public safety entities as necessary, and to users with whom public safety needs to communicate during emergencies.[29] The overall control of these priority levels must reside with the PSST, although individual priority assignments may be carried out, as they are today, at more local levels.

The PSST also must have an independent ability to monitor the D Block licensee's compliance with the FCC rules and with the terms of the NSA as they relate to public safety operations on the SWBN. The PSST therefore must have the regulatory right and the appropriate tools to monitor the D Block operator's performance on a real-time basis so that problems are identified and corrected, preferably before they impact public safety communications rather than after the fact.[30] Neither the PSST nor the emergency responders who elect to join the network should have to rely entirely on self-policing and self-reporting by the D Block licensee to confirm that public safety needs are being met. Regulatory and contractual standards are

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[27] The PSST does not need to duplicate portions of the D Block network, but a prohibition on duplication seems unnecessary as a practical matter (and could be too restrictive if taken to an extreme).

[28] Although much will depend on the nature and scope of the specific emergency requiring public safety preemptive use of the SWBN, the PSST expects that such use will likely be limited to no more than 50% of SWBN capacity, the public safety capacity contributed to the SWBN by the PSBL. Priority access – defined as an organizational method of assigning users access to the network – may be required on up to 70% of the capacity of the SWBN during certain emergency situations.

[29] The D Block licensee would control any priority levels below those assigned to the PSST and would be able to allocate them among its commercial subscribers.

[30] Although the D Block licensee will always have operational control of the SWBN, the PSST should have sufficient access to and certain rights regarding the D Block licensee's NOC and data centers to carry out the PSST's obligations, including implementing priority access for public safety users, if the PSST is not to have its own facilities.

essential and should be spelled out as clearly as possible, but this is a clear instance where "trust, but verify" must be the applicable standard. Because a breach of important contractual or regulatory obligations could completely undermine the purpose of the partnership and, in the worst case, the safety and welfare of the public is at stake, it is imperative that the PSST be given adequate tools to monitor compliance by the D Block licensee.

It also is important that the PSST, as well as the D Block licensee, play a direct role in promoting widespread public safety usage of the SWBN. The Public/Private Partnership and the contribution of public safety spectrum to a network that will be built and operated by a third party commercial provider will require a paradigm shift in public safety communications thinking. Although that shift already has begun, the FCC and the PSST must be realistic about the effort that will be involved in explaining the benefits of the SWBN to public safety agencies across the country, some of which continue to operate individual facilities for their own users exclusively and do not even participate in a shared trunked system. This outreach will be performed most effectively by public safety representatives, not by salespersons working for a commercial service provider.

D. <u>The Commission Should Grant the PSST Flexibility with Respect to Public Safety Use of the SWBN</u>

1. The Commission Should Rely on the PSST's Efforts to Encourage Network Use Rather Than Adopt Minimum or Mandatory Use Requirements

While the PSST is prepared to commit its best effort toward network promotion, the Commission should not impose a mandatory use or minimum public safety usage requirement with regard to the SWBN.[31] That concept is inconsistent with the PSST's understanding of the FCC's original Public/Private Partnership arrangement and with the PSST's belief that network

[31] *See* Second FNPRM at ¶ 37.

adoption must be entirely voluntary. Moreover, the query in the Second FNPRM does not provide sufficient detail as to which public safety entities would be obligated to use the network (all public safety, emergency responders, or some combination of the two), when participation would become mandatory, or any realistic answer as to how public safety would pay for the acquisition of network devices or service charges, all of which would need to be addressed fully before any such radical proposition could be considered.[32] Mandating public safety use of the network, an option that the PSST does not support, could have the effect of disrupting existing business relationships between commercial operators and public safety organizations.

2. The Commission Should Reaffirm the PSST's Authority to Approve Federal Usage of the PSBL Spectrum on a Case-By-Case Basis

The inquiry into the possibility of restricting Federal government use of public safety spectrum on the network except when necessary to coordinate Federal and non-Federal operations, while all other Federal usage would be as D Block customers, raises a related issue.[33] It suggests that promoting interoperability among non-Federal and Federal users may be a lesser concern than maximizing the D Block licensee's potential market. In the PSST's opinion, this risks sacrificing the primary purpose of the SWBN – fostering interoperable communications among all appropriate public safety agencies – for the sake of a modest enhancement of the D Block market opportunity. The proposed limitation should not be adopted. Instead, the FCC should reaffirm the decision adopted in the Second R&O, wherein the PSST was given exclusive

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[32] The query seems to arise from the mistaken assumption that a defined quantity of public safety subscribers would be determinative to a party considering whether to pursue the commercial D Block opportunity. Since there are fewer than three million emergency responders in the nation today, the opportunity to serve them will not drive a potential D Block bidder. In fact, the PSST fears that the reverse may be more accurate: that is, the D Block licensee might well prefer to have the smallest number of public safety network users given their preemption rights, their priority claims to D Block capacity during emergencies and the overall greater care required to meet their communications needs. That concern, in part, drives the PSST's conviction that it must be actively involved in promoting public safety use of the network.

[33] Second FNPRM at ¶ 126. It is not clear how this proposed limitation would be implemented or by whom.

authority to approve Federal usage of the PSBL spectrum, a determination that will be made on a case-by-case basis consistent with the PSST's responsibility to promote interoperable public safety communications.[34]

In fact, the PSST already has begun to encourage this critical element of interoperability. For example, the Federal Partnership for Interoperable Communications (FPIC) has indicated its support in working with the PSST to plan for the inclusion of Federal public safety users on the SWBN.[35] However, it also is important to recognize that Federal users who do not require priority service on the SWBN are free to accept normal commercial service as regular D Block subscribers.

3. The Commission Should Provide the PSST with Discretion to Assign Priority Access Rights to Critical Infrastructure Industry Entities

In the Second FNPRM, the Commission noted that Section 337 of the Communications Act appears to restrict the use of the public safety broadband network to entities eligible to hold licenses under Section 90.523 of the FCC Rules.[36] Accordingly, the Commission seeks comment on whether all other users of the SWBN, including Critical Infrastructure Industry ("CII") or

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[34] *See* Second R&O at ¶ 383.

[35] Letter from James E. Downes, Chair, Federal Partnership for Interoperable Communications, to Harlin R. McEwen, Chairman, PSST (Jan. 25, 2008), **Attachment B**.

[36] Second FNPRM at ¶ 29. Section 90.523 states the following, in pertinent part:
(a) State or local government entities. Any territory, possession, state, city, county, town, or similar State or local governmental entity is eligible to hold authorizations in the 764-776 MHz and 794-806 MHz frequency bands.
(b) Nongovernmental organizations. A nongovernmental organization (NGO) that provides services, the sole or principal purpose of which is to protect the safety of life, health, or property, is eligible to hold an authorization for a system operating in the 764-776 MHz and 794-806 MHz frequency bands for transmission or reception of communications essential to providing such services if (and only for so long as) the NGO applicant/licensee:
(1) Has the ongoing support (to operate such system) of a state or local governmental entity whose mission is the oversight of or provision of services, the sole or principal purpose of which is to protect the safety of life, health, or property;
(2) Operates such authorized system solely for transmission of communication essential to providing services the sole or principal purpose of which is to protect the safety of life, health, or property; and
(3) All applications submitted by NGOs must be accompanied by a new, written certification of support (for the NGO applicant to operate the applied-for system) by the state or local governmental entity referenced in paragraph (b)(1) of this section.

similar users, should obtain access to the SWBN only as customers of the D Block licensee's commercial services.[37] Although the PSST does not here challenge the FCC's statutory interpretation, there are compelling public safety reasons to include CII entities in the pool of eligible priority users of the SWBN. Indeed the Commission itself has "recognize[d] the potential for CII entities to engage in life critical communications."[38] This recognition is underscored by the Department of Homeland Security's comprehensive risk management framework, which places a high priority on the protection of this nation's critical infrastructure and key resources.[39] It defines roles and responsibilities in the protection of these important assets for all levels of government and private industry, *recognizing that the vast majority of the nation's critical infrastructure is owned and operated by private industry*.[40] Indeed, in most cases, local governments and private operators of critical infrastructure operate side-by-side on the "front lines" for homeland security in terms of the protection of key resources and critical infrastructure.[41]

For the PSST, this issue is framed in terms of public safety considerations, not economics or market opportunity. The question is how to ensure that the CII entities with whom police, fire, and EMS providers must communicate during emergencies, both large and small, have the appropriate priority access levels that will permit seamless interoperability with those first responders.

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[37] *Id.*
[38] Second R&O at ¶ 138.
[39] National Infrastructure Protection Plan, Department of Homeland Security (2006).
[40] *Id.* at 26 ("Owners and operators generally represent the first line of defense for the [critical infrastructure and key resources] under their control.").
[41] *Id.* at 24 (noting that "[l]ocal authorities typically shoulder the weight of initial prevention, response, and recovery operations until coordinated support from other sources becomes available *regardless of who owns or operates the affected asset, system or network*.") (emphasis added).

However the FCC draws the line of demarcation between public safety and other non-public safety priority users, it must permit the PSST to assign and manage the highest priority levels (irrespective of subscriber regulatory classification) to prevent cascading disruptions in this nation's critical infrastructure and the dramatic financial and other consequences that might ensue. Interoperable communications among such users during emergencies, including CII entities, is essential to the protection of life and property. The terrorist attack of 9/11, as well as natural disasters such as Hurricane Katrina, have called attention to the vulnerabilities and interdependence of this nation's critical infrastructure and the need for rapid and effective means of communications between public safety and CII operators in times of emergency.[42] This need can – and should – be served by the public safety broadband network, as seamless interoperability is necessary for the SWBN to be a "single and integrated" network comprised of 20 MHz of "fungible" spectrum.[43] Thus, the rules should clarify that so long as a CII entity uses the spectrum for a public safety function, that use can be given priority access by the PSST.

E. Funding Mechanisms Must be Put in Place to Enable the PSST to Carry Out its Mission While Remaining a Non-Profit Entity

The Second FNPRM poses a number of questions about the non-profit status of the PSBL generically and, thereby, inferentially about the PSST.[44] These questions arise in the context of the Commission's requirement that the PSBL be structured as a not-for-profit entity[45] and the further prohibition against commercial interests being held in the PSBL or participating in its management.[46] The FCC seeks comments, among other matters, on what sources of funding should be permitted for the PSBL, as well as what monies might actually be available, how to

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[42] *See generally* Katrina Report at 55-56; 9/11 Report at 391-98.
[43] Second FNPRM ¶ 80.
[44] *Id.* at ¶¶ 39-45.
[45] 47 C.F.R. § 90.523(e); Second R&O at ¶ 373.
[46] *Id.*

ensure that permissible arrangements with commercial third party entities not "inadvertently influence the [PSBL's] priorities" such that they are no longer aligned with the interests of the public safety community,[47] and how to view "excess revenue" generated by the PSBL.

Neither the PSST nor any other non-profit organization can survive without a source of revenue. Non-profit corporations like the PSST are legally permitted to undertake activities that generate revenue and most take advantage of that opportunity. For example, the Red Cross sells blood products for commercial purposes and uses the proceeds to fund its humanitarian efforts. There is nothing improper about these activities, just as there would be nothing improper in the PSST undertaking an activity that might generate revenue that exceeded its expenses, provided the activity was in furtherance of public safety interests and provided the disposition of any revenue is for the non-profit, tax-exempt purposes of the organization in accordance with the rules of the IRS.

Whether the PSST is funded through revenue-producing activities or through governmental appropriations, the standard for maintaining its non-profit, tax-exempt status would remain the same—it is where the money goes, not where it comes from, that is determinative. In this instance, any revenue could be used to promote public safety use of the SWBN, for example through reduced service fees, device subsidies, investment in advanced applications specific to public safety requirements, deployment of cross-band interoperability gateways, or public safety outreach and educational activities designed to encourage broader participation on the SWBN. This clearly would enhance, not undermine, the PSST's support of vital public safety operations.

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[47] Second FNPRM at ¶¶ 39-45.

As a non-profit entity that has searched long and hard for even subsistence levels of funding, the PSST must respectfully question the practicality of the FCC's apparent position. Sufficient and continuous government funding would, of course, resolve the PSST's need for financial sustenance. However, no governmental monies have been appropriated or approved as grants for the PSST's use. Outside of such governmental appropriations and grants, there are only a very limited number of non-profit organizations that themselves would be in a position to loan money to an organization such as the PSST and none have expressed a willingness to do so. Most non-profits are in the same position as the PSST; they are seeking to obtain, not dispense, funds, a situation that is likely to worsen along with the economy. The likelihood of finding a commercial banking source for lending is equally bleak. The PSST has no assets. It holds an FCC license that is legally prohibited from being the subject of a security interest and has no corporate stock that might serve as a surrogate for collateralization purposes. Thus, most potential funding sources identified in the Second FNPRM appear unpromising, at least at present.[48]

As discussed in greater detail below, in the absence of sustained government support, funding must come from other sources. Usage fees from public safety users and a lease agreement with the D Block licensee were both envisioned by the Second R&O.[49] The FCC should clarify this. Specifically, as a non-profit, tax-exempt organization, the PSST is subject to IRS rules and regulations mandating that fair value be obtained in exchange for any contract (such as the NSA) in which its spectrum is used by others. It therefore will need to charge usage

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[48] The PSST likely will need to borrow money in the early years of its operation against future receipts from usage fees or lease payments unless the FCC or Congress provides alternative funding. Accordingly, the Commission should continue to allow the PSBL to secure ordinary commercial loans at reasonable rates.

[49] Second R&O at ¶ 383 ("General administration of access to the national public safety broadband network by individual public safety entities, including assessment of usage fees to recoup its expenses and related frequency coordination duties . . . "); *see also* 47 C.F.R. § 90.1403(b)(2).

fees to public safety users, and it will need to obtain a lease payment from the D Block licensee. Because the bulk of the spectrum likely will be used by the D Block licensee to provide services from which it expects to realize a profit, the PSST believes it logically should obtain most of its funding from the lease payment.

1. The Commission Should Allow for Spectrum Lease Fees to be Negotiated in the NSA

The PSST recommends that the FCC not prohibit a spectrum lease fee,[50] but instead leave that determination to the NSA negotiation process. Lease fees are the most logical source of funding for the PSST. The issue of compensation to the PSST for the spectrum lease arrangement required in the Second R&O received, in the PSST's opinion, disproportionate attention in the 700 MHz auction post-mortem. It is only one part of the financial architecture of the SWBN undertaking. The PSST is fully aware that there must be an appropriate balance of public safety fees paid for SWBN usage and a D Block spectrum lease payment, all of which will be evaluated along with the cost of the D Block spectrum, the cost of deploying and operating the SWBN, and the benefits to be derived from commercial access to the PSBL spectrum. These issues are most appropriately addressed in the NSA, which, as an example, could provide for a reduction in the lease payments by the D Block licensee for increased public safety usage.[51] None of these elements can be viewed in a vacuum. Each must be part of a financially viable Public/Private Partnership that will be determined, in significant part, by the identity of the D

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[50] Second FNPRM at ¶ 134.

[51] The PSST notes that it is difficult to estimate the exact value of the annual lease fee in the absence of specific information regarding the PSST's licensee requirements and obligations under the Public/Private Partnership. However, the PSST does acknowledge that the amount of the annual lease fee could be materially reduced if the PSST's licensee requirements and obligations did not involve acquisition and operation of particular network elements for the benefit of the public safety and other priority users on the network. If the FCC determines to specify a more limited operational model through which it envisions the PSST fulfilling its responsibilities and discharging its obligations, the PSST could produce a related budget and cash need estimate.

Block winner. The NSA negotiation process established by the FCC is the right vehicle for making the decision on all of these network fees.

As mentioned above, the PSST as a non-profit, tax-exempt organization is legally obligated to charge for the use of its spectrum by the D Block licensee. Large scale incidents would decrease the amount of spectrum available to the D Block licensee, but the area affected by the increased demand from public safety would be localized to the area surrounding the incident, leaving the D Block licensee with access to substantial additional spectrum for commercial use on a secondary basis. The D Block licensee should expect to pay fair value for that spectrum under applicable rules, and the PSST accordingly expects to obtain the majority of its funding from a lease payment.

2. The Universal Service Fund and the Telecommunications Development Fund Are Unlikely to be Adequate Mechanisms for PSST Funding

Although the PSST supports examining all possible sources of funding for its public safety activities, the Universal Service Fund ("USF") and the Telecommunications Development Fund ("TDF") do not appear to be viable options for funding of the PSST.[52] For the PSST to receive money from the USF, it would need to be designated as an eligible telecommunications carrier.[53] To be designated as an ETC, the PSST would need to be a common carrier, which it is not and cannot become.[54]

The PSST urges the Commission, however, to make any necessary adjustments to the USF program to enable the D Block licensee to apply for funding to support the deployment of the SWBN, including operational activities by the D Block licensee and the PSST in connection

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[52] *See* Second FNPRM at ¶ 43.
[53] *See* 47 U.S.C. § 254(c)(1).
[54] *See id.* § 214(e).

with the network. Supporting the SWBN with USF money through the D Block licensee is consistent with the universal service principles set forth by Congress (*e.g.*, facilitating access to advanced telecommunications and information services in all regions of the nation, particularly in rural and high cost areas, at just, reasonable, and affordable rates), particularly given the nationwide broadband deployment required for the shared network.[55] In addition, providing USF money to help support the construction and operation of the SWBN and the Public/Private Partnership could encourage additional bidders to participate in the D Block re-auction.

With respect to the TDF, the PSST notes that although the FCC cannot control the funding decisions made by the TDF Board, it may be able to encourage and facilitate an application for funding assistance by an eligible D Block licensee. The D Block licensee's activities with respect to the SWBN will "stimulate new technology development," "support universal service" (specifically, the nationwide deployment of public safety services), and "promote delivery of telecommunications services to underserved rural and urban areas," consistent with the purposes of the TDF.[56] Moreover, these activities are consistent with the TDF's "current areas of focus," which include, among others: (1) public safety and disaster recovery; (2) urban and rural communications; and (3) security.[57] Even if an application by the D Block licensee is approved for funding, however, there could be a long delay before such funding is disbursed.

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[55] *See id.* § 254(b).
[56] *See id.* § 614(a)(2)-(3).
[57] *See* Telecommunications Development Fund, *About the Telecommunications Development Fund, at* http://www.tdfund.com/about/.

IV. THE COMMISSION SHOULD PROVIDE GREATER SPECIFICITY WITH RESPECT TO THE SWBN REQUIREMENTS AND THE OBLIGATIONS OF THE D BLOCK LICENSEE

The Second FNPRM devotes substantial attention to issues related to the technical requirements of the SWBN that are attributable specifically to public safety needs.[58] It questions whether greater specificity with respect to these technical standards would provide necessary certainty to prospective D Block bidders and thereby facilitate the NSA negotiation process.

The PSST agrees that potential D Block bidders need to understand the obligations they will be assuming if they undertake to build out and operate the SWBN. It would not be possible to determine an appropriate bid for that spectrum without an appreciation for the network build and ongoing operational costs. The Commission addressed some aspects of those obligations in the Second R&O. For example, it adopted SWBN coverage requirements specifying coverage to 75% of the nation's population within four years of February 17, 2009, 95% within seven years and 99.3% by the end of the prescribed ten-year license term.[59] The FCC also adopted the following specific, but not highly detailed, specifications for the SWBN:

- Specifications for a broadband technology platform that provides mobile voice, video, and data capability that is seamlessly interoperable across agencies, jurisdictions, and geographic areas. The platform should also include current and evolving state-of-the-art technologies reasonably made available in the commercial marketplace with features beneficial to the public safety community (*e.g.*, increased bandwidth).
- Sufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems (*i.e.*, 99.7% or better reliability).
- Sufficient robustness to meet the reliability and performance requirements of public safety. To meet this standard, network specifications must include features such as hardening of transmission facilities and antenna towers to withstand harsh weather

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[58] Second FNPRM at ¶¶ 58-83.

[59] 47 C.F.R. § 27.14(m)(1). The FCC also specified that to meet those population benchmarks the D Block licensee would need to demonstrate coverage of major highways and interstates, as well as all incorporated communities with a population in excess of 3,000. *Id.* § 27.14(m)(3).

and disaster conditions, and backup power sufficient to maintain operations for an extended period of time.

- Sufficient capacity to meet the needs of public safety, particularly during emergency and disaster situations, so that public safety applications are not degraded (*i.e.*, increased blockage rates and/or transmission times or reduced data speeds) during periods of heavy usage. In considering this requirement, we expect the network to employ spectrum efficient techniques, such as frequency reuse and sectorized or adaptive antennas.
- Security and encryption consistent with state-of-the-art technologies.
- A mechanism to automatically prioritize public safety communications over commercial uses on a real-time basis and to assign the highest priority to communications involving safety of life and property and homeland security consistent with the requirements adopted in the [Second R&O].
- Operational capabilities consistent with features and requirements specified by the [PSBL] that are typical of current and evolving state-of-the-art public safety systems (such as connection to the PSTN, push-to-talk, one-to-one and one-to-many communications, etc.).
- Operational control of the network by the [PSBL] to the extent necessary to ensure that public safety's requirements are met.
- The [PSBL] shall have the right to determine and approve the specifications of public safety equipment that is used on the network, and the right to purchase its own subscriber equipment from any vendor it chooses, to the extent such specifications and equipment are consistent with reasonable network control requirements established in the NSA.
- A requirement … that the Upper 700 MHz D Block licensee make available to the [PSBL] at least one handset that would be suitable for public safety use and include an integrated satellite solution capable of operating both on the 700 MHz public safety spectrum and on satellite frequencies.[60]

A. <u>The Technical Requirements of the Shared Network Should Be Adopted by the FCC Based on the Record in this Proceeding</u>

The PSST agrees that defined technical specifications are essential to assist prospective D Block participants in formulating their bids and to eliminate any avoidable surprises in the NSA negotiation process. It was for that reason that the PSST worked with a variety of public safety

[60] Second R&O at ¶ 405.

organizations to develop an analysis of public safety technical preferences[61] in the BID that was made publicly available prior to the first 700 MHz auction.[62] Even that document was at a somewhat high level, however, anticipating that the myriad technical details that would need to be addressed in a nationwide, advanced technology network suitable for public safety purposes would be resolved during the NSA negotiation process.

The PSST believes that a substantially more detailed list of technical specifications should be developed in advance of the D Block re-auction. It recognizes that doing so will reduce the parties' flexibility during negotiation of the NSA. Nonetheless, on balance, the PSST believes that the benefit of greater certainty for prospective bidders outweighs the natural inclination of parties to maintain maximum flexibility during a negotiation process, particularly one of such complexity and economic significance. Thus, the PSST supports resolution of these matters as expeditiously as possible so that appropriate technical specifications may be included in the FCC's rules.

The FCC has queried whether those specifications should be developed by the FCC itself based on the record in this proceeding and included in the rules,[63] whether the FCC should solicit detailed proposals on appropriate technical and other specifications from potential D Block

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[61] An initiative led by the National Public Safety Telecommunications Council ("NPSTC") worked extensively with the public safety, commercial wireless, vendor and other communities to incorporate feedback from a significant cross-section of potential stakeholders when it assisted the PSST in developing the statement of requirements prior to Auction 73. This effort culminated in a multi-day meeting in Boulder, Colorado in the fall of 2007 in which various network requirements were addressed and debated. Subsequently, work has continued by various parties within this group as well as by Project MESA and others to develop future technology and application paths. Initiatives such as these should not be overlooked by the Commission when it seeks to develop rules and requirements that will guide the development and technology refreshment of a public/private broadband network architecture.

[62] *See* Public Safety Spectrum Trust Public/Private Partnership Bidder Information Document, Version 2.0 (Nov. 30, 2007), *available at* http://www.psst.org/documents/BID2_0.pdf.

[63] Second FNPRM at ¶ 70.

bidders for inclusion in the rules,[64] or whether the rules should include only minimum specifications to which high bidders would respond with specific proposals that met or exceeded those minimum requirements from which the FCC would select the winning D Block bidder.[65] The PSST strongly favors the first approach as the most expedient and straight-forward path toward technical clarity, without specifying particular technologies in order to take advantage of evolving technical developments and standards as they become available. All interested parties, including those that might submit responses to a Request for Proposal ("RFP") issued by the FCC or a proposal based on minimum specifications, will be free to submit comments on whatever requirements the FCC proposes, which comments undoubtedly will be considered by the Commission in reaching its decision. To that end, the PSST has revised its initial technical analysis. The updated Technical Analysis is attached hereto as **Attachment C**.[66]

By contrast, both the RFP and post-auction technical comparison processes could result in lengthy delays and possibly even litigation from proponents of unsuccessful proposals. By adopting appropriate technical specifications during the second phase of the instant process (the FCC already has announced that it will issue a subsequent Further Notice of Proposed Rulemaking in this proceeding with detailed proposed rules),[67] the Commission will place all interested parties on an equal footing as they decide whether or not to participate in the D Block re-auction. To date, auctions have been almost litigation-proof because they allow all parties to bid based on precisely the same publicly available information. Bidder concerns about the novelty of the Public/Private Partnership approach championed by the FCC should be reduced

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[64] *Id.* at ¶¶ 188-89.
[65] *Id.*
[66] The PSST also is prepared to confirm that the NSA provisions are to be consistent with those in the Technical Analysis, **Attachment C**.
[67] Second FNPRM at ¶ 7.

significantly if the technical parameters of the network are clarified in advance by their inclusion in the Commission's rules.

1. The Commission Should Give the PSST Discretion to Define What Constitutes an Emergency for Purposes of Preemptive Use of the SWBN

On a related point, the Commission should not define in its rules what constitutes an "emergency" for purposes of public safety's preemptive use of the SWBN. The public safety community has attempted for decades to develop an all-inclusive definition of "emergency" without reaching an agreement. Any attempt by the Commission to create a specific definition for this difficult and technical concept invariably would leave gaps or cause significant interpretation disputes. There simply is no way to anticipate every situation that could demand an extraordinary response from the public safety community. Instead, the Commission should allow public safety to make a reasonable determination – based on general guidelines – of what constitutes an "emergency" on a case-by-case basis. This would prevent a situation from occurring in which the D Block licensee hindered public safety from managing or responding to an incident because of a disagreement over whether the incident is an "emergency."[68]

2. The SWBN's IP Core Should Promote Interoperability of Legacy Land Mobile Public Safety Systems

Since the events of 9/11 and Hurricane Katrina, much has been said about improving interoperability for the nation's public safety community. The thousands of local, state and Federal legacy land mobile public safety voice communications systems utilize analog or digital

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[68] From the D Block winner's perspective, the definition of an "emergency" should only have significance to the extent that it could trigger public safety access to some portion of the commercial capacity. Even then, however, the impact of priority access on a D Block winner's business plan could vary significantly (*e.g.*, an incumbent with substantial available capacity might have very different views on this subject than a new entrant contemplating a "greenfield" build). The former might be eager to expand the categories of events that trigger priority public safety access as long as public safety is paying for that usage, while the latter may fear that the prospect of more than the absolute minimum amount of public safety preemption would put it at a competitive disadvantage.

technology, operate in a multiplicity of frequency bands, use a wide variety of vendor technologies and software versions, and are from many different time periods. Although considerable local, state and Federal funding has been expended in an attempt to improve this situation, and efforts such as standardizing with P25 systems have been helpful, there is still a need to enhance the ability of these disparate systems to communicate with one another. The SWBN proposed by the Commission represents the only effort to address this critical need on a nationwide basis. But even when this network is deployed, it will not immediately replace these systems. Therefore, the PSST believes there must be mechanisms for the SWBN to assist in connecting these disparate systems through a series of gateways or other means, thereby furthering a critical objective of this proceeding—improving public safety interoperability. That must be one of the guiding principles when developing plans to implement the SWBN.

B. The Commission Should Not Reduce the D Block Licensee's Obligations in a Manner that Would Upset the Balance of the Public/Private Partnership

1. The Commission Should Maintain the Requirement that the D Block Licensee Make More Than 10 MHz of Network Capacity Available for Priority Access in the Event of an Emergency

The PSST is concerned about several aspects of the discussion in the Second FNPRM regarding technical specifications for the SWBN. First, the PSST is deeply troubled by the suggestion that the FCC might eliminate entirely the D Block licensee's obligation to make more than 10 MHz of network capacity available for public safety priority access in the event of an emergency.[69] The PSST does not doubt that a partnership in which the commercial operator was never required to relinquish any of its capacity, even for the most critical public emergency, would be a particularly attractive proposition. Given the efficiency gains that will be available

[69] Second FNPRM at ¶ 85. The FCC had assigned this responsibility to the D Block licensee in the Second R&O at ¶ 426.

on a 20 MHz advanced technology broadband network, the PSST believes there will be few, if any, emergencies that would require preemption of commercial usage even within the limited geographic area in which most emergencies are contained.[70] However, if the nation should ever again experience a catastrophic event such as 9/11 or Hurricane Katrina, it is this broadband network that should support emergency communications even if that means some time- and area-specific delays in the delivery of commercial traffic. Those are precisely the instances in which the SWBN will be most needed and the PSST is confident that the American public would willingly tolerate some disruption of their communications to make way for emergency responder traffic. Even in these cases, the PSST believes it is reasonable to limit priority access for public safety to 70% of overall network capacity of the SWBN, or just 40% of the D Block spectrum capacity.

2. Certain Adjustments to the D Block Licensee's Construction Requirements Would be Acceptable

The PSST has given considerable thought to the 99.3% population coverage adopted in the Second R&O as the D Block licensee's ten-year construction requirement.[71] Viewed entirely from a public safety perspective, more population coverage is always better since emergency responders serve the entire population, not just those within areas of reliable radio coverage. Today's mosaic of individual public safety radio systems serves well beyond the boundaries of

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[70] The PSST is pleased that the Commission is contemplating treating the SWBN as a "single and integrated 20 megahertz pool of fungible spectrum that may be assigned to users without regard to whether a public safety user is being assigned frequencies in the D Block or a commercial user is being assigned frequencies in the public safety broadband spectrum so long as the network provides commercial and public safety users with service that is consistent with the respective capacity and priority rights of the D Block license and the [PSBL]." *Id*. at ¶ 80. That perspective is entirely consistent with the technical realities of a 20 MHz advanced technology broadband network and the source of the extraordinary spectrum efficiency improvement that public safety and commercial users will derive from it.

[71] 47 C.F.R. § 27.14(m)(1).

the typical commercial wireless system. If the SWBN is to have meaningful utility to the public safety community, it must do so as well.

But public safety must balance an achievable good result against an unachievable perfect outcome. This network must be built if the nation's most critical communicators are to have the tools they need to provide 21st century levels of protection. If the build-out bar is so high that no commercial provider will attempt to reach it, if investors see no way to recoup the incremental site and other build-out costs that would be incurred to reach 99.3% coverage, there will be no SWBN and public safety will have gained nothing.

Therefore, the PSST recommends that the FCC consider several approaches for bringing public safety coverage needs and commercial wireless business models into closer alignment. For example, the FCC might extend the D Block license term (and the PSBL license term) by five years with a corresponding extension of the current construction requirements. Alternatively, the Commission might reduce the final build requirement from 99.3% to 98% while recognizing that 99.3% coverage still should be a SWBN goal (possibly incentivizing the D Block licensee to reach that benchmark within 15 years).[72] What such a reduction would mean in terms of population left uncovered is shown in **Attachment D**, which illustrates the geographic impact of increases and decreases in population coverage requirements for a nationwide network.[73] In sum, the PSST believes that adjustments can be made to this requirement that will address the commercial operator's legitimate cost concerns while still

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[72] Instead of reducing the ultimate coverage of the SWBN, the FCC also could implement a "two tiered" build-out obligation that establishes separate build-out schedules for urban and rural areas. *See, e.g.*, Second FNPRM at n. 219 (citing May 8, 2008 Letter from Andrew D. Beard, counsel for Vanu, Inc., in this proceeding). The PSST also supports using technology to implement less-expensive forms of coverage (for example, via satellite or WISPs) for truly sparsely populated areas. Rule changes specifying such coverage by these technological means, even though less robust than a fully terrestrial network, would be acceptable so long as certain performance standards were met.

[73] The PSST notes that other than the potential modifications to the D Block license requirements discussed herein, the Commission should maintain the renewal requirements imposed on that license.

calling for a SWBN that will provide vitally important communication capabilities to substantial numbers of emergency first responders.[74]

C. Service Fees Paid by Public Safety Users Should Be Lower Than Those Paid by Commercial Customers

Although the PSST is a non-profit, tax-exempt organization that exists to serve the public safety community in connection with the SWBN, the relationship between the PSST and the D Block licensee has significant economic elements. It is essential that the complex and interrelated cost-related elements of the Public/Private Partnership work as a whole to provide adequate compensation and protection to both parties. There is no uncertainty about who is responsible for the cost of building, operating, maintaining and upgrading the SWBN, a network that, by definition, must be built to meet public safety, not simply commercial, wireless requirements. From the outset, that obligation has been assigned to the D Block winner along with the right to routine, preemptible access to available public safety capacity. The Second R&O contemplated that public safety users would pay the D Block operator service fees based on terms negotiated by the PSST in the NSA.[75] The Commission stated that the service fees assessed were expected to be "reasonable," by which the FCC indicated it meant they should be lower than commercial rates for analogous services.[76] The FCC also cautioned that "only a small portion, if any, of the initial construction costs will be recovered through public safety charges."[77]

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[74] The PSST also supports the Commission's suggestion that the PSST make reasonable, good-faith efforts to assist the D Block licensee in obtaining access to public safety towers and public safety rights-of-way. *See* Second FNRPM at ¶ 104.
[75] Second R&O at ¶ 450.
[76] *Id.* at ¶¶ 450-51.
[77] *Id.* at ¶ 451.

In the Second FNPRM, the Commission asks if it should "specify that the D Block licensee is entitled to charge rate-of-return or cost-plus rates, taking the incremental costs of public safety network specifications and other costs attributable uniquely to public safety users into account?"[78] Alternatively, it queries whether charging public safety users at commercial rates would be sufficient (by which it presumably meant sufficient to cover public safety-related build expenses) and also whether certain public safety uses on the SWBN should be free and others fee-based.

The PSST is opposed to allowing the D Block licensee to recoup the incremental cost of a public safety-quality build from public safety users. That arrangement would not be materially different than if the PSST were to pay an incumbent wireless carrier to augment its existing facilities to support a public safety-grade 700 MHz system, particularly if the carrier was deploying its own 700 MHz network. It does not appear to take into account the fact that the FCC has discounted the reserve price of the D Block license because of its public safety "encumbrances" and has authorized preemptible commercial use of the public safety spectrum contributed to the partnership by the PSBL, for which the D Block licensee has paid nothing at auction.

The concept of requiring the D Block operator to provide free SWBN access for at least some public safety uses is facially appealing, but carries the risk of being offset by a reduction in the operator's public safety-related obligations. The D Block licensee should not be relieved of its public safety commitments in return for providing free commercial-grade service to some public safety users. Free use of a network that does not meet the technical specifications needed to ensure public safety-grade service is a Trojan Horse, not the opportunity contemplated in the

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[78] Second FNPRM at ¶ 132.

Public/Private Partnership envisioned by the FCC. The better approach is to encourage the parties to negotiate a mutually acceptable rate(s) for public safety entities, one that will encourage widespread public safety adoption[79] and that also provides the D Block operator with reasonable compensation consistent with the benefits it is receiving from the partnership arrangement. Those rates should provide all permissible users with incentives to use the network, as this will result in greater "network effects"—increasing interoperability among greater numbers of users. Accordingly, the FCC should continue to specify a requirement (or at least an expectation) that the fees paid by public safety users should be substantially lower than the fees paid by the D Block licensee's commercial customers.

While the PSST understands the desire by some parties that service fees be set prior to the auction, it sees no reasonable way of doing so. Network service fees will and should have some correlation to network costs. But those costs will vary considerably depending on the D Block winner. An incumbent with built-out infrastructure and an in-place retail service business will have different requirements than a new entrant that would need to build a network from scratch or from a winner that elects to operate on a wholesale-only basis. Public safety does not expect to be a "free rider" on the SWBN for the reason noted above, but it is not possible to determine service fees prior to knowing the identity and business plans of the D Block winner. The identity will be clear once the auction has concluded; the latter will be revealed only during the NSA negotiation process that the FCC will oversee. The Commission will thereby be able to

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[79] As noted previously in Section III.D.1, the PSST does not support mandated use of the SWBN by public safety organizations. The PSST believes that its own efforts to promote use, combined with wholesale rates and access to favorably priced equipment, among other things, will provide adequate incentives for participation by public safety organizations. It does not support mandatory participation that could have the effect of disrupting commercial relationships already in existence between public safety organizations and their current service providers and equipment vendors. Moreover, as the PSST has made clear, public safety users without priority access requirements are free to and may well subscribe to the D Block service.

ensure that the PSST's position on this and other points is reasonable under the circumstances and consistent with its good faith obligation.

V. RULE REVISIONS CAN BE MADE TO ENCOURAGE BIDDING ON THE D BLOCK LICENSE

Successful partnerships are built by partners with shared goals and clearly defined roles. Because the geographic size of the D Block authorization, the auction reserve price, the applicable default provisions, and eligibility restrictions all may influence who the successful bidder will be and the likelihood of achieving the nationwide SWBN proposed by the FCC, the PSST offers comments on those issues.

A. The D Block Should Remain a Single, Nationwide License, but the Commission Should Encourage Participation by Bidding Consortia or Joint Ventures

Currently, the D Block license is designated as a single, nationwide authorization. This mirrors the nationwide PSBL license held by the PSST. In light of the Commission's goal "[t]o facilitate public safety access to a nationwide, interoperable broadband network in a timely manner,"[80] the PSST strongly urges the FCC not to split the D Block authorization into regional licenses or high-density/low-density authorizations, or otherwise sub-divide the license in a manner that would jeopardize that most critical objective.[81] As the Commission correctly points out, if the D Block is authorized other than on a nationwide basis, the FCC first will need to determine how to ensure interoperability throughout the nation on an equitable basis and what to do if not all D Block licenses are acquired at auction.[82] These are far from trivial concerns; they go to the very heart of what the FCC, the public safety community, and the public hope to

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[80] Second FNPRM at ¶ 6.
[81] *Id*. at ¶¶ 183-85.
[82] *Id*. at ¶ 184.

accomplish through the Public/Private Partnership. Any approach that does not include a single D Block license must first be tested against its ability to provide the same assurance of nationwide interoperability.

Nonetheless, the PSST appreciates that a successful re-auction may require collaboration among multiple parties with different resources and geographic interests to form bidding consortia or joint ventures, options that already are provided for in the rules and that should be encouraged by the FCC. This would permit the FCC to issue a nationwide license to a single entity and maintain oversight of only one licensee for purposes of ensuring compliance with technical and operations requirements applicable to the SWBN on a nationwide basis. It would allow the PSST to negotiate an NSA and have an ongoing relationship with just one commercial partner, which partner would represent the interests of the entire consortium or joint venture. It combines a streamlined regulatory and NSA negotiation process with what may be a more realistic sharing of economic and operational responsibilities among multiple commercial entities.[83] The PSST is actively encouraging parties to consider this approach and is encouraged by the responses received to date.

B. The Commission Should Eliminate or Significantly Reduce the Reserve Price for the D Block License

The Commission has requested comment on the D Block reserve price. The PSST would support eliminating the reserve price, even though the PSST does not believe it is the primary

[83] Some prospective participants in that type of bidding entity have suggested that they would want the opportunity to geographically partition the nationwide D Block license into discrete market areas at some later date, perhaps after having met pre-determined build-out requirements. The PSST is not averse to a reasonable accommodation of that interest provided, of course, that it does not compromise nationwide interoperability or the services provided to public safety users in any areas.

deterrent to interested parties bidding in the D Block auction.[84] If the Commission does not eliminate the reserve price, the PSST strongly encourages the Commission to reduce it to a level comparable to the minimum opening bids that generally set the price below which a license will not be sold in FCC auctions.[85] The Commission has used minimum opening bids effectively in many previous auctions for the complementary, not conflicting, purposes of ensuring that the American public receives a reasonable value for the spectrum being sold and encouraging a competitive bidding process by having a larger number of participants. The success of this approach speaks for itself. The Commission has generated more than $20 Billion for the United States Treasury in all previous auctions that relied on minimum opening bids only and no further reserve price.

The Second FNPRM points out correctly that the financial success of Auction 73 should permit the Commission substantial flexibility in establishing the D Block reserve price. Moreover, given the unique purpose the D Block winner will fulfill – the deployment of an advanced technology broadband network built to public safety specifications – no credible argument could be made that the American public will be short-changed if the reserve price is set at a more modest level.

C. **The Commission Should Revise the Default Provisions to Provide that the License Shall Be Offered to the Second Highest Bidder in the Event of a Default**

The Commission has also sought comment on the current provisions applicable to a D Block winner that subsequently defaults prior to issuance of its license. The PSST agrees that

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[84] As discussed, *infra*, the reserve price also should take into account the greater cost to the D Block licensee of funding the relocation of narrowband public safety users from the spectrum that now has been allocated for broadband use.

[85] *See, e.g.*, Auction of 700 MHz Band Licenses Scheduled for January 24, 2008: Notice and Filing Requirements, Minimum Opening Bids, Reserve Prices, Upfront Payments, and Other Procedures for Auctions 73 and 76, *Public Notice*, 22 FCC Rcd 18,141 ¶¶ 208-14 and Attachment A (2007).

the Commission should revise these provisions. Recognizing that the existing default rules are an important element of the FCC's extraordinarily successful auction process, the Commission is correct in noting that the unprecedented nature of the Public/Private Partnership embodied in the D Block license warrants default provisions tailored to this particular authorization.

Several parties already have identified the existing default provisions as an impediment to a successful D Block auction or re-auction.[86] Most have recommended that a winning bidder that fails to negotiate an agreement with the PSST be deemed in default only if the FCC makes a finding of bad faith on the bidder's part. The Second FNPRM seeks guidance on identifying the proper balance in order to maintain incentives for the winning bidder to negotiate an NSA without facing the prospect of paying a default penalty unless it agrees to an NSA that cannot be supported by the business plan on which its bid was based.[87]

It is extremely important that the Commission maintain its rule that failure to comply with procedures established for negotiation or dispute resolution of the NSA, or failure to comply with a Commission or Bureau decision in binding adjudication, will trigger the default provisions. No party is more concerned than the PSST that the high bidder in the D Block re-auction be a party ready, willing and able to meet its obligations and move forward promptly with SWBN deployment following a fair and mutually satisfactory NSA negotiation process. The default rules therefore need to accomplish three important goals: first, they must not discourage otherwise qualified bidders because they are unreasonably draconian; second, they

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[86] *See, e.g.*, AT&T Inc. Petition for Reconsideration and Clarification, WT Docket No. 06-150, 7-9 (filed Sept. 24, 2007); Cyren Call Communications Corporation Petition for Partial Reconsideration and Clarification, WT Docket No. 06-150, 5-7 (filed Sept. 24, 2007); Petition for Reconsideration of Frontline Wireless, LLC, WT Docket No. 06-150, 23-24 (filed Sept. 24, 2007); Comments and Opposition of CTIA – The Wireless Association®, WT Docket No. 06-150, 19-20 (filed Oct. 17, 2007); *see also* Office of Inspector General Report, from Kent R. Nilsson, Inspector General, to Chairman Kevin J. Martin, 2 (OIG rel. Apr. 25, 2008).

[87] Second FNPRM at ¶¶ 172-74.

must weed out parties that are unable to satisfy the D Block requirements or that are motivated to disrupt and delay the process by placing a winning bid with no real intention of negotiating an acceptable NSA; and third, if a winning D Block bidder does not negotiate in good faith, they must ensure that the process for replacing that party with a legitimate bidder is swift and resistant to legal challenge.

The PSST believes that the proposal that the D Block license be offered to the second highest bidder in the event of a default, rather than imposing a financial penalty on the defaulting bidder, meets all three criteria. This change, in conjunction with the more detailed technical specifications discussed above, should eliminate the concern of some parties that even good faith NSA negotiations might not be successful and could lead to a substantial default penalty. It should discourage parties that are not qualified or that want to disrupt the process since the FCC will be able to move quickly to award winning status to the next high bidder and give them the opportunity to negotiate an NSA. On balance, while the PSST is mindful of the Commission's desire to penalize non-performing bidders, in this instance the PSST believes that the more effective penalty and one that better serves the public interest is not a fine, but the loss of winning bidder status and the prompt assignment of that status to another party.[88]

Providing for an automatic offering of the license to the next highest bidder in the event of a default by the winning bidder thus presents many advantages. First and foremost, it avoids further delay in the process for awarding the D Block license. The automatic offering also creates the greatest incentive for good faith negotiation on the part of the winning bidder without unnecessarily chilling the bidding process. In this vein, the FCC can take additional steps to ensure successful NSA negotiations, such as committing to real-time discussion and decisions

[88] Of course, depending on the factual situation, the FCC also may elect to impose a monetary forfeiture on the defaulting bidder.

(perhaps under the auspices of a designated Commissioner) in the context of the negotiations. This would likely shorten the time necessary to conclude NSA discussions, and would provide potential bidders with additional comfort in the process.

Finally, the PSST strongly believes that the FCC should refrain from adopting any rules providing for removal of the restrictions on the D Block if the next auction is not successful. While the PSST acknowledges that the FCC is not legally barred from doing so, the PSST submits that the adoption of such rules would create incentives to cause the next auction to fail.

D. The Commission Should Fully Consider the Benefits and Drawbacks of Any Restrictions on Bidding Eligibility

The Second FNPRM describes the D Block as presenting "a unique opportunity for a new type of nationwide network."[89] For that reason, the FCC has requested comment on "whether the public interest would be served by limiting eligibility to bid on the license(s) for the D Block to parties that do not already have significant access to 700 MHz Band spectrum or other spectrum potentially suitable for the provision of mobile wireless broadband services."[90] The Commission has made clear that it is the novelty of this particular opportunity that has triggered this inquiry, not concerns about competitive harm, and has further clarified that it is considering restrictions only on participation in the auction itself, not on after-market transactions.

It is appropriate for the Commission to address this issue squarely so that it can be confident of having the necessary record to support whatever policy decision it reaches. The PSST can see both advantages and disadvantages of restricting auction participation by certain parties and, therefore, does not take a position on this issue at this time.

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[89] Second FNPRM at ¶ 156.
[90] *Id.* at ¶ 157.

For example, the PSST is aware that some potential bidders are concerned about investing the time and resources needed to carefully analyze spectrum with complex opportunities and obligations knowing that the largest nationwide wireless carriers, Verizon[91] and AT&T, can outbid them as they did in Auction 73. On the other hand, the PSST appreciates the benefits of encouraging the broadest possible auction participation and, in particular, participation by incumbents such as Verizon and AT&T. Companies with extensive infrastructure already in place and the financial wherewithal to acquire the D Block spectrum, deploy a public safety-grade network, and provide a positive public safety customer experience on the SWBN could prove the optimal D Block partner and accelerate the network deployment process.

From the PSST's perspective, the worst outcome would be if the possibility of participation by Verizon and/or AT&T discouraged other prospective bidders, but neither company then elected to bid on the D Block. In light of the concern that the mere possibility of participation by those two wireless giants might have a chilling effect on auction participation, the Commission should attempt to assure itself of their intentions. The Commission may wish to consider rules that exclude AT&T and Verizon if they show no interest in bidding on the D Block, so that other potential bidders will not be discouraged from participating, but not do so if AT&T and/or Verizon Wireless confirm publicly that they intend to participate in the auction (or even submit an advanced "commitment" to bid up to the reserve price). If neither company intends to bid on the D Block, then their exclusion should be a matter of indifference to them. If

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[91] *See* Andrew Lavallee, Amol Sharma and Cassell Bryan-Low, *"Alltel Deal Strengthens Hand of Verizon Wireless,"* Wall St. J., June 6, 2008, *available at* http://online.wsj.com/article/SB121267269350648415.html; *see also* Andrew Ross Sorkin and Laura M. Holson, *Verizon in Talks to Buy Alltel*, N.Y. Times, June 5, 2008; *available at* http://www.nytimes.com/2008/06/05/technology/05phone.html?em&ex=1212897600&en=ead2b6dd636bb43d&ei=5087%0A.

either or both indicate an intention to participate, then the FCC can weigh the benefits of having additional bidders, the possible chilling effect, and the desire of some to promote a new broadband competitor.

VI. THE PSST SHOULD REMAIN THE PSBL, AND THE COMMISSION SHOULD REFRAIN FROM CHANGING RULES CONCERNING ITS GOVERNANCE AND OVERSIGHT

As part of its exhaustive re-examination of all matters relating to the Public/Private Partnership and the D Block auction, the Commission has raised several questions about the composition of the PSBL and its governance.[92] These inquiries are surprising since the original Second R&O established detailed requirements for the structure of the PSBL, the composition of its Board of Directors and even certain provisions of its enabling and operating documents, all of which subsequently were presented to the FCC for review as part of the PSST's application to the FCC for the PSBL authority.

As reflected in that application, the PSST is structured in strict compliance with all applicable FCC requirements, not to mention applicable IRS rules respecting governance. The organizations selected by the FCC to designate members of the Board have worked diligently and cooperatively as volunteers committed to promoting the best interests of the public safety community. As anticipated, the wisdom of the Commission's selection process has been confirmed. The Board collectively represents virtually every type of public safety and governmental entity that is eligible to operate on the SWBN pursuant to the PSBL license and

[92] Second FNPRM at ¶¶ 48-53.

their interests have been well-represented in the Board's highly collaborative decision making processes.[93]

In fact, the PSST specifically urges the FCC not to further define the internal processes of an organization that is working effectively, as any changes or further requirements to the existing structure could make it difficult for the PSST to function. In particular, the possibility of requiring unanimity among 15 Board members would be a death knell for the PSST or any organization with a Board of that size and range of constituencies. The far better and therefore more commonly used method of ensuring that minority views are considered is the adoption of super-majority voting provisions (requiring a 2/3 majority) for important issues such as election of officers.

One issue that has been discussed by the PSST Board of Directors is the PSST/PSBL management structure. One of the Board members has recommended that the PSST/PSBL not allow the Chairman of the Board of Directors to also serve as Chief Executive Officer and instead has proposed creating a separate position of President/CEO to manage the business. The PSST Board did not disagree with this concept, however the Board chose to defer any action on this subject until it had long-term adequate funding to pay for such a position if it ultimately was determined to be a preferable approach. The PSST does not believe the Commission should require such action unless the Commission has some definite funding mechanism for the PSST/PSBL to pay for such a position.

Further proposals set forth in the notice are also unworkable and unnecessary. For example, requiring the PSST to obtain prior FCC approval for certain decisions is unnecessary and would cause delays that could undermine the PSST's ability to carry out its duties. The

[93] Moreover, the PSST, as it is currently structured, has no shareholders, members or other equity owners, and thus will require no changes if the FCC were to clarify that this is a requirement for the PSBL entity.

PSST already is required to submit quarterly financial reporting to the FCC. To the extent that the Commission believes that additional oversight is necessary, the PSST can provide additional reports to the FCC on its operational goals and actions.

The PSST is aware that some people have suggested that the organization structure of the PSBL be revised and, further, that one way to accomplish that would be to rescind the PSBL license issued to the PSST license issued to the PSST.[94] We believe that the Commission should reject any such suggestion and instead work with the organizations represented on the current PSST Board to address any major concerns about the organizational structure and governance of the organization rather than starting from scratch. While the PSST is organized in compliance with the requirements established by the FCC in the Second R&O, we recognize that certain adjustments might be appropriate as it moves forward.

Nonetheless, it is our strong belief that the cost and delay in starting up another non-profit, tax-exempt organization will result in irreparable damage to the substantial efforts of the public safety community to establish a new Public/Private Partnership and SWBN and creates a substantial risk that the entire effort to establish a new SWBN will fail. The PSST therefore strongly discourages the Commission from opening a new application window for the public safety license. The PSST notes that there were no other applicants during the initial window. In addition, the PSST believes that potential bidders on the D Block may be discouraged by the uncertainty that would be added to the process if interested parties have no idea who will be representing public safety interests going forward.[95] Moreover, the PSST and its individual

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[94] Second FNPRM at ¶ 53.

[95] One thing is clear in the aftermath of Auction 73: Uncertainty was a factor in causing potential bidders not to participate. One area of certainty for the last year has been the composition and functioning of the PSST and, in general, its expectations of the D block winner. It would require a compelling reason to remove that certainty and to

Board members have already contributed enormous efforts to the establishment of the PSST and its related infrastructure,[96] as detailed previously, and it would be wasteful to walk away from this substantial investment when funding and resources are so scarce.

The FCC's decision should recognize that the Public/Private Partnership is unique in the FCC's history, and there is no body of precedent for the PSST to consult. A monthly discussion, or more often if needed, with the appropriate persons at the FCC would be the more effective means to provide the PSST with guidance and interpretation of FCC intent. The staff should be specifically empowered to work with the PSST on an ongoing basis, particularly in the early years of its operation.

Another means of providing guidance would be the establishment of a relationship between the PSST and a designated FCC official. The PSST would welcome the FCC designating a Commissioner as an *ex officio* representative to the PSST, just as the FCC has a Defense Commissioner and a Commissioner with primary responsibility for international activities. The vital importance of this Public/Private Partnership and the importance of ensuring that the PSST, the D Block operator and the FCC have a common understanding of its evolving goals and obligations would be well-served if a single Commissioner had an ongoing, primary responsibility for the FCC-PSST relationship. Of course, the PSST expects that all of the FCC Commissioners will be actively engaged in this undertaking given its vital importance to the American public. Nonetheless, having one Commissioner with a direct PSST responsibility might prove extremely useful, particularly during the formative years of this partnership.

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replace it with doubt about the composition and expectations of a new public safety representative. No such case has been made.

[96] *See supra* at Section I.

With regard to the question about Congressional involvement, the PSST is a supporter of transparency, would welcome Congressional monitoring, and is happy to submit reports to Congress, but believes that the need for real-time, rapid decision-making on many issues will of necessity limit the types of Congressional oversight that could be mandated as part of the functioning of the PSST.

Moreover, the PSST believes that the current restrictions regarding its agent/advisor relationships are more than adequate to prevent improper commercial influence, and the FCC should not place additional restrictions on the PSST's business relationships and agent/advisor relationships. Instead, the Commission should provide greater clarity regarding its restriction on "commercial interests" participating in management of the licensee. Current rules governing the PSBL allow for arrangements with third parties to assist with the management or operation of the public safety-side of the network. Such arrangements are invaluable for a variety of reasons, including access to expertise and funding, in assisting the PSST to do its job effectively.

The PSST will endeavor to fulfill its primary responsibilities to the best of its ability and in compliance with all applicable FCC requirements. This includes the FCC prohibition against commercial participation in the PSBL itself or in its management, a prohibition that the PSST supports. It does not fear that commercial involvement might cause the PSST to compromise its obligations to the public safety community, but the PSST is aware that there have been abuses in the past involving impermissible relationships between licensees and third parties that would cause the FCC to adopt such prophylactic measures. However, it also is important that the FCC not so restrict the PSBL in its ability to contract for needed services that it is prevented from fulfilling the very functions that the FCC has determined need to be undertaken on behalf of public safety. The PSBL, like all FCC licensees, must have authority to engage such parties as it

deems appropriate, provided that the relationship between the PSST and those parties is in all ways consistent with the FCC's requirements (not to mention the myriad of IRS rules applicable to a non-profit, tax-exempt organization like the PSST). The PSST has a strong preference for outsourcing services to others where practical and appropriate, thereby avoiding the need for a large internal staff with associated employer obligations.

The PSST acknowledges that a commercial interest may not control the PSST's activities and that all arrangements with third parties must satisfy the FCC's *Intermountain Microwave* or *Motorola*[97] test for control. Accordingly, prohibitions on revenue-sharing or having a commercial entity obtain a financial interest in the PSST's activities with respect to the SWBN are understandable. However, provision of management services or other types of support that are consistent with *Intermountain Microwave* or *Motorola* and would not involve prohibited economic interests should be permitted under "incentive-compatible" standards. Additionally, any new "incentive-compatible" rules must not unduly restrict the PSST's ability to obtain funding, so long as there is no commercial interest participating in management of the licensee.

Although not raised as an issue in the Second FNPRM, the PSST would like to make clear that its engagement of Cyren Call is consistent with those FCC requirements. The PSST, advised and represented by its own legal counsel, entered into a month-to-month agreement with

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[97] *Intermountain Microwave*, 12 FCC 2d 559 (1963) ("*Intermountain Microwave*"). The FCC historically has not applied the *Intermountain Microwave* test to private radio licenses such as that held by the PSST. Instead, the FCC has relied on a standard adopted in a matter involving certain assignment applications filed by Motorola, Inc. that applies a more general analysis. *See* Applications of Motorola, Inc. for 800 MHz Specialized Mobile Radio Trunked Systems, File Nos. 507505 *et al.*, *Order* (Private Radio Bur. Jul. 30, 1985) ("*Motorola*"). As described by the FCC, the factors in the *Motorola* test are "distinct from the six factors set forth in *Intermountain Microwave.* Under the *Motorola* standard, the Commission focuses primarily on issues related to the licensee's supervision and its propriety interest in equipment." Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Notice of Proposed Rulemaking*, WT Docket No. 00-230, 18 FCC Rcd 20,604 at ¶ 72 (2000). Although the factors considered in the two tests are different, reflecting the fact that most systems evaluated under the *Motorola* analysis are operated for the private, internal use of the licensee rather than to provide third party commercial service to customers, the objective is the same: to determine whether the licensee has retained both *de jure* and *de facto* control of its system.

Cyren Call to provide services to the PSST. Because it had no governmental or other funding or assets to serve as collateral for a commercial loan, the PSST obtained a deferral from Cyren Call of amounts due, and even obtained an advance loan from Cyren Call that reflects arm's-length, normal commercial terms. Cyren Call has no management relationship with or management role within the PSST, has no legal or beneficial interest in the PSST, and does not participate in the PSST's management. There are no conditions, covenants or other features of Cyren Call's service agreement with or loan to the PSST that would allow Cyren Call to influence the PSST's policy or management determinations. Cyren Call's relationship with the PSST is therefore fully consistent with the FCC's rules.

The PSST addressed the concern about the possibility of commercial interests causing it to neglect its public safety obligations earlier in these Comments. The FCC need not fear that the PSST Board members, all of whom represent organizations hand-picked by the Commission and each of whom has an ongoing primary public safety or governmental role to fulfill in addition to an involvement with the PSST, would fail to place the interests of public safety as their highest concern.

VII. IT IS IMPERATIVE THAT THE COMMISSION CONTINUE TO FOSTER RAPID AND EFFICIENT REBANDING OF THE NARROWBAND SYSTEMS

The Commission should ensure a timely relocation of narrowband equipment out of the spectrum allocated for public safety broadband communications. However, it also should remain mindful that the delay in identifying a D Block auction winner will affect the current February 19, 2009 deadline for completing this undertaking.[98] The FCC's timeline for narrowband relocation assumed that the D Block/PSBL NSA negotiation process would be completed well

[98] *See* Second FNPRM ¶ 180-82.

before that date and, therefore, that there would be a D Block licensee ready to assume the financial obligation for narrowband relocation. Even that original timeline did not provide a mechanism for funding the preparatory work that had to be undertaken almost immediately to allow incumbents to meet the February 2009 relocation deadline. For example, the PSST already has spent considerable time and effort collecting the information from public safety agencies and manufacturers and initiating the dialogue between those parties that will be needed to effect a reasonably smooth relocation process. Since the date for the D Block re-auction has not yet been set, and since the successful auction will be followed by the NSA negotiation process,[99] it does not seem realistic for the FCC to retain the February 19, 2009 completion date. The PSST recommends instead that the 700 MHz narrowband relocation deadline be twelve months after funding from the D Block winner becomes available.

As part of this narrowband transition, the Commission should continue to prohibit new narrowband operations from being deployed in the public safety broadband allocation and should maintain the August 30, 2007 deadline for equipment whose relocation costs will be reimbursable.[100] The PSST is well aware of the difficulties this presents for certain licensees,[101] but it sees no reasonable alternative that would not seriously undermine the deployment of the SWBN in a timely fashion

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[99] While the FCC's efforts in the Second FNPRM are expected to reduce the issues that will need to be addressed in the NSA – because they will be defined in the FCC Rules – there still are matters that will require negotiation of an NSA.

[100] *Id.*; *see also* Public Safety and Homeland Security Bureau Announces an October 23, 2007 Deadline for Filing 700 MHz Relocation Certification Information, *Public Notice*, DA 07-4168 (rel. Oct. 5, 2007).

[101] The PSST is concerned that the unavoidable delay in securing funding from the D Block licensee to pay for relocation costs will result in incumbents continuing to deploy narrowband equipment on what now is broadband spectrum. This, in turn, likely will increase the number of waiver requests from incumbents seeking reimbursement for equipment deployed after the August 30, 2007 deadline. The problem will only worsen over time. Prompt Commission action on already pending waivers would help by clarifying whether such requests are likely to be granted and, if so, under what conditions.

Importantly, the PSST recommends that the FCC replace the current $10 Million cap on the D Block licensee's reimbursement obligation with a cap of $75 Million. Other parties, including public safety representatives, already have noted that the $10 Million specified by the Commission will not be sufficient to cover the costs deemed reimbursable.[102] The PSST has confirmed that the current cap substantially underestimates the funds needed to address this situation based on its extensive work with the affected public safety agencies, equipment vendors and with organizations such as the NPSTC that have committed time and resources toward identifying a cost-effective solution. For one thing, the PSST itself already has incurred substantial costs in taking on those tasks, tasks that could not be deferred until the NSA has been negotiated. Those costs should be reimbursed by the D Block licensee. Moreover, it has been determined that the original cost estimate failed to include one critical equipment category: the vehicular repeater. The PSST's work has revealed that vehicular repeaters are used extensively by certain licensees and that retuning these units to new narrowband channels will significantly increase the total relocation cost. When those expenses are factored in, the PSST believes that a $75 Million cap is a more realistic assessment of the actual cost of narrowband relocation. Even a $75 Million cap is but a fraction of the anticipated cost of purchasing the spectrum at auction and deploying and operating the SWBN. It is not an amount that should deter an otherwise interested D Block bidder. Since this spectrum must be cleared of narrowband operation before the SWBN can be deployed in a given area, the PSST believes it is essential that prospective bidders have a realistic understanding of what will be required to relocate these operations, even if the number is higher than was anticipated when the Second R&O was adopted. Unless the

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[102] *See, e.g.*, Pierce Transit Petition for Reconsideration, WT Docket No. 06-150, 6-12 (filed Sept. 24, 2007); Commonwealth of Virginia Petition for Reconsideration, WT Docket No. 06-150, 9-12 (filed Sept. 24, 2007).

Commission revises the cap, public safety users likely will only receive a *pro rata* reimbursement—amounts that will be insufficient to fund the relocation of these systems. This could produce protracted delays in SWBN deployment, as public safety agencies may be unable to secure the funding needed to migrate and/or may initiate legal action. In any event, the result would be antithetical to the D Block's interest and to the public interest. Adequate funding must be made available to permit migration in a manner that will support the primary goal of the Public/Private Partnership: deployment of a shared nationwide interoperable broadband network.

VIII. CONCLUSION

The Commission is faced with a unique opportunity in this proceeding. It can fulfill its public safety goals and foster a Public/Private Partnership resulting in the construction and deployment of an interoperable, nationwide broadband network for public safety to use as it protects and serves the people of this nation. For this Public/Private Partnership to succeed, the Commission must strike the appropriate balance—by adopting rules that will encourage commercial interest in the D Block license and by empowering the PSST, as the PSBL, to ensure that the needs of public safety are addressed. For these reasons, the PSST respectfully urges the Commission to adopt rules and policies consistent with the positions articulated herein.

Respectfully submitted,

/s/ Harlin R. McEwen

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June 20, 2008

ATTACHMENT A

Public/Private Shared Wireless Broadband Network

Financial Summary

June 20, 2008

Public/Private Shared Wireless Broadband Network
Financial Summary

June 20, 2008

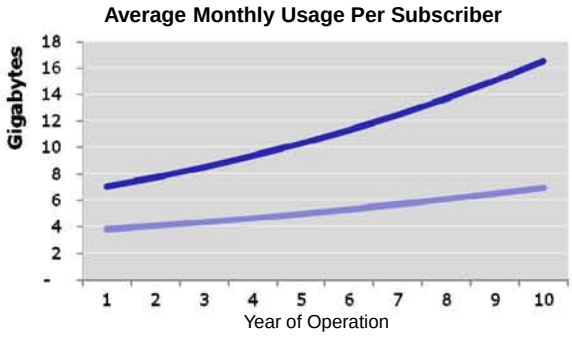
Key Network and Capital Expenditure Assumptions

(In thousands)

- 20 MHz spectrum block (10 MHz D Block + 10 MHz Public Safety)
- Fourth generation (4G) radio transmission technology
- All IP network
- Overlay on existing carriers' network infrastructures and leverage existing operating and business systems (assuming nationwide network or amalgamation of regional networks)
- 98% total U.S. population coverage by Year 10 of operation
- Assumed approximately $25M annual contingency reserve for PSBL (to include items such as spectrum lease payment from D Block)

* While not all costs are driven by site deployment, site count is used as the common denominator for the purpose of comparative analysis.

Key Network Usage Profile Assumptions



- Monthly usage per subscriber is blended average across multiple devices and applications
  - Devices include: sensors, modems, mobile handhelds, portable devices
  - Applications include: voice, database access, Inter/intranet, imaging, telemetry
- Based on capacity availability of a 4G network, there is sufficient network capacity to meet projected demand by Commercial subscribers

Monthly Access Charge: Current Industry Benchmarks

Key Subscriber Economics Assumptions (Year 5)

Note: Public Safety subscription rates are assumed to be lower than commercial rates for analogous services.

Financial Estimates for an Overlay Network

ATTACHMENT B

Letter from
James E. Downes, Chair,
Federal Partnership for Interoperable Communications, to
Harlin R. McEwen, Chairman,
Public Safety Spectrum Trust Corporation

January 25, 2008

Federal Partnership for

FPIC

Interoperable Communications

January 25, 2008

Harlin R. McEwen
Chair, Public Safety Spectrum Trust
1101 K Street, NW
Washington, DC 20005

SUBJECT : FPIC Participation in PSST Activity

Dear Mr. McEwen:

The Federal Partnership for Interoperable Communications (FPIC) appreciates this opportunity to comment on the initial version of the Public Safety Spectrum Trust's (PSST) Bidder Information Document (BID Version 1.0). The FPIC is an organization chartered by the Department of Homeland Security's Office of Emergency Communications to address federal wireless communications interoperability by fostering intergovernmental cooperation among federal, state, local, and tribal wireless users.

FPIC commends PSST for its extensive efforts in preparing for the Federal Communications Commission's Auction # 73 and the formation of the Public/Private Partnership that will operate the Shared Wireless Broadband Network in the 700 MHz band. The FPIC is pleased that the BID provided ample notice to all potential bidders that the Shared Wireless Broadband Network should include Federal public safety users. Such Federal access will be essential to enhancing interoperability among public safety agencies at all levels of government. Additionally, it will allow Federal agencies to shape developments in broadband requirements and capabilities as a fundamental part of an integrated nationwide network.

As this process continues, we would welcome the opportunity for the FPIC to act as a federal advisory group to the PSST, and to work with the Trust and the D Block auction winner to represent the federal public safety user community to achieve the common interoperability goals. To facilitate such efforts, the FPIC will form a Working Group to act as a resource for the Trust and the auction winner throughout the remainder of this process.

Please feel free to contact me at (703) 235-5069 or via email at james.downes@dhs.gov if you have any questions or wish to discuss further. We look forward to receiving your concurrence regarding the federal advisory group and working with the PSST.

Respectfully,

James E. Downes

James E. Downes
Chair, FPIC

Cc: Director, OEC

ATTACHMENT C

Shared Wireless Broadband Network

Technical Analysis

June 20, 2008

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I. Overview

The Public Safety Spectrum Trust Corporation ("PSST"), the Public Safety Broadband Licensee ("PSBL") for the 700 MHz public safety broadband spectrum, submits the following discussion of public safety expectations for the technical parameters and capabilities that should be required of the Shared Wireless Broadband Network ("SWBN").

II. Specifications for Public/Private System Architecture

A. FCC Rule

§ 27.1305 (2)(a) / § 90.1405 (2)(a)

The SWBN developed by the 700 MHz Public/Private Partnership between the PSBL and the D Block licensee and constructed by the D Block licensee must be designed to meet the requirements associated with a nationwide public safety broadband network. At a minimum, the SWBN must incorporate the following features:

1. Design for operation over a broadband technology platform that provides mobile voice, video, and data capability that is seamlessly interoperable across local and state public safety agencies, jurisdictions, and geographic areas, and that includes current and evolving state-of-the-art technologies reasonably made available in the commercial marketplace with features beneficial to the public safety community (*see* Sec. II below).
2. Sufficient signal coverage to ensure reliable operation throughout the service area, consistent with typical public safety communications systems (*see* Sec. VI below).
3. Sufficient robustness to meet the reliability and performance requirements of public safety (*see* Sec. III below).
4. Sufficient capacity to meet the day-to-day and emergency needs of public safety (*see* Sec. IV below).
5. Security and encryption capabilities consistent with state-of-the-art technologies (*see* Sec. V below).
6. A mechanism to automatically prioritize public safety communications over commercial uses on a real-time basis, consistent with the requirements of § 27.1307 (*see* Sec IV.D below).
7. Operational capabilities consistent with the features and requirements that are typical of current and evolving state-of-the-art public safety systems (*see* Sec. VII below).
8. Operational control of the network by the PSBL to the extent necessary to ensure that public safety requirements are met (*see* Sec. VIII below).

B. PSST SWBN Technology Platform Expectations

1) The technology selection and upgrade and migration plans will be the decision of the D Block operator, subject to PSST approval. Multiple open standards technologies that meet public safety requirements are viable.
2) The SWBN technology platform will be based, wherever possible, on commercial off-the-shelf (COTS) technology that provides mobile data, video, and cellular voice capabilities that are seamlessly interoperable across agencies, jurisdictions, and geographical areas.
3) The SWBN technology platform should provide cellular Push-To-Talk (PTT) capability to be used as a back-up for mission-critical land mobile radio networks. The preference is to have the cellular PTT capability available at network launch.
4) The SWBN technology platform will use a single common air interface (CAI) and the CAI must allow for a migration to future technology upgrades.
5) The technology selected for the SWBN will evolve and be upgraded based on commercial wireless upgrade timeframes; however, future upgrades should be backward–compatible, allowing for appropriate transition periods so that devices used by public safety entities do not become obsolete prematurely.
6) The PSST and the D Block winner will establish a joint program to identify public safety user requirements affecting the network technology road map and will support the appropriate standards development organizations' (SDOs') processes to encourage those requirements be included in subsequent technology releases.
7) The SWBN should launch with and/or upgrade to within a reasonable period, a uniform, IP Version 6 as required based on Federal government mandates.
8) During normal conditions, public safety users will have assured priority access on up to 50% of the engineered SWBN site capacity. During emergency conditions, public safety users will have assured priority access on up to 70% of the engineered SWBN site capacity.
9) During both normal and emergency conditions, the SWBN should support pre-emption of public safety users over commercial users on up to 50% of the engineered SWBN site capacity.

III. Reliability, Robustness, and Hardening

A. FCC Rule

§ 27.1305 (2)(c); § 90.1405(2)(c)

Sufficient robustness to meet the reliability and performance expectations of public safety.

Second R&O Para 405

Sufficient robustness to meet the reliability and performance expectations of public safety. To meet this standard, network specifications must include features such as hardening of transmission facilities and antenna towers to withstand harsh weather and disaster conditions, and backup power sufficient to maintain operations for an extended period of time.

B. PSST Network Reliability, Availability, and Hardening Expectations

1) To meet public safety expectations for mission-critical communications, the SWBN must be usable during extremely adverse operational and weather conditions. The higher the level of communications reliability and availability, the more effectively public safety users can execute their jobs during the most critical times. The goal is to construct a highly reliable and available network that is better than commercial wireless networks today, yet economically viable. This can be achieved through a variety of means such as hardening the terrestrial network, strategic storage staging and use of emergency deployable infrastructure and backup reliance on satellite coverage.
2) The RF signal level reliability is expected to be 95% over 95% of the area covered. The RF link is not included when calculating the availability numbers that follow.
3) The SWBN is expected to provide 99.9% availability at Year One of operation (calculated on jurisdictional boundaries). The exact method for measuring availability will be negotiated as part of the Network Sharing Agreement ("NSA"); however, the intent is for this to be a measure of infrastructure availability as measured from the antenna back through the core network and will exclude scheduled maintenance downtime as coordinated with the PSST.
4) SWBN specifications must include commercial best-practices, which take into consideration local influencing factors such as weather, geology, and building codes on network attributes such as hardening of transmission facilities and antenna towers, extended backup power, seismic safety standards, and accommodations for wind, ice and other natural phenomenon.
5) The SWBN cellular-like network architecture obviates the need for economically non-viable reliability and availability measures (as a requirement for extended power and redundant backhaul at every site, such as might be the case for traditional public safety high-site, high-power systems without overlapping coverage). However, sites designated as "critical" must have battery backup power of 8 hours and

generators with a 5 to 7- day fuel supply. Some sites will require redundant backhaul to meet the network availability standard.

6) The designation of a site as “critical” shall be a joint decision by the D Block operator, the PSST, and local public safety agencies, with a limitation that critical sites shall not exceed 50% of the operational SWBN site count. The use of emergency deployable infrastructure will be factored into the overall network availability measurement.

IV. Network Capacity

A. FCC Rule

§ 27.1305(2)(d); § 90.1405(2)(d)

Sufficient capacity to meet the needs of public safety.

Second R&O Para 405

Sufficient capacity to meet the needs of public safety, particularly during emergency and disaster situations, so that public safety applications are not degraded (*i.e.*, increase blockage rates and/or transmission times or reduced data speeds) during periods of heavy usage.

B. PSST Network Capacity Expectations

1) The SWBN must have sufficient capacity to meet identified needs of public safety in everyday normal operations as well as during unusual events or emergencies. PSST analysis concludes that the 20 MHz SWBN employing a 10 x10 MHz channel via an advanced 4G wireless broadband technology can provide sufficient capacity to make the network commercially viable, and meet public safety user needs under normal operations and emergency conditions.
2) To facilitate capacity and forecast planning, the D Block operator should provide the PSST monthly with summary and detail priority user utilization data. Both the PSST and the D Block operator will jointly forecast priority user demand and capacity needs.

C. FCC Rule

§ 27.1305(2)(f); § 90.1405(2)(f); § 27.1307

A mechanism to automatically prioritize public safety communications over commercial uses on a real-time basis consistent with the requirements of [§ 27.1307] and 90.1407(c).

Second R&O Para 405

A mechanism to automatically prioritize public safety communications over commercial uses on a real-time basis and to assign the highest priority to communications involving safety of life and property and homeland security consistent with the expectations adopted in this Second Report and Order.

D. PSST Public Safety Priority and Quality of Service (QoS) Expectations

The technology deployed on the SWBN will determine the specific method used to provide network priority and QoS to meet the PSST's priority and QoS expectations. Within all current advanced broadband technologies, varying levels of capabilities exist to provide degrees of priority and QoS management. Consistent with the FCC requirements, the PSST will have overall responsibility for assignment of the highest levels of network priority and QoS to public safety and other PSST-approved priority users.

a) Priority

1) Priority will be defined as PSST-approved user, network, application, and services priorities that, via user and/or device identification, offer the highest assignable levels of priority for network access and use of network resources, services, and applications.
2) Public safety and other PSST-approved priority users will be provided priority service that will allow for different levels of service priority, based on the given role of a user.
3) The highest 50% of access priority levels available in the radio access network technology will be allocated for assignment and use only for PSST-approved public safety and other users.
4) In the event that SWBN bandwidth is congested due to commercial use, the network will provide an automatic mechanism to accommodate public safety users by pre-empting commercial users and providing public safety users up to 50% of the site engineered capacity.
5) Under normal conditions, the network will provide assured priority access to public safety users on up to 50% of the site engineered capacity. During emergency conditions, the network will provide assured priority access to public safety users on up to 70% of the site engineered capacity.
6) The SWBN will provide an appropriate priority to 9-1-1 calls per applicable FCC requirements; 9-1-1 calls would not be subject to pre-emption.

b) Quality of Service (QoS)

1) The determination of QoS classes is technology-dependent, but it is anticipated that the SWBN will support up to 7 defined classes of service.
2) QoS will refer to resource reservation and session control mechanisms.
3) QoS mechanisms will provide different levels of performance to a traffic/data flow in accordance with predefined class of service and its associated performance parameters for identified applications and/or services.
4) QoS will be considered the full class of mechanisms that are found at multiple IP layers in the network (both RAN and Core) to provision and apply priority for IP packet-based traffic.
5) The assignment of network resources will take into account the user and/or service priority as well as the QoS requirements of the application.
6) The SWBN will support multiple QoS flows between a user device and network, where each flow may have a different QoS requirement and priority level.

7) If network resources are not available to meet a resource reservation request, the SWBN should have the ability to negotiate a mutually acceptable QoS with the user device.
8) All PSST priority user logical client-based VPN and layer 2/3 Virtual Private Network (VPN) will be configured and provisioned within the SWBN to have the highest authorized IP packet routing and queuing treatment.
9) The methods by which QoS will be promulgated across the SWBN will be dependent on the technology employed. Therefore, the PSST expects that the D Block winner will coordinate with the PSST to identify and document the configuration parameters for the chosen SWBN technology required to provide the specified QoS for PSST-authorized or PSST-designated services, applications, and permissions.

V. Security and Encryption

A. FCC Rule

§ 27.1305(2)(e); § 90.1405(2)(e)

Security and encryption consistent with state-of-the-art technologies.

B. PSST Network Security and Encryption Expectations

1) The SWBN should accommodate compliance with FBI Criminal Justice Information System (CJIS) guidelines, which include physical security guidelines, advanced authentication methods, and unique identifiers for authenticated users. Standards for network security also will be complied with and incorporated.
2) The SWBN should accommodate compliance with the National Information Exchange Model (NIEM) to facilitate the sharing of emergency and incident information across agencies and jurisdictions.
3) The SWBN should implement controls to ensure that public safety priority and secure network access is limited to authorized public safety users and devices.
4) The SWBN should utilize an open standard protocol for authentication.
5) Some of public safety's unique needs are not provided for in a commercial service context. The SWBN should allow for public safety network authentication, authorization, automatic logoff, transmission secrecy and integrity, and audit control capabilities, as well as other unique attributes.
6) There should be a joint effort by the PSST and the D Block licensee to introduce into commercial technology standards bodies the security and encryption and other functional specifications that are needed by public safety.
7) PSST recommendations for data and operations security safeguards and controls should be incorporated into the D Block licensee's data security policies and procedures.

VI. Coverage

A. FCC Rule

§ 27.1305(2)(b); § 90.1405(2)(b); § 27.14(m)(1)

Sufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems.

B. PSST Proposed Coverage Requirements

The FCC could consider alternative approaches, such as the following example, to balance the needs of public safety against the D Block licensee's legitimate cost concerns:

YEAR	% OF TOTAL POPULATION
4	75%
7	90%
10	95%
15	98.3% The PSST desires to achieve long-term 99.3% coverage

The population requirement includes coverage of communities in excess of 3,000 people are part of the build-out, as well as all major US highways and interstates.

With PSST approval and device availability, satellite and roaming agreements may be used to calculate population coverage.

C. PSST SWBN Coverage and RF Reliability Expectations

1) It is expected that signal levels will be sufficient to provide the RF reliability defined in Table I-A (below) to ensure coverage consistent with public safety operational requirements.
2) To promote SWBN usage, the D Block operator and PSST will review the build plan and progress, and jointly adjust it to provide coverage in difficult areas. This activity will occur as part of network capacity and forecasting coordination already discussed in Section IV, paragraph B(2).

D. PSST Signal Reliability Expectations

1) The SWBN should provide seamless coverage (via handoff/handover mechanisms) and continuous connectivity with a 95% signal level reliability over 95% of an area as defined by county, township, or parish boundaries at stationary and vehicular speeds up to 75 miles per hour (120 km/h).
2) Published originally in the NPSTC Broadband Working Group's Statement of Requirements (SoR)[1], Table I-A (below) is provided to assist in determining average cell site radii per morphology class.
3) Table I-A also represents anticipated data rates through the first 4 years of operation, anticipating commercial standard improvements as the network build plan progresses.

Table I-A Propagation and Capacity Parameters

Morphology	*In-Building Penetration Margin*	*Coverage Availability*	*Sector Loading* Sector is loaded to this level of traffic	*Forward Link Throughput* •**On-street** •**Single user** • Average cell edge throughput	*Reverse Link Throughput* • **On-street** • **Single user** • Average cell edge Throughput
Dense Urban	22 dB	95%	70%	1000 kbps	256 kbps
Urban	19 dB	95%	70%	1000 kbps	256 kbps
Suburban	13 dB	95%	70%	512 kbps	128 kbps
Rural	6 dB	95%	70%	512 kbps	128 kbps
Highway	6 dB	95%	70%	128 kbps	64 kbps

[1] Public Safety 700 MHz Broadband Statement of Requirements

Table I–B Morphology Class Parameters

Morphology	*Population Density Based on County Boundaries (pops/sq mile)*	*Area Description*	*Approximate Land Mass* (sq mile)
Dense Urban	+15,000	Skyscrapers, high rise apartments, buildings of 20+ stories, narrow streets	297
Urban	2,500 – 14,999	Hotels, hospitals, buildings of 4-19 stories, medium to narrow streets	12,367
Suburban	200 – 2,499	Buildings of 1-3 stories, trees and foliage, medium width streets	258,380
Rural	0 – 199	Large open spaces, isolated highways, 1 -2 story houses, barns	3,268,719
Highway	NA	Stretches of interstate highway, and/or US highways, principally within under-populated areas	NA

VII. Operational Capabilities – Network Services and Applications

A. FCC Rule

§ 27.1305(2)(g); § 90.1405(2)(g)

Operational capabilities consistent with features and requirements that are typical of current and evolving state-of-the-art public safety systems.

Second R&O Para 405

Operational capabilities consistent with features and expectations specified by the public safety broadband licensee that are typical of current and evolving state-of-the-art public safety systems (such as connection to the PSTN, push-to-talk, one-to-one and one-to-many communications, etc.).

B. PSST Network Services and Applications Expectations

1) Public safety should have access to the full suite of current and continually evolving commercial services and applications hosted on the SWBN.
2) All approved PSST-hosted and/or other third party public safety applications and services will be delivered via the SWBN, consistent with specified performance, network transport, and routing parameters.
3) There will be mechanisms for monitoring SWBN adherence and conformance to specified service quality and performance standards, including:
    a. Creation of service level agreements (SLAs) and associated key performance indicator (KPI) definition, metrics, and reporting.
    b. KPIs measured will be limited to the list in Table II-A.
    c. SLA conformance oversight and management; and
    d. SLA violation and shortfall identification, notification, and correction.
4) The D Block winner should provide agreed-upon services-related SLA reports to the PSST, as well as access to the source data for such reports:
    a. Monthly KPI/SLA compliance reports indicating compliance against SLAs;
    b. Access to service assurance systems and data to perform analysis on compliance and out-of-compliance situations and remedies; and
    c. Formal quarterly reviews of performance against NSA SLA agreements between the PSST and the D Block operator
5) Originally published in the NPSTC Broadband Working Group's Statement of Requirements (SoR),[2] Table II-B provides a list of applications and services that should be supported on the SWBN. Parameters such as delay, delay variation, throughput, etc, in addition to the stipulated KPI's for such applications and services, will be negotiated in the NSA.

[2] Public Safety 700 MHz Broadband Statement of Requirements

Table II-A Key Performance Indicators

Key Performance Indicator	Abbreviation
Availability(Service)	Av(S)
Accessibility(Service)	Ac(S)
Access Time(Service)	AT(S)
End to End Delay(Service)	EED(S)
Access Delay(Service)	AD(S)
Release Failure	RF(S)
Time to Restore	TTR
Grade of Service (Service)	GOS(S)
Bit Error Rate	BER
Latency(Service)	Latency(S)
Jitter	Jitter
Event Notification	EN
Response Time	RT
Continuity of Service Connections	CSC
Quality of Sessions	
System Responsiveness	
One-Way Transmission Delay	
Payload Content Preservation	
% Packet Mis-Direction per Session	

Table II-B Applications and Services

Application/Service	Description	Data Rate
File transfer	*i.e.* to download such items as high-resolution images, GIS data, etc.	Greater than 256 kb/s
Email		Less than 16 kb/s
Web browsing		Greater than 32 kb/s
Cellular voice	Analogous to today's cellular system capability.	4-25 kb/s
Push to talk voice	Analogous to commercial offerings, but coupled with group call capability.	4-25 kb/s

Application/Service	Description	Data Rate
Indoor video	Indoor video is video that is transmitted from inside a building, whether it is surveillance or tactical video.	20-384 kb/s
Outdoor video	Outdoor video is video that is transmitted from the street, whether it is surveillance or tactical video.	32-384 kb/s
Location services	This includes location services for personnel as well as vehicles and other objects that public safety tracks.	Less than 16 kb/s
Database transactions	This includes remote databases (data that is not under the agency's direct control) as well as databases that are local.	Less than 32 kb/s
Messaging	Instant messaging and SMS type services, both one-way and two-way.	Less than 16 kb/s
Operations data	This is a catch-all for data that deals with the operations and maintenance of the network, *i.e.* over-the-air programming, remote client management, etc.	Less than 32 kb/s
Dispatch data	This area primarily covers data as it relates to computer-aided dispatching.	Less than 64 kb/s

Application/Service	Description	Data Rate
Generic traffic	This is a catch all for traffic that doesn't fall within any of the categories described above, and that generates less than 64 kb of data per second.	Less than 64 kb/s
Telemetry	Remote measurement and reporting of information for radio devices, vehicles, etc. Also includes sensors data such as passive chemical detection. Additionally, biometric sensors that require better network performance are also included in this application class.	70-120 kb/s
Virtual Private Networking		Less than 64 kb/s

VIII. Operational Control and Use of the Network

A. FCC Rule

§ 27.1305(2)(h); § 90.1405(2)(h)

Operational control of the network by the public safety broadband licensee to the extent necessary to ensure that public safety expectations are met.

1) Local Public Safety Operational Control

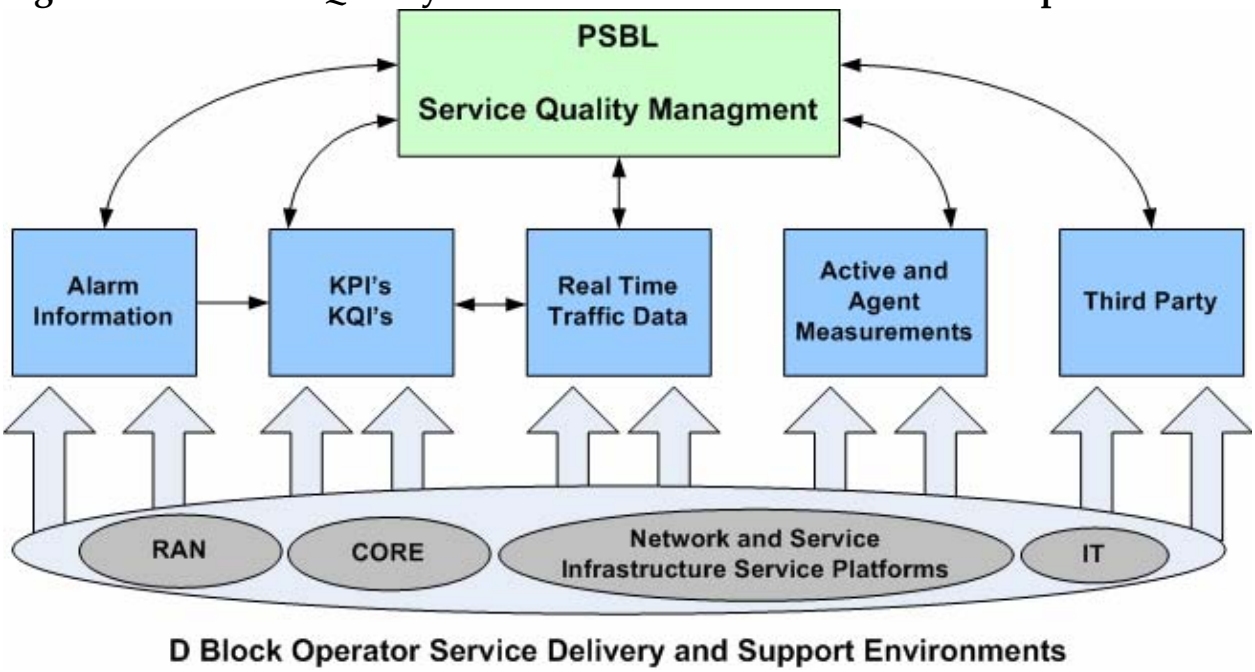
a) Real-time visibility to SWBN network and service quality status relevant to the local agency or jurisdiction. This includes the ability for local public safety users to obtain real-time network status, site status, and access SWBN operator network monitoring system events and alarms for their geographic area. The type, content, source, display, delivery format, security, reliability and other key design parameters will be addressed in the NSA.
b) Real-time access to service management applications with control limited to local agency or jurisdiction SWBN users for them to view and modify user/group/application priorities and profiles, and to add, modify, provision and authenticate priority users and devices.

2) PSST Operational Control

a) The ability by the PSST to host services that may require elements of IP Multimedia Subsystem (IMS) or System Architecture Evolution (SAE) environments for the control and management of services.
b) Physical co-location of trained incident management PSST personnel in the D Block operator's primary and secondary Network Operations Center(s) ("NOCs"). The number of seats and locations are subject to NSA negotiation.
c) Real-time ability to declare an "emergency" for defined geographic area(s), and enable public safety priority and preemption of up to 70% of the engineered capacity for the sites within the emergency location(s).
d) Real-time and near-real-time Operational Support Systems ("OSS") / Network Management Systems ("NMS") visibility to the entire SWBN network and service quality status using the same tools and systems available to the D Block operator.
e) Real-time visibility into public safety consumption of network resources in a given geographic location(s) and real-time alerts/notifications when the priority access capacity maximum of 70% occurs on a given site.
f) To facilitate incidents, the PSST will have access to service management applications with control to setup, modify user/user group/application priorities profiles nationally across agencies and jurisdictions.
g) Additionally, the PSST will have access to service management applications, enabling them to provision or add, manage, and authenticate users and devices nationally across agencies and jurisdictions to facilitate incident management.

h) Access to an over-the-air management framework for managing SWBN public safety user devices (individually or in groups of devices) to clear user data or disable devices.
i) Real-time visibility into malfunctions or failures that impact priority users' services and applications over a wide geographic area of the SWBN.
j) Notification to the PSST of system downtime (or any work that may affect service or system performance) due to planned maintenance, configuration changes, or upgrades. The PSST will provide the D Block licensee with advance notice of planned public safety events to allow time for proper capacity planning and if required, adjustment. The PSST will coordinate with local public safety entities affected by these activities.
k) Figure I sets forth examples of the types of elements to be correlated to provide the level of information by which the PSST can offer oversight and service QoS to its priority users.

Figure I Service Quality Information Flows and Sources Example



IX. Specialized Care and Billing

Although not addressed specifically within the Second Report and Order, public safety has care and billing requirements which are both differentiated and more demanding than the commercial standard provided for consumer and enterprise customers. The PSST lists these requirements for consideration in inclusion in the D Block Service Rules.

A. Specialized Care

The critical nature of public safety's mission requires public safety to have access to specialized care agents in an expedited fashion, with minimal hold time and minimal, if any, automated attendant or Interactive Voice Response system ("IVR") intervention.

D Block specialized care agents interacting with public safety users should be well-trained in the services and applications used by public safety, and should have access to tools providing real-time visibility into public safety personnel services, features, and devices, as well as the ability to modify those services and features real-time in the SWBN and devices.

The PSST recommends that D Block specialized care teams that interact with public safety have NIMS and ICS training to facilitate the integration of D Block care into PSST incident management procedures.

B. Local Agency Self-Care Tools

As discussed in Section VIII, Operational Control and Use of the Network, local public safety jurisdictions and agencies require the ability to access tools securely, which tools provide them with an ability to manage (view, add, delete, change) in real-time their subscribers, services and features, devices and applications, and account information.

Access controls should allow public safety personnel differentiated access to functions and hierarchy levels based upon the users' credentials. As an example, a police chief would have access and control over subscribers within his/her agency, whereas an officer in the same agency would only have access to his/her own profile and services.

C. Specialized Billing

Many public safety agencies have complex departmental accounting, and reporting structures. Billing for public safety requires systems with robust account hierarchy and billing capabilities which can be configured to mirror and support these organizations. Key requirements to support public safety accounts and billing include:

1) Hierarchical account structures with a common root account and one-to-many related subordinate accounts (tree structure).

2) Ability to allocate discounts, charges and receivables at different levels within the hierarchy.
3) Multiple (10 or more) sub-account levels within the hierarchy.
4) Sub-accounts at varying levels with distinct invoice, reporting, and receivables allocation configuration.
5) Eligibility validations for agency/jurisdiction orders including:
    a. Established contract (priority access)
    b. Established agency hierarchy
    c. Funds (Purchase Order) availability
6) Product/Pricing catalogs which support mapping to an agency's Contract Line Item Number ("CLIN").
7) Management of multi-period/multi-year Purchase Orders.
8) Multiple invoice formats (electronic, paper, alternate media such as CD-ROM).
9) Equipment-only invoices.
10) Flexible invoice periods (example: monthly, quarterly, yearly).
11) Adherence to OMB Prompt Payment Act (PPA) generally accepted proper invoice recommendations:
    a. Vendor Name
    b. Invoice Date
    c. Payment terms
    d. Contract / PO / Account Number
    e. Detail description of all charges including CLIN

D. Data, Reports, and Analytics

In support of the numerous requirements described in this document for capacity forecasting and performance/service assurance monitoring, the D Block operator will require robust data warehouse and business analytics capabilities. Systems must provide for data retention and data details as needed to achieve the PSST data and reporting requirements. Data envisioned by the PSST to fulfill its functions includes:

1) Public safety user account, subscriber, and service/feature profile data.
2) Public safety usage data.
3) Incident and emergency records and logs.
4) Network event and alarms.
5) Network capacity and utilization statistics.
6) Network coverage data.
7) Public safety application data (subscriptions, usage, event activity).
8) Data is geographically sensitive, must have geographic identifiers allowing for analysis based upon location(s): National, regional (*e.g.,* FEMA regions), state, county, city, township, parish, zip code, cell, sector.
9) Timing and delivery details to be established during NSA negotiation.

E. Support Systems Security

As part of standard operations, the D Block operator should collect and store public safety user identity, contact information, and usage data which could be used to infer

broadband wireless service utilization, location and work patterns for public safety personnel. It is expected that the data security requirements for the D Block operator's back-office support systems may be more stringent than the commercial standard in place for some Business Support Systems ("BSS") and operations. Industry security standards such as PCI, OSI-27001, NIST 800-53 and ITU-T X-805 provide guidance on the physical, logical and application level security and access controls which may be required for the D Block operator's BSS systems and operation.

F. Support Systems Hardening

Some parts of the D Block operator's BSS solution may be involved in providing critical services to public safety. For example, provisioning, self-care, and databases which are part of the BSS solution may become an integral part of emergency incident management tools and procedures. Due to the critical nature of public safety service, components of the BSS platform which are part of a critical service or system will require operational performance and availability SLAs above what is the traditional commercial standard for back-office BSS systems and operations.

ATTACHMENT D

Public/Private Shared Wireless Broadband Network

Coverage Analysis

June 20, 2008

Public/Private Shared Wireless Broadband Network Coverage Analysis

June 20, 2008

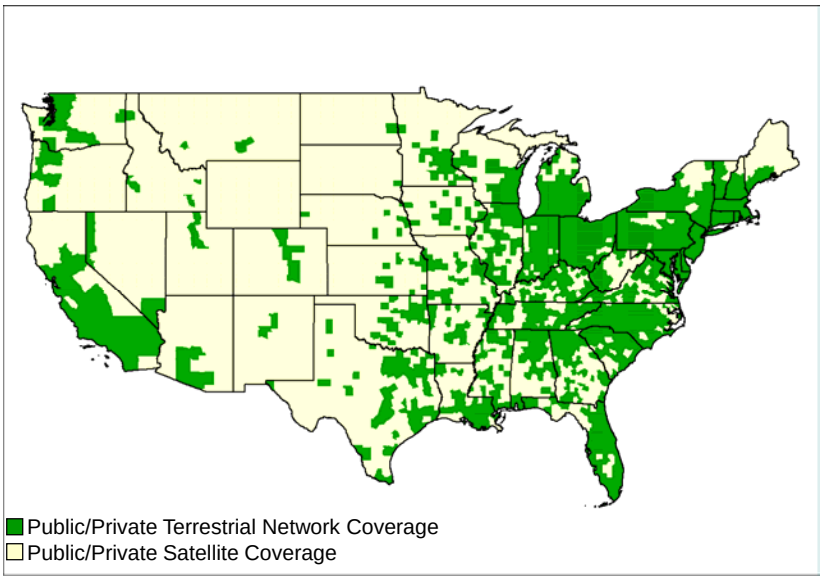
Network Population Coverage Reduction Impacts

Percent Covered		Total Covered (Millions)		Reduction			Savings (Billions)		
POPs	Geography	POPs	Covered Sq. Mi.	Sq. Mi (Millions)	Sites (Thousands)	Site Count (Thousands)	RAN CapEx	Network OpEx	Total
90.0%	26.3%	281	0.93	1.26	11.5	25.5	$3.4	$3.3	$6.7
91.0%	28.2%	285	1.00	1.20	10.9	26.1	$3.3	$3.1	$6.4
92.0%	30.1%	288	1.07	1.13	10.3	26.7	$3.2	$2.9	$6.2
93.0%	32.3%	291	1.14	1.05	9.6	27.4	$3.1	$2.7	$5.9
94.0%	34.7%	294	1.23	0.97	8.8	28.2	$3.0	$2.5	$5.5
95.0%	37.4%	297	1.33	0.87	7.9	29.1	$2.9	$2.3	$5.1
96.0%	40.6%	300	1.44	0.76	6.9	30.1	$2.6	$2.0	$4.6
97.0%	44.6%	303	1.58	0.62	5.6	31.4	$2.1	$1.6	$3.7
97.5%	47.0%	305	1.66	0.53	4.8	32.2	$1.8	$1.4	$3.2
98.0%	50.1%	306	1.77	0.42	3.8	33.2	$1.4	$1.1	$2.5
98.5%	53.9%	308	1.91	0.29	2.6	34.4	$1.0	$0.7	$1.7
99.0%	58.0%	309	2.05	0.14	1.3	35.7	$0.5	$0.4	$0.9
99.3%	62.0%	310	2.19	0.00	0.0	37.0	$0.0	$0.0	$0.0

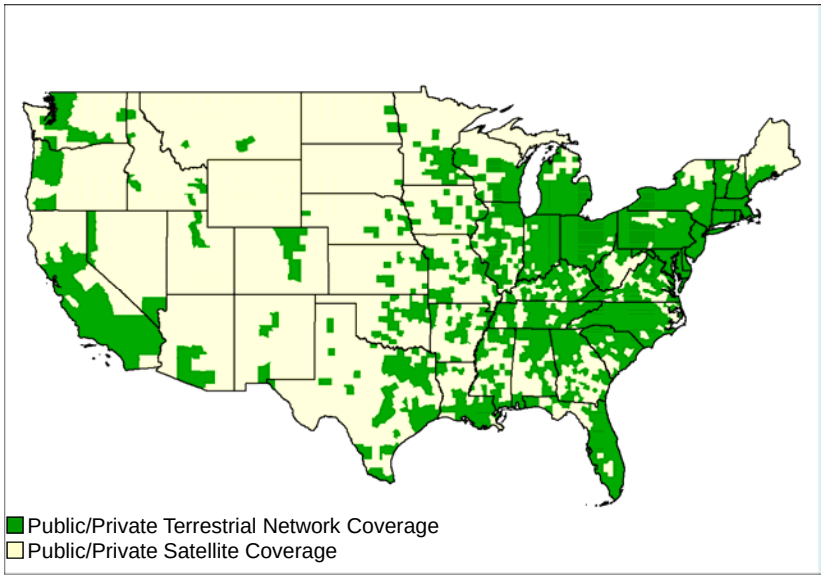
Note:

- 2010 basis for population figures
  - 312.6 million total U.S. population
  - 3,540,896 total U.S. square miles
- RAN: Radio Access Network
- Based on network deployment timeline, network OpEx savings, on average, are only for three years of operations

90% Population Coverage



91% Population Coverage



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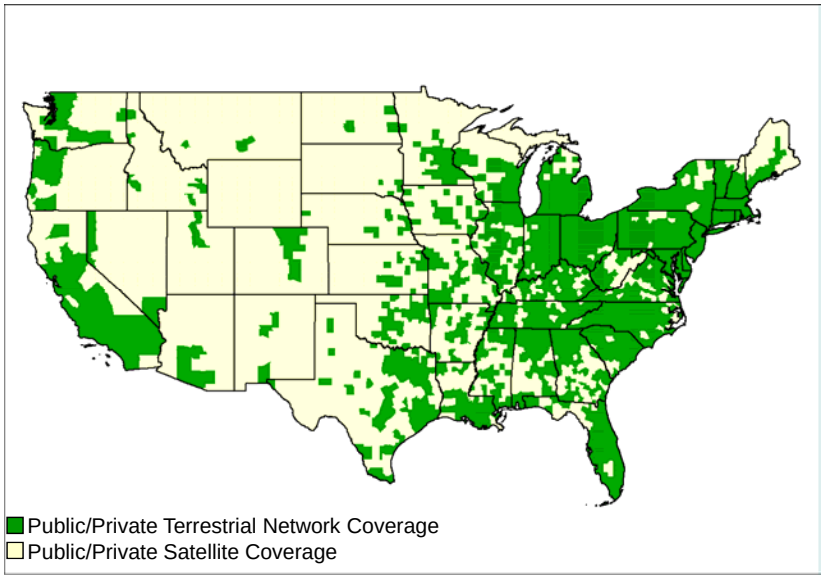
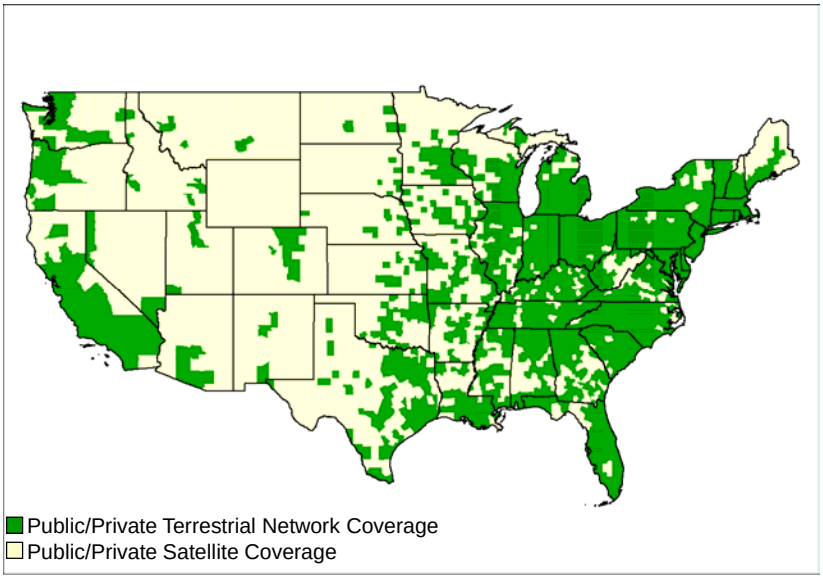
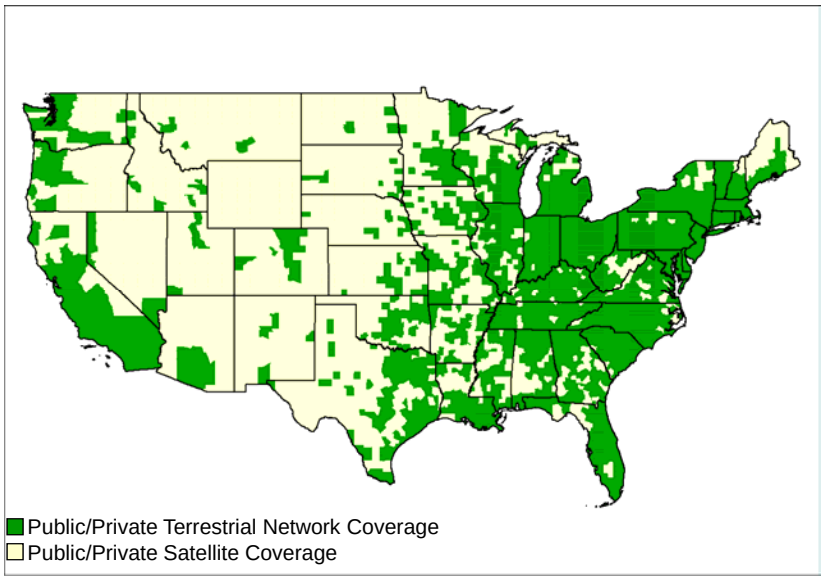


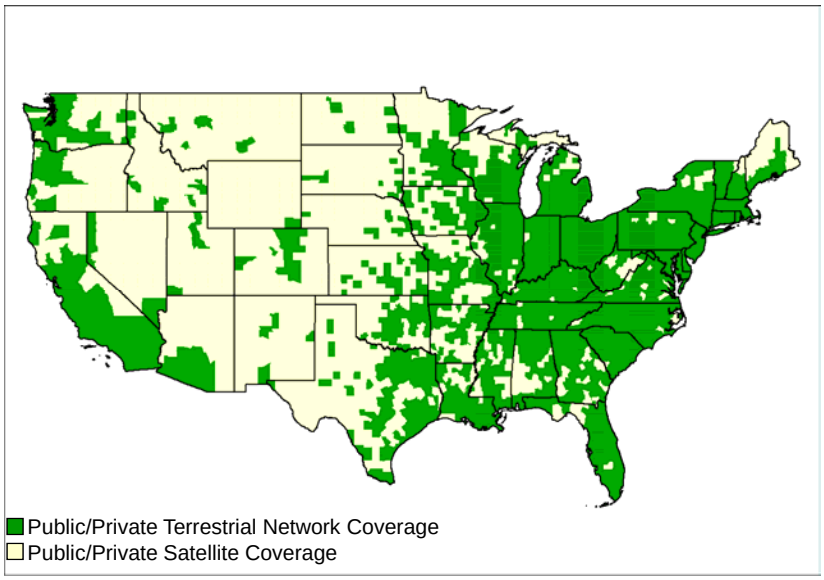
93% Population Coverage



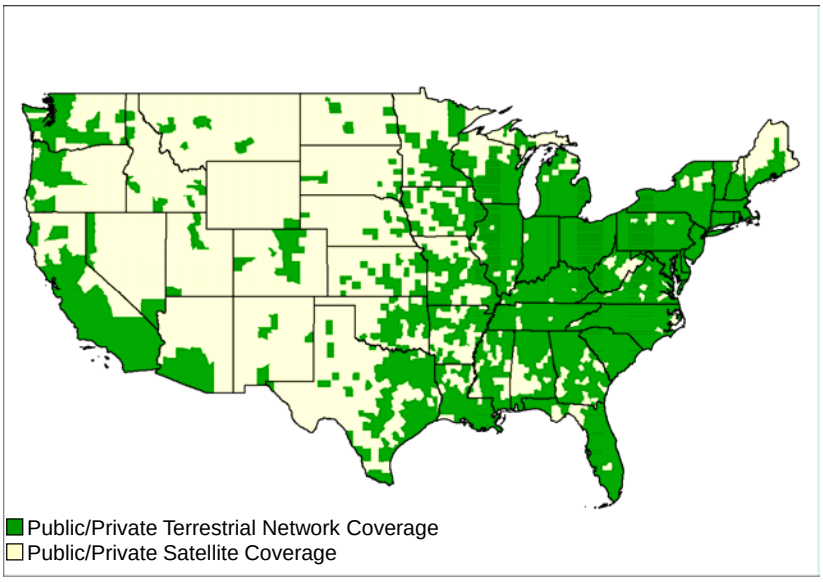
94% Population Coverage



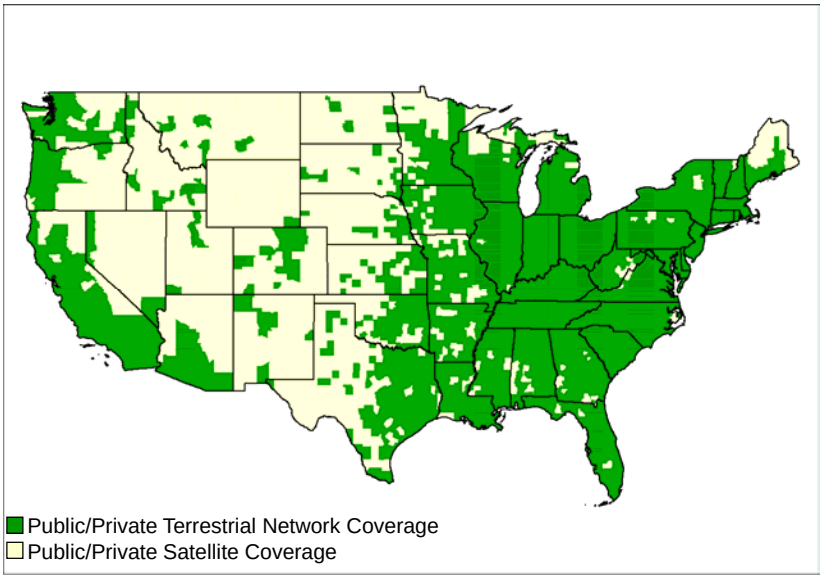
95% Population Coverage



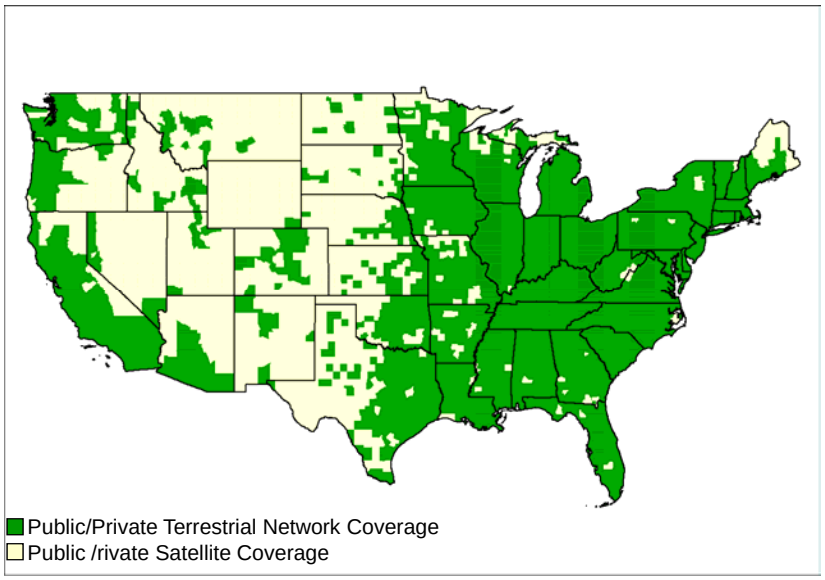
96% Population Coverage



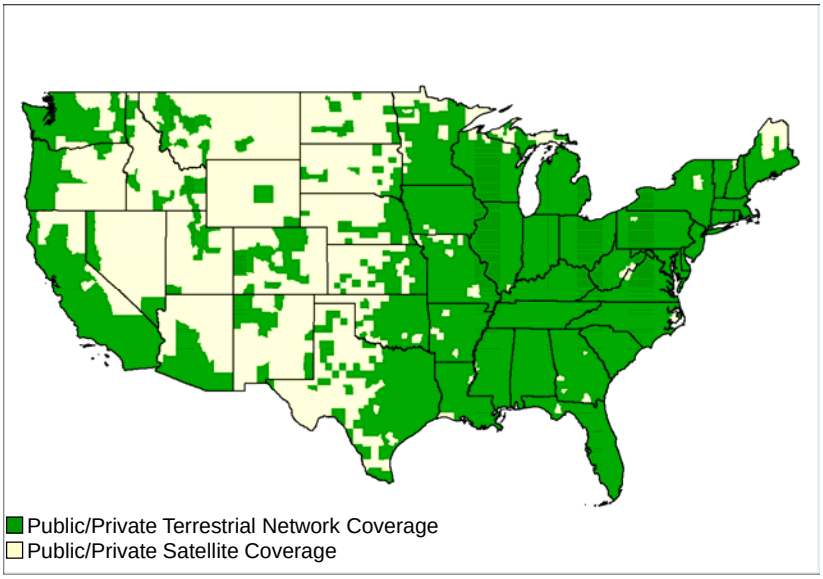
97% Population Coverage



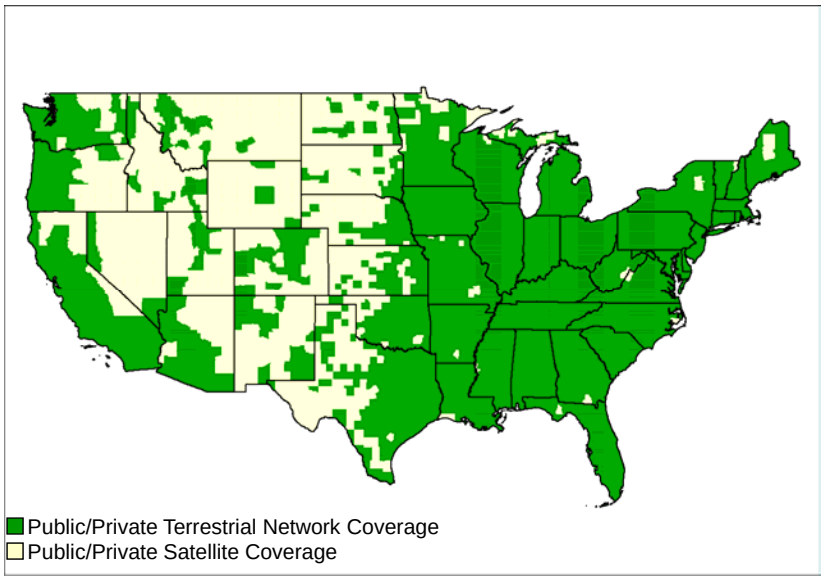
97.5% Population Coverage



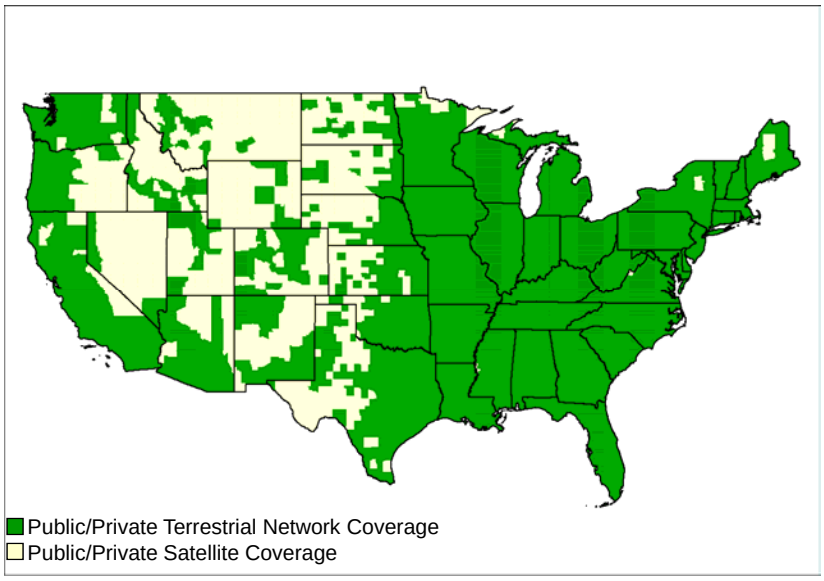
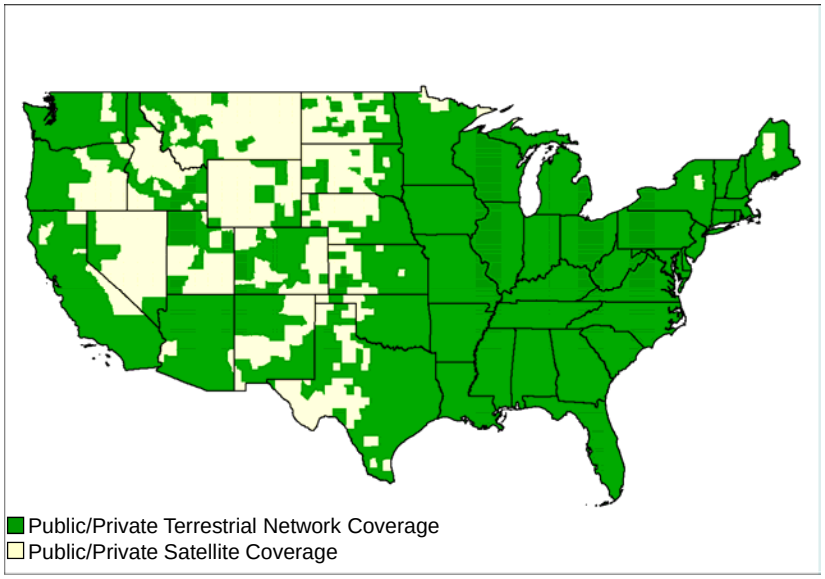
98% Population Coverage



98.5% Population Coverage



99% Population Coverage



99.3% Population Coverage