

**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
)	

Reply Comments of the Public Safety Spectrum Trust Corporation

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July 7, 2008

EXECUTIVE SUMMARY

The Public Safety Spectrum Trust Corporation (“PSST”), pursuant to Section 1.415 of the Federal Communications Commission (“FCC”) Rules, 47 C.F.R. § 1.415, respectfully submits these Reply Comments in the above-referenced proceeding.¹

Commenters representing the wireless industry, equipment manufacturers, and the public safety community have expressed broad support for the Public/Private Partnership to address long term public safety communications needs. Indeed, the overwhelming majority of commenters recognize that the Public/Private Partnership is the only realistic hope for addressing public safety needs. The PSST agrees that the current challenge is to modify the rules in such a way as to encourage a successful partnership.

The record makes clear that modifying the rules to reduce uncertainty about the relationship between the PSST and the D Block operator can produce a successful auction. The PSST has responded to the need for greater certainty by developing a revised Technical Analysis filed with its Comments and corresponding draft rules attached to these Reply Comments. The PSST has refined its expectations to better calibrate the commercial and public interests with respect to build-out, priority access, and its relationship with users of the Shared Wireless Broadband Network (“SWBN”). Most importantly:

- The PSST recommends extending the FCC license term for the D Block winner from 10 to 15 years and that the population coverage benchmarks be extended consistent with that longer license term. The PSST supports reducing the 10-year coverage requirement to 98%, with 99.3% population coverage a longer-term objective, but not a requirement.

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) (“Second FNPRM”).

- The PSST believes public safety priority access during emergency situations should be limited to 70% of total network capacity and that public safety preemption rights should not exceed 50% of the network capacity.
- The PSST will modify its anticipated relationship with public safety users so as to only undertake those functions that do not duplicate or intrude into the D Block operator's activities.

Contrary to the suggestions made by a few commenters, the FCC should refrain from adopting a "Request for Proposal" ("RFP") approach to build the SWBN. These commenters have not demonstrated that an RFP process would offer public safety users anything beyond the commercial services already available today. In addition, a Request for Proposal approach would require additional Congressional action and would further delay the deployment of an advanced technology, nationwide, interoperable public safety network.

The PSST also believes that the Commission should encourage participation in the auction by consortia and joint ventures. The PSST disagrees, however, with those parties that recommended issuing multiple licenses for the D Block spectrum based on regional or smaller geographic areas, as this could undermine the primary goals of ensuring the deployment of a nationwide, interoperable network, and might dramatically increase the transaction and administrative costs to be borne by the PSST. In addition, the SWBN must properly balance the requirements for nationwide interoperability with the essential need for local control of public safety operations.

In order to ensure successful deployment of the SWBN, the FCC should reaffirm the current Public Safety Broadband Licensee ("PSBL") structure and its approval of the PSST as the PSBL. The invaluable contributions of the PSST have been recognized by a broad range of commenters. The record also makes clear that a nationwide public safety

network needs a consistent funding source. Although the PSST agrees with those who suggest federal government funding would be the optimal means for supporting the SWBN, it is extremely unlikely that such funding will become available in the immediate future. Because of this, the Commission should allow the PSST, as the PSBL, to secure ongoing funding through spectrum lease payments from the D Block licensee and through modest usage fees from public safety users.

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Reply Comments of the Public Safety Spectrum Trust Corporation

The PSST, as the FCC-authorized PSBL, is pleased to note that there is broad support in the record for the Public/Private Partnership and for some refinements to the D Block rules in order to construct an interoperable, nationwide SWBN. On the basis of this support, the FCC has an opportunity to ensure a successful 700 MHz SWBN by making minor modifications to current technical requirements, build-out rules, and auction rules. Although some parties disagree on the scope of licensing and eligibility requirements and specifics concerning the funding of the network, these issues can be resolved by the FCC in a manner that fulfills its overarching goals in this proceeding, without adding uncertainty or delay to the process.

The PSST is confident that the Commission will – in each of these considerations – choose the path that is consistent with the goals it has embraced in this proceeding, the promotion of the “rapid construction and deployment of a nationwide, interoperable broadband public safety network”² and with its primary statutory obligation to adopt rules that promote the safety and security of the public.³ As the PSST emphasized in its Comments, achieving this objective through the implementation of the SWBN will require a complementary relationship between the PSST and the D Block licensee, one that is properly balanced to provide the maximum benefits to both parties. These views have been echoed by a broad range of commenters in this proceeding.

To that end, the PSST has prepared draft rules covering technical and operational aspects of the SWBN (Attachment A). The Commission has announced already that it intends to adopt another Further Notice of Proposed Rulemaking in which it will present proposed rules for public comment based on the record compiled in this stage of the proceeding.⁴ The draft regulations provided herein are intended to detail the PSST’s preferences with respect to these matters so that interested parties, including potential D Block bidders, can provide meaningful comments on those preferences at the earliest possible opportunity. If valid concerns are raised and it is demonstrated that an alternative approach in any particular area would better serve the Public/Private Partnership arrangement, the PSST will work cooperatively with the Commission and commenting parties in support of final rules that are consistent with the FCC’s objectives and the public interest. The importance of these rules cannot be overstated, as they will

² *Id.* at ¶ 1.

³ 47 U.S.C. § 151.

⁴ Second FNPRM at ¶ 7.

guide the negotiation of the Network Sharing Agreement (“NSA”) between the PSST and the D Block auction winner.

I. THE RECORD CONFIRMS THE NEED FOR A PUBLIC/PRIVATE PARTNERSHIP TO ADDRESS LONG-TERM PUBLIC SAFETY COMMUNICATIONS REQUIREMENTS

A. There is Substantial Record Support for the Viability of a Public/Private Partnership

An overwhelming majority of the commenters supports the Public/Private Partnership as the only realistic hope for addressing essential public safety requirements.⁵ Many of these commenters offer suggestions for modifying the rules governing the Public/Private Partnership. A few commenters offer major revisions to the proposed arrangement. In general, however, the majority of parties agree that with certain changes, the D Block can be an attractive and viable commercial opportunity. For example, Sprint Nextel noted that the Commission could make “modest adjustments” to some of the D Block licensee requirements, and that this would promote greater participation in the

⁵ See, e.g., AT&T Inc. (“AT&T”) Comments at 1 (“AT&T believes that a carefully-designed Public/Private Partnership...provides the best path to developing a nationwide interoperable broadband network for state and local public safety users.”); Northrop Grumman Information Technology, Inc. (“Northrop Grumman”) Comments at i (“The Commission’s initial attempt at auctioning the D Block as part of the public/private partnership was unsuccessful due to a number of uncertainties that created unbounded and untenable commercial risk for the D Block winner – uncertainties that can be meaningfully reduced through changes to the Commission’s framework, leading to a re-auctioning of the D Block with the partnership obligation.”); Alcatel-Lucent Comments at 2 (“As the Commission revisits the rules for a 700 MHz public/private partnership, it is clear that the challenges are substantial – but surmountable.”); Sprint Nextel Corporation (“Sprint Nextel”) Comments at 9 (“While Auction 73 was not ultimately successful in licensing the D Block, the Commission was ‘on the right track’ in adopting most of the D Block conditions. No radical departure from these public-safety elements is required to make the Commission’s proposal economically viable.”); Google Inc. (“Google”) Comments at 2 (“Although one key component of the Public/Private Partnership – the auction of the 10 MHz D Block spectrum – remains to be completed, the goals of the Public/Private Partnership remain laudable and, Google believes, obtainable”); Council Tree Communications, Inc. (“Council Tree”) Comments at 3 (“If the Commission adopts D Block rules that are supportive of new entrants, then it will create a clear and viable pathway for new D Block license bidders to emerge with strong management teams, rational D Block business plans, strategic partnership, and the necessary capital.”); Ericsson Inc. (“Ericsson”) Comments at 3 (“The public-private partnership, if properly structured, will provide the economic basis for constructing and operating a Shared Wireless Broadband Network.”).

auction.⁶ In addition, AT&T supported the Public/Private Partnership, noting that the partnership “could offer valuable and unique business opportunities for commercial partners.”⁷

Despite the overwhelming support for the Public/Private Partnership, a few parties claim that the FCC’s proposed partnership between commercial and public safety interests cannot succeed. These parties – primarily commercial wireless operators – would prefer that the D Block be reauctioned without public safety obligations.⁸ While their interest in acquiring additional spectrum is clear, the Commission should discount this argument in light of the wide-ranging endorsements for the Public/Private Partnership and the dire need for a nationwide, interoperable SWBN. The Commission has recognized both the need for a nationwide, interoperable public safety network and the reality that the Public/Private Partnership is the only practical solution for its construction. Further, commenters from the wireless industry, equipment manufacturers, and the public safety community alike support the notion that such an arrangement is both necessary and feasible. Thus, the challenge for the FCC (and for the PSST, an organization committed to the successful deployment of the SWBN) is determining how best to modify the current rules, consistent with the record in this proceeding, to provide both public safety and commercial interests with the opportunities and protections needed for a successful partnership.

⁶ Sprint Nextel Comments at 18.

⁷ AT&T Comments at 1.

⁸ *See, e.g.*, Verizon Wireless (“Verizon”) Comments at 5-6; Rural Telecommunications Group, (“RTG”) Comments at 4. Motorola, Inc. (“Motorola”) takes the position that the partnership cannot succeed without direct government funding, funding that is not now or likely to be made available. Motorola Comments at 4-6, 12.

B. No Federal Government Appropriation Has Been Made Available to Finance a Nationwide Broadband Public Safety Network

A decade ago, the FCC determined that public safety had a critical requirement for additional capacity to satisfy long-term public safety communications needs.⁹ In 2001, the country saw the consequences of inadequate public safety communications when emergency responders were unable to communicate with one another effectively during the horrors of 9-11. Almost three years ago, those same deficiencies were thrown into stark relief during the chaos following Hurricane Katrina. Only months later, the FCC reported to Congress that “Without adequate funding . . . it is likely that public safety would be unable to implement a nationwide, interoperable broadband network.”¹⁰ Each of those milestone events took place during a period of unprecedented prosperity in the United States, when the national will could and should have dictated that the Federal Government make funds available for the initial deployment and continued operation of a nationwide interoperable broadband public safety network.

While a committed and continuous governmental funding source would have been the optimal means for financing the network envisioned by the FCC and urgently needed by the nation’s emergency first responders,¹¹ no such funding has ever been appropriated, despite the efforts of the public safety community.¹² Stalwart supporters of public safety

⁹ See Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communications Requirements through the Year 2010, WT Docket No. 96-86, *First Report and Order and Third Notice of Proposed Rulemaking*, 14 FCC Rcd 152 (1998).

¹⁰ See Report to Congress on the Study to Assess the Short-Term and Long-Term Needs for Allocations of Additional Portions of the Electromagnetic Spectrum for Federal, State and Local Emergency Response Providers, WT Docket No. 05-157 at ¶ 30 (Dec. 16, 2005).

¹¹ The PSST has explained previously that adequate funding means not only sufficient monies to deploy a nationwide broadband network, but the funds to operate, maintain and upgrade it so that it remains technologically current.

¹² Congress did appropriate \$1 billion from the 700 MHz auction proceeds for interoperability purposes. See Deficit Reduction Act of 2005, Pub L. No. 109-171, § 3006, 120 Stat. 4 (2006) (codified as amended at

interests such as Senator John McCain and Representative Jane Harman both have introduced legislation addressing future public safety communications needs and the funding to support them, but neither bill has attracted meaningful support.¹³ In fact, the FCC's recognition of the absence of governmental funding was the primary basis for the Commission's conclusion that a Public/Private Partnership represented the only realistic model for meeting these critical public safety needs, a conclusion that remains valid today.

C. The Rules Governing the Public/Private Partnership and the Balance of Interests Can Be Improved in Several Material Respects

The record makes it clear that reducing uncertainty about public safety expectations and about the relationship of the PSST and D Block operator may be the most critical factor in establishing the framework for a successful D Block auction.¹⁴ Most commenters support the general proposition that the Commission should adopt modifications to the Public/Private Partnership approach that increase certainty while avoiding those that reduce it. The record also suggests that there is broad support for adoption of technical and operational rules in advance of the auction.

The PSST continues to believe that greater certainty unquestionably is required, provided that it also promotes the correct balance between public safety and commercial interests. Indeed, achieving that balance will be the cornerstone of a successful Public Safety/Private Partnership. The SWBN must provide emergency responders with a level

47 U.S.C. § 309). Of course, the PSST would welcome future governmental appropriations for advanced public safety communications.

¹³ See Public Safety Broadband Authorization Act of 2008, H.R. 6055, 110th Cong. (2008); and Spectrum Availability for Emergency-Response and Law-Enforcement to Improve Vital Emergency Services Act, S. 744, 110th Cong. (2007).

¹⁴ AT&T Comments at 8-9; Google Comments at 5-7; Leap Wireless Comments at 10.

of service consistent with their operating requirements, while also providing a viable economic opportunity for the commercial D Block partner.

The PSST first developed a revised Technical Analysis as part of its Comments in this proceeding.¹⁵ That analysis addressed certain of the concerns expressed by potential D Block bidders and made responsive adjustments to public safety SWBN expectations where appropriate. The PSST also included in its Comments a Public/Private SWBN Financial Summary that described a business model for the partnership arrangement.¹⁶ The comments in response to the Second FNPRM provided additional valuable input on certain elements of the partnership arrangement. The PSST has considered those comments, made further refinements to its SWBN expectations, and distilled its current preferences into the draft rules set out in Attachment A. The PSST believes that the proposed regulations represent an appropriate recalibration of commercial and public safety interests, including the following modifications governing build-out, priority access, and its relationship with SWBN users:

- The PSST has recommended that the D Block winner’s FCC license term be extended from 10 to 15 years, that the population coverage benchmarks be extended consistent with that longer license term, and that the FCC adopt a reduced 10-year coverage requirement of 98%, with 99.3% population coverage identified as a longer-term objective, but not a requirement. While the specific proposals vary, there is substantial support in the Comments for a longer license term.¹⁷
- The PSST has recommended that public safety priority access during emergency situations should be limited to a maximum of 70% of total network capacity and that public safety preemption rights during emergencies should be limited to no more than

¹⁵ See PSST Comments, Attachment C.

¹⁶ See *id.*, Attachment A.

¹⁷ See, e.g., Association of Public-Safety Communications Officials-International, Inc. (“APCO”) Comments at 30; Ericsson Comments at 26-27; Leap Wireless International, Inc. Comments at 11-12; National Emergency Number Association (“NENA”) Comments at 2; Wirefree Partners III, LLC (“Wirefree”) Comments at 15.

50% of network capacity, an amount equal to the percentage of spectrum contributed by the PSBL to the SWBN.¹⁸

➤ The PSST has sharply curtailed the scope of its anticipated relationship with public safety users requiring priority access on the SWBN. In fulfilling its responsibility to see that the needs of those users are properly served on the network, the PSST will undertake only those functions that do not duplicate or intrude into the D Block operator's activities.¹⁹

The PSST reiterates here that the rules governing the Public/Private Partnership must represent an appropriate balance of both public safety and commercial interests. The PSST is committed to working with the FCC and other parties to ensure that the regulatory framework for this partnership and the NSA negotiated by the PSST and the D Block winner pursuant to those rules achieve that balance.

II. THE USE OF REQUESTS FOR PROPOSALS IS NOT A MEANINGFUL ALTERNATIVE FOR THE SWBN

Verizon Wireless ("Verizon") has declared the D Block approach as "fundamentally – and fatally – flawed."²⁰ Indeed, it stated that the investment required to build a SWBN to public safety specifications outweighs the value of the D Block spectrum by so much that the approach would not be workable even if the D Block spectrum were given away for free.²¹ Verizon has urged the FCC to abandon its proposal and instead "undertake a comprehensive evaluation of public safety's communications needs and... re-examine whether the D Block national partnership approach remains the

¹⁸ Contrary to Motorola's warning that public safety-related video applications could "easily exhaust the excess capacity in the 10 megahertz public safety block rendering it of little value to the D-Block commercial use," the PSST hereby assures the FCC that the public safety community is ready, willing and eminently able to adopt appropriate mechanisms for regulating public safety utilization on the SWBN consistent with its Public/Private Partnership obligations. *See* Motorola Comments at n. 6.

¹⁹ *See* PSST Comments at 8-17.

²⁰ Verizon Comments at 4.

²¹ *Id.*

best way to ensure that our nation's first responders have access to the communications systems they need on a timely and nationwide basis."²²

The PSST disagrees with Verizon's assessment of the Public/Private Partnership approach as do many other commenters in this proceeding. Verizon's recommendation that the FCC initiate another study of public safety spectrum requirements, despite the Commission's recent, thorough analyses of this very issue,²³ is unnecessary, unacceptable, and would undermine public safety interests. The public safety community needs a solution – not additional studies – and the Public/Private Partnership is the only approach that promises an economically viable, sustainable, interoperable nationwide network that will meet advanced public safety communications requirements.

Moreover, Verizon's conclusion cannot be reconciled with its recommendation that the FCC use a process involving RFPs in lieu of a D Block auction to address this situation. Specifically, having discounted any possibility that a commercial operator would build to public safety specifications even if awarded the D Block license at zero cost, Verizon suggests that an RFP approach would be more effective than an encumbered D Block auction in promoting partnerships between commercial operators and public safety agencies.

The PSST is willing to consider any reasonable recommendations that have the potential of facilitating implementation of a 700 MHz Public/Private Partnership, but the suggestions advanced by Verizon would not have that result. Even ignoring Verizon's

²² *Id.* at 2.

²³ As Verizon undoubtedly is aware, the FCC undertook a comprehensive review of public safety requirements as recently as December 2005. *See* n. 10 *supra*. The results of that report were significant in the Commission's decision to adopt a Public/Private Partnership approach. There is no basis for suggesting that those needs have diminished in the intervening years or for delaying addressing them to develop what most certainly would be a report reaffirming public safety requirements.

blithe acknowledgement that both of its recommended approaches would require Congressional action, the PSST fails to understand how Verizon can reconcile its suggestions with its position on the economics of such a partnership.

The first alternative, whereby the proceeds of an unencumbered D Block auction would be given to public safety, might make approximately \$2 billion available to the PSST to deploy interoperable communications solutions.²⁴ Verizon itself must agree that this amount would be far less than adequate to build, operate, maintain and refresh a nationwide broadband public safety network, having claimed that even the incremental cost of building a commercial system to public safety specifications would exceed \$20 billion.²⁵ Verizon's second alternative would have the FCC reallocate the D Block to public safety. But this plan offers no greater hope for success under Verizon's own analysis. If Verizon is correct in concluding that a commercial entity would not build to public safety requirements even if that entity was given the D Block spectrum for free (a conclusion with which the PSST strongly disagrees), why would the same commercial entity be motivated to enter into a partnership with the PSST for deployment of that same network if the D Block spectrum is allocated to the PSST? The PSST would, of course, welcome a reallocation of the D Block spectrum from commercial to public safety use. However, even if that option was feasible, the allocation of more spectrum without access to the monies Verizon claims are required to attract a commercial partner is no solution at all.

²⁴ The proceeds from an unencumbered D Block auction are not likely to exceed the proceeds of the 22 MHz C Block on a *pro rata* basis.

²⁵ Verizon Comments at 8. Although Verizon's Comments could be read to suggest that this \$20 billion is the incremental cost of building a 700 MHz network to public safety specifications, that would be a dramatic increase from the much smaller estimate Verizon has used in other venues. See *SGA Task Force: Achieving Interoperability for Public Safety Communications*, Response of Verizon Communications and Verizon Wireless (March 16, 2007).

AT&T also has proposed an RFP component to the Public/Private Partnership, but its proposal is fatally flawed as well because it is entirely dependent on Federal legislation.²⁶ AT&T has recommended that the FCC issue the D Block license to the PSBL and require the PSBL to lease that spectrum on a regional basis to commercial operators selected through an RFP process. The operators selected by the PSBL in each area would be required to build and operate a broadband network to public safety specifications and would thereby secure the right to use both the D Block and the PSBL 700 MHz spectrum for commercial purposes.²⁷

AT&T has acknowledged that Congressional action would be required to implement its recommendation, but has concluded that “given the urgent need for an interoperable broadband network for state and local users, members of Congress will move quickly to pass such legislation.”²⁸ This suggestion appears far too optimistic, particularly in light of the impending change in administration and perhaps even in the party inhabiting the White House.

III. THE SWBN MUST BE NATIONAL IN SCOPE, WHILE REMAINING RESPONSIVE TO LOCAL REQUIREMENTS

A. The D Block License Should Be Issued as a Single Nationwide Authorization

One of the foundational aspects of the SWBN is its national scope. The Commission determined correctly that this network must be a single nationwide system if it is to fulfill a primary objective of facilitating interoperability among emergency

²⁶ AT&T Comments at 6-7.

²⁷ *Id.* This proposal is effectively identical to the Petition for Rule Making filed by Cyren Call Communications Corporation (“Cyren Call”) in April 2006, a Petition that was opposed by virtually all incumbent commercial wireless operators.

²⁸ AT&T Comments at 7.

responders.²⁹ Both the authorization issued to the PSST is for nationwide use of the 700 MHz broadband public safety spectrum, and the license issued to the PSST's partner, the winning bidder for the D Block spectrum, must be for nationwide authority. However, the PSST is mindful that an undertaking of this size might require more than a single entity to achieve success. For that reason, the PSST recommended in its Comments that the FCC encourage the development of consortia or joint ventures to bid on the D Block spectrum.³⁰ This approach also was endorsed by parties such as Wirefree as a sensible means of tackling a project of daunting scale, cost and complexity.³¹

The PSST disagrees with the commenters that recommended issuing multiple licenses for the D Block spectrum based on regional or even smaller geographic areas.³² While it might theoretically be possible for the PSST to negotiate an individual NSA with each of a multiplicity of D Block auction winners and thereafter ensure that those entities knit together a so-called "network of networks" that is fully consistent with the nationwide interoperability standard, that approach would dramatically increase the complexity of the PSST's responsibilities and, therefore, the cost of fulfilling them. The far better approach is the one adopted by the FCC, which provides for a single D Block auction winner, a single NSA negotiation process, and the deployment of a cohesive, integrated nationwide SWBN.³³

²⁹ In the Matter of 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 at ¶ 366 (2007) ("Second R&O").

³⁰ See PSST Comments at 38-39.

³¹ Wirefree Comments at 12.

³² See, e.g., AT&T Comments at 24-25; Cox Communications, Inc. Comments at 5-7; Verizon Comments at 29-32.

³³ However, the PSST has had discussions with wireless operators who have made a case for regional D Block licenses. The PSST Board has not had an opportunity to consider their arguments sufficiently to determine whether a regional licensing approach could, under appropriate conditions, satisfy the operational and administrative requirements of public safety, in particular the overriding need to provide

In an effort to balance the need for a single initial D Block licensee and the reality that the successful licensee might well be a consortium of individual companies with distinct geographic interests, the PSST has given further consideration to the current prohibition against post-auction license partitioning.³⁴ The critical issue for public safety is that the SWBN be deployed on a national scale. Once that mission is accomplished, and the processes for managing the PSST-D Block relationship have been established and tested over time, it is less important that the D Block remain a single, nationwide authorization.³⁵

B. The SWBN Must Provide for Nationwide Interoperability as Well as Local Control of Public Safety Operations

The Commission established the composition of the PSST Board of Directors for the dual purpose of ensuring that the organization would reflect a broadly representative perspective on the overall SWBN while also providing appropriate levels of local, state and regional public safety user control over operations on the SWBN within their respective jurisdictions. The member organizations of the PSST's Board are fully mindful of that dual responsibility. While each organization has a national presence and a commitment to deployment of a nationwide, interoperable network, their constituent members are among the very public safety entities that will determine how the capabilities of the SWBN can be implemented most successfully at the local level.

nationwide interoperability on the SWBN. Nonetheless, the Board believes these discussions should continue to determine if there are regulatory provisions that would guard against a D Block auction that left any substantial number of markets unsold, but that would promote robust auction participation by the greatest possible number of qualified bidders.

³⁴ 47 C.F.R. § 1333(a).

³⁵ If the FCC decides to consider the future partitioning of the D Block license, any such consideration should remain focused on a key objective of this proceeding – nationwide interoperability for emergency response providers. Thus, no partitioning should be permitted prior to substantial deployment of the SWBN and approval must be conditioned on PSST concurrence.

There is no question that the PSST recognizes the ongoing need for coordination and cooperation with public safety organizations and agencies that have direct responsibility for communications operations. It is particularly pleased that the Regional Planning Committees (“RPCs”) that have played such an integral role in public safety use of both the 800 MHz and 700 MHz bands have formed the National Regional Planning Council (“NRPC”). This organization will provide an effective and efficient conduit for the exchange of information needed to properly balance local and national requirements.

The PSST previously met with representatives of the NRPC and indicated its willingness to develop a more formal relationship with the NRPC at such time as the FCC adopts its final rules so that that the initiative moves forward and funding is available to support such a relationship. The PSST is committed to continuing its dialogue with local, state, and regional public safety representatives.

Although the PSST considers local input invaluable in ensuring that the SWBN is responsive to the requirements of individual jurisdictions, it must respectfully disagree with the small number of local jurisdictions that opposed the nationwide PSBL concept and suggested that 700 MHz broadband spectrum should be assigned to and/or controlled by local and/or state agencies.³⁶ Their comments highlight the very issue that the PSBL is intended to resolve: the need for at least one public safety allocation that can be used to deploy a network that is overseen and funded on a national basis so that emergency responders throughout the country have access to advanced communications capabilities and an ability to communicate with one another during emergencies. The PSST disagrees with the New York City Police Department’s assessment that “New York City will not

³⁶ See, e.g., New York City Police Department Comments at 5-7; City and County of San Francisco Comments at 2-10; City of Philadelphia Comments at 5-7.

benefit from the 700 MHz public safety broadband spectrum,”³⁷ and believes that the SWBN will bring many benefits (not the least of which is wide-area interoperability and economies of scale with respect to equipment procurement).

More importantly, the organizations that have sent their representatives to participate on the PSST Board recognize that solving the problem of interoperability cannot be left to the decisions of individual jurisdictions or agencies; it must be defined at the national level, while leaving to local public safety the same operational responsibilities that they carry out so successfully on their individually operated mission-critical voice systems.³⁸ These organizations believe that public safety officials throughout the country must have access to the advanced capabilities that will be essential to fulfilling their missions in the future, not just officials in areas that are able to secure funding to deploy technologically advanced facilities. The Public/Private Partnership established by the FCC represents the best, indeed in the PSST’s opinion the only, approach that will permit the public safety community in this country to achieve these absolutely essential goals of interoperability and improved capabilities.

IV. THE FCC SHOULD REAFFIRM THE CURRENT PSBL STRUCTURE AND ENSURE A FUNDING MECHANISM

In response to questions raised in the Second FNPRM, a wide range of commenters endorsed the basic structure of the PSBL and applauded the work of the

³⁷ New York City Police Department Comments at 4.

³⁸ The PSST strongly disagrees with Motorola’s position that the best nationwide public safety network is one that is deployed on a regional and local level (*see* Motorola Comments at 15-17), but the PSST understands that such an approach could be preferable for a vendor that has maintained a very substantial market share in the public safety community by selling individual systems that often use proprietary technology to jurisdictions and agencies throughout the country.

PSST in fulfilling its many responsibilities as the PSBL.³⁹ The PSST is pleased that its efforts have met with approval from the great majority of parties both within and outside of the public safety community. The time, energy and resources contributed by its volunteer Board have been extraordinary and is entirely reflective of the Board members' individual commitments to this momentous undertaking. Based on this broad approbation of the PSST's work to date, and to avoid adding uncertainty to an area where greater certainty has been demanded by virtually all parties, the PSST urges the FCC to reaffirm the basic structure of the PSBL and its approval of the PSST as the PSBL.

Despite the PSST's accomplishments, certain actions could enhance the PSST's effectiveness. For example, one organization with a designated Board representative (with support from one other organization represented on the Board)⁴⁰ has called for greater transparency in the PSST's processes.⁴¹ The PSST agrees that, for the most part, conducting open meetings is a good idea to facilitate its efforts to work cooperatively with members of the public safety community, as well as with vendors, commercial operators, and other parties, and believes that appropriate changes in its procedures should be evaluated by the Board. The PSST also reiterates its recommendation that the Commission appoint a Commissioner as its *ex officio* representative to the PSST, a step

³⁹ See, e.g., Ericsson Comments at 5-6; Motorola Comments at 15; NPSTC Comments at 18-20; State of Louisiana Comments at 2; Western Fire Chiefs Association Comments at 1; Oregon State Interoperability Executive Council Comments at 1.

⁴⁰ See NENA Comments at 4-5.

⁴¹ APCO Comments at 21. APCO also made a number of other recommendations that would involve extensive revamping of the PSST and its processes. In an organization with fifteen Board representatives, it is not surprising that one of them might have a different view about how the organization should be run or even what its role should be. The PSST would note, however, that no organization represented on the Board, including APCO, and no other commenting party supported imposing a unanimity rule on the PSST. Unanimous voting requirements provide each individual Board member with negative control, and prevent an organization from functioning effectively. The super-majority voting procedures already in place for the PSST are sufficient to ensure that all voices within the PSST are heard even if their positions are not necessarily adopted.

that can only improve the communications between the FCC and the PSBL that it created.⁴² The overwhelming majority of the PSST Board does not agree with comments from two organizations participating in the PSST that the “three-person executive committee (the chairman, vice-chairman, and secretary-treasurer) exercises a substantial degree of discretion without sufficient opportunities for input from other board members.”⁴³ In fact, all actions taken by the Executive Committee have always been authorized by the majority of the Board and the Board is consulted regularly for guidance by the Executive Committee.

The PSST opposes any change in the composition of its Board, including the possibility of including representatives from a variety of non-public safety entities. It unquestionably is beneficial to solicit input from vendors, commercial operators, technologists and other parties with expertise that could enable the PSST to make the best possible decisions on the myriad matters for which it is responsible. The PSST has sought such input throughout its existence, most recently through its participation in the recent summit sponsored by Silicon Flatirons in which the issue of next generation public safety communications requirements were addressed.⁴⁴ However, adding non-public safety members to the PSST Board would be problematic. The PSST does not believe that such representatives could be entirely objective, for example, when the PSST must: (i) negotiate the NSA with one commercial operator (who may or may not have a

⁴² For example, FCC Commissioner Cox was actively involved with the activities undertaken by the Land Mobile Communications Council during its formative years in the mid-1960s when the land mobile community was investigating a variety of means to address its communications requirements in a spectrally efficient fashion.

⁴³ APCO Comments at 22.

⁴⁴ Silicon Flatirons, A Center for Law, Technology, and Entrepreneurship at the University of Colorado, Summit on Information Policy: A Next Generation Public Safety Communications Ecosystem, June 6, 2008.

Board seat), (ii) evaluate competing equipment and application products, (iii) adopt a regulatory position, or (iv) take any number of other actions that could affect the businesses of those individuals or of their competitors.⁴⁵ Moreover, to the extent that closely associated with for-profit entities might act as officers of the PSST or otherwise be responsible for the direction of its activities, that involvement would be inconsistent with the FCC's requirement that no commercial interest be held in the PSBL and that no commercial interest participate in the management of the licensee.

There is one key administrative issue that still must be addressed – the PSST's lack of funding. The PSST recognizes that the Commission does not itself have the ability to make funds directly available for the PSST to handle PSBL obligations that arise prior to negotiation of the NSA, such as the ongoing work associated with 700 MHz narrowband relocation, preparation for and participation in the NSA negotiation, and even participation in FCC proceedings that relate directly to the SWBN and, thereby, to the PSST.⁴⁶ The importance of adequate PSST funding was described by the National Public Safety Telecommunications Council (“NPSTC”):

The Second Further Notice ignores several realities. The first is the lack of any financial support for the PSST to carry out its initial responsibilities

⁴⁵ It is difficult to reconcile APCO's admonition against allowing the PSBL to “[establish] business relationships with equipment vendors, service providers and others with a financial interest in the decisions of the PSBL” with its recommendation that individuals representing these same interests be seated on the PSBL Board. *Compare* APCO Comments at 17 and at 24.

⁴⁶ Despite commenter concerns about PSST funding, however, no commenter has provided a reasonable, achievable alternative to the interim funding source that the PSST utilized – an arms-length loan from its advisor, Cyren Call. The PSST exhausted all known alternatives before entering into that arrangement. Contrary to the wishful thinking of some parties, few non-profit organizations are willing to loan money to other non-profits (particularly those with no assets and no secure, future revenue stream). Although APCO has expressly recognized the PSBL's “extraordinary near-term, mid-term, and...long-term responsibilities,” it nonetheless has chided the PSST Board for having made the difficult, but unavoidable, decision to enter into a loan agreement with Cyren Call after it had been determined that no other funding sources were available. *Compare* APCO Comments at 16 and at 17. Commercial lenders are even less likely to loan monies under those circumstances, and none did. The PSST is eager to retire its debt at the earliest possible opportunity and urges those who have criticized the decision to enter into that arrangement to identify alternative financing sources.

and the depth of the challenge it faced in adequately preparing to meet its objectives. Those responsibilities include influencing the technical parameters of the network, attracting competitors to the D Block auction, negotiating an NSA and implementing the narrowband relocation. These are technically complex and proper results affect the credibility of the entire public private partnership endeavor...The PSBL must have the ability and the resources needed to do its job effectively – bring broadband service to the public safety community.⁴⁷

In light of those funding realities, the PSST disagrees with commenters that suggest the PSST's non-profit status also requires it to be non-revenue producing and that object to it undertaking activities relating to usage of the SWBN that generate a revenue stream.⁴⁸

The PSST previously confirmed that it would undertake only those functions that do not duplicate or intrude into the D Block operator's activities in fulfilling its responsibility to see that the needs of users requiring priority access on the SWBN are met. In addition, the PSST continues to believe that a spectrum lease payment must be included in the NSA, and modest usage fees from public safety users should be available, as envisioned by the Second R&O and supported in the record, as likely required by IRS regulations that mandate receipt of fair value by a non-profit for transfer of property to a for-profit, and as the only realistic option for ongoing funding of the PSST.

V. CONCLUSION

The nation already has waited too long for its emergency responders to have access to a nationwide, modern, interoperable broadband network. The record in response to the Second FNPRM confirms the fundamental soundness of the Commission's previous determination to adopt "a regulatory framework for establishing a public/private partnership between a 700 MHz Band commercial licensee and the

⁴⁷ NPSTC Comments at 20.

⁴⁸ See, e.g., AT&T Comments at 19.

Public Safety Broadband Licensee to further the Commission’s goal of making a nationwide, interoperable broadband network available to state and local public safety users.”⁴⁹ That decision should be reaffirmed and the rules governing the Public/Private Partnership arrangement should be clarified and balanced properly between public safety and commercial interests so that the FCC can proceed promptly with a re-auction of the D Block license. For these reasons, the PSST respectfully urges the Commission to adopt rules and policies consistent with the positions articulated herein.

Respectfully submitted,

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⁴⁹ Second R&O at ¶ 386.

ATTACHMENT A

Proposed SWBN Rules

Proposed Rules

Parts 27 and 90 of Title 47 of the Code of Federal Regulations are amended as follows:

1. The authority citation for Part 27 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 301, 302, 303, 307, 309, 332, 336, and 337 unless otherwise noted.

2. Section 27.4 is amended by adding the following definitions in alphabetical order to read as follows:

§ 27.4 Terms and definitions

* * * * *

Emergency. An Emergency is an unforeseen combination of circumstances or the resulting state that calls for immediate action, including the actual or threatened existence of conditions of disaster or extreme peril to the safety of persons and property caused by such conditions as air pollution, avalanche, drought, earthquake, epidemic, fire, flood, riot or other civil disturbance, storm, sudden and severe energy shortage, volcano, or other conditions, including conditions resulting from war or imminent threat of war.

* * * * *

Priority Public Safety User. A Priority Public Safety User is a public safety entity, or an individual employed by such an entity (1) that is (i) engaged in a service the sole or principal purpose of which is to protect the safety of life, health, or property, which service is provided by a State or local government entity, or by a nongovernmental organization authorized by a governmental entity whose primary mission is the provision of such a service; or (ii) approved by the Commission and the Public Safety Broadband Licensee as essential to the provision of such a service; and (2) that is a member of the cooperative arrangement established by the Public Safety Broadband Licensee pursuant to § 90.1403(c) for the purpose of obtaining priority access on the Shared Wireless Broadband Network.

3. Section 27.13 is amended by revising paragraph (b) to read as follows:

§ 27.13 License period

* * * * *

(b) 698-758 MHz, 758-763 MHz, 776-788 MHz, and 788-793 MHz bands. Initial authorizations for the 698-758 MHz and 776-788 MHz bands will extend for a term not to

exceed ten years from February 17, 2009, except that initial authorizations for a Part 27 licensee that provides broadcast services, whether exclusively or in combination with other services, will not exceed eight years. Initial authorizations for the 758-763 MHz and 788-793 MHz bands will extend for a term not to exceed 15 years from the later of (i) February 17, 2009; and (ii) the issuance of the Upper 700 MHz D Block license. Initial authorizations for the 775-776 MHz and 805-806 MHz bands shall not exceed January 1, 2015. * * *

4. Section 27.14 is amended by revising paragraphs (e) and (m), by redesignating paragraph (n) as paragraph (o), by revising paragraph (o), and by adding new paragraph (n) to read as follows:

§ 27.14 Construction requirements; criteria for renewal

* * * * *

(e) Comparative renewal proceedings do not apply to WCS licensees holding authorizations for the 698-757 MHz and 776-787 MHz bands. These licensees must file a renewal application in accordance with the provisions set forth in § 1.949, and must make a showing of substantial service, independent of its performance requirements, as a condition for renewal at the end of each license term. For the 758-763 MHz and 788-793 MHz bands the Upper 700 MHz D Block licensee shall file a renewal application in accordance with the provisions set forth in § 1.949, and shall meet the criteria specified in paragraph (m)(1) and paragraph (m)(3) of this section.

(m) * * *

(1) The Upper 700 MHz D Block licensee shall (i) provide a signal coverage and offer service over at least 75 percent of the population of the nationwide Upper 700 MHz D Block license area within four years from the later of (A) February 17, 2009; and (B) the date of issuance of the Upper 700 MHz D Block license, 95 percent of the population of the nationwide license area within seven years from the later of such dates, 98 percent of the population of the nationwide license area within ten years from the later of such dates; and (ii) strive to meet the goal of providing a signal coverage and offering service over at least 99.3 percent of the population of the nationwide license area within 15 years from the later of such dates.

* * * * *

(2) * * *

(3) The Upper 700 MHz D Block licensee shall meet the population benchmarks based on a performance schedule specified in subparagraph (1) of this paragraph and in the Network Sharing Agreement taking into account performance pursuant to § 27.1327 as appropriate under that rule, and using the most recently available U.S. Census Data. The network and signal levels and services employed to meet these benchmarks must be adequate for public safety use, as defined in the Network Sharing Agreement, and as stipulated in §

27.1305 to be made available for use by Priority Public Safety Users that operate in those areas. The schedule shall include coverage for major highways and interstates, as well as such additional areas that are necessary to provide coverage for all incorporated communities with a population in excess of 3,000, unless the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee jointly determine, in consultation with a relevant community, that such additional coverage will not provide significant public benefit and will not require adherence to the procedures outlined in subparagraph (2) of this paragraph.

(4) The Upper 700 MHz D Block licensee shall demonstrate compliance with performance requirements by filing a construction notification with the Commission within 15 days of the expiration of the relevant benchmark, in accordance with the provisions set forth in § 1.946(d). The licensee must certify whether it has met the relevant performance requirements and must file a description and certification of the areas for which it is providing service. The construction notifications must include the following:

(i) Certifications for those areas that were scheduled for construction and service by the date under the Network Sharing Agreement for which it is providing service, the type of service it is providing for each area, and the type of technology it is utilizing to provide this service.

(ii) Electronic coverage maps and supporting technical documentation providing the assumptions used by the Upper 700 MHz D Block licensee to create the coverage maps, including the propagation model and the signal strength necessary to provide service.

(n) Population coverage shall be measured and certified at the U.S. Census county boundary area level. All certified counties shall be aggregated together to determine compliance with the performance goals specified in subparagraph (1) of paragraph (m).

(1) Network and service performance for those covered population areas shall be verified by the Upper 700 MHz D Block licensee and benchmarked and reported against the performance criteria stipulated in § 27.1305.

(2) The Public Safety Broadband Licensee shall review all Upper 700 MHz D Block licensee construction notifications and reports prepared by the Upper 700 MHz D Block licensee pursuant to subparagraph (1) of this paragraph relating to population, network service, and performance. The Public Safety Broadband Licensee shall, in writing, either accept, conditionally accept, or reject the Upper 700 MHz D Block licensee certifications. For those elements that are conditionally accepted or rejected, the Public Safety Broadband Licensee shall provide a rationale as to its conclusions and the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall seek resolution from the Commission, pursuant to § 27.1325, for any identified issues.

(o) At the end of its license term, the Upper 700 MHz D Block licensee must, in order to renew its license, make a showing of its success in meeting the material requirements set forth in the Network Sharing Agreement as well as all other license conditions, including the performance benchmark requirements set forth in § 27.14 and § 27.1305.

5. Section 27.1303 is amended by revising paragraph (e), by redesignating paragraph (f) as paragraph (g), and by adding a new paragraph (f) to read as follows:

§ 27.1303 Upper 700 MHz D Block license conditions

* * * * *

(e) The Upper 700 MHz D Block licensee shall provide Priority Public Safety Users with assured priority access during Emergencies as specified in § 27.1305(f)(4) and in the NSA.

(f) The Upper 700 MHz D Block licensee shall, as part of the NSA negotiation process, negotiate a spectrum lease agreement, and spectrum lease fees, with the Public Safety Broadband Licensee pursuant to § 90.1403(c)(6), and shall comply with all terms and conditions of such lease agreement.

6. Section 27.1305 is amended to read as follows:

§ 27.1305 Shared Wireless Broadband Network

The Shared Wireless Broadband Network developed by the 700 MHz Public/Private Partnership must be designed to meet requirements associated with a nationwide, public safety broadband network. At a minimum, the network shall incorporate the features specified in this section. All specified mandatory requirements as defined in this section or in the approved and executed NSA, as specified in § 27.1310, shall be used in the determination of compliance under § 27.1320. The Public Safety Broadband Licensee and the D Block auction winner shall establish a joint program, not later than six months following the approval and execution of the NSA pursuant to § 27.1315, to identify Priority Public Safety User requirements for inclusion in the Upper 700 MHz D Block licensee's Shared Wireless Broadband Network technology road map. This joint program also shall support the processes of the appropriate standards development organizations (SDOs) to encourage the inclusion of those requirements in subsequent technology releases. The 700 MHz Public/Private Partnership, in its development of the Shared Wireless Broadband Network, shall:

(a) Develop a design for public safety operations over a commercial broadband technology platform that provides mobile voice, video, and data capability that is interoperable across public safety local and state 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.

(1) Such a design shall provide a national common radio access network air interface (CAI) as specified by the Upper 700 MHz D Block licensee to enable Shared Wireless Broadband Network national level interoperability. The CAI shall allow migration to future technology upgrades.

(2) The technology selected for the Shared Wireless Broadband Network shall be permitted to evolve and shall be upgraded based on commercial wireless upgrade timeframes, except that future upgrades shall include user equipment (UE) backward compatibility to allow for appropriate transition periods so that UE used by public safety entities does not become prematurely obsolete.

(3) The notification and impact management processes relating to technology upgrades, and migration to such upgrades, shall be defined and agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee as part of the NSA process established in § 27.1310.

(b) Provide sufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems. To achieve this goal, coverage, propagation, and performance, as specified in Table 1 of this section, shall be used to measure the effective capabilities of the Shared Wireless Broadband Network for the first four years of operation. The parameters listed in Table 1 of this section shall be reviewed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee every two years thereafter to assess the impact of benefits from technology evolution and general improvement in network coverage. All incremental increases in coverage, propagation, and performance shall be incorporated as updates or modifications to Table 1 of this section. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall submit information on a semiannual basis regarding all incremental improvements in coverage, propagation, and performance to the Chiefs of the Public Safety and Homeland Security Bureau and the Wireless Telecommunications Bureau for review. The Chiefs of the respective Bureaus are delegated joint responsibility for reviewing such submissions.

(c) Provide sufficient robustness to meet the reliability and performance requirements of public safety.

(1) The Shared Wireless Broadband Network shall provide a 99.9 percent network availability for all terrestrial elements of operation calculated on jurisdictional boundaries.

(2) The method for measuring availability shall be negotiated as part of the NSA, except that such method shall reflect the intent of the Commission that such method (i) shall be a measure of infrastructure availability as measured from the cell site radio antenna through and across the core network; and (ii) shall exclude radio signal coverage and scheduled maintenance downtime as coordinated with the Public Safety Broadband Licensee.

(3) The Shared Wireless Broadband Network design specifications shall include commercial best practices, such as Network Reliability and Interoperability Council best practices, that 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.

(4) The method for measuring availability shall take into account the cellular-like network architecture of the Shared Wireless Broadband Network.

(5) Sites designated as “critical” shall have battery backup power of 8 hours, and shall have generators with a fuel supply sufficient to operate the generators for at least 5 days. The designation of a site as a “critical” site shall be a joint decision by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and designated representatives of those local Priority Public Safety Users that the Public safety Broadband Licensee determines to be affected by the particular designation or designations involved. The designation of sites as “critical” shall not require the Upper 700 MHz D Block licensee, for purposes of complying with the requirements of this subparagraph (5), to expend during the period of the initial license term more than the lesser of (i) the amount necessary to achieve such compliance with respect to the designation of not more than 50 percent of the operational Shared Wireless Broadband Network site count as critical sites; or (ii) \$2 billion. The Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and local Priority Public Safety User shall jointly determine the percentage of sites that will require redundant backhaul in order to comply with the network availability standard.

(d) Provide sufficient capacity to meet the needs of public safety.

(1) Measures of sufficient capacity shall be developed, and agreed to, by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee, and incorporated into the NSA prior to the approval and execution of the NSA pursuant to § 27.1315.

(2) The Upper 700 MHz D Block licensee shall ensure that the installed and engineered capacity across the entire Shared Wireless Broadband Network incorporates the user and service demand forecasts jointly developed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee.

(3) The Upper 700 MHz D Block licensee shall deliver to the Public Safety Broadband Licensee capacity utilization reports that provide a comparative measure of public safety network services utilization against the documented, engineered, installed, and in-service Radio Access (RA) and terrestrial network capacity.

(e) Provide security and encryption consistent with state-of-the-art technologies. For purposes of complying with this paragraph (e), the Upper 700 MHz D Block licensee shall:

(1) Accommodate compliance with (i) Federal Bureau of Investigation Criminal Justice Information System (CJIS) guidelines, which include physical security guidelines, advanced authentication methods, and unique identifiers for authenticated users; and (ii) the National Information Exchange Model (NIEM) to facilitate the sharing of Emergency and incident information across agencies and jurisdictions.

(2) Implement controls to ensure that public safety priority and secure network access are limited to authorized Priority Public Safety Users and devices, and utilize an open standard protocol for authentication.

(3) Allow for public safety network authentication, authorization, automatic logoff, transmission secrecy and integrity, audit control capabilities, and other unique attributes.

(4) Present recommendations to the Public Safety Broadband Licensee for data and operations security safeguards and controls. As part of the NSA development, the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall assess the Upper 700 MHz D Block licensee's data security policies and procedures and jointly agree to any changes or modifications that shall be required to ensure public safety security compliance.

(f) Provide a mechanism to automatically prioritize and deliver specified Quality of Service (QoS) management features for public safety communications of Priority Public Safety Users over commercial uses on a real-time basis consistent with the requirements of § 27.1307. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall take into account the fact that the technology deployed by the Upper 700 MHz D Block licensee on the Shared Wireless Broadband Network will determine the specific method used to provide network priority and QoS in compliance with the expressed expectations of the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall have authority to define the highest levels of network priority and QoS for Priority Public Safety Users and for other priority users approved by the Public Safety Broadband Licensee and the Commission. In addition, the following priority and QoS definitions shall be used for purposes of providing a mechanism to automatically prioritize and deliver specified QoS management features, and the described attributes shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network:

(1) Priority shall be defined as Public Safety Broadband Licensee-approved user, network, application, and services priorities that, via user or device identification, or both, offer the highest assignable levels of priority for network access and use of network resources, services, and applications.

(2) The highest 50 percent of access priority levels available in the radio access network technology shall be allocated for assignment and use only for Public Safety Broadband Licensee-approved Priority Public Safety Users and for other Public Safety Broadband Licensee-approved and Commission-approved users.

(3) The Shared Wireless Broadband Network shall provide an automatic mechanism to accommodate Priority Public Safety Users' preemption of commercial users for up to 50 percent of the site engineered capacity.

(4) The Shared Wireless Broadband Network shall provide assured priority access to Priority Public Safety Users for (i) up to 50 percent of the site engineered capacity at all times; and (ii) up to 70 percent of the site engineered capacity for the duration of an Emergency occurring within the jurisdiction or jurisdictions of such Priority Public Safety Users. For purposes of this subparagraph, the term "priority access" means any organizational method of assigning users access to the network.

(5) The Shared Wireless Broadband Network shall provide an appropriate priority to 9-1-1 calls pursuant to applicable Commission requirements. 9-1-1 calls shall not be subject to any preemption.

(6) The determination of QoS classes shall be technology-dependent, except that the Shared Wireless Broadband Network shall support mechanisms to ensure the performance of defined classes of service for Priority Public Safety User services and applications, as specified in Table 2 of this section.

(7) QoS resource reservation and session control mechanisms shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network.

(8) QoS shall be considered to be the full class of mechanisms that are found at multiple IP layers in the network (both RAN and Core), and that provision and apply priority for IP packet based traffic.

(9) The assignment of network resources shall enable user or service priority, or both, in addition to the QoS requirements of the application.

(10) The Shared Wireless Broadband Network shall support multiple IP data services and application session flows between a user device and network, where each flow may have a different QoS requirement and priority level.

(11) If network resources are not available to meet a resource reservation request, the Shared Wireless Broadband Network shall have the ability to negotiate a mutually acceptable QoS with the user device.

(12) All services and applications that are authorized and designated by the Public Safety Broadband Licensee for use by Priority Public Safety Users, and that utilize Virtual Private Network (VPN) and layer 2/3 VPN access methods, shall be assigned and provided the highest IP packet routing and queuing capability across all Shared Wireless Broadband Network radio and terrestrial network elements and all Shared Wireless Broadband Network internetworking gateways.

(13) The methods by which QoS shall be promulgated across the Shared Wireless Broadband Network shall be dependent on the technology employed. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly identify, and agree to, in the NSA the Shared Wireless Broadband Network configuration parameters required to provide the specified QoS for Public Safety Broadband Licensee authorized or designated services, applications, and permissions.

(g) Develop operational capabilities consistent with features and requirements that are typical of current and evolving state-of-the-art public safety systems.

(1) The Shared Wireless Broadband Network shall provide:

(i) Access for all Public Safety Broadband Licensee-approved applications and services, hosted applications and services, and third party public safety applications and services approved by the Public Safety Broadband Licensee for use on the Shared Wireless Broadband Network, consistent with specified performance, network transport, and routing parameters in Table 2 of this section, and the technical capabilities of the Shared Wireless Broadband Network technology.

(ii) Commercial Push-To-Talk (PTT) capability and the ability to create, modify, and remove user group configurations and assignments by Priority Public Safety Users.

(2) To ensure that the operational capabilities required by Priority Public Safety Users are delivered by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee shall develop Service Level Agreements (SLAs) and supporting Key Performance Indicators (KPIs) for inclusion in the NSA. The SLAs and KPIs shall measure conformance to QoS and to the Priority Public Safety User Quality of Experience (QoE), network performance as specified in this section, and the implementation and management of Priority Public Safety User priority mechanisms employed on the Shared Wireless Broadband Network.

(3) The final SLAs and KPIs, associated measurements and reports, access to source data, violations, shortfall identification, and correction oversight on the part of the Public Safety Broadband Licensee shall be agreed to and included in the NSA. The Upper 700 MHz D Block licensee shall, as part of this process, provide access to service assurance systems and data to perform analysis on compliance and out-of-compliance situations and remedies, and conduct formal quarterly reviews of performance, with reference to SLAs incorporated in the NSA, between the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee.

(h) Provide for operational control of the network by the Public Safety Broadband Licensee, on terms and conditions agreed to by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee, to the extent necessary to ensure that Priority Public Safety Users' expectations are met.

(1) These terms and conditions shall include the ability of the Public Safety Broadband Licensee and Priority Public Safety Users to:

(i) Have real-time monitoring and visibility into the network that is integrated with performance, SLA, and KPI reports as defined and specified in the NSA.

(ii) Have real-time visibility into Shared Wireless Broadband Network service quality and network status relevant to the local agency or jurisdiction, including the ability for local Priority Public Safety Users to have real-time network status, site status, and alarm visibility for their geographic area.

(2) The type, content, source, display, delivery format, security, reliability and other key design parameters shall be addressed in the NSA.

(3) As provided in paragraph (g) of this section, there shall be real-time access to service management applications, with control limited to local agency or jurisdiction Priority Public Safety Users. These controls shall include the ability to view and modify user, group, and application priorities and profiles, and to add, modify, provision, and authenticate priority users and devices.

(4) Operational control, as agreed to between the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA, shall include:

(i) The ability by Priority Public Safety Users 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.

(ii) The authorities and permissions for Public Safety Broadband Licensee-trained incident management personnel to have real-time access to the Upper 700 MHz D Block licensee's primary and secondary Network Operations Centers (NOCs).

(iii) Defined, agreed to, and specifically developed Public Safety Broadband Licensee views and presentations from the Upper 700 MHz D Block licensee's Operational Support Systems (OSS) / Network Management Systems (NMS). These views and presentations shall include defined real-time national, regional, and local Priority Public Safety User visibility into the Shared Wireless Broadband Network service quality and network status with associated notification and alerting methods to ensure the health and safety of public safety personnel.

(iv) Real-time visibility of Priority Public Safety User consumption of network resources in a given geographic location or locations, with alerts and notifications when the priority access capacity maximum of 70 percent occurs on a given site.

(v) As provided in subparagraph (3) of this paragraph (h), the Public Safety Broadband Licensee, to facilitate incident management, shall be provided with access to service management applications with control to set up, and to modify, user, user group, and application priority profiles nationally across agencies and jurisdictions, enabling the Public Safety Broadband Licensee to provision or to add, manage, and authenticate, users and devices nationally across agencies and jurisdictions to facilitate incident management. The standards governing incident management shall also enable local Priority Public Safety Users to provision or to add, manage, and authenticate, users and devices within the jurisdictions of such Users to facilitate incident management.

(vi) Access to an over-the-air management framework for managing Shared Wireless Broadband Network Priority Public Safety User devices (individually or in groups of devices) to clear user data or disable devices.

(vii) Notification to the Public Safety Broadband Licensee of network downtime (or any work that may affect service or network performance) due to planned maintenance, configuration changes, or upgrades. In conjunction with this requirement a method shall be

agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA that shall enable the Public Safety Broadband Licensee or Priority Public Safety Users to provide the Upper 700 MHz D Block licensee with advance notice of planned public safety events to allow time for proper capacity planning and, if required, adjustment. The Public Safety Broadband Licensee or the local Priority Public Safety Users, or both, shall coordinate with the Upper 700 MHz D Block licensee for all specific or special requirements to support such activities.

Table 1 to § 27.1305 — Propagation and Capacity Parameters					
Morphology	In-Building Penetration Margin	Coverage Availability	Sector Loading Factor	Forward Link Throughput - On-street - Single user - Average cell edge - throughput	Reverse Link Throughput - On-street - Single user - Average cell edge - throughput
Dense	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

Table 2 to § 27.1305 — Applications and Services QoS Attributes		
Application/Service	Description	Data Rate
File transfer	FTP and general data upload / download	Greater than 256kb/s
Email	Both Web based and Entity Hosted E-Mail Service	Less than 16kb/s
Web browsing	Intranet, extranet, and internet	Greater than 32kb/s
Mobile voice	Equivalent to current commercial mobile voice	Minimum 15 kb/s
Push to talk (PTT) voice	Commercial grade PTT / PoC offerings with group call, alerting, and monitoring capability.	4-25 kb/s
Indoor video	Video that is transmitted from inside a building	20-384 kb/sF
Outdoor video	Video that is transmitted from the street	32-384 kb/s
Location services	All location based services	Less than 16kb/s

Table 2 to § 27.1305 — Applications and Services QoS Attributes		
Application/Service	Description	Data Rate
Database transactions	Remote databases access both under the entities' direct control as well as databases that are local	Less than 32kb/s
Messaging	Instant messaging, SMS, and Push to X services	Less than 16kb/s
Network Operations data	Network operational and maintenance data including over the air programming and remote client management	Less than 32kb/s
Dispatch data	Data as it relates to computer aided dispatching.	Less than 64kb/s
Generic traffic	General category for traffic that does not fall within any of the categories described above, and that generates less than 64kb of data per second	Less than 64kb/s
Telemetry	Remote measurement and reporting of information for radio devices, vehicles, and sensor data	70-120 kb/s
Virtual Private Networking	Secure remote access to entity LAN and WAN environments	64 – 256 kb/s

7. Add the following new section to subpart N of Part 27, immediately after § 27.1305, to read as follows:

§ 27.1306 Satellite coverage and service requirements

The Upper 700 MHz D Block licensee shall develop an internetworking gateway for voice, and a limited set of data services, with satellite service providers approved by the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall develop technical criteria and other specifications for the satellite internetworking solutions, which satellite service arrangements shall be negotiated and included in the NSA. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly agree on the level of Upper 700 MHz D Block licensee responsibilities for this capability, including services it may provide in support of the delivery and management of such services, and limitations and warranties for satellite service quality and availability outside of its immediate control and responsibility.

8. Section 27.1307(d) is amended to read as follows:

§ 27.1307 Spectrum use in the network

* * * * *

(d) *Commercial operations in the 763-768 MHz and 793-798 MHz bands.* Commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement shall not cause harmful interference to primary users (*i.e.*, Priority Public Safety Users) and cannot claim protection from harmful interference from the primary Priority Public Safety User operations in the 763-768 MHz and 793-798 MHz bands. The network used by the Upper 700 MHz D Block licensee to provide commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement must be designed to automatically assign priority to Priority Public Safety Users, as specified in § 27.1305(f)(4), to the exclusion and/or immediate preemption of any commercial use on a dynamic, real-time priority basis, and to guarantee that Priority Public Safety Users suffer no harmful interference or interruption or degradation of service due to commercial operations in the 763-768 MHz and 793-798 MHz bands.

- 9. Section 27.1310 is amended by redesignating paragraph (j) as paragraph (k), by adding a new paragraph (j), and by revising paragraph (k) to read as follows:

§ 27.1310 Network Sharing Agreement

* * * * *

(j) The NSA shall incorporate without modification all conditions and requirements made applicable to the Upper 700 MHz D Block license by the provisions of this subpart N of this part.

(k) The NSA must have a term, not to exceed 15 years from the later of (i) February 17, 2009; and (ii) the issuance of the Upper 700 MHz D Block license, that coincides with the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License. If the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License are renewed, then the NSA shall remain in effect.

- 10. Section 27.1330(b) is amended by revising subparagraph (5), subparagraph (5)(i), subparagraph (5)(iii)(D), and subparagraph (7) to read as follows:

§ 27.1330 Local public safety build-out and operation

* * * * *

(b) * * *

(1) * * *

(2) * * *

(3) * * *

(4) * * *

(5) *Rights to build out and operate in areas without a build-out commitment.* In areas for which the NSA does not require the Upper 700 MHz D Block licensee to build out the Shared Wireless Broadband Network, a public safety entity may build out and operate a separate, exclusive network in the 700 MHz public safety broadband spectrum at any time, provided the public safety entity has received the written approval of both the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee and operates its independent network pursuant to a spectrum leasing arrangement into which the public safety entity has entered with the Public Safety Broadband Licensee.

(i) Such leasing arrangement shall require the approval or consent of the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee. The public safety entity seeking to exercise this option shall inform the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee of the public safety entity’s anticipated build-out date(s).

* * * * *

(ii) * * *

(iii) * * *

(A) * * *

(B) * * *

(C) * * *

(D) The network must satisfy any other terms or conditions required by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee; and

* * * * *

(6) * * *

(7) The Public Safety Broadband Licensee must file with the Commission and notify the Upper 700 MHz D Block licensee of any spectrum manager leasing arrangement as specified in § 1.9020(e) of this chapter; such filing shall identify the public safety entity leasing the spectrum, the particular areas of spectrum leased as part of this build-out option, and the specific network infrastructure and equipment deployed on such leased spectrum.

11. Section 27.1340(b) is amended to read as follows:

§ 27.1340 Reporting obligations

* * * * *

(b) The Upper 700 MHz D Block licensee shall have responsibility to register the base station locations with the Commission, providing basic technical information, including geographic location.

12. The authority citation for Part 90 continues to read as follows:

AUTHORITY: Sections 4(i), 11, 303(g), 303(r), and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), and 332(c)(7).

13. Section 90.7 is amended by adding the following definitions in alphabetical order to read as follows:

§ 90.7 Definitions

* * * * *

Emergency. An Emergency is an unforeseen combination of circumstances or the resulting state that calls for immediate action, including the actual or threatened existence of conditions of disaster or extreme peril to the safety of persons and property caused by such conditions as air pollution, avalanche, drought, earthquake, epidemic, fire, flood, riot or other civil disturbance, storm, sudden and severe energy shortage, volcano, or other conditions, including conditions resulting from war or imminent threat of war.

* * * * *

Priority Public Safety User. A Priority Public Safety User is a public safety entity, or an individual employed by such an entity (1) that is (i) engaged in a service the sole or principal purpose of which is to protect the safety of life, health, or property, which service is provided by a State or local government entity, or by a nongovernmental organization authorized by a governmental entity whose primary mission is the provision of such a service; or (ii) approved by the Commission and the Public Safety Broadband Licensee as essential to the provision of such a service; and (2) that is a member of the cooperative arrangement established by the Public Safety Broadband Licensee pursuant to § 90.1403(c) for the purpose of obtaining priority access on the Shared Wireless Broadband Network.

14. Section 90.1403 is amended by revising the title and by adding new paragraph (c) to read as follows:

§ 90.1403 Public Safety Broadband License conditions; cooperative license arrangements

* * * * *

(c) For purposes of facilitating the performance of responsibilities by the Public Safety Broadband Licensee pursuant to paragraph (b) of this section, the Public Safety Broadband Licensee and individual Priority Public Safety Users utilizing spectrum in the 763-768 MHz and 793-798 MHz bands are hereby deemed to be utilizing such spectrum pursuant to a cooperative arrangement. Pursuant to this cooperative arrangement, the Public Safety

Broadband Licensee holds the authorization for such spectrum, but individual Priority Public Safety Users may utilize such spectrum on a non-profit, cost-shared basis. The cooperative arrangement authorized by this paragraph (c) shall enable the Public Safety Broadband Licensee to exercise various authority and to engage in various activities in furtherance of its responsibilities described in paragraph (b) of this section. Pursuant to this authorization, the Public Safety Broadband Licensee is hereby granted the authority:

(1) To establish membership criteria for participation in the cooperative arrangement with individual Priority Public Safety Users as it deems necessary or appropriate to fulfill its responsibilities and to further the objectives and policies of the Commission with regard to the operations and activities of the 700 MHz Public/Private Partnership.

(2) To ensure that the highest levels of Shared Wireless Broadband Network priority access are used only for authorized public safety purposes and to be responsible for defining appropriate priority levels for assignment by individual Priority Public Safety Users.

(3) To ensure that arrangements between the Upper 700 MHz D Block licensee and Priority Public Safety Users are consistent with the provisions of the NSA and with the Commission's rules, and fully utilize the public safety benefits provided for by the NSA.

(4) Acting on behalf of individual Priority Public Safety Users, to (i) negotiate pricing for such entities purchasing Shared Wireless Broadband Network airtime from the Upper 700 MHz D Block licensee; (ii) negotiate favorable terms with equipment vendors for subscriber devices; and (iii) enter into other contractual agreements in furtherance and support of the cooperative arrangement authorized by this paragraph (c).

(5) To monitor compliance by the Upper 700 MHz D Block licensee with the Commission's rules and with the NSA in accordance with § 27.1305 and § 90.1405, including the authority to monitor such licensee's performance on a real-time basis to ensure that any problems are identified and expeditiously corrected.

(6) To negotiate a spectrum lease agreement with the Upper 700 MHz D Block licensee, as part of the NSA negotiation process, including negotiation of service usage fees for Priority Public Safety Users on the Shared Wireless Broadband Network, pursuant to which the Public Safety Broadband Licensee shall receive compensation for use of the spectrum for which the Public Safety Broadband Licensee holds the license issued by the Commission.

(7) To take such other actions that are consistent with and necessary for the fulfillment of, the responsibilities of the Public Safety Broadband Licensee established in paragraph (b) of this section.

15. Section 90.1405 is amended to read as follows:

§ 90.1405 Shared Wireless Broadband Network

The Shared Wireless Broadband Network developed by the 700 MHz Public/Private Partnership must be designed to meet requirements associated with a nationwide, public safety broadband network. At a minimum, the network shall incorporate the features

specified in this section. All specified mandatory requirements as defined in this section or in the approved and executed NSA, as specified in § 90.1410, shall be used in the determination of compliance under § 90.1420. The Public Safety Broadband Licensee and the D Block auction winner shall establish a joint program, which shall be required by the NSA and which shall be established not later than six months following the approval and execution of the NSA pursuant to § 90.1415, to identify Priority Public Safety User requirements for inclusion in the Upper 700 MHz D Block licensee's Shared Wireless Broadband Network technology road map. This joint program also shall support the processes of the appropriate standards development organizations (SDOs) to encourage the inclusion of those requirements in subsequent technology releases. The 700 MHz Public/Private Partnership, in its development of the Shared Wireless Broadband Network, shall:

(a) Develop a design for public safety operations over a commercial broadband technology platform that provides mobile voice, video, and data capability that is interoperable across public safety local and state 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.

(1) Such a design shall provide a national common radio access network air interface (CAI) as specified by the Upper 700 MHz D Block licensee to enable Shared Wireless Broadband Network national level interoperability. The CAI shall allow migration to future technology upgrades.

(2) The technology selected for the Shared Wireless Broadband Network shall be permitted to evolve and shall be upgraded based on commercial wireless upgrade timeframes, except that future upgrades shall include user equipment (UE) backward compatibility to allow for appropriate transition periods so that UE used by public safety entities does not become prematurely obsolete.

(3) The notification and impact management processes relating to technology upgrades, and migration to such upgrades, shall be defined and agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee as part of the NSA process established in § 90.1410.

(b) Provide sufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems. To achieve this goal, coverage, propagation, and performance, as specified in Table 1 of this section, shall be used to measure the effective capabilities of the Shared Wireless Broadband Network for the first four years of operation. The parameters listed in Table 1 of this section shall be reviewed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee every two years thereafter to assess the impacts of benefits from technology evolution and general improvement in network coverage. All incremental increases in coverage, propagation, and performance shall be incorporated as updates or modifications to Table 1 of this section. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall submit

information on a semiannual basis regarding all incremental improvements in coverage, propagation, and performance to the Chiefs of the Public Safety and Homeland Security Bureau and the Wireless Telecommunications Bureau for review. The Chiefs of the respective Bureaus are delegated joint responsibility for reviewing such submissions.

(c) Provide sufficient robustness to meet the reliability and performance requirements of public safety.

(1) The Shared Wireless Broadband Network shall provide a 99.9 percent network availability for all terrestrial elements of operation calculated on jurisdictional boundaries.

(2) The method for measuring availability shall be negotiated as part of the NSA, except that such method shall reflect the intent of the Commission that such method (i) shall be a measure of infrastructure availability as measured from the cell site radio antenna through and across the core network; and (ii) shall exclude radio signal coverage and scheduled maintenance downtime as coordinated with the Public Safety Broadband Licensee.

(3) The Shared Wireless Broadband Network design specifications shall include commercial best practices, such as Network Reliability and Interoperability Council best practices, that 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.

(4) The method for measuring availability shall take into account the cellular-like network architecture of the Shared Wireless Broadband Network.

(5) Sites designated as “critical” shall have battery backup power of 8 hours, and shall have generators with a fuel supply sufficient to operate the generators for at least 5 days. The designation of a site as a “critical” site shall be a joint decision by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and designated representatives of those local Priority Public Safety Users that the Public safety Broadband Licensee determines to be affected by the particular designation or designations involved. The designation of sites as “critical” shall not require the Upper 700 MHz D Block licensee, for purposes of complying with the requirements of this subparagraph (5), to expend during the period of the initial license term more than the lesser of (i) the amount necessary to achieve such compliance with respect to the designation of not more than 50 percent of the operational Shared Wireless Broadband Network site count as critical sites; or (ii) \$2 billion. The Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and local Priority Public Safety User shall jointly determine the percentage of sites that will require redundant backhaul in order to comply with the network availability standard.

(d) Provide sufficient capacity to meet the needs of public safety.

(1) Measures of sufficient capacity shall be developed, and agreed to, by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee, and incorporated into the NSA prior to the approval and execution of the NSA pursuant to § 90.1415.

(2) The Upper 700 MHz D Block licensee shall ensure that the installed and engineered capacity across the entire Shared Wireless Broadband Network incorporates the user and service demand forecasts jointly developed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee.

(3) The Upper 700 MHz D Block licensee shall deliver to the Public Safety Broadband Licensee capacity utilization reports that provide a comparative measure of public safety network services utilization against the documented, engineered, installed, and in-service Radio Access (RA) and terrestrial network capacity.

(e) Provide security and encryption consistent with state-of-the-art technologies. For purposes of complying with this paragraph (e), the Upper 700 MHz D Block licensee shall:

(1) Accommodate compliance with (i) Federal Bureau of Investigation Criminal Justice Information System (CJIS) guidelines, which include physical security guidelines, advanced authentication methods, and unique identifiers for authenticated users; and (ii) the National Information Exchange Model (NIEM) to facilitate the sharing of Emergency and incident information across agencies and jurisdictions.

(2) Implement controls to ensure that public safety priority and secure network access are limited to authorized Priority Public Safety Users and devices, and utilize an open standard protocol for authentication.

(3) Allow for public safety network authentication, authorization, automatic logoff, transmission secrecy and integrity, audit control capabilities, and other unique attributes.

(4) Present recommendations to the Public Safety Broadband Licensee for data and operations security safeguards and controls. As part of the NSA development, the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall assess the Upper 700 MHz D Block licensee's data security policies and procedures and jointly agree to any changes or modifications that shall be required to ensure public safety security compliance.

(f) Provide a mechanism to automatically prioritize and deliver specified Quality of Service (QoS) management features for public safety communications of Priority Public Safety Users over commercial uses on a real-time basis consistent with the requirements of § 90.1407. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall take into account the fact that the technology deployed by the Upper 700 MHz D Block licensee on the Shared Wireless Broadband Network will determine the specific method used to provide network priority and QoS in compliance with the expressed expectations of the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall have authority to define the highest levels of network priority and QoS for Priority Public Safety Users and for other priority users approved by the Public Safety Broadband Licensee and the

Commission. In addition, the following priority and QoS definitions shall be used for purposes of providing a mechanism to automatically prioritize and deliver specified QoS management features, and the described attributes shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network:

(1) Priority shall be defined as Public Safety Broadband Licensee-approved user, network, application, and services priorities that, via user or device identification, or both, offer the highest assignable levels of priority for network access and use of network resources, services, and applications.

(2) The highest 50 percent of access priority levels available in the radio access network technology shall be allocated for assignment and use only for Public Safety Broadband Licensee-approved Priority Public Safety Users and for other Public Safety Broadband Licensee-approved and Commission-approved users.

(3) The Shared Wireless Broadband Network shall provide an automatic mechanism to accommodate Priority Public Safety Users' preemption of commercial users for up to 50 percent of the site engineered capacity.

(4) The Shared Wireless Broadband Network shall provide assured priority access to Priority Public Safety Users for (i) up to 50 percent of the site engineered capacity at all times; and (ii) up to 70 percent of the site engineered capacity for the duration of an Emergency occurring within the jurisdiction or jurisdictions of such Priority Public Safety Users. For purposes of this subparagraph, the term "priority access" means any organizational method of assigning users access to the network.

(5) The Shared Wireless Broadband Network shall provide an appropriate priority to 9-1-1 calls pursuant to applicable Commission requirements. 9-1-1 calls shall not be subject to any preemption.

(6) The determination of QoS classes shall be technology-dependent, except that the Shared Wireless Broadband Network shall support mechanisms to ensure the performance of defined classes of service for Priority Public Safety User services and applications, as specified in Table 2 of this section.

(7) QoS resource reservation and session control mechanisms shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network.

(8) QoS shall be considered to be the full class of mechanisms that are found at multiple IP layers in the network (both RAN and Core), and that provision and apply priority for IP packet based traffic.

(9) The assignment of network resources shall enable user or service priority, or both, in addition to the QoS requirements of the application.

(10) The Shared Wireless Broadband Network shall support multiple IP data services and application session flows between a user device and network, where each flow may have a different QoS requirement and priority level.

(11) If network resources are not available to meet a resource reservation request, the Shared Wireless Broadband Network shall have the ability to negotiate a mutually acceptable QoS with the user device.

(12) All services and applications that are authorized and designated by the Public Safety Broadband Licensee for use by Priority Public Safety Users, and that utilize Virtual Private Network (VPN) and layer 2/3 VPN access methods, shall be assigned and provided the highest IP packet routing and queuing capability across all Shared Wireless Broadband Network radio and terrestrial network elements and all Shared Wireless Broadband Network internetworking gateways.

(13) The methods by which QoS shall be promulgated across the Shared Wireless Broadband Network shall be dependent on the technology employed. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly identify, and agree to, in the NSA the Shared Wireless Broadband Network configuration parameters required to provide the specified QoS for Public Safety Broadband Licensee authorized or designated services, applications, and permissions.

(g) Develop operational capabilities consistent with features and requirements that are typical of current and evolving state-of-the-art public safety systems.

(1) The Shared Wireless Broadband Network shall provide:

(i) Access for all Public Safety Broadband Licensee-approved applications and services, hosted applications and services, and third party public safety applications and services approved by the Public Safety Broadband Licensee for use on the Shared Wireless Broadband Network, consistent with specified performance, network transport, and routing parameters in Table 2 of this section, and the technical capabilities of the Shared Wireless Broadband Network technology.

(ii) Commercial Push-To-Talk (PTT) capability and the ability to create, modify, and remove user group configurations and assignments by Priority Public Safety Users.

(2) To ensure that the operational capabilities required by Priority Public Safety Users are delivered by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee shall develop Service Level Agreements (SLAs) and supporting Key Performance Indicators (KPIs) for inclusion in the NSA. The SLAs and KPIs shall measure conformance to QoS and to the Priority Public Safety User Quality of Experience (QoE), network performance as specified in this section, and the implementation and management of Priority Public Safety User priority mechanisms employed on the Shared Wireless Broadband Network.

(3) The final SLAs and KPIs, associated measurements and reports, access to source data, violations, shortfall identification, and correction oversight on the part of the Public Safety Broadband Licensee shall be agreed to and included in the NSA. The Upper 700 MHz D Block licensee shall, as part of this process, provide access to service assurance systems and data to perform analysis on compliance and out-of-compliance situations and remedies, and conduct formal quarterly reviews of performance, with reference to SLAs incorporated in the NSA, between the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee.

(h) Provide for operational control of the network by the Public Safety Broadband Licensee, on terms and conditions agreed to by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee, to the extent necessary to ensure that Priority Public Safety Users' expectations are met.

(1) These terms and conditions shall include the ability of the Public Safety Broadband Licensee and Priority Public Safety Users to:

(i) Have real-time monitoring and visibility into the network that is integrated with performance, SLA, and KPI reports as defined and specified in the NSA.

(ii) Have real-time visibility into Shared Wireless Broadband Network service quality and network status relevant to the local agency or jurisdiction, including the ability for local Priority Public Safety Users to have real-time network status, site status, and alarm visibility for their geographic area.

(2) The type, content, source, display, delivery format, security, reliability and other key design parameters shall be addressed in the NSA.

(3) As provided in paragraph (g) of this section, there shall be real-time access to service management applications, with control limited to local agency or jurisdiction Priority Public Safety Users. These controls shall include the ability to view and modify user, group, and application priorities and profiles, and to add, modify, provision, and authenticate priority users and devices.

(4) Operational control, as agreed to between the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA, shall include:

(i) The ability by Priority Public Safety Users 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.

(ii) The authorities and permissions for Public Safety Broadband Licensee-trained incident management personnel to have real-time access to the Upper 700 MHz D Block licensee's primary and secondary Network Operations Centers (NOCs).

(iii) Defined, agreed to, and specifically developed Public Safety Broadband Licensee views and presentations from the Upper 700 MHz D Block licensee’s Operational Support Systems (OSS) / Network Management Systems (NMS). These views and presentations shall include defined real-time national, regional, and local Priority Public Safety User visibility into the Shared Wireless Broadband Network service quality and network status with associated notification and alerting methods to ensure the health and safety of public safety personnel.

(iv) Real-time visibility of Priority Public Safety User consumption of network resources in a given geographic location or locations, with alerts and notifications when the priority access capacity maximum of 70 percent occurs on a given site.

(v) As provided in subparagraph (3) of this paragraph (h), the Public Safety Broadband Licensee, to facilitate incident management, shall be provided with access to service management applications with control to set up, and to modify, user, user group, and application priority profiles nationally across agencies and jurisdictions, enabling the Public Safety Broadband Licensee to provision or to add, manage, and authenticate, users and devices nationally across agencies and jurisdictions to facilitate incident management. The standards governing incident management shall also enable local Priority Public Safety Users to provision or to add, manage, and authenticate, users and devices within the jurisdictions of such Users to facilitate incident management.

(vi) Access to an over-the-air management framework for managing Shared Wireless Broadband Network Priority Public Safety User devices (individually or in groups of devices) to clear user data or disable devices.

(vii) Notification to the Public Safety Broadband Licensee of network downtime (or any work that may affect service or network performance) due to planned maintenance, configuration changes, or upgrades. In conjunction with this requirement a method shall be agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA that shall enable the Public Safety Broadband Licensee or Priority Public Safety Users to provide the Upper 700 MHz D Block licensee with advance notice of planned public safety events to allow time for proper capacity planning and, if required, adjustment. The Public Safety Broadband Licensee or the local Priority Public Safety Users, or both, shall coordinate with the Upper 700 MHz D Block licensee for all specific or special requirements to support such activities.

<p>Table 1 to § 90.1405 — Propagation and Capacity Parameters</p>
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Table 1 to § 90.1405 — Propagation and Capacity Parameters

Morphology	In-Building Penetration Margin	Coverage Availability	Sector Loading Factor	Forward Link Throughput - On-street - Single user - Average cell edge - throughput	Reverse Link Throughput - On-street - Single user - Average cell edge - throughput
Dense	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

Table 2 to § 90.1405 — Applications and Services QoS Attributes

Application/Service	Description	Data Rate
File transfer	FTP and general data upload / download	Greater than 256kb/s
Email	Both Web based and Entity Hosted E-Mail Service	Less than 16kb/s
Web browsing	Intranet, extranet, and internet	Greater than 32kb/s
Mobile voice	Equivalent to current commercial mobile voice	Minimum 15 kb/s
Push to talk (PTT) voice	Commercial grade PTT / PoC offerings with group call, alerting, and monitoring capability.	4-25 kb/s
Indoor video	Video that is transmitted from inside a building	20-384 kb/sF
Outdoor video	Video that is transmitted from the street	32-384 kb/s
Location services	All location based services	Less than 16kb/s
Database transactions	Remote databases access both under the entities direct control as well as databases that are local.	Less than 32kb/s
Messaging	Instant messaging, SMS, and Push to X services	Less than 16kb/s

Table 2 to § 90.1405 — Applications and Services QoS Attributes		
Application/Service	Description	Data Rate
Network Operations data	Network operational and maintenance data including over the air programming and remote client management	Less than 32kb/s
Dispatch data	Data as it relates to computer aided dispatching.	Less than 64kb/s
Generic traffic	General category for traffic that does not fall within any of the categories described above, and that generates less than 64kb of data per second	Less than 64kb/s
Telemetry	Remote measurement and reporting of information for radio devices, vehicles, and sensor data	70-120 kb/s
Virtual Private Networking	Secure remote access to entity LAN and WAN environments	64 – 256 kb/s

16. Add the following new section to subpart AA of Part 90, immediately after § 90.1405, to read as follows:

§ 90.1406 Satellite coverage and service requirements

The Upper 700 MHz D Block licensee shall develop an internetworking gateway for voice, and a limited set of data services, with satellite service providers approved by the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall develop technical criteria and other specifications for the satellite internetworking solutions, which satellite service arrangements shall be negotiated and included in the NSA. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly agree on the level of Upper 700 MHz D Block licensee responsibilities for this capability, including services it may provide in support of the delivery and management of such services, and limitations and warranties for satellite service quality and availability outside of its immediate control and responsibility.

17. Section 90.1407(c) is amended to read as follows:

§ 90.1407 Spectrum use in the network

* * * * *

(c) *Commercial operations in the 763-768 MHz and 793-798 MHz bands.* Commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement shall not cause harmful interference to primary users (*i.e.*, Priority Public Safety Users) and cannot claim protection from harmful interference from the primary

Priority Public Safety User operations in the 763-768 MHz and 793-798 MHz bands. The network used by the Upper 700 MHz D Block licensee to provide commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement must be designed to automatically assign priority to Priority Public Safety Users, as specified in § 90.1405(f)(4), to the exclusion and/or immediate preemption of any commercial use on a dynamic, real-time priority basis, and to guarantee that Priority Public Safety Users suffer no harmful interference or interruption or degradation of service due to commercial operations in the 763-768 MHz and 793-798 MHz bands.

18. Section 90.1410 is amended by redesignating paragraph (j) as paragraph (k), by adding a new paragraph (j), and by revising paragraph (k) to read as follows:

§ 90.1410 Network Sharing Agreement

* * * * *

(j) The NSA shall incorporate without modification all conditions and requirements made applicable to the Upper 700 MHz D Block license by the provisions of this subpart AA of this part.

(k) The NSA must have a term, not to exceed 15 years from the later of (i) February 17, 2009; and (ii) the issuance of the Upper 700 MHz D Block license, that coincides with the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License. If the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License are renewed, then the NSA shall remain in effect.

19. Section 90.1430(b) is amended by revising subparagraph (5), subparagraph (5)(i), subparagraph (5)(iii)(d), and subparagraph (7) to read as follows:

§ 90.1430 Local public safety build-out and operation

* * * * *

(b) * * *

(1) * * *

(2) * * *

(3) * * *

(4) * * *

(5) *Rights to build out and operate in areas without a build-out commitment.* In areas for which the NSA does not require the Upper 700 MHz D Block licensee to build out the Shared Wireless Broadband Network, a public safety entity may build out and operate a separate, exclusive network in the 700 MHz public safety broadband spectrum at any time,

provided the public safety entity has received the written approval of both the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee and operates its independent network pursuant to a spectrum leasing arrangement into which the public safety entity has entered with the Public Safety Broadband Licensee.

(i) Such leasing arrangement shall require the approval or consent of the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee. The public safety entity seeking to exercise this option shall inform the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee of the public safety entity’s anticipated build-out date(s).

* * * * *

(ii) * * *

(iii) * * *

(A) * * *

(B) * * *

(C) * * *

(D) The network must satisfy any other terms or conditions required by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee; and

* * * * *

(6) * * *

(7) The Public Safety Broadband Licensee must file with the Commission and notify the Upper 700 MHz D Block licensee of any spectrum manager leasing arrangement as specified in § 1.9020(e) of this chapter; such filing shall identify the public safety entity leasing the spectrum, the particular areas of spectrum leased as part of this build-out option, and the specific network infrastructure and equipment deployed on such leased spectrum.

20. Section 90.1440(b) is amended to read as follows:

§ 90.1440 Reporting obligations

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(b) The Upper 700 MHz D Block licensee shall have responsibility to register the base station locations with the Commission, providing basic technical information, including geographic location.

Comparison of Current Rules and Rules Proposed in Attachment A1

[Proposed changes to the current rules are shown in ~~strikethrough~~ and underlining.]

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PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

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§ 27.4 Terms and definitions

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Emergency. An Emergency is an unforeseen combination of circumstances or the resulting state that calls for immediate action, including the actual or threatened existence of conditions of disaster or extreme peril to the safety of persons and property caused by such conditions as air pollution, avalanche, drought, earthquake, epidemic, fire, flood, riot or other civil disturbance, storm, sudden and severe energy shortage, volcano, or other conditions, including conditions resulting from war or imminent threat of war.

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Priority Public Safety User. A Priority Public Safety User is a public safety entity, or an individual employed by such an entity (1) that is (i) engaged in a service the sole or principal purpose of which is to protect the safety of life, health, or property, which service is provided by a State or local government entity, or by a nongovernmental organization authorized by a governmental entity whose primary mission is the provision of such a service; or (ii) approved by the Commission and the Public Safety Broadband Licensee as essential to the provision of such a service; and (2) that is a member of the cooperative arrangement established by the Public Safety Broadband Licensee pursuant to § 90.1403(c) for the purpose of obtaining priority access on the Shared Wireless Broadband Network.

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§ 27.13 License ~~period~~Period.

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(b) 698-758 MHz, 758-763-698-763 MHz, 776-788 MHz, and 788-793~~776-793~~ MHz bands. Initial authorizations for the 698-758~~698-763~~ MHz and 776-788~~776-793~~ MHz bands will extend for a term not to exceed ten years from February 17, 2009, except that initial

authorizations for a Part 27 licensee that provides broadcast services, whether exclusively or in combination with other services, will not exceed eight years. Initial authorizations for the 758-763 MHz and 788-793 MHz bands will extend for a term not to exceed 15 years from the later of (i) February 17, 2009; and (ii) the issuance of the Upper 700 MHz D Block license. Initial authorizations for the 775-776 MHz and 805-806 MHz bands shall not exceed January 1, 2015. * * *

§ 27.14 Construction requirements; ~~criteria~~Criteria for ~~R~~Renewal.

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(e) Comparative renewal proceedings do not apply to WCS licensees holding authorizations for the 698-757 MHz ~~and ,758-763 MHz,~~776-787 MHz, ~~and 788-793 MHz~~ bands. These licensees must file a renewal application in accordance with the provisions set forth in § 1.949, and must make a showing of substantial service, independent of its performance requirements, as a condition for renewal at the end of each license term. For the 758-763 MHz and 788-793 MHz bands the Upper 700 MHz D Block licensee shall file a renewal application in accordance with the provisions set forth in § 1.949, and shall meet the criteria specified in paragraph (m)(1) and paragraph (m)(3) of this section.

* * * * *

(m) * * *

(1) The Upper 700 MHz D Block licensee shall (i) provide a signal coverage and offer service over at least 75 percent of the population of the nationwide Upper 700 MHz D Block license area within four years from the later of (A) February 17, 2009; and (B) the date of issuance of the Upper 700 MHz D Block license. 95 percent of the population of the nationwide license area within seven years from the later of such dates, 98 percent of the population of the nationwide license area within ten years from the later of such dates; and (ii) strive to meet the goal of providing a signal coverage and offering service over at least, and 99.3 percent of the population of the nationwide license area within ~~15~~ten years from the later of such dates.

(2) * * *

(3) The Upper 700 MHz D Block licensee shall meet the population benchmarks based on a performance schedule specified in subparagraph (1) of this paragraph and in the Network Sharing Agreement; taking into account performance pursuant to § 27.1327 as appropriate under that rule, and using the most recently available U.S. Census Data. The network and signal levels and services employed to meet these benchmarks must be adequate for public safety use, as defined in the Network Sharing Agreement, and as stipulated in § 27.1305 to be the services made available ~~must include those appropriate~~ for use by Priority Public Safety Users~~public safety entities~~ that operate in those areas. The schedule shall include coverage for major highways and interstates, as well as such additional areas that are necessary to provide coverage for all incorporated communities with a population in excess

of 3,000, unless the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee jointly determine, in consultation with a relevant community, that such additional coverage will not provide significant public benefit and will not require adherence to the procedures outlined in subparagraph (2) of this paragraph.

(4) The Upper 700 MHz D Block licensee shall demonstrate compliance with performance requirements by filing a construction notification with the Commission within 15 days of the expiration of the relevant benchmark, in accordance with the provisions set forth in § 1.946(d). The licensee must certify whether it has met the relevant performance requirements and must file a description and certification of the areas for which it is providing service. The construction notifications must include the following:

(i) Certifications for those of the areas that were scheduled for construction and service by ~~the~~that date under the Network Sharing Agreement for which it is providing service, the type of service it is providing for each area, and the type of technology it is utilizing to provide this service.

(ii) Electronic coverage maps and supporting technical documentation providing the assumptions used by the Upper 700 MHz D Block licensee to create the coverage maps, including the propagation model and the signal strength necessary to provide service.

(n) Population coverage shall be measured and certified at the U.S. Census county boundary area level. All certified counties shall be aggregated together to determine compliance with the performance goals specified in subparagraph (1) of paragraph (m).

(1) Network and service performance for those covered population areas shall be verified by the Upper 700 MHz D Block licensee and benchmarked and reported against the performance criteria stipulated in § 27.1305.

(2) The Public Safety Broadband Licensee shall review all Upper 700 MHz D Block licensee construction notifications and reports prepared by the Upper 700 MHz D Block licensee pursuant to subparagraph (1) of this paragraph relating to population, network service, and performance. The Public Safety Broadband Licensee shall, in writing, either accept, conditionally accept, or reject the Upper 700 MHz D Block licensee certifications. For those elements that are conditionally accepted or rejected, the Public Safety Broadband Licensee shall provide a rationale as to its conclusions and the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall seek resolution from the Commission, pursuant to § 27.1325, for any identified issues.

~~(o)(n)~~ At the end of its license term, the Upper 700 MHz D Block licensee must, in order to renew its license, make a showing of its success in meeting the material requirements set forth in the Network Sharing Agreement as well as all other license conditions, including the performance benchmark requirements set forth in § 27.14 and § 27.1305.

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SUBPART N — 700 MHz PUBLIC/PRIVATE PARTNERSHIP

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§ 27.1303 Upper 700 MHz D Block license conditions

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(e) The Upper 700 MHz D Block licensee ~~shall must~~ provide ~~Priority~~the Public Safety ~~Users~~~~Broadband Licensee~~ with assured priority access during ~~Emergencies~~~~emergencies~~, as specified in § 27.1305(f)(4) and in the NSA.

(f) The Upper 700 MHz D Block licensee shall, as part of the NSA negotiation process, negotiate a spectrum lease agreement, and spectrum lease fees, with the Public Safety Broadband Licensee pursuant to § 90.1403(c)(6), and shall comply with all terms and conditions of such lease agreement.

~~(g)~~(g) These conditions and requirements will apply to any related entities that the Commission may require or allow, as provided for in the NSA or otherwise as authorized by the Commission.

§ 27.1305 Shared Wireless Broadband Network

The Shared Wireless Broadband Network developed by the 700 MHz Public/Private Partnership must be designed to meet requirements associated with a nationwide, public safety broadband network. At a minimum, the network ~~shall must~~ incorporate the ~~following~~ features specified in this section. All specified mandatory requirements as defined in this section or in the approved and executed NSA, as specified in § 27.1310, shall be used in the determination of compliance under § 27.1320. The Public Safety Broadband Licensee and the D Block auction winner shall establish a joint program, not later than six months following the approval and execution of the NSA pursuant to § 27.1315, to identify Priority Public Safety User requirements for inclusion in the Upper 700 MHz D Block licensee's Shared Wireless Broadband Network technology road map. This joint program also shall support the processes of the appropriate standards development organizations (SDOs) to encourage the inclusion of those requirements in subsequent technology releases. The 700 MHz Public/Private Partnership, in its development of the Shared Wireless Broadband Network, shall:

(a) Develop a design~~Design~~ for public safety operations~~operation~~ over a commercial broadband technology platform that provides mobile voice, video, and data capability that is ~~seamlessly~~ interoperable across public safety local and state 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.

(1) Such a design shall provide a national common radio access network air interface (CAI) as specified by the Upper 700 MHz D Block licensee to enable Shared Wireless Broadband Network national level interoperability. The CAI shall allow migration to future technology upgrades.

(2) The technology selected for the Shared Wireless Broadband Network shall be permitted to evolve and shall be upgraded based on commercial wireless upgrade timeframes, except that future upgrades shall include user equipment (UE) backward compatibility to allow for appropriate transition periods so that UE used by public safety entities does not become prematurely obsolete.

(3) The notification and impact management processes relating to technology upgrades, and migration to such upgrades, shall be defined and agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee as part of the NSA process established in § 27.1310.

(b) Provide Sufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems. To achieve this goal, coverage, propagation, and performance, as specified in Table 1 of this section, shall be used to measure the effective capabilities of the Shared Wireless Broadband Network for the first four years of operation. The parameters listed in Table 1 of this section shall be reviewed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee every two years thereafter to assess the impact of benefits from technology evolution and general improvement in network coverage. All incremental increases in coverage, propagation, and performance shall be incorporated as updates or modifications to Table 1 of this section. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall submit information on a semiannual basis regarding all incremental improvements in coverage, propagation, and performance to the Chiefs of the Public Safety and Homeland Security Bureau and the Wireless Telecommunications Bureau for review. The Chiefs of the respective Bureaus are delegated joint responsibility for reviewing such submissions.

(c) Provide sufficient ~~Suffieient~~ robustness to meet the reliability and performance requirements of public safety.

(1) The Shared Wireless Broadband Network shall provide a 99.9 percent network availability for all terrestrial elements of operation calculated on jurisdictional boundaries.

(2) The method for measuring availability shall be negotiated as part of the NSA, except that such method shall reflect the intent of the Commission that such method (i) shall be a measure of infrastructure availability as measured from the cell site radio antenna through and across the core network; and (ii) shall exclude radio signal coverage and scheduled maintenance downtime as coordinated with the Public Safety Broadband Licensee.

(3) The Shared Wireless Broadband Network design specifications shall include commercial best practices, such as Network Reliability and Interoperability Council best

practices, that 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.

(4) The method for measuring availability shall take into account the cellular-like network architecture of the Shared Wireless Broadband Network.

(5) Sites designated as “critical” shall have battery backup power of 8 hours, and shall have generators with a fuel supply sufficient to operate the generators for at least 5 days. The designation of a site as a “critical” site shall be a joint decision by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and designated representatives of those local Priority Public Safety Users that the Public safety Broadband Licensee determines to be affected by the particular designation or designations involved. The designation of sites as “critical” shall not require the Upper 700 MHz D Block licensee, for purposes of complying with the requirements of this subparagraph (5), to expend during the period of the initial license term more than the lesser of (i) the amount necessary to achieve such compliance with respect to the designation of not more than 50 percent of the operational Shared Wireless Broadband Network site count as critical sites; or (ii) \$2 billion. The Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and local Priority Public Safety User shall jointly determine the percentage of sites that will require redundant backhaul in order to comply with the network availability standard.

(d) Provide sufficient ~~Sufficient~~ capacity to meet the needs of public safety.

(1) Measures of sufficient capacity shall be developed, and agreed to, by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee, and incorporated into the NSA prior to the approval and execution of the NSA pursuant to § 27.1315.

(2) The Upper 700 MHz D Block licensee shall ensure that the installed and engineered capacity across the entire Shared Wireless Broadband Network incorporates the user and service demand forecasts jointly developed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee.

(3) The Upper 700 MHz D Block licensee shall deliver to the Public Safety Broadband Licensee capacity utilization reports that provide a comparative measure of public safety network services utilization against the documented, engineered, installed, and in-service Radio Access (RA) and terrestrial network capacity.

(e) Provide security ~~Security~~ and encryption consistent with state-of-the-art technologies. For purposes of complying with this paragraph (e), the Upper 700 MHz D Block licensee shall:

(1) Accommodate compliance with (i) Federal Bureau of Investigation Criminal Justice Information System (CJIS) guidelines, which include physical security guidelines, advanced authentication methods, and unique identifiers for authenticated users; and (ii) the National

Information Exchange Model (NIEM) to facilitate the sharing of Emergency and incident information across agencies and jurisdictions.

(2) Implement controls to ensure that public safety priority and secure network access are limited to authorized Priority Public Safety Users and devices, and utilize an open standard protocol for authentication.

(3) Allow for public safety network authentication, authorization, automatic logoff, transmission secrecy and integrity, audit control capabilities, and other unique attributes.

(4) Present recommendations to the Public Safety Broadband Licensee for data and operations security safeguards and controls. As part of the NSA development, the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall assess the Upper 700 MHz D Block licensee's data security policies and procedures and jointly agree to any changes or modifications that shall be required to ensure public safety security compliance.

(f) Provide a mechanism to automatically prioritize and deliver specified Quality of Service (QoS) management features for public safety communications of Priority Public Safety Users over commercial uses on a real-time basis consistent with the requirements of § 27.1307. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall take into account the fact that the technology deployed by the Upper 700 MHz D Block licensee on the Shared Wireless Broadband Network will determine the specific method used to provide network priority and QoS in compliance with the expressed expectations of the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall have authority to define the highest levels of network priority and QoS for Priority Public Safety Users and for other priority users approved by the Public Safety Broadband Licensee and the Commission. In addition, the following priority and QoS definitions shall be used for purposes of providing a mechanism to automatically prioritize and deliver specified QoS management features, and the described attributes shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network:

(1) Priority shall be defined as Public Safety Broadband Licensee-approved user, network, application, and services priorities that, via user or device identification, or both, offer the highest assignable levels of priority for network access and use of network resources, services, and applications.

(2) The highest 50 percent of access priority levels available in the radio access network technology shall be allocated for assignment and use only for Public Safety Broadband Licensee-approved Priority Public Safety Users and for other Public Safety Broadband Licensee-approved and Commission-approved users.

(3) The Shared Wireless Broadband Network shall provide an automatic mechanism to accommodate Priority Public Safety Users' preemption of commercial users for up to 50 percent of the site engineered capacity.

(4) The Shared Wireless Broadband Network shall provide assured priority access to Priority Public Safety Users for (i) up to 50 percent of the site engineered capacity at all times; and (ii) up to 70 percent of the site engineered capacity for the duration of an Emergency occurring within the jurisdiction or jurisdictions of such Priority Public Safety Users. For purposes of this subparagraph, the term “priority access” means any organizational method of assigning users access to the network.

(5) The Shared Wireless Broadband Network shall provide an appropriate priority to 9-1-1 calls pursuant to applicable Commission requirements. 9-1-1 calls shall not be subject to any preemption.

(6) The determination of QoS classes shall be technology-dependent, except that the Shared Wireless Broadband Network shall support mechanisms to ensure the performance of defined classes of service for Priority Public Safety User services and applications, as specified in Table 2 of this section.

(7) QoS resource reservation and session control mechanisms shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network.

(8) QoS shall be considered to be the full class of mechanisms that are found at multiple IP layers in the network (both RAN and Core), and that provision and apply priority for IP packet based traffic.

(9) The assignment of network resources shall enable user or service priority, or both, in addition to the QoS requirements of the application.

(10) The Shared Wireless Broadband Network shall support multiple IP data services and application session flows between a user device and network, where each flow may have a different QoS requirement and priority level.

(11) If network resources are not available to meet a resource reservation request, the Shared Wireless Broadband Network shall have the ability to negotiate a mutually acceptable QoS with the user device.

(12) All services and applications that are authorized and designated by the Public Safety Broadband Licensee for use by Priority Public Safety Users, and that utilize Virtual Private Network (VPN) and layer 2/3 VPN access methods, shall be assigned and provided the highest IP packet routing and queuing capability across all Shared Wireless Broadband Network radio and terrestrial network elements and all Shared Wireless Broadband Network internetworking gateways.

(13) The methods by which QoS shall be promulgated across the Shared Wireless Broadband Network shall be dependent on the technology employed. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly identify, and agree to, in the NSA the Shared Wireless Broadband Network configuration parameters required to

provide the specified QoS for Public Safety Broadband Licensee authorized or designated services, applications, and permissions.

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

(1) The Shared Wireless Broadband Network shall provide:

(i) Access for all Public Safety Broadband Licensee-approved applications and services, hosted applications and services, and third party public safety applications and services approved by the Public Safety Broadband Licensee for use on the Shared Wireless Broadband Network, consistent with specified performance, network transport, and routing parameters in Table 2 of this section, and the technical capabilities of the Shared Wireless Broadband Network technology.

(ii) Commercial Push-To-Talk (PTT) capability and the ability to create, modify, and remove user group configurations and assignments by Priority Public Safety Users.

(2) To ensure that the operational capabilities required by Priority Public Safety Users are delivered by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee shall develop Service Level Agreements (SLAs) and supporting Key Performance Indicators (KPIs) for inclusion in the NSA. The SLAs and KPIs shall measure conformance to QoS and to the Priority Public Safety User Quality of Experience (QoE), network performance as specified in this section, and the implementation and management of Priority Public Safety User priority mechanisms employed on the Shared Wireless Broadband Network.

(3) The final SLAs and KPIs, associated measurements and reports, access to source data, violations, shortfall identification, and correction oversight on the part of the Public Safety Broadband Licensee shall be agreed to and included in the NSA. The Upper 700 MHz D Block licensee shall, as part of this process, provide access to service assurance systems and data to perform analysis on compliance and out-of-compliance situations and remedies, and conduct formal quarterly reviews of performance, with reference to SLAs incorporated in the NSA, between the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee.

(h) Provide for operational-Operational control of the network by the Public Safety Broadband Licensee, on terms and conditions agreed to by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee, to the extent necessary to ensure that Priority Public Safety Users' expectationspublic safety requirements are met.

(1) These terms and conditions shall include the ability of the Public Safety Broadband Licensee and Priority Public Safety Users to:

(i) Have real-time monitoring and visibility into the network that is integrated with performance, SLA, and KPI reports as defined and specified in the NSA.

(ii) Have real-time visibility into Shared Wireless Broadband Network service quality and network status relevant to the local agency or jurisdiction, including the ability for local Priority Public Safety Users to have real-time network status, site status, and alarm visibility for their geographic area.

(2) The type, content, source, display, delivery format, security, reliability and other key design parameters shall be addressed in the NSA.

(3) As provided in paragraph (g) of this section, there shall be real-time access to service management applications, with control limited to local agency or jurisdiction Priority Public Safety Users. These controls shall include the ability to view and modify user, group, and application priorities and profiles, and to add, modify, provision, and authenticate priority users and devices.

(4) Operational control, as agreed to between the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA, shall include:

(i) The ability by Priority Public Safety Users 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.

(ii) The authorities and permissions for Public Safety Broadband Licensee-trained incident management personnel to have real-time access to the Upper 700 MHz D Block licensee's primary and secondary Network Operations Centers (NOCs).

(iii) Defined, agreed to, and specifically developed Public Safety Broadband Licensee views and presentations from the Upper 700 MHz D Block licensee's Operational Support Systems (OSS) / Network Management Systems (NMS). These views and presentations shall include defined real-time national, regional, and local Priority Public Safety User visibility into the Shared Wireless Broadband Network service quality and network status with associated notification and alerting methods to ensure the health and safety of public safety personnel.

(iv) Real-time visibility of Priority Public Safety User consumption of network resources in a given geographic location or locations, with alerts and notifications when the priority access capacity maximum of 70 percent occurs on a given site.

(v) As provided in subparagraph (3) of this paragraph (h), the Public Safety Broadband Licensee, to facilitate incident management, shall be provided with access to service management applications with control to set up, and to modify, user, user group, and application priority profiles nationally across agencies and jurisdictions, enabling the Public Safety Broadband Licensee to provision or to add, manage, and authenticate, users and devices nationally across agencies and jurisdictions to facilitate incident management. The standards governing incident management shall also enable local Priority Public Safety Users to provision or to add, manage, and authenticate, users and devices within the jurisdictions of such Users to facilitate incident management.

(vi) Access to an over-the-air management framework for managing Shared Wireless Broadband Network Priority Public Safety User devices (individually or in groups of devices) to clear user data or disable devices.

(vii) Notification to the Public Safety Broadband Licensee of network downtime (or any work that may affect service or network performance) due to planned maintenance, configuration changes, or upgrades. In conjunction with this requirement a method shall be agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA that shall enable the Public Safety Broadband Licensee or Priority Public Safety Users to provide the Upper 700 MHz D Block licensee with advance notice of planned public safety events to allow time for proper capacity planning and, if required, adjustment. The Public Safety Broadband Licensee or the local Priority Public Safety Users, or both, shall coordinate with the Upper 700 MHz D Block licensee for all specific or special requirements to support such activities.

<u>Table 1 to § 27.1305 — Propagation and Capacity Parameters</u>					
<u>Morphology</u>	<u>In-Building Penetration Margin</u>	<u>Coverage Availability</u>	<u>Sector Loading Factor</u>	<u>Forward Link Throughput</u> - <u>On-street</u> - <u>Single user</u> - <u>Average cell edge</u> - <u>throughput</u>	<u>Reverse Link Throughput</u> - <u>On-street</u> - <u>Single user</u> - <u>Average cell edge</u> - <u>throughput</u>
<u>Dense Urban</u>	<u>22 dB</u>	<u>95%</u>	<u>70%</u>	<u>1000 kbps</u>	<u>256 kbps</u>
<u>Urban</u>	<u>19 dB</u>	<u>95%</u>	<u>70%</u>	<u>1000 kbps</u>	<u>256 kbps</u>
<u>Suburban</u>	<u>13 dB</u>	<u>95%</u>	<u>70%</u>	<u>512 kbps</u>	<u>128 kbps</u>
<u>Rural</u>	<u>6 dB</u>	<u>95%</u>	<u>70%</u>	<u>512 kbps</u>	<u>128 kbps</u>
<u>Highway</u>	<u>6 dB</u>	<u>95%</u>	<u>70%</u>	<u>128 kbps</u>	<u>64 kbps</u>

<u>Table 2 to § 27.1305 — Applications and Services QoS Attributes</u>		
<u>Application/Service</u>	<u>Description</u>	<u>Data Rate</u>
<u>File transfer</u>	<u>FTP and general data upload / download</u>	<u>Greater than 256kb/s</u>
<u>Email</u>	<u>Both Web based and Entity Hosted E-Mail Service</u>	<u>Less than 16kb/s</u>
<u>Web browsing</u>	<u>Intranet, extranet, and internet</u>	<u>Greater than 32kb/s</u>
<u>Mobile voice</u>	<u>Equivalent to current commercial mobile voice</u>	<u>Minimum 15 kb/s</u>

<u>Table 2 to § 27.1305 — Applications and Services QoS Attributes</u>		
<u>Application/Service</u>	<u>Description</u>	<u>Data Rate</u>
<u>Push to talk (PTT) voice</u>	<u>Commercial grade PTT / PoC offerings with group call, alerting, and monitoring capability.</u>	<u>4-25 kb/s</u>
<u>Indoor video</u>	<u>Video that is transmitted from inside a building</u>	<u>20-384 kb/sF</u>
<u>Outdoor video</u>	<u>Video that is transmitted from the street</u>	<u>32-384 kb/s</u>
<u>Location services</u>	<u>All location based services</u>	<u>Less than 16kb/s</u>
<u>Database transactions</u>	<u>Remote databases access both under the entities' direct control as well as databases that are local</u>	<u>Less than 32kb/s</u>
<u>Messaging</u>	<u>Instant messaging, SMS, and Push to X services</u>	<u>Less than 16kb/s</u>
<u>Network Operations data</u>	<u>Network operational and maintenance data including over the air programming and remote client management</u>	<u>Less than 32kb/s</u>
<u>Dispatch data</u>	<u>Data as it relates to computer aided dispatching.</u>	<u>Less than 64kb/s</u>
<u>Generic traffic</u>	<u>General category for traffic that does not fall within any of the categories described above, and that generates less than 64kb of data per second</u>	<u>Less than 64kb/s</u>
<u>Telemetry</u>	<u>Remote measurement and reporting of information for radio devices, vehicles, and sensor data</u>	<u>70-120 kb/s</u>
<u>Virtual Private Networking</u>	<u>Secure remote access to entity LAN and WAN environments</u>	<u>64 – 256 kb/s</u>

§ 27.1306 Satellite coverage and service requirements

The Upper 700 MHz D Block licensee shall develop an internetworking gateway for voice, and a limited set of data services, with satellite service providers approved by the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall develop technical criteria and other specifications for the satellite internetworking solutions, which satellite service arrangements shall be negotiated and included in the NSA. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly agree on the level of Upper 700 MHz D Block licensee responsibilities for this capability, including services it may provide in support of the delivery and management of such services, and limitations and warranties for satellite service quality and availability outside of its immediate control and responsibility.

§ 27.1307 Spectrum use in the network:

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(d) *Commercial operations in the 763-768 MHz and 793-798 MHz bands.* Commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement shall not cause harmful interference to primary users (i.e., Priority Public Safety Users)~~public safety users~~) and cannot claim protection from harmful interference from the primary Priority Public Safety User ~~public safety~~ operations in the 763-768 MHz and 793-798 MHz bands. The network used by the Upper 700 MHz D Block licensee to provide~~providing~~ commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement must be designed to automatically assign priority to Priority Public Safety Users, as specified in § 27.1305(f)(4), ~~public safety users,~~ to the exclusion and/or immediate preemption of any commercial use on a dynamic, real-time priority basis, and to guarantee that Priority Public Safety Users~~public safety users~~ suffer no harmful interference or interruption or degradation of service due to commercial operations in the 763-768 MHz and 793-798 MHz bands.

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§ 27.1310 Network Sharing Agreement.

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(j) The NSA shall incorporate without modification all conditions and requirements made applicable to the Upper 700 MHz D Block license by the provisions of this subpart N of this part.

~~(j)~~(k) The NSA must have a term, not to exceed 1540 years from the later of (i) February 17, 2009; ~~;~~ and (ii) the issuance of the Upper 700 MHz D Block license, that coincides with the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License. If the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License are renewed, then the NSA shall remain in effect.

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§ 27.1330 Local public safety build-out and operation.

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(b) * * *

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(5) *Rights to build out and operate in areas without a build-out commitment.* In areas for which the NSA does not require the Upper 700 MHz D Block licensee to build out the Shared Wireless Broadband Network, a public safety entity may build out and operate a separate, exclusive network in the 700 MHz public safety broadband spectrum at any time,

provided the public safety entity has received the written approval of both the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee and operates its independent network pursuant to a spectrum leasing arrangement into which the public safety entity has entered with the Public Safety Broadband Licensee.

(i) Such leasing arrangement shall ~~not~~ require the approval or consent of the ~~Upper 700 MHz D Block licensee; however, the~~ Public Safety Broadband Licensee ~~and must provide~~ the Upper 700 MHz D Block licensee. ~~The -with notice of the public safety entity's intent to construct in that area within 30 days of receipt of a request from a~~ public safety entity seeking to exercise this option, ~~and~~ shall inform the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee of the public safety entity's anticipated build-out date(s).

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(iii) * * *

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(D) The network must satisfy any other terms or conditions required by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee; and

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(7) The Public Safety Broadband Licensee must file with the Commission and notify the Upper 700 MHz D Block licensee of any spectrum manager leasing arrangement as specified in § 1.9020(e) of this chapter; such filing shall identify the public safety entity leasing the spectrum, the particular areas of spectrum leased as part of this build-out option, and the specific network infrastructure and equipment deployed on such leased spectrum.

§ 27.1340 Reporting obligations:

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(b) The Upper 700 MHz D Block licensee ~~and the Public Safety Broadband Licensee~~ shall have ~~joint~~ responsibility to register the base station locations with the Commission, providing basic technical information, including geographic location.

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**PART 90 – PRIVATE LAND
MOBILE RADIO SERVICES**

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§ 90.7 Definitions:

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Emergency. An Emergency is an unforeseen combination of circumstances or the resulting state that calls for immediate action, including the actual or threatened existence of conditions of disaster or extreme peril to the safety of persons and property caused by such conditions as air pollution, avalanche, drought, earthquake, epidemic, fire, flood, riot or other civil disturbance, storm, sudden and severe energy shortage, volcano, or other conditions, including conditions resulting from war or imminent threat of war.

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Priority Public Safety User. A Priority Public Safety User is a public safety entity, or an individual employed by such an entity (1) that is (i) engaged in a service the sole or principal purpose of which is to protect the safety of life, health, or property, which service is provided by a State or local government entity, or by a nongovernmental organization authorized by a governmental entity whose primary mission is the provision of such a service; or (ii) approved by the Commission and the Public Safety Broadband Licensee as essential to the provision of such a service; and (2) that is a member of the cooperative arrangement established by the Public Safety Broadband Licensee pursuant to § 90.1403(c) for the purpose of obtaining priority access on the Shared Wireless Broadband Network.

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SUBPART AA – 700 MHZ PUBLIC/PRIVATE PARTNERSHIP

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§ 90.1403 Public Safety Broadband License conditions; cooperative license arrangements;

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(c) For purposes of facilitating the performance of responsibilities by the Public Safety Broadband Licensee pursuant to paragraph (b) of this section, the Public Safety Broadband Licensee and individual Priority Public Safety Users utilizing spectrum in the 763-768 MHz and 793-798 MHz bands are hereby deemed to be utilizing such spectrum pursuant to a cooperative arrangement. Pursuant to this cooperative arrangement, the Public Safety Broadband Licensee holds the authorization for such spectrum, but individual Priority Public Safety Users may utilize such spectrum on a non-profit, cost-shared basis. The cooperative arrangement authorized by this paragraph (c) shall enable the Public Safety Broadband Licensee to exercise various authority and to engage in various activities in furtherance of its responsibilities described in paragraph (b) of this section. Pursuant to this authorization, the Public Safety Broadband Licensee is hereby granted the authority:

(1) To establish membership criteria for participation in the cooperative arrangement with individual Priority Public Safety Users as it deems necessary or appropriate to fulfill its

responsibilities and to further the objectives and policies of the Commission with regard to the operations and activities of the 700 MHz Public/Private Partnership.

(2) To ensure that the highest levels of Shared Wireless Broadband Network priority access are used only for authorized public safety purposes and to be responsible for defining appropriate priority levels for assignment by individual Priority Public Safety Users.

(3) To ensure that arrangements between the Upper 700 MHz D Block licensee and Priority Public Safety Users are consistent with the provisions of the NSA and with the Commission's rules, and fully utilize the public safety benefits provided for by the NSA.

(4) Acting on behalf of individual Priority Public Safety Users, to (i) negotiate pricing for such entities purchasing Shared Wireless Broadband Network airtime from the Upper 700 MHz D Block licensee; (ii) negotiate favorable terms with equipment vendors for subscriber devices; and (iii) enter into other contractual agreements in furtherance and support of the cooperative arrangement authorized by this paragraph (c).

(5) To monitor compliance by the Upper 700 MHz D Block licensee with the Commission's rules and with the NSA in accordance with § 27.1305 and § 90.1405, including the authority to monitor such licensee's performance on a real-time basis to ensure that any problems are identified and expeditiously corrected.

(6) To negotiate a spectrum lease agreement with the Upper 700 MHz D Block licensee, as part of the NSA negotiation process, including negotiation of service usage fees for Priority Public Safety Users on the Shared Wireless Broadband Network, pursuant to which the Public Safety Broadband Licensee shall receive compensation for use of the spectrum for which the Public Safety Broadband Licensee holds the license issued by the Commission.

(7) To take such other actions that are consistent with and necessary for the fulfillment of, the responsibilities of the Public Safety Broadband Licensee established in paragraph (b) of this section.

§ 90.1405 Shared Wireless Broadband Network.

The Shared Wireless Broadband Network developed by the 700 MHz Public/Private Partnership must be designed to meet requirements associated with a nationwide, public safety broadband network. At a minimum, the network shall incorporate the features specified in this section. All specified mandatory requirements as defined in this section or in the approved and executed NSA, as specified in § 90.1410, shall be used in the determination of compliance under § 90.1420. The Public Safety Broadband Licensee and the D Block auction winner shall establish a joint program, which shall be required by the NSA and which shall be established not later than six months following the approval and execution of the NSA pursuant to § 90.1415, to identify Priority Public Safety User requirements for inclusion in the Upper 700 MHz D Block licensee's Shared Wireless Broadband Network technology road map. This joint program also shall support the processes of the appropriate standards development organizations (SDOs) to encourage the inclusion of those requirements in subsequent technology releases. The 700 MHz

Public/Private Partnership, in its development of the Shared Wireless Broadband Network, shall:must incorporate the following features:

(a) Develop a design-Design for public safety operationsoperation over a commercial broadband technology platform that provides mobile voice, video, and data capability that is seamlessly-interoperable across public safety local and state agencies, jurisdictions, and geographic areas, and thatwhich includes current and evolving state-of-the-art technologies reasonably made available in the commercial marketplace with features beneficial to the public safety community.

(1) Such a design shall provide a national common radio access network air interface (CAI) as specified by the Upper 700 MHz D Block licensee to enable Shared Wireless Broadband Network national level interoperability. The CAI shall allow migration to future technology upgrades.

(2) The technology selected for the Shared Wireless Broadband Network shall be permitted to evolve and shall be upgraded based on commercial wireless upgrade timeframes, except that future upgrades shall include user equipment (UE) backward compatibility to allow for appropriate transition periods so that UE used by public safety entities does not become prematurely obsolete.

(3) The notification and impact management processes relating to technology upgrades, and migration to such upgrades, shall be defined and agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee as part of the NSA process established in § 90.1410.

(b) Provide Ssufficient signal coverage to ensure reliable operation throughout the service area consistent with typical public safety communications systems. To achieve this goal, coverage, propagation, and performance, as specified in Table 1 of this section, shall be used to measure the effective capabilities of the Shared Wireless Broadband Network for the first four years of operation. The parameters listed in Table 1 of this section shall be reviewed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee every two years thereafter to assess the impact of benefits from technology evolution and general improvement in network coverage. All incremental increases in coverage, propagation, and performance shall be incorporated as updates or modifications to Table 1 of this section. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall submit information on a semiannual basis regarding all incremental improvements in coverage, propagation, and performance to the Chiefs of the Public Safety and Homeland Security Bureau and the Wireless Telecommunications Bureau for review. The Chiefs of the respective Bureaus are delegated joint responsibility for reviewing such submissions.

(c) Provide sufficient-Sufficient robustness to meet the reliability and performance requirements of public safety.

(1) The Shared Wireless Broadband Network shall provide a 99.9 percent network availability for all terrestrial elements of operation calculated on jurisdictional boundaries.

(2) The method for measuring availability shall be negotiated as part of the NSA, except that such method shall reflect the intent of the Commission that such method (i) shall be a measure of infrastructure availability as measured from the cell site radio antenna through and across the core network; and (ii) shall exclude radio signal coverage and scheduled maintenance downtime as coordinated with the Public Safety Broadband Licensee.

(3) The Shared Wireless Broadband Network design specifications shall include commercial best practices, such as Network Reliability and Interoperability Council best practices, that 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.

(4) The method for measuring availability shall take into account the cellular-like network architecture of the Shared Wireless Broadband Network.

(5) Sites designated as “critical” shall have battery backup power of 8 hours, and shall have generators with a fuel supply sufficient to operate the generators for at least 5 days. The designation of a site as a “critical” site shall be a joint decision by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and designated representatives of those local Priority Public Safety Users that the Public safety Broadband Licensee determines to be affected by the particular designation or designations involved. The designation of sites as “critical” shall not require the Upper 700 MHz D Block licensee, for purposes of complying with the requirements of this subparagraph (5), to expend during the period of the initial license term more than the lesser of (i) the amount necessary to achieve such compliance with respect to the designation of not more than 50 percent of the operational Shared Wireless Broadband Network site count as critical sites; or (ii) \$2 billion. The Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee, and local Priority Public Safety User shall jointly determine the percentage of sites that will require redundant backhaul in order to comply with the network availability standard.

(d) Provide sufficient ~~Sufficient~~ capacity to meet the needs of public safety.

(1) Measures of sufficient capacity shall be developed, and agreed to, by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee, and incorporated into the NSA prior to the approval and execution of the NSA pursuant to § 90.1415.

(2) The Upper 700 MHz D Block licensee shall ensure that the installed and engineered capacity across the entire Shared Wireless Broadband Network incorporates the user and service demand forecasts jointly developed by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee.

(3) The Upper 700 MHz D Block licensee shall deliver to the Public Safety Broadband Licensee capacity utilization reports that provide a comparative measure of public safety

network services utilization against the documented, engineered, installed, and in-service Radio Access (RA) and terrestrial network capacity.

(e) Provide security ~~Security~~ and encryption consistent with state-of-the-art technologies. For purposes of complying with this paragraph (e), the Upper 700 MHz D Block licensee shall:

(1) Accommodate compliance with (i) Federal Bureau of Investigation Criminal Justice Information System (CJIS) guidelines, which include physical security guidelines, advanced authentication methods, and unique identifiers for authenticated users; and (ii) the National Information Exchange Model (NIEM) to facilitate the sharing of Emergency and incident information across agencies and jurisdictions.

(2) Implement controls to ensure that public safety priority and secure network access are limited to authorized Priority Public Safety Users and devices, and utilize an open standard protocol for authentication.

(3) Allow for public safety network authentication, authorization, automatic logoff, transmission secrecy and integrity, audit control capabilities, and other unique attributes.

(4) Present recommendations to the Public Safety Broadband Licensee for data and operations security safeguards and controls. As part of the NSA development, the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall assess the Upper 700 MHz D Block licensee's data security policies and procedures and jointly agree to any changes or modifications that shall be required to ensure public safety security compliance.

(f) Provide ~~A~~ a mechanism to automatically prioritize and deliver specified Quality of Service (QoS) management features for public safety communications of Priority Public Safety Users over commercial uses on a real-time basis consistent with the requirements of § 90.1407. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall take into account the fact that the technology deployed by the Upper 700 MHz D Block licensee on the Shared Wireless Broadband Network will determine the specific method used to provide network priority and QoS in compliance with the expressed expectations of the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall have authority to define the highest levels of network priority and QoS for Priority Public Safety Users and for other priority users approved by the Public Safety Broadband Licensee and the Commission. In addition, the following priority and QoS definitions shall be used for purposes of providing a mechanism to automatically prioritize and deliver specified QoS management features, and the described attributes shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network:

(1) Priority shall be defined as Public Safety Broadband Licensee-approved user, network, application, and services priorities that, via user or device identification, or both, offer the highest assignable levels of priority for network access and use of network resources, services, and applications.

(2) The highest 50 percent of access priority levels available in the radio access network technology shall be allocated for assignment and use only for Public Safety Broadband Licensee-approved Priority Public Safety Users and for other Public Safety Broadband Licensee-approved and Commission-approved users.

(3) The Shared Wireless Broadband Network shall provide an automatic mechanism to accommodate Priority Public Safety Users' preemption of commercial users for up to 50 percent of the site engineered capacity.

(4) The Shared Wireless Broadband Network shall provide assured priority access to Priority Public Safety Users for (i) up to 50 percent of the site engineered capacity at all times; and (ii) up to 70 percent of the site engineered capacity for the duration of an Emergency occurring within the jurisdiction or jurisdictions of such Priority Public Safety Users. For purposes of this subparagraph, the term "priority access" means any organizational method of assigning users access to the network.

(5) The Shared Wireless Broadband Network shall provide an appropriate priority to 9-1-1 calls pursuant to applicable Commission requirements. 9-1-1 calls shall not be subject to any preemption.

(6) The determination of QoS classes shall be technology-dependent, except that the Shared Wireless Broadband Network shall support mechanisms to ensure the performance of defined classes of service for Priority Public Safety User services and applications, as specified in Table 2 of this section.

(7) QoS resource reservation and session control mechanisms shall be incorporated into the operational capabilities of the Shared Wireless Broadband Network.

(8) QoS shall be considered to be the full class of mechanisms that are found at multiple IP layers in the network (both RAN and Core), and that provision and apply priority for IP packet based traffic.

(9) The assignment of network resources shall enable user or service priority, or both, in addition to the QoS requirements of the application.

(10) The Shared Wireless Broadband Network shall support multiple IP data services and application session flows between a user device and network, where each flow may have a different QoS requirement and priority level.

(11) If network resources are not available to meet a resource reservation request, the Shared Wireless Broadband Network shall have the ability to negotiate a mutually acceptable QoS with the user device.

(12) All services and applications that are authorized and designated by the Public Safety Broadband Licensee for use by Priority Public Safety Users, and that utilize Virtual Private Network (VPN) and layer 2/3 VPN access methods, shall be assigned and provided the

highest IP packet routing and queuing capability across all Shared Wireless Broadband Network radio and terrestrial network elements and all Shared Wireless Broadband Network internetworking gateways.

(13) The methods by which QoS shall be promulgated across the Shared Wireless Broadband Network shall be dependent on the technology employed. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly identify, and agree to, in the NSA the Shared Wireless Broadband Network configuration parameters required to provide the specified QoS for Public Safety Broadband Licensee authorized or designated services, applications, and permissions.

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

(1) The Shared Wireless Broadband Network shall provide:

(i) Access for all Public Safety Broadband Licensee-approved applications and services, hosted applications and services, and third party public safety applications and services approved by the Public Safety Broadband Licensee for use on the Shared Wireless Broadband Network, consistent with specified performance, network transport, and routing parameters in Table 2 of this section, and the technical capabilities of the Shared Wireless Broadband Network technology.

(ii) Commercial Push-To-Talk (PTT) capability and the ability to create, modify, and remove user group configurations and assignments by Priority Public Safety Users.

(2) To ensure that the operational capabilities required by Priority Public Safety Users are delivered by the Upper 700 MHz D Block licensee, the Public Safety Broadband Licensee shall develop Service Level Agreements (SLAs) and supporting Key Performance Indicators (KPIs) for inclusion in the NSA. The SLAs and KPIs shall measure conformance to QoS and to the Priority Public Safety User Quality of Experience (QoE), network performance as specified in this section, and the implementation and management of Priority Public Safety User priority mechanisms employed on the Shared Wireless Broadband Network.

(3) The final SLAs and KPIs, associated measurements and reports, access to source data, violations, shortfall identification, and correction oversight on the part of the Public Safety Broadband Licensee shall be agreed to and included in the NSA. The Upper 700 MHz D Block licensee shall, as part of this process, provide access to service assurance systems and data to perform analysis on compliance and out-of-compliance situations and remedies, and conduct formal quarterly reviews of performance, with reference to SLAs incorporated in the NSA, between the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee.

(h) Provide for operational-Operational control of the network by the Public Safety Broadband Licensee, on terms and conditions agreed to by the Public Safety Broadband

Licensee and the Upper 700 MHz D Block licensee, to the extent necessary to ensure that Priority Public Safety Users' expectationspublic safety requirements are met.

(1) These terms and conditions shall include the ability of the Public Safety Broadband Licensee and Priority Public Safety Users to:

(i) Have real-time monitoring and visibility into the network that is integrated with performance, SLA, and KPI reports as defined and specified in the NSA.

(ii) Have real-time visibility into Shared Wireless Broadband Network service quality and network status relevant to the local agency or jurisdiction, including the ability for local Priority Public Safety Users to have real-time network status, site status, and alarm visibility for their geographic area.

(2) The type, content, source, display, delivery format, security, reliability and other key design parameters shall be addressed in the NSA.

(3) As provided in paragraph (g) of this section, there shall be real-time access to service management applications, with control limited to local agency or jurisdiction Priority Public Safety Users. These controls shall include the ability to view and modify user, group, and application priorities and profiles, and to add, modify, provision, and authenticate priority users and devices.

(4) Operational control, as agreed to between the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA, shall include:

(i) The ability by Priority Public Safety Users 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.

(ii) The authorities and permissions for Public Safety Broadband Licensee-trained incident management personnel to have real-time access to the Upper 700 MHz D Block licensee's primary and secondary Network Operations Centers (NOCs).

(iii) Defined, agreed to, and specifically developed Public Safety Broadband Licensee views and presentations from the Upper 700 MHz D Block licensee's Operational Support Systems (OSS) / Network Management Systems (NMS). These views and presentations shall include defined real-time national, regional, and local Priority Public Safety User visibility into the Shared Wireless Broadband Network service quality and network status with associated notification and alerting methods to ensure the health and safety of public safety personnel.

(iv) Real-time visibility of Priority Public Safety User consumption of network resources in a given geographic location or locations, with alerts and notifications when the priority access capacity maximum of 70 percent occurs on a given site.

(v) As provided in subparagraph (3) of this paragraph (h), the Public Safety Broadband Licensee, to facilitate incident management, shall be provided with access to service management applications with control to set up, and to modify, user, user group, and application priority profiles nationally across agencies and jurisdictions, enabling the Public Safety Broadband Licensee to provision or to add, manage, and authenticate, users and devices nationally across agencies and jurisdictions to facilitate incident management. The standards governing incident management shall also enable local Priority Public Safety Users to provision or to add, manage, and authenticate, users and devices within the jurisdictions of such Users to facilitate incident management.

(vi) Access to an over-the-air management framework for managing Shared Wireless Broadband Network Priority Public Safety User devices (individually or in groups of devices) to clear user data or disable devices.

(vii) Notification to the Public Safety Broadband Licensee of network downtime (or any work that may affect service or network performance) due to planned maintenance, configuration changes, or upgrades. In conjunction with this requirement a method shall be agreed to by the Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee in the NSA that shall enable the Public Safety Broadband Licensee or Priority Public Safety Users to provide the Upper 700 MHz D Block licensee with advance notice of planned public safety events to allow time for proper capacity planning and, if required, adjustment. The Public Safety Broadband Licensee or the local Priority Public Safety Users, or both, shall coordinate with the Upper 700 MHz D Block licensee for all specific or special requirements to support such activities.

<u>Table 1 to § 90.1405 — Propagation and Capacity Parameters</u>					
<u>Morphology</u>	<u>In-Building Penetration Margin</u>	<u>Coverage Availability</u>	<u>Sector Loading Factor</u>	<u>Forward Link Throughput</u> <u>- On-street</u> <u>- Single user</u> <u>- Average cell edge</u> <u>- throughput</u>	<u>Reverse Link Throughput</u> <u>- On-street</u> <u>- Single user</u> <u>- Average cell edge</u> <u>- throughput</u>
<u>Dense Urban</u>	<u>22 dB</u>	<u>95%</u>	<u>70%</u>	<u>1000 kbps</u>	<u>256 kbps</u>
<u>Urban</u>	<u>19 dB</u>	<u>95%</u>	<u>70%</u>	<u>1000 kbps</u>	<u>256 kbps</u>
<u>Suburban</u>	<u>13 dB</u>	<u>95%</u>	<u>70%</u>	<u>512 kbps</u>	<u>128 kbps</u>
<u>Rural</u>	<u>6 dB</u>	<u>95%</u>	<u>70%</u>	<u>512 kbps</u>	<u>128 kbps</u>
<u>Highway</u>	<u>6 dB</u>	<u>95%</u>	<u>70%</u>	<u>128 kbps</u>	<u>64 kbps</u>

Table 2 to § 90.1405 — Applications and Services QoS Attributes

<u>Application/Service</u>	<u>Description</u>	<u>Data Rate</u>
<u>File transfer</u>	<u>FTP and general data upload / download</u>	<u>Greater than 256kb/s</u>
<u>Email</u>	<u>Both Web based and Entity Hosted E-Mail Service</u>	<u>Less than 16kb/s</u>
<u>Web browsing</u>	<u>Intranet, extranet, and internet</u>	<u>Greater than 32kb/s</u>
<u>Mobile voice</u>	<u>Equivalent to current commercial mobile voice</u>	<u>Minimum 15 kb/s</u>
<u>Push to talk (PTT) voice</u>	<u>Commercial grade PTT / PoC offerings with group call, alerting, and monitoring capability.</u>	<u>4-25 kb/s</u>
<u>Indoor video</u>	<u>Video that is transmitted from inside a building</u>	<u>20-384 kb/sF</u>
<u>Outdoor video</u>	<u>Video that is transmitted from the street</u>	<u>32-384 kb/s</u>
<u>Location services</u>	<u>All location based services</u>	<u>Less than 16kb/s</u>
<u>Database transactions</u>	<u>Remote databases access both under the entities direct control as well as databases that are local.</u>	<u>Less than 32kb/s</u>
<u>Messaging</u>	<u>Instant messaging, SMS, and Push to X services</u>	<u>Less than 16kb/s</u>
<u>Network Operations data</u>	<u>Network operational and maintenance data including over the air programming and remote client management</u>	<u>Less than 32kb/s</u>
<u>Dispatch data</u>	<u>Data as it relates to computer aided dispatching.</u>	<u>Less than 64kb/s</u>
<u>Generic traffic</u>	<u>General category for traffic that does not fall within any of the categories described above, and that generates less than 64kb of data per second</u>	<u>Less than 64kb/s</u>
<u>Telemetry</u>	<u>Remote measurement and reporting of information for radio devices, vehicles, and sensor data</u>	<u>70-120 kb/s</u>
<u>Virtual Private Networking</u>	<u>Secure remote access to entity LAN and WAN environments</u>	<u>64 – 256 kb/s</u>

§ 90.1406 Satellite coverage and service requirements

The Upper 700 MHz D Block licensee shall develop an internetworking gateway for voice, and a limited set of data services, with satellite service providers approved by the Public Safety Broadband Licensee. The Public Safety Broadband Licensee shall develop technical criteria and other specifications for the satellite internetworking solutions, which satellite service arrangements shall be negotiated and included in the NSA. The Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee shall jointly agree on the

level of Upper 700 MHz D Block licensee responsibilities for this capability, including services it may provide in support of the delivery and management of such services, and limitations and warranties for satellite service quality and availability outside of its immediate control and responsibility.

§ 90.1407 Spectrum use in the network.

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(c) *Commercial operations in the 763-768 MHz and 793-798 MHz bands.* Commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement shall not cause harmful interference to primary users (*i.e.*, Priority Public Safety Users)~~public safety users~~) and cannot claim protection from harmful interference from the primary Priority Public Safety User ~~public safety~~ operations in the 763-768 MHz and 793-798 MHz bands. The network used by the Upper 700 MHz D Block licensee to provide~~providing~~ commercial operations in the 763-768 MHz and 793-798 MHz bands through the spectrum manager leasing arrangement must be designed to automatically assign priority to Priority Public Safety Users, as specified in § 90.1405(f)(4), ~~public safety users,~~ to the exclusion and/or immediate preemption of any commercial use on a dynamic, real-time priority basis, and to guarantee that Priority Public Safety Users~~public safety users~~ suffer no harmful interference or interruption or degradation of service due to commercial operations in the 763-768 MHz and 793-798 MHz bands.

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§ 90.1410 Network Sharing Agreement.

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(j) The NSA shall incorporate without modification all conditions and requirements made applicable to the Upper 700 MHz D Block license by the provisions of this subpart AA of this part.

~~(j)~~(k) The NSA must have a term, not to exceed 1540 years from the later of (i) February 17, 2009; ~~and (ii) the issuance of the Upper 700 MHz D Block license,~~ that coincides with the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License. If the terms of the Upper 700 MHz D Block license and the Public Safety Broadband License are renewed, then the NSA shall remain in effect.

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§ 90.1430 Local public safety~~Public Safety~~ build-out and operation.

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(5) *Rights to build out and operate in areas without a build-out commitment.* In areas for which the NSA does not require the Upper 700 MHz D Block licensee to build out the Shared Wireless Broadband Network, a public safety entity may build out and operate a separate, exclusive network in the 700 MHz public safety broadband spectrum at any time, provided the public safety entity has received the written approval of both the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee and operates its independent network pursuant to a spectrum leasing arrangement into which the public safety entity has entered with the Public Safety Broadband Licensee.

(i) Such leasing arrangement shall ~~not~~ require the approval or consent of the ~~Upper 700 MHz D Block licensee; however, the~~ Public Safety Broadband Licensee and must provide the Upper 700 MHz D Block licensee. ~~The -with notice of the public safety entity's intent to construct in that area within 30 days of receipt of a request from a~~ public safety entity seeking to exercise this option, ~~and~~ shall inform the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee of the public safety entity's anticipated build-out date(s).

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(D) The network must satisfy any other terms or conditions required by the Public Safety Broadband Licensee and the Upper 700 MHz D Block licensee; and

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(7) The Public Safety Broadband Licensee must file with the Commission and notify the Upper 700 MHz D Block licensee of any spectrum manager leasing arrangement as specified in § 1.9020(e) of this chapter; such filing shall identify the public safety entity leasing the spectrum, the particular areas of spectrum leased as part of this build-out option, and the specific network infrastructure and equipment deployed on such leased spectrum.

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§ 90.1440 Reporting obligations.

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(b) The Upper 700 MHz D Block licensee ~~and the Public Safety Broadband Licensee~~ shall have ~~joint~~ responsibility to register the base station locations with the Commission, providing basic technical information, including geographic location.