

**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, that is bounded by a specific geographic area of impact and expected to be of limited duration, 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, as declared by the Defense Commissioner or the Public Safety Broadband Licensee.

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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 § 90.14031043(c) for the purpose of obtaining priority access on the Shared Wireless Broadband Network.

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§ 27.13 License period

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(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 applicable 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 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, each~~ 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, as permitted to be modified under paragraph (m)(2) of this section.

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(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.~~

(1) Each Upper 700 MHz D Block licensee shall provide signal coverage and offer service over at least the percent of the population covered by their license authorizations as specified in Table X below. If such a licensee fails to provide service coverage at the applicable four-year level in Table X, the term of that license authorization will be automatically reduced by two years and such licensee shall be required to meet the ten year coverage requirement for such license within eight years after the license issuance.

Table X - D Block Market Service Coverage Requirements Based on Population Density of Licensed Area

<u>Population Density of Licensed Area</u>	<u>Service Population Coverage Requirement</u>
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	<u>Four Years after license issuance</u>	<u>Ten Years after license issuance</u>
<u>< 10 pops per square mile</u>	<u>43%</u>	<u>86%</u>
<u>≥ 10 and < 100 pops per square mile</u>	<u>45%</u>	<u>90%</u>
<u>≥100 and < 500 pops per square mile</u>	<u>47%</u>	<u>94%</u>
<u>≥ 500 pops per square mile</u>	<u>49%</u>	<u>98%</u>

(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~~shall use 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~~ and in compliance with § 27.1305, to be made available for use by Priority Public Safety Users that operate in those areas. The ~~schedule~~ service coverage 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 applicable Upper 700 MHz D Block licensee determines, in consultation with the Public Safety Broadband Licensee and the ~~Upper 700 MHz D Block licensee jointly determine, in consultation with a~~ relevant community, that (a) such additional coverage will not provide significant public benefit ~~and will not require adherence to the procedures outlined in subparagraph (2) of this paragraph, or (b) such additional coverage cannot be provided on commercially reasonable terms and conditions.~~

(4) ~~The~~Each Upper 700 MHz D Block licensee shall demonstrate compliance with performance requirements by filing a construction notification with the Commission and the Public Safety Broadband Licensee within 15 days of the expiration of the relevant benchmark, in accordance with the provisions set forth in § 1.946(d). ~~The~~Each 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~~ that 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 each 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 Each~~ Upper 700 MHz D Block licensee shall provide Priority Public Safety Users and individual Priority Public Safety Users with assured priority access during Emergencies as specified in § 27.1305(f)(4) and in the ~~NSA~~ Network Sharing Agreement.

(f) ~~The Each~~ Upper 700 MHz D Block licensee shall, execute as ~~part a condition~~ of being awarded the NSA negotiation process, negotiate a spectrum lease agreement, and spectrum lease fees, with the license authorization for which it has filed a long form application the Network Sharing Agreement in the form approved by the Commission pursuant to § 90.1403(b)(10).

(g) For use of the Public Safety Broadband Licensee's licensed spectrum, each Upper 700 MHz D Block licensee shall pay the Public Safety Broadband Licensee pursuant to § 90.1403(c)(6), and shall comply with all terms and conditions of such lease agreement annually an amount specified in the Network Sharing Agreement, which shall be no less than 3 percent and no more than 5 percent of the net winning bid amount for the applicable Upper 700 MHz D Block license. The annual payments may be adjusted for price inflation and thereby exceed 5 percent as provided in the Network Sharing Agreement. The

Network Sharing Agreement may provide that this fee varies based on the population density of the licensed area. This spectrum lease fee shall be paid to the Public Safety Broadband Licensee in equal quarterly installments in advance.

~~(g)~~

(h) These conditions and requirements will apply to any related entities that the Commission may require or allow, as provided for in the ~~NSA~~ Network Sharing Agreement or otherwise as authorized by the Commission. ~~§ 27.1305 – Shared Wireless Broadband Network.~~

(i) National Committee of Area Licensees

(1) Formation. Following the grant of any Upper 700 MHz D Block licenses, the licensees shall form a national committee. Any subsequent licensees in the Upper 700 MHz D Block shall join this national committee. Licensees under common control (defined as 50 percent or more ownership by the party) shall be treated as a single licensee for purposes of the national committee.

(2) Board of directors. The board of directors of the national committee shall have three categories of directors, each of which shall comprise a minority of the total number of directors: (i) nominees of the largest licensees (by licensed POPs) in the Upper 700 MHz D Block; (ii) nominees of the other licensees; and (iii) independent directors nominated by majority vote of all licensees (with the independent directors having no other business relationship to any licensee and subject to approval by the Commission). The position of chairman of the board shall rotate across the three categories of directors. The board may establish an executive committee or other committees as it sees fit.

(3) Purpose. The national committee shall provide a point of contact for the Commission and Public Safety Broadband Licensee on national issues pertaining to the Upper 700 MHz D Block licenses. The national committee shall represent the licensees in negotiating supplements and amendments to the national Network Sharing Agreement that are applicable to services and networks nationwide, and licensees shall be bound by decisions of the national committee on such supplements and amendments. The licensees may also use the national committee to coordinate inter-operator matters to support their services.

(4) Voting. Actions by the national committee shall be taken by majority vote of the board of directors, except that approval by 75 percent of the directors shall be required for any supplement or amendment to the national Network Sharing Agreement applicable to services and networks nationwide which is reasonably expected to have a material adverse effect on any licensee. The board of directors may delegate authority to an executive committee or other committees and to officers of the national committee.

(5) Expenses. The licensees shall pay the expenses of the national committee in proportion to the number of licensed POPs of each licensee.

(6) Bylaws. Provisionally winning bidders shall, within ninety (90) days after the close of the auction of Upper 700 MHz D Block licenses, file for review by the Commission proposed bylaws and the initial directors for the national committee.

§ 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 as~~ specified in this ~~section.~~ Section 27.1305. 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. ~~1320.14(o).~~ The Network Sharing Agreement may raise or supplement the mandatory requirements specified in this section. The Public Safety Broadband Licensee and the ~~D-Block auction winner~~ National Committee of Area Licensees 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~~ licensees' 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 in~~ the ~~Upper 700 MHz D Block licensee~~ Network Sharing Agreement to enable Shared Wireless Broadband Network national level interoperability. The ~~CAI~~ common air interface 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, as determined by both the nationwide, interoperable network and the conditions appropriate to each license area, except that future upgrades shall include user equipment ~~(UE)~~ backward compatibility, as supported by commercial product availability and specified in the technology standards, to allow for ~~appropriate commercially reasonable~~ transition periods ~~so that UE used by for~~ public safety ~~entities does not become prematurely~~ obsolete entities' user equipment.

(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~~ in the Network Sharing Agreement.

(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~~ Tables 1a and 1b of this section, shall be used to measure the effective capabilities of the Shared Wireless Broadband Network for the first four years of operation. ~~Section 27.1305.~~ The parameters ~~listed in Table 1 of this section shall be reviewed by the Upper 700 MHz D Block licensee~~ for signal coverage, propagation, and performance shall be reviewed by the National Committee of Area Licensees and the Public Safety Broadband Licensee every ~~two~~ four 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 National Committee of Area Licensees and the Public Safety Broadband Licensee shall submit information ~~on a semiannual basis~~ annually 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~~ Bureaus. The Chiefs of the respective Bureaus are delegated joint responsibility for reviewing such submissions.

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

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(1) The Shared Wireless Broadband Network shall provide a 99.96 percent network availability for all terrestrial elements of operation in the coverage areas certified pursuant to §27.14(m)(4)(i) calculated on jurisdictional boundaries over each license area annually, starting four years after license issuance. The Upper 700 MHz D Block licensees shall use commercially reasonable efforts to provide network availability above this requirement, with the target of 99.9 percent network availability.

(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~~ defined in the Network Sharing Agreement, which shall (i) 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 prior notice to the Public Safety Broadband Licensee; (iii) exclude outages caused by actions or events outside the reasonable control of the applicable Upper 700 MHz D Block licensee; (iv) exclude outages only affecting limited applications; and (v) take into account the cellular-like network architecture of the Shared Wireless Broadband Network.

(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 48 hours; Upper 700 MHz D Block licensees shall use commercially reasonable efforts to provide fuel supply at “critical” sites above this requirement, with the target of 3-5 days. The designation of a site as a “critical” site shall be a joint decision by the applicable Upper 700 MHz D Block licensee, and 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, in consultation with the relevant community. 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), be required to expend during the period of the initial license term cover 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 for any applicable Upper 700 MHz D Block licensee; however, each Upper 700 MHz D Block licensee shall use commercially reasonable efforts to designate as “critical” additional sites requested by the Public Safety Broadband Licensee, up to 50 percent of all the licensee’s sites. The applicable Upper 700 MHz D Block licensee and local Priority the Public Safety User Broadband Licensee, in consultation with the relevant community, 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~~ Capacity to meet the needs of public safety.

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~~(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 specified in the Network Sharing Agreement.~~

~~(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~~ Sharing Agreement shall include a process for demand

forecasting. Each licensee shall use commercially reasonable efforts to meet capacity needs of public safety users of the Shared Wireless Broadband Network.

~~(3) The Upper 700 MHz D Block licensee~~

(3) The National Committee of Area Licensees shall deliver to the Public Safety Broadband Licensee annual 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)~~ radio access and terrestrial network capacity.

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

~~(1) Accommodate compliance with (i) Federal Bureau of Investigation Criminal Justice Information System (CJIS) Comply with U.S. federal government standards, guidelines, which include physical security guidelines, advanced authentication methods, and unique identifiers and models that are commercial best practices for authenticated users; and (ii) the National Information Exchange Model (NIEM) to facilitate the sharing of Emergency and incident information across agencies and jurisdictions~~ wireless broadband networks.

(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 in the Network Sharing Agreement 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~~ However, Upper 700 MHz D Block ~~licensee~~ licensees shall not be obligated to implement the features described in this subsection until equipment and systems supporting these features are available on commercially reasonable terms for such license areas, and Section 27.14(m) shall not be interpreted to require a timetable for implementing these features. These licensees 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~~ use reasonable efforts to work with applicable standards organizations, network ~~priority and QoS in compliance with the expressed~~

~~expectations of the Public Safety Broadband Licensee~~ equipment manufacturers and other suppliers to accelerate the commercially reasonable availability of these features for the Shared Wireless Broadband Network. 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:-

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(1) Priority shall be defined as Public Safety Broadband Licensee-approved user or class of users, network, application, and services priorities that, via user or class of users 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 and geographical area 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 as specified in the Network Sharing Agreement.

(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 or priority access rules in this Section 27.1305 (f).

(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~~ provide a new QoS consistent with the limited network resources.

(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 in accordance with the QoS mechanism in this Section 27.1305(f) 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, subject to 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~~ capacity allocation limitation in Section 27.1305(f)(4).

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

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(1) The Shared Wireless Broadband Network shall provide:

~~(i) Access~~ 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~~ specified in the Network Sharing Agreement, 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~~The Network Sharing Agreement shall specify 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~~public safety user priority mechanisms employed on the Shared Wireless Broadband Network.

~~(3) The final SLAs and KPIs, associated measurements and~~Each Upper 700 MHz D Block licensee shall provide reports, ~~access to source and 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~~ for 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,~~ with the Public Safety Broadband Licensee ~~and the Upper 700 MHz D Block licensee~~.

~~(h) 4) 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,~~ The monitoring will allow verification of performance, SLA, and KPI reports as defined and specified in the ~~NSA~~Network Sharing Agreement.

(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~~Have 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)~~(vii) 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)~~(viii) 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.

~~(5) 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~~ manner determined by the National Committee of Area Licensees, provide the Upper 700 MHz D Block licensee with advance notice of planned for nationally hosted applications services that require elements of:

- a. Functionality as specified in Table 2 required for handling Priority Public Safety User based on the QoS requirements specified in Section 27.1305 (f) and to the extent supported by the propagation and capacity attributes designated in Tables 1a and 1b.
- b. Authentication and authorization required to support Section 27.1305 (h) (4) (i) (a) for public safety subscribers via equipment such as Authentication, Authorization and Accounting (AAA) servers and Home Subscriber Servers (HSS).
- c. As provided in Section 27.1305 (g), access to non-commercial service management applications utilized exclusively for Priority Public Safety Users. These capabilities 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
- d. Monitoring of application level functionality as defined in Section 27.1305 (h) (4) (i) (a) for 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.~~ subscribers
- e. IP Multimedia Subsystem (IMS) or System Architecture Evolution (SAE) environments for the control and management of services. Key functionality:
 - i. For IMS: Call Session Control Function (CSCF), Home Subscriber Server (HSS) , Application Servers (AS), Media Resource Function (MRF)
 - ii. For SAE: Mobility Management Entity (MME), Serving Gateway (SGW) , Packet Data Network Gateway (PGW)

**Table ~~11a~~ to §27.1305 —
Voice 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 Urban	22 dB	95%	70%	1000 kbps	256 kbps
Urban	19 dB	95%	70%	1000 kbps	256 kbps
Suburban	13 dB	95%	70%	512 kbps	128 kbps
Rural	6 dB	95%	70%	512 kbps	128 kbps
Highway	6 dB	95%	70%	128 kbps	64 kbps

<u>Morphology</u>	<u>In-Building Penetration Margin</u>	<u>Cell Coverage Area Reliability</u>	<u>Sector Loading Factor</u>
<u>Dense Urban</u>	<u>22 dB</u>	<u>95%</u>	<u>70%</u>
<u>Urban</u>	<u>19 dB</u>	<u>95%</u>	<u>70%</u>
<u>Suburban</u>	<u>13 dB</u>	<u>95%</u>	<u>70%</u>
<u>Rural</u>	<u>6 dB</u>	<u>95%</u>	<u>70%</u>
<u>Highway</u>	<u>6 dB</u>	<u>95%</u>	<u>70%</u>

<u>Table 1b to 27.1305 Data Propagation and Capacity Parameters</u>				
<u>Morphology</u>	<u>Cell Coverage Area Reliability</u>	<u>Sector Loading Factor</u>	<u>Forward Link Throughput On-Street Single user Average Cell-edge</u>	<u>Reverse Link Throughput On-Street Single user Average Cell-edge</u>
<u>Dense Urban</u>	<u>95%</u>	<u>70%</u>	<u>256 kbps</u>	<u>256 kbps</u>
<u>Urban</u>	<u>95%</u>	<u>70%</u>	<u>256 kbps</u>	<u>256 kbps</u>
<u>Suburban</u>	<u>95%</u>	<u>70%</u>	<u>128 kbps</u>	<u>128 kbps</u>
<u>Rural</u>	<u>95%</u>	<u>70%</u>	<u>128 kbps</u>	<u>128 kbps</u>
<u>Highway</u>	<u>95%</u>	<u>70%</u>	<u>64 kbps</u>	<u>64 kbps</u>

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
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

§ 27.1306 Satellite coverage and service requirements

The ~~Upper 700 MHz D-Block licensee~~ Network Sharing Agreement shall ~~develop~~ specify 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.

* * * * *(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 shall be offered through the spectrum manager long term de facto transfer leasing arrangement arrangements to each applicable Upper 700 MHz D Block licensee pursuant to Section 1.9030. The commercial lessees 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~~ networks used by the Upper 700 MHz D Block ~~licensee~~ licensees 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.~~

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§ 27.1310 Network Sharing Agreement.

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(j) The ~~NSA~~ Network Sharing Agreement shall ~~incorporate without modification~~ comply with all conditions and requirements made applicable to the Upper 700 MHz D Block ~~license licenses~~ by the provisions of this subpart N of this part. For provisions applicable to services and networks nationwide, the Network Sharing Agreement may be amended by agreement of the National Committee of Area Licensees and the Public Safety Broadband Licensee. For provisions applicable solely to services and networks in a particular Upper 700 MHz D Block license area, the Network Sharing Agreement may be amended by agreement of the applicable Upper 700 MHz D Block licensee and the Public Safety Broadband Licensee.

(k) The ~~NSA~~ Network Sharing Agreement must have a term, not to exceed 15 years from the later of (i) February 17, 2009; and (ii) the earliest issuance of ~~the an~~ 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 licenses~~ and the Public Safety Broadband License are renewed, then the ~~NSA~~ term of the Network Sharing Agreement shall ~~remain in effect~~ be extended.

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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~~Network Sharing Agreement does not require ~~the~~an Upper 700 MHz D Block licensee to build out the Shared Wireless Broadband Network and which remain unserved more than four years after initial grant of the applicable Upper 700 MHz D Block license, a public safety entity ~~may~~will be permitted to 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.~~ Such separate network must comply with the requirements in Section 27.1305 as implemented in the Network Sharing Agreement for such area. The public safety entity proposing to deploy and operate such separate network must have negotiated in good faith and been unable to agree with the applicable Upper 700 MHz D Block licensee on terms and conditions under which an expansion and/or enhancement of the Shared Wireless Broadband Network could be employed to meet the requirements of such public safety entity, and must have obtained approvals of both the Public Safety Broadband Licensee and the applicable Upper 700 MHz D Block licensee. Such public safety entity must agree to operate its separate network pursuant to a spectrum leasing arrangement ~~into which the public safety entity has entered~~ with the Public Safety Broadband Licensee.

(i) Such spectrum leasing arrangement shall require the ~~approval or consent of lessee to coordinate with the Public Safety Broadband Licensee and the applicable~~ Upper 700 MHz D Block licensee. ~~The~~ in advance of construction and operation of such a separate network. Such public safety entity shall minimize possible interference to the Shared Wireless Broadband Network from its network construction and operations, including by not interfering with any expansion and/or enhancement of the Shared Wireless Broadband Network undertaken after construction of such a separate network. A public safety entity seeking to exercise this option shall inform the Public Safety Broadband Licensee and the applicable 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~~

~~§ 27.1340 Reporting obligations~~

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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.**~~

~~(b) Each 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.~~

~~* * * * *~~

~~—(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.~~

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 and shall not preclude any individual Priority Public Safety User from obtaining Shared Wireless Broadband Network airtime and priority access on terms and conditions other than those~~

negotiated by the Public Safety Broadband Licensee. Pursuant to this authorization, the Public Safety Broadband Licensee is hereby granted the authority:

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(2) General administration of access to the 763-768 MHz and 793-798 MHz bands by individual public safety entities, including implementation of user registration procedures, assessment of usage fees and related frequency coordination duties.

§ 90.1414 Procedures for Establishment of Network Sharing Agreement

(a) Publication of NSA Prior to Holding the D Block Auction. As a condition for and upon receipt of a license in the Upper 700 MHz D Block, each winning bidder shall enter into the NSA with the Public Safety Broadband Licensee. The FCC shall make the provisions of the NSA available to the public prior to the auction.

(b) Development and Review of the NSA. The Public Safety Broadband Licensee shall submit a completed draft NSA to the Commission not later than three months after the adoption of this rule. The Public Safety Broadband Licensee shall develop the draft NSA after reasonable consultation with potential bidders, equipment manufacturers and other interested parties. The Commission shall review such draft NSA to determine whether it complies with the relevant Commission rules. The Commission may modify any provision of the draft NSA to comply with the relevant rules.

(c) Post-Auction Supplements and Amendments to the NSA. The NSA may be supplemented and amended after the auction. If the modification involves network, service or other provisions of nationwide application, the modification must be approved by the Public Safety Broadband Licensee and the National Committee of Area Licensees. If the modification involves network, service or other provisions affecting only certain license areas, the modification must be approved by the Public Safety Broadband Licensee and the affected Upper 700 MHz D Block licensee or licensees. Each modification of the NSA must comply with the relevant rules of the Commission, and any party to the NSA may seek Commission review of a modification for the Commission to determine whether it complies with the relevant rules.