

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

In the Matter of)) Implementing Public Safety Broadband Provisions) of the Middle Class Tax Relief and Job Creation) Act of 2012)) Implementing a Nationwide, Broadband,) Interoperable Public Safety Network in the 700) MHz Band)) Service Rules for the 698-746, 747-762 and 777-) 792 MHz Bands))) PS Docket No. 12-94))) PS Docket No. 06-229))))) WT Docket No. 06-150))
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SECOND REPORT AND ORDER

Adopted: October 28, 2013

Released: October 28, 2013

By the Commission: Acting Chairwoman Clyburn and Commissioners Rosenworcel and Pai issuing separate statements.

I. INTRODUCTION

1. In this *Second Report and Order* we adopt consolidated rules, primarily technical service rules, for the 758-769/788-799 MHz band, which is licensed to the First Responder Network Authority (FirstNet) on a nationwide basis.¹ We also direct the Office of Engineering and Technology (OET) to accept and process applications for equipment certification in this band consistent with the newly consolidated rules. Our adoption of this *Second Report and Order* will further “facilitate the transition” of spectrum to FirstNet to enable its deployment of a nationwide public safety broadband network as prescribed by statute.² We also focus on these technical matters in order to expedite the availability of equipment for use in this band, which will fulfill “the imminent need” FirstNet cites “for authorized equipment to meet the needs of jurisdictions that may deploy early” in its licensed spectrum.³

¹ This consolidation of technical service rules was proposed in a *Notice of Proposed Rulemaking (Notice)* that also sought comment on whether the Commission need adopt reporting obligations or rural construction milestones in connection with its statutory duties regarding FirstNet. *See* Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012 *et al.*, PS Docket 12-94 *et al.*, *Notice of Proposed Rulemaking*, 28 FCC Rcd 2715, 2728-29 ¶¶ 42-46 (2013). In addition, the *Notice* sought comment on transition plans for incumbent operations in FirstNet’s licensed spectrum, which primarily consist of narrowband public safety systems that were authorized to operate in this spectrum prior to the reconfiguration of the 700 MHz public safety spectrum in 2007. *See id.* at 2729-2733 ¶¶ 47-59. All matters raised in the *Notice* but not addressed herein are deferred for future consideration.

² *See* 47 U.S.C. § 1421(c).

³ Comments of the First Responder Network Authority, PS Docket 12-94 at 3 (Aug. 2, 2013).

2. The rules we adopt today will provide a necessary foundation for FirstNet's operations and expedite the availability of equipment for use in this band. As noted below, in light of the urgent need to resume our process for certifying equipment for use in promoting more effective public safety operations in this band, and because that process cannot be resumed in the absence of governing technical service rules, we find good cause to make this *Second Report and Order* effective immediately upon publication in the Federal Register.

II. BACKGROUND

3. The Middle Class Tax Relief and Job Creation Act of 2012, enacted February 22, 2012, provides for the deployment of a nationwide public safety broadband network in the 700 MHz band.⁴ The Act established FirstNet as an independent authority within the National Telecommunications and Information Administration (NTIA),⁵ and required the Commission to grant a license to FirstNet for the use of both the existing public safety broadband spectrum (763-768/793-798 MHz) and the spectrally adjacent D Block (758-763/788-793 MHz), a commercial spectrum block that the statute required the Commission to reallocate for public safety use.⁶ The Act charges FirstNet with the responsibility for establishing and overseeing "a nationwide, interoperable public safety broadband network"⁷ operated in this spectrum by taking "all actions necessary to ensure the building, deployment, and operation of the . . . network, in consultation with Federal, State, tribal, and local public safety entities, the Director of NIST, the Commission, and the public safety advisory committee [that section 6205 of the Act requires FirstNet to establish]."⁸ Among its more specific duties, FirstNet is responsible for issuing Requests for Proposals (RFPs) and entering into contracts for the construction, operation and management of the network on a nationwide basis, using funds allocated for these purposes under the Act.⁹

4. The Act also established within the Commission a Technical Advisory Board for First Responder Interoperability (Interoperability Board) charged with the development of recommended minimum technical requirements to ensure nationwide interoperability for the public safety broadband network based on "commercial standards for Long Term Evolution (LTE) service."¹⁰ On May 22, 2012, the Interoperability Board submitted its recommendations to the Commission, and on June 21, 2012, the

⁴ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156 §§ 6001-6303, 6413 (codified at 47 U.S.C. §§ 1401-1443, 1457)

⁵ On August 20, 2012, the Department of Commerce announced the initial appointment of non-Federal members to the Board of Directors of FirstNet. See Acting U.S. Commerce Secretary Rebecca Blank Announces Board of Directors for the First Responder Network Authority, *Press Release* (Aug. 20, 2012) available at <http://www.commerce.gov/news/press-releases/2012/08/20/acting-us-commerce-secretary-rebecca-blank-announces-board-directors-> (last visited Oct. 25, 2013)

⁶ See *id.* §§ 1411(a), 1421(a), 1424(a). FirstNet's license also includes the 768-769/798-799 MHz band, which the Commission has designated as a "guard band" that spectrally separates the broadband and narrowband segments of the 700 MHz public safety band. See *infra* Section III.A.1.f.

⁷ *Id.* § 1422(a). See generally *id.* § 1426 (setting out FirstNet's powers, duties and responsibilities).

⁸ *Id.* § 1426(b).

⁹ *Id.* § 1426.

¹⁰ *Id.* § 1423(a).

Commission approved the transmittal of these recommendations to FirstNet.¹¹ The Act requires FirstNet to incorporate the recommendations into its RFPs “without materially changing” them.¹²

5. On September 7, 2012, the Public Safety and Homeland Security Bureau adopted, on delegated authority, a *Report and Order* implementing the clear statutory directive requiring the Commission to reallocate the D Block for “public safety services.” The Bureau also deleted a number of Commission rules that were plainly inconsistent with this revised allocation,¹³ including the rules establishing, providing license authority with respect to, and governing operations under the “Public Safety Broadband License” that had previously been established for the existing public safety broadband spectrum.¹⁴ On November 15, 2012,¹⁵ the Bureau granted FirstNet the license prescribed by statute, under call sign WQQE234.¹⁶

6. The Commission released the *Notice* on March 8, 2013, seeking comment on additional measures to implement its statutory responsibilities regarding deployment of the public safety broadband network.¹⁷ The *Notice* sought comment on the adoption of consolidated technical service rules for the network; on the exercise of the Commission’s statutory responsibilities as they relate to oversight of FirstNet’s operations; and on transition matters for the various classes of incumbent operations in the spectrum licensed to FirstNet.¹⁸ The Commission also sought comment on the scope of its authority as it relates to these proposals, particularly in light of the statutory delegation to FirstNet of the responsibility to develop “the technical and operational requirements of the network.”¹⁹

7. FirstNet filed comments on the *Notice* on August 2, 2013, after the comment cycle had completed. While not addressing for the most part the substantive rules at issue, FirstNet urged the Commission to “act quickly to amend its technical service rules to enable FirstNet to expedite the deployment of [its network].”²⁰ FirstNet also expressed support for “swift Commission action to begin accepting and processing equipment authorizations” in its licensed spectrum, particularly in light of imminent public safety network deployments planned therein.²¹ On August 28, the Public Safety and Homeland Security Bureau published a notice in the Federal Register providing an additional seven days

¹¹ See Recommendations of the Technical Advisory Board for First Responder Interoperability, PS Docket No. 12-74, *Order of Transmittal*, FCC 12-68 (June 21, 2012). The Interoperability Board terminated fifteen days after this transmittal, *i.e.*, on July 6, 2012. See 47 U.S.C. § 1423(f).

¹² *Id.* § 1426(b)(1)(B). The Act also requires States electing to “opt out” and deploy their own State network to submit to the Commission for approval construction plans that comply with the recommendations. See *id.* § 1442(e)(3)(C)(i)(I).

¹³ *Id.* at Section III.A.

¹⁴ *Id.* at Section III.B.1.

¹⁵ See Letter from Samuel Ginn, Chairman of the Board, First Responder Network Authority, to David S. Turetsky, Chief, Public Safety and Homeland Security Bureau (dated Sept. 25, 2012).

¹⁶ See Universal Licensing System, License Call Sign WQQE234 (Nov. 15, 2012).

¹⁷ See *Notice*.

¹⁸ See *id.* at 2720 ¶ 16.

¹⁹ See *id.* (citing 47 U.S.C. § 1426(c)(1)(B)).

²⁰ First Net Comments at 4. FirstNet did provide substantive comment on the disposition of the 700 MHz public safety guard band. See *id.* at 3; see also *Notice*, 28 FCC Rcd at 2725 ¶¶ 31-32.

²¹ *Id.* at 3.

for public comment on FirstNet's filing.²² The few comments received in response were supportive of these views.²³

III. SECOND REPORT AND ORDER

8. In this *Second Report and Order*, we adopt consolidated technical service rules to facilitate FirstNet's efforts in deploying a nationwide public safety broadband network in the 700 MHz band. The adoption of these rules will also enable the Commission to certify for operation in the spectrum licensed to FirstNet. This will expedite the availability of equipment for operation in this band, which FirstNet and numerous other commenters identify as an urgent priority given the near-term deployments planned in this spectrum.²⁴

9. In the *Notice* we sought comment, including specific data and information, on the costs and benefits of each proposal set forth and of any potential alternatives to such proposals.²⁵ The few commenters that addressed the potential costs associated with consolidating technical service rules under Part 90 anticipate that such costs will be minimal.²⁶ Such comments are unsurprising, given that the rules proposed for consolidation are already codified in Commission rules and largely track the service rules that apply to commercial LTE services in neighboring bands. Accordingly, we proceed with the consolidation of technical rules based on the record before us.

A. Consolidating the Rules That Govern the Nationwide Public Safety Broadband Network

10. In the *Notice*, the Commission observed that "rules governing 700 MHz commercial wireless spectrum, including the D Block, are codified primarily in Part 27 ("Miscellaneous Wireless Communications Services"), while rules governing the existing public safety broadband spectrum generally fall under Part 90."²⁷ The Commission proposed, as a general matter, to modify its rules so as to merge the requirements governing both band segments into a unified set of Part 90 rules. FirstNet and

²² See 78 Fed. Reg. 53124 (Aug. 28, 2013). For purposes of citation, comments filed during the initial comment cycle are referred to as "Comments" or "Reply Comments" while those filed during the subsequent filing period are referred to as "Comments on FirstNet Filing".

²³ See generally Comments of APCO on FirstNet Filing, PS Docket 12-94 (Sept. 4, 2013); Comments of AT&T Services (AT&T) on FirstNet Filing, PS Docket 12-94 (Sept. 4, 2013); Comments of FiberTower on FirstNet Filing, PS Docket 12-94 (Sept. 4, 2013); Comments of the National Public Safety Telecommunications Council (NPSTC) on FirstNet Filing, PS Docket 12-94 (Sept. 4, 2013); Comments of Motorola Solutions on FirstNet Filing, PS Docket 12-94 (Sept. 4, 2013); Verizon *Ex Parte* Filing, PS Docket 12-94 (Sept. 4, 2013) (commenting on FirstNet filing).

²⁴ See FirstNet Comments at 3; see also Comments of APCO, PS Docket 12-94 at 4 (May 24, 2013); Comments of Ericsson, PS Docket 12-94 at 6 (May 24, 2013); Comments of Harris Corp. (Harris), PS Docket 12-94 at 8 (May 24, 2013); Comments of Motorola Solutions, PS Docket 12-94 at 10-11 (May 24, 2013); Comments of TIA, PS Docket 12-94 at 5 (May 24, 2013); Reply Comments of City of Charlotte, North Carolina (Charlotte), PS Docket 12-94 at 2-3 (June 10, 2013); Reply Comments of Nokia Siemens, PS Docket 12-94 at 3 (June 11, 2013); Sonim Technologies, *Ex Parte* Filing, PS Docket 12-94 (July 11, 2013); AT&T Comments on FirstNet Filing at 1-3; NPSTC Comments on FirstNet Filing at 4; see also National Telecommunications and Information Administration, FirstNet Approves Resolutions on Spectrum Lease Agreement with LA-RICS and Personnel Acquisition Strategy, <http://www.ntia.doc.gov/press-release/2013/firstnet-approves-resolutions-spectrum-lease-agreement-la-rics-and-personnel-acqu> (last visited Oct. 25, 2013); National Telecommunications and Information Administration, FirstNet Approves Spectrum Lease Agreement with New Mexico; Provides Status Update on Remaining Projects, <http://www.ntia.doc.gov/press-release/2013/firstnet-approves-spectrum-lease-agreement-new-mexico-provides-status-update-rema> (last visited Oct. 25, 2013).

²⁵ See *Notice*, 28 FCC Rcd at 2720 ¶ 15.

²⁶ See Ericsson Comments at 2-3; General Dynamics C4 Systems (General Dynamics) Comments at 6-7, 9.

²⁷ *Notice*, 28 FCC Rcd at 2721 ¶ 17.

many other commenters expressed support for this general approach, and none opposed it.²⁸ Accordingly, in this *Second Report and Order* we adopt a unified set of Part 90 rules to govern FirstNet's licensed spectrum.

1. A Foundation of Technical Service Rules for the Network

11. We first consider the Commission's proposed modifications to the Part 27 technical service rules governing the D Block and parallel Part 90 rules governing the public safety broadband spectrum (763-768/793-798 MHz). The Commission proposed such modifications to unify under a common set of rules a number of technical requirements, many of them substantively similar or identical to one another, that govern the two respective segments of FirstNet's licensed spectrum. The Commission also sought comment on the merits of these technical requirements as applied to the combined spectrum allocation licensed to FirstNet. In this section, we consider each requirement in turn.

a. Power Limits

12. *Power Limits.* In the *Notice*, the Commission proposed to modify Section 90.542(a) of its rules to bring the D Block frequencies within its purview and to delete as redundant the parallel provisions of Section 27.50(b).²⁹ The Commission also sought comment on whether the power limits established in Section 90.542(a) remain appropriate for the combined public safety broadband allocation, and on the relative costs and benefits of any proposed alternatives.³⁰ In addition, the Commission sought comment on whether the operational parameters of Long Term Evolution (LTE) technology call for the placement of more restrictive limits on the power output of portable (*i.e.*, hand-held) devices operated in the public safety broadband allocation.³¹

13. *Comments.* Most commenters that addressed the issue support maintaining the power and antenna height limits set forth in Section 90.542(a) and extending the reach of this provision to the D Block.³² Harris supports this general approach, but argues that the rule's reduced base station power limits for antennas above 305 meters in height above average terrain (HAAT) "may not reflect the economic realities of building out [the network] in rural areas" and that "[f]lexibility should be allowed for implementation of a cost effective network . . . but free of rules that may force higher site densities based on regulation rather than need."³³ To that end, Harris contends that "a single set of maximum power limits should be established and the licensee should be offered flexibility to determine specific operating parameters for each RF site" within these limits.³⁴ Verizon opposes Harris's proposal, observing that the rule "already allow[s] operations in rural areas at power levels that are twice that of higher density areas."³⁵ Verizon further argues that more restrictive power limits on transmissions from antennas above

²⁸ See FirstNet Comments at 2-3; *see also* Alcatel-Lucent Comments at 2; APCO Comments at 3; AT&T Comments at 4; Ericsson Comments at 2; General Dynamics Comments at 3; Harris Comments at 1; Motorola Solutions Comments at 4; Comments of NPSTC, PS Docket 12-94 at 3 (May 24, 2013); TIA Comments at 3; Charlotte Reply Comments at 2; Joint Reply Comments of the National Rural Electric Cooperative Association (NRECA) and NTCA-The Rural Broadband Association (NTCA), PS Docket 12-94 at 5-6 (June 10, 2013); Nokia Siemens Reply Comments at 3; Reply Comments of Ocus Networks, PS Docket 12-94 at 3 (June 10, 2013); Reply Comments of Verizon and Verizon Wireless (Verizon), PS Docket 12-94 at 1-2 (June 10, 2013).

²⁹ *Notice*, 28 FCC Red at 2721 ¶ 19.

³⁰ *Id.* at 2721-22 ¶ 19.

³¹ *Id.* at 2722 ¶ 20.

³² See Alcatel-Lucent Comments at 2; AT&T Comments at 4; Ericsson Comments at 3-4; General Dynamics Comments at 3; Motorola Solutions Comments at 5; TIA Comments at 4; Ocus Reply Comments at 3-4.

³³ Harris Comments at 15.

³⁴ *Id.*

³⁵ Reply Comments of Verizon and Verizon Wireless (Verizon), PS Docket 12-94 at 2-3 (June 10, 2013).

305 meters HAAT should remain in place “to protect not only nearby commercial 700 MHz operations, but other FirstNet and narrowband public safety operations as well.”³⁶

14. A number of commenters also argue that the power limits currently in place for portable devices are consistent with the operational parameters of LTE and should not be restricted further. Motorola Solutions explains that the power limits established under Section 90.542, unlike those specified by LTE standards, are expressed in terms of “effective radiated power” (ERP) and thus account for antenna gains and losses.³⁷ Motorola Solutions further argues that the Commission should continue to permit “high gain/high powered operations” in this band, because “higher power LTE devices improve spectral efficiency and coverage range, especially in rural areas with large inter-site distances and low user density.”³⁸ Meanwhile, General Dynamics contends that further restricting the permissible power output of hand-held devices operated in the public safety broadband allocation “would negate some manufacturers’ research and development investment-to-date” in higher-power LTE devices and “could greatly impact ongoing system-level engineering trades for the emerging [network] being designed by the FirstNet.”³⁹

15. *Discussion.* As the Commission observed in the *Notice*, power limits play an important role in minimizing the potential for radiofrequency (RF) transmissions to create harmful interference for operations in co-channel and adjacent spectrum bands. Identical power limits are already in place for the public safety broadband spectrum and D Block, and the majority of commenters support the consolidation of these existing requirements under Section 90.542. Moreover, as AT&T observes, the proposed consolidated limits are those that already “apply to 700 MHz commercial wireless services,” which include LTE services.⁴⁰ We thus find that the proposed limits are reasonable for FirstNet’s licensed spectrum, which will be used to deploy a nationwide LTE broadband network for first responders. Also, while recognizing the need to afford FirstNet flexibility to implement its network in a cost-effective manner, we decline to reformulate the rule as Harris proposes to sever the relationship between base station power limit and antenna height above average terrain. We first observe that FirstNet has not sought any modification of the restrictions currently in place, which are already calibrated to provide maximum flexibility to operators consistent with protecting both adjacent and co-channel operations from interference. We also note Verizon’s observation that the rules in place already provide for higher-power transmissions in rural areas,⁴¹ which should enable sites to be deployed less densely in areas where it may be particularly costly to build out the network. Accordingly, we consolidate the power limits for FirstNet’s licensed spectrum under Section 90.542(a) as proposed. Moreover, as we find no support in the record for further restricting the permissible power output of hand-held devices operated in this spectrum to reflect the operational parameters of LTE technology, we will retain the 3 watt ERP limit the rule currently prescribes for hand-held (*i.e.*, portable) devices.

16. *Power Strength Limits (Power Flux Density).* In the *Notice*, the Commission proposed consolidating under Section 90.542(b) of its rules the power flux density limits that govern the respective segments of FirstNet’s licensed spectrum.⁴² The Commission then sought comment on whether the limit set forth, namely 3000 microwatts per square meter ($\mu\text{w}/\text{m}^2$) on the ground within 1000 meters of the base of an antenna for any signal transmitted in excess of 1000 watts ERP, remains appropriate.⁴³ Finally,

³⁶ *Id.* at 3.

³⁷ Motorola Solutions Comments at 5; *see also* Ericsson Comments at 3; Harris Comments at 15.

³⁸ Motorola Solutions Comment at 5-6.

³⁹ General Dynamics Comments at 4.

⁴⁰ *See* AT&T Comments at 4.

⁴¹ *See* 47 C.F.R. §§ 90.542(a)(2), (4), (5), 90.542(b).

⁴² *See Notice*, 28 FCC Rcd at 2722 ¶ 21.

⁴³ *Id.*

it sought comment on the costs and benefits of the proposed rule consolidation and of any possible alternatives.⁴⁴

17. *Comments.* Several commenters support the proposed consolidation of existing power flux density limits under Section 90.542(b).⁴⁵ One such commenter, Motorola Solutions, explains that “[i]n the 800 MHz band, the 3000 $\mu\text{w}/\text{m}^2$ limit has proven to be an effective compromise between service and interference prevention,” one that “does not prevent interference in all cases [but] is an effective standard to trigger the initiation of mitigation work.”⁴⁶ Harris, on the other hand, argues that limiting the power flux density only of signals transmitted in excess of 1000 watts ERP “is counterproductive to minimizing harmful interference.”⁴⁷ Harris explains that even lower ERP transmissions from a FirstNet base station could, “by a combined effect of the site antenna directivity and ERP,” produce a power flux density that is sufficient to create a serious potential for interference with public safety narrowband operations in the surrounding area.⁴⁸ Harris explains that co-location of broadband and narrowband sites can mitigate this problem but that “site densities for LTE are expected to be higher necessitating the need for broadband-only sites.”⁴⁹ Accordingly, Harris recommends extending rule to cover base station transmissions at any level of ERP.⁵⁰

18. *Discussion.* Power flux density limits help mitigate the potential for a base station’s transmissions to create interference for adjacent-band users in the immediate area. We agree with Motorola Solutions that the limits currently in place provide for interference mitigation without unduly constraining service. We further observe that no public safety narrowband licensee or other public safety commenter argued that the proposed PFD limits are insufficiently restrictive to protect narrowband or other operations from interference. We will therefore consolidate the existing PFD limits as proposed. In doing so, we acknowledge Harris’s argument that FirstNet’s placement and configuration of sites within its network may affect the probability that adjacent narrowband users may encounter harmful interference from its base station transmissions. We would expect that FirstNet will carefully coordinate its site deployments with adjacent narrowband licensees and adjust its operations as appropriate to mitigate any problems that may arise.⁵¹ The Commission may also consider adoption of a more restrictive PFD limit for this spectrum in the future should circumstances warrant.

b. Emission Limits

19. In the *Notice* the Commission sought comment on proposals to unify under Section 90.543 of our rules the out-of-band emission (OOBE) limits that govern the public safety broadband spectrum allocation, as expanded to include the D Block. First, the Commission proposed consolidating into Section 90.543(e) the provisions restricting emissions from the public safety broadband allocation into the adjacent 700 MHz public safety narrowband segment (769-775/799-805 MHz).⁵² It then proposed consolidating into Section 90.543(f) the limits on emissions from the public safety broadband

⁴⁴ *Id.*

⁴⁵ See Alcatel-Lucent Comments at 2; AT&T Comments at 4; Motorola Solutions Comments at 6; TIA Comments at 4.

⁴⁶ Motorola Solutions Comments at 6.

⁴⁷ Harris Comments at 17-18.

⁴⁸ *Id.* at 18.

⁴⁹ *Id.*

⁵⁰ *Id.* at 17-18.

⁵¹ See 47 U.S.C. § 1426(b)(1) (requiring FirstNet to consult with, *inter alia*, “State, tribal and local public safety entities” in establishing the network); *id.* at 1426(c)(2)(A) (requiring FirstNet to consult with such entities on specific matters including FirstNet’s “radio access network build out” and “placement of towers”).

⁵² *Notice*, 28 FCC Rcd at 2722-23 ¶ 23.

allocation into the 1559-1610 MHz band, which supports the operation of Global Positioning System (GPS) L1 receivers, and to retain the explicit language in Section 90.543(f) that the rule applies to emissions “including harmonics.”⁵³ Finally, it sought comment on whether limits codified in Section 27.53(d)(3) on emissions from the D Block into frequencies below 758 MHz, between 775 and 788 MHz, and above 806 MHz should be extended to apply to the public safety broadband spectrum.⁵⁴ For each of these proposals, the Commission also sought comment on any possible alternatives and on the respective costs and benefits of each.⁵⁵

20. *Comments.* All commenters that addressed this issue support retaining appropriate limits on emissions from the public safety broadband allocation into adjacent spectrum bands, and the majority of these commenters endorse the specific proposals issued in the *Notice*.⁵⁶

21. A number of commenters emphasize the need for appropriate rules limiting emissions from the public safety broadband allocation into the adjacent narrowband spectrum. Motorola Solutions supports the proposed consolidation of the existing limits on such emissions, noting that it “strongly opposes any reduction in the protection afforded to public safety narrowband systems.”⁵⁷ AT&T supports the proposed rule consolidation as one that would “apply to the national public safety broadband spectrum the same requirements applicable to commercial wireless service.”⁵⁸ Harris argues that the protection of adjacent narrowband systems “require[s] special attention by the [C]ommission” given the incompatibility of broadband technologies with these systems, which are “used for existing critical communications.”⁵⁹ Harris believes that the proposed limit on emissions into the narrowband spectrum would not adequately protect these existing systems from interference from LTE operations.⁶⁰ Accordingly, it proposes a more robust set of protections under which limits on emissions into the narrowband spectrum would vary based on the nature (*e.g.*, base vs. mobile) of both the transmitter and the receiver of the out-of-band signal.⁶¹

22. With respect to the 1559-1610 MHz band, commenters acknowledge the importance of protecting GPS L1 receivers operated there from interference. General Dynamics states that the protection of GPS operations “is viewed with great importance,”⁶² while Motorola Solutions observes that “GPS is a critically important service to public safety as well as a wide range of consumer, enterprise and government applications.”⁶³ While commenters generally support the proposed consolidation under Section 90.543(f) of the existing rules limiting emissions from the public safety broadband allocation into the 1559-1610 MHz band, parties disagree on whether that provision should retain the phrase “including harmonics.” General Dynamics contends that this phrase “is necessary to ensure that the rules are unambiguous about restrictions that are placed on harmonics of intended transmissions” and that the cost impact of its inclusion would be “minimal.”⁶⁴ Ericsson, on the other hand, contends that the provision in

⁵³ *Id.* at 2723 ¶ 24.

⁵⁴ *Id.* at ¶ 25.

⁵⁵ *See id.* at 2722-23 ¶¶ 23-25.

⁵⁶ *See* Alcatel-Lucent Comments at 2; AT&T Comments at 5; Ericsson Comments at 4; General Dynamics Comments at 6; Motorola Solutions Comments at 7; TIA Comments at 4-5

⁵⁷ Motorola Solutions Comments at 7.

⁵⁸ AT&T Comments at 5.

⁵⁹ *See* Harris Comments at 19.

⁶⁰ *See id.* at 20.

⁶¹ *See* Harris Comments at 20-21; *see also id.* at app. A.

⁶² General Dynamics Comments at 5.

⁶³ Motorola Solutions Comments at 7.

question would apply to harmonics emissions even in the absence of explicit wording to that effect, making such wording “not necessary.”⁶⁵

23. Finally, a number of commenters support the proposed extension to the public safety broadband spectrum of existing limits imposed on emissions from the D Block into neighboring commercial spectrum bands.⁶⁶ General Dynamics observes that “public safety systems based on LTE technology will have to co-exist with commercial services operating in adjacent spectrum” and that adopting the proposed rule would merely “ensure consistency” with emission limitations already imposed on 700 MHz public safety narrowband operations.⁶⁷ General Dynamics further contends that the proposed limits “are relatively straightforward to achieve by fixed, mobile and portable stations” and that adoption of the proposal thus “will not impose any additional cost on public safety station equipment.”⁶⁸ AT&T also supports the proposal, observing that its adoption would harmonize the requirements applicable to this band with those that apply to 700 MHz commercial wireless services.⁶⁹

24. *Discussion.* Out-of-band emissions limits play a critical role in minimizing inter-band interference. As several commenters recognize, the limits established under Section 90.543(e) have been calibrated to prevent public safety broadband operations from interfering with operations in the adjacent public safety narrowband spectrum. Moreover, while Harris explains that its alternative proposal “is based on 3GPP standard practice for evaluating co-location and co-existence of commercial deployments,” the rule as written is aligned with the rules applicable to 700 MHz commercial bands. We accordingly modify Section 90.543(e) to include within its purview the D Block portion of FirstNet’s spectrum. In doing so, we emphasize that this provision merely establishes a baseline of protection, one which FirstNet may opt to strengthen as it moves forward with its deployment and engages in its required consultations with State and local governments.⁷⁰ Accordingly, while we decline to adopt more stringent out-of-band emissions limits of the sort Harris proposes, we encourage FirstNet to work cooperatively with adjacent-channel narrowband licensees to ensure that their respective operations are adequately protected.⁷¹

25. Section 90.543(f), which limits emissions from the public safety broadband spectrum into the 1559-1610 MHz band, protects critical GPS operations from interference. Accordingly, with the support of many commenters, we incorporate the D Block into this provision. We further observe that no commenters provided a compelling reason to delete the phrase “including harmonics” from this provision, while one argues that such deletion could create unnecessary ambiguity. We therefore retain the original wording of the Part 90 provision.

26. Finally, we observe that many commenters support the Commission’s proposed adoption of a Part 90 provision limiting emissions from the public safety broadband allocation into neighboring commercial spectrum bands, and none oppose the proposal. The adoption of this proposal would further align the technical service rules for this band with those established for commercial 700 MHz LTE

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⁶⁴ General Dynamics Comments at 6; *see also* Motorola Solutions Comments at 7.

⁶⁵ Ericsson Comments at 4.

⁶⁶ *See* Comments of Access Spectrum, PS Docket 12-94 at 4 (May 24, 2013); AT&T Comments at 5; General Dynamics Comments at 6-7; TIA Comments at 4.

⁶⁷ General Dynamics Comments at 6.

⁶⁸ *Id.* at 7.

⁶⁹ *See* AT&T Comments at 5; *see also* TIA Comments at 4.

⁷⁰ As previously observed, the statute imposes obligations on FirstNet to consult with state and local governments in deploying its network. *See* 47 U.S.C. § 1426(b)(1), (c)(2)(A).

⁷¹ *See id.*

operations. Moreover, the one commenter to address the cost implications of the proposal argues that it would create no cost burden.⁷² We accordingly adopt the proposal.

c. Field Strength Limits

27. In the *Notice*, the Commission sought comment on whether a field strength limit should be established for the expanded public safety broadband allocation to limit interference between the FirstNet radio access network (RAN) and any State Networks deployed in the same band.⁷³ The Commission then sought comment more specifically on whether to adopt for this band the field strength limit of 40 dBuV/M specified in Section 27.55(a)(2) for 700 MHz commercial wireless spectrum, or whether an alternative limit would be more appropriate.⁷⁴ The Commission also sought comment on the costs and benefits of the various options.⁷⁵

28. *Comments.* Commenters were divided on whether the Commission should adopt a field strength limit for FirstNet's licensed spectrum. Motorola Solutions supports the adoption of the proposed 40 dBuV/M limit "[g]iven the likelihood that there will be more than one network operating in [this spectrum.]"⁷⁶ However, it also notes that 40 dBuV/M represents a "relatively high" field strength limit that is "sufficient to cause interference," so "deployments near service area boundaries [will] require licensee coordination."⁷⁷ AT&T contends that a field strength limit should be adopted "to mitigate the potential for harmful interference between the nationwide network and any State networks," and it proposes adoption of the 40 dBuV/M limit already specified "for 700 MHz commercial wireless services" in Section 27.55(a)(2).⁷⁸ General Dynamics and TIA also support using the 40 dBuV/M limit set forth in Section 27.55(a)(2).⁷⁹

29. Some commenters, however, oppose the Commission's adoption of a field strength limit for FirstNet's licensed spectrum. Harris contends that any State Networks deployed in this spectrum must "function logically [with FirstNet's network] as a single RAN," making field strength limits "not necessary for this spectrum."⁸⁰ Ericsson similarly argues that such limits are unnecessary given the expectation that FirstNet "will work in a cooperative way to ensure that harmful interference is not an issue through coordination and site engineering."⁸¹ Alcatel-Lucent also opposes adoption of such a limit "at this time."⁸²

30. *Discussion.* Although FirstNet is licensed on a nationwide basis, we acknowledge the importance of minimizing interference between the FirstNet network and any "State Network" deployed in the same spectrum. The statutory scheme under which State Networks may be deployed, however, includes several provisions that serve to promote the operational integration of such networks with FirstNet's nationwide deployment. A State electing to deploy its own network must submit an

⁷² See General Dynamics Comments at 6.

⁷³ *Notice*, 28 FCC Red at 2723-24 ¶ 26.

⁷⁴ *Id.*

⁷⁵ *Id.* at 2724 ¶ 26.

⁷⁶ Motorola Solutions Comments at 8.

⁷⁷ *Id.*

⁷⁸ AT&T Comments at 5.

⁷⁹ General Dynamics Comments at 7; TIA Comments at 5.

⁸⁰ Harris Comments at 21-22.

⁸¹ Ericsson Comments at 4.

⁸² Alcatel-Lucent Comments at 2.

interoperability plan for the Commission's approval,⁸³ apply to NTIA to lease spectrum capacity from FirstNet upon demonstrating that will have the technical capabilities to operate its network, have the ability to maintain ongoing interoperability with FirstNet, and provide a comparable quality of service;⁸⁴ and pay any user fees associated with its use of FirstNet's core network.⁸⁵ These provisions, among others,⁸⁶ already contemplate a significant amount of advance coordination of State Network operations with those of FirstNet.⁸⁷ We therefore do not find it necessary at this time to adopt a field strength limit for RANs operated in FirstNet's licensed spectrum.⁸⁸

d. Interference Coordination

31. The Commission sought comment in the *Notice* on whether FirstNet or other broadband operators in its licensed spectrum should be required to engage in interference coordination of some kind, either with 700 MHz commercial licensees or with incumbent public safety narrowband licensees.

32. *Comments.* While several commenters acknowledge the importance of protecting co-channel and spectrally adjacent operations from mutual interference, many oppose the adoption of formal requirements for FirstNet or other public safety broadband operators to coordinate with either 700 MHz commercial or incumbent public safety narrowband licensees. APCO "cautions the Commission to refrain from adopting any unnecessary procedures or requirements that would have the effect of introducing additional complexity on network planning with little or no corresponding benefit."⁸⁹ Motorola Solutions raises similar concerns and suggests that interference coordination procedures be "implemented as a design guideline" rather than a binding rule.⁹⁰ Ericsson meanwhile suggests that, while the Commission "is wise to consider coordinating interference issues" between incumbent narrowband operators and FirstNet, these two constituencies are "highly motivated" to coordinate with one another even in the absence of any formal requirements.⁹¹ AT&T also opposes the adoption of formal coordination requirements but recommends that the Commission adopt for the public safety broadband allocation the informal coordination procedures codified for commercial operations under Section 27.64.⁹²

33. Alone among commenters, the Commonwealth of Virginia (Virginia) argues "that coordination requirements must be put in place to protect incumbent narrowband operations" such as its own.⁹³ In support of its position, Virginia explains that its network "has already experienced harmful interference from the testing of a 700 MHz LTE system in Virginia by a manufacturer," an outcome it deems "unacceptable for public safety communications."⁹⁴

⁸³ See 47 U.S.C. § 1442(e)(3)(C)(i).

⁸⁴ *Id.* § 1442(e)(3)(D).

⁸⁵ *Id.* § 1442(f).

⁸⁶ See 47 U.S.C. §§ 1426(b)(1), 1426(c)(2)(A).

⁸⁷ At any rate, as Motorola Solutions observes, the adoption of field strength limits would not eliminate the need for further coordination of FirstNet and State network operations. See Motorola Solutions Comments at 8.

⁸⁸ Our declining to adopt such a limit in this *Second Report and Order* does not prejudice our consideration of whether field strength at the RAN service boundary may factor into determining whether a planned State Network demonstrates "interoperability with the nationwide public safety broadband network." See 47 U.S.C. § 1442(e)(3)(C)(i)(II).

⁸⁹ APCO Comments at 3.

⁹⁰ Motorola Solutions Comments at 8-9.

⁹¹ Ericsson Comments at 5.

⁹² AT&T Comments at 6; see also 47 C.F.R. § 27.64.

⁹³ Virginia Comments at 3.

⁹⁴ *Id.*

34. *Discussion.* We agree with commenters that assert the importance of coordination among spectrally and geographically adjacent network operators to protect against mutual interference. At the same time, we observe once again that the statute creating FirstNet imposes on it a number of consultative obligations, including obligations to consult with state and local governments as it designs and implements its network.⁹⁵ In addition, FirstNet's desire to attract public safety customers and potential commercial partners is likely to create incentives for additional coordination beyond what is statutorily required, which are different in kind and degree from those of a manufacturer conducting tests. Accordingly, we do not find it necessary at this time to adopt any formal requirements that FirstNet coordinate its operations with either incumbent narrowband or 700 MHz commercial operators. We will continue, however, to exercise our spectrum management and licensing responsibilities as necessary to ensure that properly authorized radio communications are protected from harmful interference,⁹⁶ and we encourage all parties to work together to minimize the potential for interference.

e. International Considerations

35. In the *Notice*, the Commission proposed to remove the D Block from the reach of Section 27.57(b) and place it within the purview of Section 90.533, which sets forth substantively identical requirements concerning international coordination.⁹⁷ Ericsson and General Dynamics, the only parties to address the issue, support this proposed rule consolidation.⁹⁸ Accordingly, we adopt the proposal.

f. 700 MHz Public Safety Guard Band

36. In the *Notice*, the Commission observed that FirstNet's license includes the 768-769/798-799 MHz band, which is designated as a guard band under Commission rules to minimize the potential for interference between the broadband and narrowband segments of the 700 MHz public safety band.⁹⁹ Observing that the transfer of the broadband spectrum to FirstNet does nothing to mitigate these concerns, the Commission proposed to maintain the designation of this spectrum as a guard band and keep in place all associated restrictions on its use.¹⁰⁰ The Commission sought comment on this proposal, and on whether the possibility of broadband operations eventually being permitted in the narrowband segment should have any impact on this analysis.¹⁰¹

37. *Comments.* A number of commenters support preserving the designation of the 768-769/798-799 MHz band as a guard band, at least during the early stages of public safety broadband network development. FirstNet recommends that “[a]t this time” the Commission “enable the guard band to continue serving as a ‘buffer’ between public safety broadband and narrowband spectrum.”¹⁰² Harris agrees and further argues that “the existing expanded public safety broadband allocation should be deployed and subsequent evaluation of real-world harmful interference should be evaluated before the guard band is allowed to be used.”¹⁰³ Motorola Solutions similarly contends that “[t]he interference concerns that led to the establishment of the guard band have not been mitigated” and that “[t]he Commission should take no actions with respect to the guard band that would jeopardize the continued

⁹⁵ See 47 U.S.C. § 1426(b)(1), (c)(2)(A).

⁹⁶ See 47 U.S.C. §§ 301 *et seq.*, 1403, 1421.

⁹⁷ *Notice*, 28 FCC Rcd at 2724 ¶ 29.

⁹⁸ Ericsson Comments at 5; General Dynamics Comments at 7.

⁹⁹ *Notice*, 28 FCC Rcd 2725 ¶ 31.

¹⁰⁰ *Id.*; see also 47 C.F.R. § 90.531(f)

¹⁰¹ *Id.* ¶ 32.

¹⁰² FirstNet Comments at 3.

¹⁰³ Harris Comments at 14.

interference-free availability of the public safety narrowband spectrum.”¹⁰⁴ The Commonwealth of Virginia also asserts that “a continued guard band is a necessity.”¹⁰⁵

38. Some commenters, however, suggest that this spectrum could be suitable for limited use, if only within specified parameters. Motorola Solutions envisions use of the band for “localized public safety applications” including “low power mobile/portable applications that would enhance public safety communications while posing little risk of interference to adjacent band systems.”¹⁰⁶ NPSTC meanwhile argues that designating this spectrum as a “home” for narrowband vehicular repeaters currently operated in the public safety broadband spectrum could serve as a cost-effective strategy for managing the relocation of these operations.¹⁰⁷ FirstNet also cautions that “[its] plans could necessitate a change in the status of the public safety guard bands” to accommodate some operations therein.¹⁰⁸

39. Finally, a few commenters contend that FirstNet should retain control over the operational parameters of all spectrum licensed to it, including the 768-769/798-799 MHz band. APCO argues that FirstNet’s statutory responsibilities “extend to the guard bands” and that the Commission should accordingly “remove the existing guard band restrictions and instead leave to FirstNet’s discretion as to how to address any potential interference issues.”¹⁰⁹ Similarly, Ericsson “supports allowing FirstNet discretion on its use as long as these bands function as guard bands to protect narrowband operations.”¹¹⁰

40. *Discussion.* As an initial matter, we observe that the Commission holds authority to adopt regulations aimed at preventing public safety broadband network operations from creating interference for users in adjacent bands.¹¹¹ The operational restrictions that currently attach to the 768-769 and 798-799 MHz “guard band” were adopted to mitigate interference between users in the broadband and narrowband segments of the public safety band, and no commenter has challenged the Commission’s observation that these underlying concerns remain valid. In addition, FirstNet itself recommends that the band “continue serving as a ‘buffer’” between these bands, at least in the near term. Accordingly, we will maintain the guard band restrictions currently in place for the 768-769 and 798-799 MHz band. In a future proceeding we may consider relaxing these restrictions to accommodate some operations in this band, such as those commenters contemplate, but such matters are not yet ripe for consideration at this early stage of network development.

g. Equipment Certification

41. In the *Notice*, the Commission proposed consolidating under Section 90.549 of its rules the requirements governing certification of equipment for operation in FirstNet’s licensed spectrum.¹¹² The Commission further observed that, under this approach, such certification would be subject to consolidated technical rules that had themselves yet to be adopted.¹¹³ Accordingly, it suspended OET’s

¹⁰⁴ Motorola Solutions Comments at 9.

¹⁰⁵ Virginia Comments at 4.

¹⁰⁶ Motorola Solutions Comments at 10.

¹⁰⁷ NPSTC Comments at 6.

¹⁰⁸ FirstNet Comments at 3.

¹⁰⁹ APCO Comments at 3-4; *but see* Comments of APCO on FirstNet Filing, PS Docket 12-94 at 2 (September 4, 2013) (noting APCO’s “general agreement” with FirstNet’s filed comments).

¹¹⁰ Ericsson Comments at 6.

¹¹¹ *See* 47 U.S.C. § 1403(a) (providing that the Commission “shall implement and enforce” the public safety broadband provisions of the Middle Class Tax Relief and Job Creation Act of 2012 “as if [they were] part of the Communications Act of 1934”); *see also* 47 U.S.C. §§ 301 *et seq.*

¹¹² *Notice*, 28 FCC Rcd at 2726 ¶ 35.

¹¹³ *Id.* at 33.

acceptance and processing of applications for equipment certification in FirstNet's licensed spectrum pending the adoption of the necessary technical rules.¹¹⁴ In addition, it sought comment on whether to adopt certification requirements specific to this band that would augment the basic certification requirements already codified under Section 90.549.¹¹⁵ Finally, it proposed removing from its rules a legacy provision, Section 90.203(p), that required applicants for equipment certification in the public safety broadband spectrum to demonstrate support for LTE interfaces that public safety operators had been required to implement under rules no longer in force.¹¹⁶

42. *Comments.* In general, commenters support the specific proposals regarding equipment certification set forth in the *Notice*. Those commenters that addressed these matters support the proposed consolidation of requirements under Section 90.549¹¹⁷ and the proposed deletion of Section 90.203(p).¹¹⁸ With respect to the proposed rule consolidation, General Dynamics further observes that “[t]he inclusion of the D Block frequency in this section will have the benefit of eliminating duplicative certification processes, thereby reducing cost.”¹¹⁹

43. As noted earlier, a substantial number of commenters, including FirstNet, contend that urgent Commission action is necessary to ensure that equipment is made available for operations in FirstNet's licensed spectrum on an expedited basis.¹²⁰ FirstNet explains that “there is an imminent need for authorized equipment to meet the needs of jurisdictions that may deploy early” in its licensed spectrum under lease agreements.¹²¹ Motorola Solutions similarly notes that “[t]here is already a demand” for authorized equipment “that will increase as FirstNet progresses towards deployment of the nationwide public safety broadband network,” and that “[t]he halt in equipment authorizations is impacting product development schedules for devices being designed to meet this demand.”¹²² Ericsson further argues that “delays in certifying equipment hampe[r] the access to new and potentially life-saving technologies by the public safety community.”¹²³ Some commenters, including APCO and Harris, offer proposals for expediting the availability of equipment for use in this band prior to the adoption of technical service rules. APCO recommends “issuance of an earlier order that focuses on [equipment certification] to avoid further interruptions in the development of equipment necessary for [network] operations.”¹²⁴ Harris, meanwhile, recommends that the Commission permit equipment with existing certifications already granted under the provisions of its 2010 waiver order,¹²⁵ and equipment

¹¹⁴ *Id.*

¹¹⁵ *Id.* at 35.

¹¹⁶ *Id.* at 34.

¹¹⁷ See Ericsson Comments at 6; General Dynamics Comments at 9; Motorola Solutions Comments at 11; TIA Comments at 5-6.

¹¹⁸ See Ericsson Comments at 6-7; General Dynamics Comments at 8-9; Motorola Solutions Comments at 11.

¹¹⁹ General Dynamics Comments at 9.

¹²⁰ See FirstNet Comments at 3; see also APCO Comments at 4; Ericsson Comments at 6; Harris Comments at 8; Motorola Solutions Comments at 10-11; TIA Comments at 5; Charlotte Reply Comments at 2-3; Nokia Siemens Reply Comments at 3; Sonim Technologies July 11 *Ex Parte* Filing; AT&T Comments on FirstNet Filing at 1-3; NPSTC Comments on FirstNet Filing at 4.

¹²¹ FirstNet Comments at 3.

¹²² Comments of Motorola Solutions, PS Docket 12-94 at 10-11 (May 24, 2013); see also Reply Comments of City of Charlotte, North Carolina, PS Docket 12-94 at 2-3 (June 10, 2013).

¹²³ Comments of Ericsson, PS Docket 12-94 at 6 (May 24, 2013).

¹²⁴ Comments of APCO at 4.

subsequently certified to be compliant with that order's technical requirements, to be authorized for use by early adopter networks while the Commission continues to develop technical service rules to permit the certification of equipment.¹²⁶ Harris clarifies, however, that all equipment operated in the band should be subject to the rules ultimately adopted "to ensure interoperability and [a] multi-vendor environment."¹²⁷

44. A few commenters also urge the Commission to refrain from adopting any band-specific requirements that would augment the more basic requirements for equipment certification established under Section 90.549.¹²⁸ On this point, Motorola Solutions observes that "[s]imilar to any commercial system operator, FirstNet has the right to impose additional requirements on equipment vendors to support specified features, protocols and applications" and that "[s]ubjecting future enhancements and refinements to the Commission's rulemaking process would add unnecessary delay to providing public safety with devices that have the latest features and functionality."¹²⁹

45. *Discussion.* Our adoption in this *Second Report and Order* of consolidated public safety broadband technical service rules sets the stage for equipment certifications to commence in this band. Commenters widely support the Commission's proposal to unify the equipment certification requirements for this band under Section 90.549, without further modification. We accordingly consolidate this rule as proposed and direct the Office of Engineering and Technology to certify equipment in this band consistent with the technical rules adopted in this *Second Report and Order*, as soon as these rules become effective.¹³⁰ We also delete Section 90.203(p) as proposed in the *Notice*.

46. Moreover, as explained in more detail below, we will make this *Second Report and Order* effective upon publication in the Federal Register. Such action will expedite the Commission's ability to process applications for equipment certification under the newly consolidated rules, thereby obviating the need for adoption of interim measures such as those APCO and Harris propose.

h. Miscellaneous Proposals From the Comment Record

47. *AT&T's Proposed Rule on Adherence to Commercial Standards.* AT&T proposes that, in addition to consolidating existing technical rules under Part 90, the Commission should adopt "a catch-all rule to ensure that the public safety broadband network operates in accordance with 'commercial standards' as defined [by statute]."¹³¹ Motorola Solutions opposes the adoption of such a rule, arguing

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¹²⁵ In 2010, the Commission granted waivers to various public safety jurisdictions to pursue early deployment of public safety broadband networks in the 763-768/793-798 MHz band. *See* Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks, PS Docket 06-229, *Order*, 25 FCC Rcd 5145 (2010) (*Waiver Order*). The Commission waived its equipment authorization requirements with respect to equipment operated in these networks pending the adoption of final rules, permitting those waiver recipients to use equipment meeting 3GPP Release 8 as specified in the *Waiver Order*. *Id.* at 5157 ¶ 88. In 2012, the Commission terminated these waivers as part of its efforts to implement the Public Safety Spectrum Act. *See* Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012, PS Docket No. 12-94, *Order*, 27 FCC Rcd 9652 (2012) (*STA Order*).

¹²⁶ Comments of Harris at 8; *see also* Harris *Ex Parte* Filing, PS Docket 12-94 (June 21, 2012).

¹²⁷ Comments of Harris at 8.

¹²⁸ *See* General Dynamics Comments at 9; Motorola Solutions Comments at 12; TIA Comments at 5.

¹²⁹ Motorola Solutions Comments at 12.

¹³⁰ The equipment certification requirements we adopt today for FirstNet's licensed spectrum shall apply to all equipment operated in this spectrum, including any equipment that was previously certified for operation in either of the spectrum's constituent bands as well as any equipment operated without Commission certification pursuant to the *Waiver Order*. *See Waiver Order*, 25 FCC Rcd at 5157 n. 88 (granting the equipment certification waiver "until such time as we adopt final rules").

¹³¹ AT&T Comments at 2. *See also* 47 U.S.C. § 1422(b). AT&T's proposed rule reads as follows:

(continued....)

that it “may hinder FirstNet’s ability to promote the development and use of public safety applications and devices that do not conform precisely to commercial standards.”¹³²

48. AT&T concedes that many of the specific technical rules proposed in the *Notice* align with requirements applicable to commercial spectrum bands, but it asserts that its proposed rule “would serve to fill any unintended gaps in the other rules, provide important context for construing any ambiguities in the other rules, and plainly place the Commission in step with the mission of other governments entities charged with implementing [the statute].”¹³³ The rule it proposes, however, largely recites general principles set forth by statute and, as such, would not appear to place any affirmative restriction on the conduct of FirstNet or any other entity in deploying and operating the network. Any such restriction the rule might impose, on the other hand, may exceed the scope of the *Notice*, which did not expressly seek comment on proposals to implement the statutory requirement that FirstNet base its network on “commercial standards,” or on how this requirement of the Spectrum Act should be construed in this context. We thus decline to adopt AT&T’s proposal.

49. *Harris’s Proposed Regulatory Classification of LTE Base Stations.* Harris proposes that the Commission’s public safety broadband service rules “establish distinct definitions and rules for different types of base stations . . . in a manner consistent with 3GPP definitions and technical specifications.”¹³⁴ In particular, Harris recommends the adoption of distinct transmitter power and minimum coupling loss (MCL) restrictions for “Wide area,” “Medium area,” “Local area,” and “Home” base stations, at levels defined by the LTE standard.¹³⁵ Specialized requirements for various base station classes are necessary, Harris asserts, “to ensure that minimum technical requirements are placed on each of the classes while minimizing cost and harmful interference potential.”¹³⁶

50. The technical rules we are establishing for FirstNet’s licensed spectrum include power limits and other technical requirements aimed at mitigating the interference potential of operations in FirstNet’s licensed spectrum. These protections are well-established and enjoy broad record support, and, as some commenters have observed, they are generally aligned with the technical service rules that apply to 700 MHz commercial LTE services. We do not find that Harris has made the case for codifying a distinct and potentially conflicting set of rules for FirstNet’s licensed spectrum based directly on LTE design specifications, which themselves may evolve over time. Accordingly, we decline to adopt Harris’s proposal.

2. Further Rule Consolidations

51. In addition to its proposed consolidation of technical service rules, the Commission proposed additional minor rule revisions necessary to remove the D Block from the reach of Part 27 and

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“This Part’s technical service rules applicable to the 758-769/788-799 MHz band are designed to help ensure that the nationwide public safety broadband network in that band is built, operated, and maintained in accordance with commercial standards followed by the commercial mobile service and commercial mobile data service industries for network, device, and Internet Protocol connectivity, including standards developed by the Third Generation Partnership Project (3GPP), the Institute of Electrical and Electronics Engineers (IEEE), the Alliance for Telecommunications Industry Solutions (ATIS), the Internet Engineering Task Force (IETF), and the International Telecommunication Union (ITU).” AT&T Comments at 7.

¹³² Reply Comments of Motorola Solutions, PS Docket 12-94 at 3 (June 10, 2013).

¹³³ AT&T Comments at 6-7.

¹³⁴ Harris Comments at 10. *See also* Joint Reply Comments of the National Rural Electric Cooperative Association (NRECA) and NTCA-The Rural Broadband Association (NTCA), PS Docket 12-94 at 6-7 (June 10, 2013).

¹³⁵ *Id.* at 11.

¹³⁶ *Id.* at 12.

place it within the purview of Part 90.¹³⁷ The only commenters to address these proposed revisions support them.¹³⁸ We accordingly adopt the proposals. We also requested comment more generally on “the development of a unified set of rules for the expanded public safety broadband allocation,”¹³⁹ and Motorola Solutions identified for revision two additional “non-substantive” Part 27 references to the D Block.¹⁴⁰ We agree that these changes to reflect the new statutory mandate with respect to the D Block are purely ministerial, and we adopt such revisions as well.¹⁴¹

52. The Commission also proposed minor revisions to Sections 2.103, 90.179 and 90.523 of its rules to omit references to the defunct Public Safety Broadband Licensee. The few commenters that addressed any of these proposed revisions support them.¹⁴² We accordingly adopt these proposals as well.

B. Procedural Matters

1. Effective Date

53. Section 553 of the Administrative Procedure Act generally requires publication of a rule in the Federal Register at least thirty days before it goes into effect, but not when an agency otherwise finds and publishes “good cause” for an earlier effective date.¹⁴³ We believe there is good cause for making such rules effective immediately upon publication. As noted above, in our *Notice* we suspended OET’s acceptance and processing of applications for equipment certification in this band pending the adoption of the foregoing technical rules against which to evaluate such equipment. With several near-term deployments now planned in FirstNet’s licensed spectrum,¹⁴⁴ some under lease agreements that have already been executed, it is essential that the Commission commence its equipment certification process for this band as soon as possible, particularly in light of the clear public safety benefits resulting from such proposed deployments. Because the rules we adopt in this *Second Report and Order* will provide the foundation for this certification process, expediting their effective date is necessary to prevent delay in the availability of equipment for operation in FirstNet’s licensed spectrum. We will therefore make this

¹³⁷ *Notice*, 28 FCC Rcd at 2727-28 ¶¶ 40-41. The subject rules include Sections 1.9005(k) (“Included services.”), 27.6 (“Service Areas.”), 27.11 (“Initial Authorization”), 27.13 (“License Period.”), 27.14 (“Construction requirements; Criteria for Renewal.”), 27.15 (“Geographic partitioning and spectrum disaggregation.”), 27.60 (“TV/DTV interference protection criteria”), 27.70 (“Information exchange.”), 27.303 (“Upper 700 MHz commercial and public safety coordination zone.”), 27.501 (“746-763 MHz, 775-793 MHz, and 805-806 MHz bands subject to competitive bidding.”), and Section 90.555 (“Information Exchange”).

¹³⁸ See APCO Comments at 4-5; Motorola Solutions Comments at 12.

¹³⁹ *Notice*, 28 FCC Rcd at 2721 ¶ 18.

¹⁴⁰ Motorola Solutions Comments at 12 (proposing revisions to Sections 27.4, 27.6, 27.20 and 27.53). The revisions proposed to Section 27.4 were implemented in the *Report and Order*. See 27 FCC Rcd at 10962-63. Section 27.53 will be revised as discussed in Section III.A.1.b. above.

¹⁴¹ As noted above, we believe these changes fall within the general scope of our proposal to develop a unified set of rules for the spectrum licensed to FirstNet. In any event, however, because they are purely ministerial, specific notice and opportunity for comment on these rule changes is unnecessary. 5 U.S.C. § 553(b)(3)(B).

¹⁴² See APCO Comments at 4-5; Ericsson Comments at 7.

¹⁴³ See 5 U.S.C. § 553(d)(3).

¹⁴⁴ See National Telecommunications and Information Administration, FirstNet Approves Resolutions on Spectrum Lease Agreement with LA-RICS and Personnel Acquisition Strategy, <http://www.ntia.doc.gov/press-release/2013/firstnet-approves-resolutions-spectrum-lease-agreement-la-rics-and-personnel-acqu> (last visited Oct. 25, 2013); National Telecommunications and Information Administration, FirstNet Approves Spectrum Lease Agreement with New Mexico; Provides Status Update on Remaining Projects, <http://www.ntia.doc.gov/press-release/2013/firstnet-approves-spectrum-lease-agreement-new-mexico-provides-status-update-rema> (last visited Oct. 25, 2013).

Second Report and Order effective upon publication in the Federal Register.¹⁴⁵

2. Regulatory Flexibility Act

54. As required by the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities. The FRFA is set forth in Appendix B.

3. Paperwork Reduction Act of 1995

55. This document contains no new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13.

4. Congressional Review Act

56. The Bureau will send a copy of this *Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

5. Accessible Formats

57. To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an e-mail to FCC504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (TTY). Contact the FCC to request reasonable accommodations for filing comments (accessible format documents, sign language interpreters, CARTS, *etc.*) by e-mail at FCC504@fcc.gov or by phone at 202-418-0530 (voice) or 202-418-0432 (TTY).

IV. ORDERING CLAUSES

58. Accordingly, IT IS ORDERED pursuant to sections 1, 2, 4(i), 5(c), 7, 301, 302, 303, 307, 308, 309, 310, 311, 314, 316, 319, 324, 332, 333, 336, 337 and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 155(c), 157, 301, 302, 303, 307, 308, 309, 310, 311, 314, 316, 319, 324, 332, 333, 336, 337 and 403, as well as Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, that this *Second Report and Order* in PS Docket No. 12-94 IS ADOPTED. This *Second Report and Order* shall become effective upon publication in the Federal Register.

59. IT IS FURTHER ORDERED that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Second Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

60. IT IS FURTHER ORDERED that the Office of Engineering and Technology SHALL RESUME its acceptance and processing of applications for equipment certification in the 758-769 MHz and 788-799 MHz band upon publication of this *Second Report and Order* in the Federal Register.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

¹⁴⁵There is also good cause for making immediately effective those changes to our rules that are purely ministerial amendments designed to reflect our new statutory mandate with respect to the D Block. 5 U.S.C. § 553(d)(3).

APPENDIX A**Final Rules**

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 1, 2, 27 and 90 as follows:

PART 1 – PRACTICE AND PROCEDURE

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

Authority: 15 U.S.C. 79 *et seq.*; 47 U.S.C. 151, 154(i), 154(j), 155, 157, 225, 227, 303(r), and 309, Cable Landing License Act of 1921, 47 U.S.C. 35-39, and the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96.

2. Section 1.9005 is amended by revising paragraph (k) to read as follows:

§ 1.9005 Included services.

* * * * *

(k) The Wireless Communications Service in the 746 – 758 MHz, 775 – 788 MHz, and 805 – 806 MHz bands (part 27 of this chapter);

* * * * *

PART 2 – FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

3. The authority citation for part 2 continues to read as follows:

Authority: 47 U.S.C. 154, 302(a), 303, and 336, unless otherwise noted.

4. Section 2.103 is amended by revising paragraph (a) introductory text and paragraph (c) to read as follows:

§ 2.103 Federal Use of non-Federal frequencies.

(a) Federal stations may be authorized to use non-Federal frequencies in the bands above 25 MHz (except the 758-775 MHz and 788-805 MHz public safety bands) if the Commission finds that such use is necessary for coordination of Federal and non-Federal activities: Provided, however, that:

* * *

* * * * *

(c) Federal stations may be authorized by the First Responder Network Authority to use channels in the 758-769 MHz and 788-799 MHz public safety bands.

PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

5. The authority citation for part 27 continues to read as follows:

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

6. Section 27.6 is amended by revising paragraph (b) introductory text and removing paragraph (b)(3) to read as follows:

§ 27.6 Service Areas.

* * * * *

(b) 746–758 MHz, 775–788 MHz, and 805-806 MHz bands. WCS service areas for the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands are as follows.

* * * * *

Section 27.11 is amended by revising paragraph (c) introductory text and removing paragraph (c)(4) to read as follows:

§ 27.11 Initial authorization.

* * * * *

(c) 746–758 MHz, 775–788 MHz, and 805-806 MHz bands. Initial authorizations for the 746–758 MHz, 775–788 MHz, and 805-806 MHz bands shall be for paired channels of 1, 5, 6, or 11 megahertz of spectrum in accordance with §27.5(b).

* * * * *

7. Section 27.13 is amended by revising the first sentence in paragraph (b) to read as follows:

§ 27.13 License Period.

* * * * *

(b) 698-758 MHz, 776-788, 775-776, and 805-806 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 June 13, 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. * * *

* * * * *

- 8. Section 27.14 is amended by revising the first sentence in paragraph (a) and the first sentence in paragraph (e), removing paragraphs (m) and (n), and redesignating paragraphs (o) and (p) as paragraphs (m) and (n) to read as follows:

§ 27.14 Construction requirements; Criteria for Renewal.

(a) AWS and WCS licensees, with the exception of WCS licensees holding authorizations for Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block E in the 722-728 MHz band, Block C, C1 or C2 in the 746-757 MHz and 776-787 MHz bands, Block A in the 2305-2310 MHz and 2350-2355 MHz bands, Block B in the 2310-2315 MHz and 2355-2360 MHz bands, Block C in the 2315-2320 MHz band, and Block D in the 2345-2350 MHz band, must, as a performance requirement, make a showing of "substantial service" in their license area within the prescribed license term set forth in § 27.13. * * *

* * * * *

(e) Comparative renewal proceedings do not apply to WCS licensees holding authorizations for Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block C in the 710-716 MHz and 740-746 MHz bands, Block D in the 716-722 MHz band, Block E in the 722-728 MHz band, or Block C, C1 or C2 in the 746-757 MHz and 776-787 MHz bands. * * *

* * * * *

- 9. Section 27.15 is amended by revising the first sentence in paragraphs (d)(1)(i) and (d)(2)(i) to read as follows:

§ 27.15 Geographic partitioning and spectrum disaggregation.

* * * * *

(d) * * *

(1) * * *

(i) Except for WCS licensees holding authorizations for Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block E in the 722-728 MHz band, or Blocks C, C1, and C2 in the 746-757 MHz and 776-787 MHz bands, the following rules apply to WCS and AWS licensees holding authorizations for purposes of implementing the construction requirements set forth in § 27.14. * * *

* * * * *

(2) * * *

(i) Except for WCS licensees holding authorizations for Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block E in the 722-728 MHz band, or Blocks C, C1, and C2 in the 746-757 MHz and 776-787 MHz bands, the following rules apply to WCS and AWS licensees holding authorizations for purposes of implementing the construction requirements set forth in § 27.14. * * *

* * * * *

10. Section 27.20 is amended by revising paragraph (a) to read as follows:

§ 27.20 Digital television transition education reports.

(a) The requirements of this section shall apply only with regard to WCS license authorizations in Block A in the 698-704 MHz and 728-734 MHz bands, Block B in the 704-710 MHz and 734-740 MHz bands, Block E in the 722-728 MHz band, and Block C, C1 or C2 in the 746-757 MHz and 776-787 MHz bands.

* * * * *

11. Section 27.50 is amended by revising paragraph (b) introductory text, paragraphs (b)(2) through (b)(7), (b)(7)(i), (b)(8) through (b)(10), (b)(12), (c)(5)(i), and the headings to Table 1 through Table 4 at the end of the section to read as follows:

§ 27.50 Power limits and duty cycle.

* * * * *

(b) The following power and antenna height limits apply to transmitters operating in the 746-758 MHz, 775-788 MHz and 805-806 MHz bands:

* * * * *

(2) Fixed and base stations transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth of 1 MHz or less must not exceed an ERP of 1000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section.

(3) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth of 1 MHz or less must not exceed an ERP of 2000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts ERP in accordance with Table 2 of this section.

(4) Fixed and base stations transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section.

(5) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 746-757 MHz and 776-787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section.

(6) Licensees of fixed or base stations transmitting a signal in the 746-757 MHz and 776-787 MHz bands at an ERP greater than 1000 watts must comply with the provisions set forth in paragraph (b)(8) of this section and §27.55(c).

(7) Licensees seeking to operate a fixed or base station located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population

statistics from the Bureau of the Census, and transmitting a signal in the 746-757 MHz and 776-787 MHz bands at an ERP greater than 1000 watts must:

(i) coordinate in advance with all licensees authorized to operate in the 698-758 MHz, 775-788, and 805-806 MHz bands within 120 kilometers (75 miles) of the base or fixed station;

* * * * *

(8) Licensees authorized to transmit in the 746-757 MHz and 776-787 MHz bands and intending to operate a base or fixed station at a power level permitted under the provisions of paragraph (b)(6) of this section must provide advanced notice of such operation to the Commission and to licensees authorized in their area of operation. Licensees who must be notified are all licensees authorized to operate in the 758-775 MHz and 788-805 MHz bands under Part 90 of this chapter within 75 km of the base or fixed station and all regional planning committees, as identified in §90.527 of this chapter, with jurisdiction within 75 km of the base or fixed station. Notifications must provide the location and operating parameters of the base or fixed station, including the station's ERP, antenna coordinates, antenna height above ground, and vertical antenna pattern, and such notifications must be provided at least 90 days prior to the commencement of station operation.

(9) Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands and fixed stations transmitting in the 787-788 MHz and 805-806 MHz bands are limited to 30 watts ERP.

(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

* * * * *

(12) For transmissions in the 746-757 and 776-787 MHz bands, licensees may employ equipment operating in compliance with either the measurement techniques described in paragraph (b)(11) of this section or a Commission-approved average power technique. In both instances, equipment employed must be authorized in accordance with the provisions of 27.51.

(c) * * *

(5) * * *

(i) coordinate in advance with all licensees authorized to operate in the 698-758 MHz, 775-788, and 805-806 MHz bands within 120 kilometers (75 miles) of the base or fixed station;

* * * * *

Table 1 - Permissible Power and Antenna Heights for Base and Fixed Stations in the 757-758 and 775-776 MHz Bands and for Base and Fixed Stations in the 698-757 MHz and 776-787 MHz Bands Transmitting a Signal with an Emission Bandwidth of 1 MHz or Less	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100
Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

Table 2 – Permissible Power and Antenna Heights for Base and Fixed Stations in the 698-757 MHz and 776-787 MHz Bands Transmitting a Signal with an Emission Bandwidth of 1 MHz or Less	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts)

Above 1372 (4500)	130
Above 1220 (4000) To 1372 (4500)	140
Above 1067 (3500) To 1220 (4000)	150
Above 915 (3000) To 1067 (3500)	200
Above 763 (2500) To 915 (3000)	280
Above 610 (2000) To 763 (2500)	400
Above 458 (1500) To 610 (2000)	700
Above 305 (1000) To 458 (1500)	1200
Up to 305 (1000)	2000

Table 3 – Permissible Power and Antenna Heights for Base and Fixed Stations in the 698-757 MHz and 776-787 MHz Bands Transmitting a Signal with an Emission Bandwidth Greater than 1 MHz	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) per MHz (watts/MHz)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100
Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

Table 4 – Permissible Power and Antenna Heights for Base and Fixed Stations in the 698-757 MHz and 776-787 MHz Bands Transmitting a Signal with an Emission Bandwidth Greater than 1 MHz	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) per MHz (watts/MHz)
Above 1372 (4500)	130
Above 1220 (4000) To 1372 (4500)	140
Above 1067 (3500) To 1220 (4000)	150
Above 915 (3000) To 1067 (3500)	200
Above 763 (2500) To 915 (3000)	280
Above 610 (2000) To 763 (2500)	400
Above 458 (1500) To 610 (2000)	700
Above 305 (1000) To 458 (1500)	1200
Up to 305 (1000)	2000

12. Section 27.53 is amended by removing paragraph (d), redesignating paragraphs (e) through (n) as paragraphs (d) through (m), and revising newly redesignated paragraphs (d),(1) and (2) and (e) to read as follows:

§ 27.53 Emission limits.

* * * * *

(d) For operations in the 775–776 MHz and 805–806 MHz bands, transmitters must comply with either paragraphs (d)(1) through (5) of this section or the ACP emission limitations set forth in paragraphs (d)(6) to (d)(9) of this section.

(1) On all frequencies between 758-775 MHz and 788-805 MHz, the power of any emission outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by a factor not less than $76 + 10 \log (P)$ dB in

a 6.25 kHz band segment, for base and fixed stations;

(2) On all frequencies between 758-775 MHz and 788-805 MHz, the power of any emission outside the licensee's frequency bands of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

* * * * *

(e) For operations in the 746–758 MHz, 775–788 MHz, and 805-806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

* * * * *

13. Section 27.55 is amended by revising paragraph (c) to read as follows:

§ 27.55 Power strength limits.

* * * * *

(c) Power flux density limit for stations operating in the 746-757 MHz and 776-787 MHz bands. For base and fixed stations operating in the 746-757 MHz and 776-787 MHz bands in accordance with the provisions of §27.50(b)(6), the power flux density that would be produced by such stations through a combination of antenna height and vertical gain pattern must not exceed 3000 microwatts per square meter on the ground over the area extending to 1 km from the base of the antenna mounting structure.

14. Section 27.57 is amended by revising paragraph (b) to read as follows:

§ 27.57 International coordination.

* * * * *

(b) Operation in the 698–758 MHz, 775–788 MHz, and 805-806 MHz bands is subject to international agreements between Mexico and Canada. Unless otherwise modified by international treaty, licenses must not cause interference to, and must accept harmful interference from, television broadcast

operations in Mexico and Canada.

* * * * *

15. Section 27.60 is amended by revising the introductory text, paragraph (a)(1)(iii), the second sentence in paragraph (b) introductory text, paragraph (b)(2)(i), paragraph (b)(2)(ii), paragraph (b)(2)(ii)(A) and paragraph (b)(2)(ii)(C) to read as follows:

§ 27.60 TV/DTV interference protection criteria.

Base, fixed, control, and mobile transmitters in the 698–758 MHz, 775–788 MHz, and 805-806 MHz frequency bands must be operated only in accordance with the rules in this section to reduce the potential for interference to public reception of the signals of existing TV and DTV broadcast stations transmitting on TV Channels 51 through 68.

(a) * * *

(1) * * *

(iii) For transmitters operating in the 746–758 MHz, 775–788 MHz, and 805-806 MHz frequency bands, 17 dB at the equivalent Grade B contour (41 dB μ V/m) (88.5 kilometers (55 miles)) of the DTV station.

* * * * *

(b) * * * Tables to determine the necessary minimum distance from the 698–758 MHz, 775–788 MHz, and 805-806 MHz station to the TV/DTV station, assuming that the TV/DTV station has a hypothetical or equivalent Grade B contour of 88.5 kilometers (55 miles), are located in § 90.309 of this chapter and labeled as Tables B, D, and E. * * *

* * * * *

(2) * * *

(i) Base and fixed stations that operate in the 746–758 MHz and 775–787 MHz bands having an antenna height (HAAT) less than 152 m. (500 ft.) shall afford protection to co-channel and adjacent channel TV/DTV stations in accordance with the values specified in Table B (co-channel frequencies based on 40 dB protection) and Table E (adjacent channel frequencies based on 0 dB protection) in §

90.309 of this chapter. * * *

(ii) Control, fixed, and mobile stations (including portables) that operate in the 787-788 MHz and 805-806 MHz bands and control and mobile stations (including portables) that operate in the 698–757 MHz and 776–787 MHz bands are limited in height and power and therefore shall afford protection to co-channel and adjacent channel TV/DTV stations in the following manner:

(A) For control, fixed, and mobile stations (including portables) that operate in the 787-788 MHz and 805–806 MHz bands and control and mobile stations (including portables) that operate in the 746-757 MHz and 776-787 MHz bands, co-channel protection shall be afforded in accordance with the values specified in Table D (co-channel frequencies based on 40 dB protection for TV stations and 17 dB for DTV stations) in § 90.309 of this chapter.

* * * * *

(C) For control, fixed, and mobile stations (including portables) that operate in the 787-788 MHz and 805–806 MHz bands and control and mobile stations (including portables) that operate in the 698-757 MHz and 776-787 MHz bands, adjacent channel protection shall be afforded by providing a minimum distance of 8 kilometers (5 miles) from all adjacent channel TV/DTV station hypothetical or equivalent Grade B contours (adjacent channel frequencies based on 0 dB protection for TV stations and –23 dB for DTV stations).

* * * * *

16. Section 27.70 is amended by revising paragraphs (a) and (b)(1), and (b)(2) to read as follows:

§ 27.70 Information exchange.

(a) Prior notification. Public safety licensees authorized to operate in the 758-775 MHz and 788-805 MHz bands may notify any licensee authorized to operate in the 746-757 or 776-787 MHz bands that they wish to receive prior notification of the activation or modification of the licensee's base or fixed stations in their area. Thereafter, the 746-757 or 776-787 MHz band licensee must provide the following information to the public safety licensee at least 10 business days before a new base or fixed station is activated or an existing base or fixed station is modified:

* * * * *

(b) * * *

(1) Allow a public safety licensee to advise the 746-757 or 776-787 MHz band licensee whether it believes a proposed base or fixed station will generate unacceptable interference;

(2) Permit 746-757 and 776-787 MHz band licensees to make voluntary changes in base or fixed station parameters when a public safety licensee alerts them to possible interference; and,

* * * * *

17. Section 27.303 is amended by revising paragraph (a) introductory text to read as follows:

§ 27.303 Upper 700 MHz commercial and public safety coordination zone.

(a) General. CMRS operators are required, prior to commencing operations on fixed or base station transmitters on the 776–787 MHz band that are located within 500 meters of existing or planned public safety base station receivers, to submit a description of their proposed facility to a Commission-approved public safety coordinator.

* * * * *

18. Section 27.501 is revised to read as follows:

§ 27.501 746–758 MHz, 775–788 MHz, and 805–806 MHz bands subject to competitive bidding.

Mutually exclusive initial applications for licenses in the 746 – 758 MHz, 775 – 788 MHz, and 805 – 806 MHz bands are subject to competitive bidding. The general competitive bidding procedures set forth in part 1, subpart Q of this chapter will apply unless otherwise provided in this subpart.

PART 90 – PRIVATE LAND MOBILE RADIO SERVICES

19. 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), and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156.

20. Section 90.179 is amended by revising paragraph (g) to read as follows:

§ 90.179 Shared use of radio stations.

* * * * *

(g) Notwithstanding paragraph (a) of this section, licensees authorized to operate radio systems on Public Safety Pool frequencies designated in § 90.20 may share their facilities with Federal Government entities on a non-profit, cost-shared basis. Such a sharing arrangement is subject to the provisions of paragraphs (b), (d), and (e) of this section, and § 2.103(c) of this chapter concerning operations in the 758-769 MHz and 788-799 MHz bands. State governments authorized to operate radio systems under § 90.529 may share the use of their systems (for public safety services not made commercially available to the public) with any entity that would be eligible for licensing under § 90.523 and Federal government entities.

* * * * *

21. Section 90.203 is amended by removing paragraph (p).

22. Section 90.205 is amended by revising paragraph (j) to read as follows:

§ 90.205 Power and antenna height limits.

* * * * *

(j) 758-775 MHz and 788-805 MHz. Power and height limitations are specified in §§ 90.541 and 90.542.

* * * * *

23. Section 90.523 is amended by revising the introductory paragraph, and revising paragraph (e), to read as follows:

§ 90.523 Eligibility.

This section implements the definition of public safety services contained in 47 U.S.C. 337(f)(1). The following are eligible to hold Commission authorizations for systems operating in the 769-775 MHz and 799-805 MHz frequency bands:

* * * * *

(e) A nationwide license for the 758-769 MHz and 788-799 MHz bands shall be issued to the

First Responder Network Authority.

24. Section 90.533 is amended by revising the introductory paragraph and paragraphs (a) and (c) to read as follows:

§ 90.533 Transmitting sites near the U.S./Canada or U.S./Mexico border.

This section applies to each license to operate one or more public safety transmitters in the 758-775 MHz and 788-805 MHz bands, at a location or locations North of Line A (see § 90.7) or within 120 kilometers (75 miles) of the U.S.-Mexico border, until such time as agreements between the government of the United States and the government of Canada or the government of the United States and the government of Mexico, as applicable, become effective governing border area non-broadcast use of these bands.

Public safety licenses are granted subject to the following conditions:

- (a) Public safety transmitters operating in the 758-775 MHz and 788-805 MHz bands must conform to the limitations on interference to Canadian television stations contained in agreement(s) between the United States and Canada for use of television channels in the border area.

* * * * *

- (c) Conditions may be added during the term of the license, if required by the terms of international agreements between the government of the United States and the government of Canada or the government of the United States and the government of Mexico, as applicable, regarding non-broadcast use of the 758-775 MHz and 788-805 MHz bands.

25. Section 90.542 is amended by revising paragraph (a) introductory text, paragraphs (a)(1) through (a)(8), Tables 1 through 4, and paragraph (b) to read as follows:

§ 90.542 Broadband transmitting power limits.

- (a) The following power limits apply to the 758-768/788-798 MHz band:

(1) Fixed and base stations transmitting a signal in the 758-768 MHz band with an emission bandwidth of 1 MHz or less must not exceed an ERP of 1000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section.

(2) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 758-768 MHz band with an emission bandwidth of 1 MHz or less must not exceed an ERP of 2000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts ERP in accordance with Table 2 of this section.

(3) Fixed and base stations transmitting a signal in the 758-768 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP accordance with Table 3 of this section.

(4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal in the 758-768 MHz band with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section.

(5) Licensees of fixed or base stations transmitting a signal in the 758-768 MHz band at an ERP greater than 1000 watts must comply with the provisions set forth in paragraph (b) of this section.

(6) Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.

(7) Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

(8) For transmissions in the 758-768 MHz and 788-798 MHz bands, licensees may employ equipment operating in compliance with either of the following measurement techniques:

* * * * *

Table 1 - Permissible Power and Antenna Heights for Base and Fixed in the 758-768 MHz Band Transmitting a Signal with an Emission Bandwidth of 1 MHz or Less	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100
Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

Table 2 – Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal with an Emission Bandwidth of 1 MHz or Less	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) (watts)
Above 1372 (4500)	130
Above 1220 (4000) To 1372 (4500)	140
Above 1067 (3500) To 1220 (4000)	150
Above 915 (3000) To 1067 (3500)	200
Above 763 (2500) To 915 (3000)	280

Above 610 (2000) To 763 (2500)	400
Above 458 (1500) To 610 (2000)	700
Above 305 (1000) To 458 (1500)	1200
Up to 305 (1000)	2000

Table 3 – Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal with an Emission Bandwidth Greater than 1 MHz	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) per MHz (watts/MHz)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100
Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

Table 4 – Permissible Power and Antenna Heights for Base and Fixed Stations in the 758-768 MHz Band Transmitting a Signal with an Emission Bandwidth Greater than 1 MHz	
Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) per MHz (watts/MHz)

Above 1372 (4500)	130
Above 1220 (4000) To 1372 (4500)	140
Above 1067 (3500) To 1220 (4000)	150
Above 915 (3000) To 1067 (3500)	200
Above 763 (2500) To 915 (3000)	280
Above 610 (2000) To 763 (2500)	400
Above 458 (1500) To 610 (2000)	700
Above 305 (1000) To 458 (1500)	1200
Up to 305 (1000)	2000

(b) For base and fixed stations operating in the 758-768 MHz band in accordance with the provisions of paragraph (a)(5) of this section, the power flux density that would be produced by such stations through a combination of antenna height and vertical gain pattern must not exceed 3000 microwatts per square meter on the ground over the area extending to 1 km from the base of the antenna mounting structure.

26. Section 90.543 is amended by revising the introductory paragraph, revising paragraph (e) introductory text, adding new paragraph (e)(3), redesignating existing paragraph (e)(3) as (e)(4), adding new paragraph (e)(5), and revising paragraph (f) to read as follows:

§ 90.543 Emission limitations.

Transmitters designed to operate in 769-775 MHz and 799-805 MHz frequency bands must meet the emission limitations in paragraphs (a) through (d) of this section. Transmitters operating in 758-768 MHz and 788-798 MHz bands must meet the emission limitations in (e) of this section.

* * * * *

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

* * * * *

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

* * * * *

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

* * * * *

27. Section 90.549 is revised to read as follows:

§ 90.549 Transmitter certification.

Transmitters operated in the 758-775 MHz and 788-805 MHz frequency bands must be of a type that have been authorized by the Commission under its certification procedure as required by § 90.203.

28. Section 90.555 is amended by revising paragraph (a) introductory text, paragraph (b)(1), paragraph (b)(2), paragraph (c)(1), and paragraph (c)(2) to read as follows:

§ 90.555 Information Exchange.

(a) Prior notification. Public safety licensees authorized to operate in the 758-775 MHz and 788-805 MHz bands may notify any licensee authorized to operate in the 746-757 MHz or 776-787 MHz bands that they wish to receive prior notification of the activation or modification of the licensee's base or fixed stations in their area. Thereafter, the 746-757 MHz or 776-787 MHz band licensee must provide the following information to the public safety licensee at least 10 business days before a new base or fixed

station is activated or an existing base or fixed station is modified:

* * * * *

(b) * * *

(1) Allow a public safety licensee to advise the 746-757 or 776-787 MHz band licensee whether it believes a proposed base or fixed station will generate unacceptable interference;

(2) Permit 746-757 and 776-787 MHz band licensees to make voluntary changes in base or fixed station parameters when a public safety licensee alerts them to possible interference; and,

* * * * *

(c) Public Safety Information Exchange.

(1) Upon request by a 746-757 or 776-787 MHz band licensee, public safety licensees authorized to operate radio systems in the 758-775 and 788-805 MHz bands shall provide the operating parameters of their radio system to the 746-757 or 776-787 MHz band licensee.

(2) Public safety licensees who perform the information exchange described in this section must notify the appropriate 746-757 or 776-787 MHz band licensees prior to any technical changes to their radio system.

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act (RFA),¹ the Commission has prepared this Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of rules adopted in this *Second Report and Order* in PS Docket 12-94. The Commission sought comment on such impact in an Initial Regulatory Flexibility Analysis (IRFA) prepared in connection with the *Notice* in which the rules were proposed.² No commenters directly responded to the IRFA.

A. Need for, and Objectives of, the Proposed Rules

2. In this *Second Report and Order*, the Commission adopts a unified set of technical service rules for the spectrum licensed to the First Responder Network Authority (FirstNet) for purposes of establishing a nationwide 700 MHz public safety broadband network. This unification primarily involves merging into Part 90 of the Commission's rules a number of technical requirements that had been codified separately in Parts 27 and 90 for the two respective segments of FirstNet's licensed spectrum, the "public safety broadband spectrum" (763-768/793-798 MHz) and the "D Block" (758-763/788-793 MHz). Such action will further "facilitate[s] the transition" of spectrum to FirstNet for its use in establishing a nationwide wireless broadband communications network for our Nation's first responders. In particular, the adoption of consolidated rules for FirstNet's licensed spectrum will enable the Commission to start certifying equipment for operation in this spectrum under the technical rules established for the combined band.

B. Summary of Significant Issues Raised by Comments in Response to IRFA

3. No commenters directly responded to the IRFA. A number of commenters expressed support in general for the consolidation of technical rules that we effect in this *Second Report and Order*. Also, no commenters expressed the view that such consolidation of rules would have a significant economic impact on a substantial number of small entities.

C. Description and Estimate of the Number of Small Entities To Which the Proposed Rules Will Apply

4. The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein.³ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."⁴ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.⁵ A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3)

¹ See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

² See Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012 *et al.*, PS Docket 12-94 *et al.*, *Notice of Proposed Rulemaking*, 28 FCC Rcd 2715, 2752 app. B (2013).

³ 5 U.S.C. § 604(a)(3).

⁴ 5 U.S.C. § 601(6).

⁵ 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

satisfies any additional criteria established by the Small Business Administration (“SBA”).⁶ Below, we further describe and estimate the number of small entity licensees and regulatees that may be affected by the rules changes we propose in this *Notice*.

5. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions.* Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.⁷ First, nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.⁸ In addition, a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”⁹ Nationwide, as of 2007, there were approximately 1,621,315 small organizations.¹⁰ Finally, the term “small governmental jurisdiction” is defined generally as “governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹¹ Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.¹² We estimate that, of this total, as many as 88,506 entities may qualify as “small governmental jurisdictions.”¹³ Thus, we estimate that most governmental jurisdictions are small.

6. *Public Safety Radio Licensees.* As a general matter, Public Safety Radio Pool licensees include police, fire, local government, forestry conservation, highway maintenance, and emergency medical services.¹⁴ Because of the vast array of public safety licensees, the Commission has not developed a small business size standard specifically applicable to public safety licensees. The SBA rules contain a definition for Wireless Telecommunications Carriers (except Satellite) which encompasses

⁶ 15 U.S.C. § 632.

⁷ See 5 U.S.C. §§ 601(3)–(6).

⁸ See SBA, Office of Advocacy, “Frequently Asked Questions,” web.sba.gov/faqs (last visited May 6, 2011; figures are from 2009).

⁹ 5 U.S.C. § 601(4).

¹⁰ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

¹¹ 5 U.S.C. § 601(5).

¹² U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007)

¹³ The 2007 U.S. Census data for small governmental organizations indicate that there were 89,476 “Local Governments” in 2007. (U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Table 428.) The criterion by which the size of such local governments is determined to be small is a population of 50,000. However, since the Census Bureau does not specifically apply that criterion, it cannot be determined with precision how many of such local governmental organizations are small. Nonetheless, the inference seems reasonable that a substantial number of these governmental organizations has a population of less than 50,000. To look at Table 428 in conjunction with a related set of data in Table 429 in the Census’s Statistical Abstract of the U.S., that inference is further supported by the fact that in both Tables, many entities that may well be small are included in the 89,476 local governmental organizations, e.g. county, municipal, township and town, school district and special district entities. Measured by a criterion of a population of 50,000 many specific sub-entities in this category seem more likely than larger county-level governmental organizations to have small populations. Accordingly, of the 89,476 small governmental organizations identified in the 2007 Census, the Commission estimates that a substantial majority is small.

¹⁴ See subparts A and B of Part 90 of the Commission’s Rules, 47 C.F.R. §§ 90.1-90.22. Police licensees serve state, county, and municipal enforcement through telephony (voice), telegraphy (code), and teletype and facsimile (printed material). Fire licensees are comprised of private volunteer or professional fire companies, as well as units under governmental control. Public Safety Radio Pool licensees also include state, county, or municipal entities that use radio for official purposes. State departments of conservation and private forest organizations comprise forestry service licensees that set up communications networks among fire lookout towers and ground crews. State and local governments are highway maintenance licensees that provide emergency and routine communications to aid other public safety services to keep main roads safe for vehicular traffic. Emergency medical licensees use these channels for emergency medical service communications related to the delivery of emergency medical treatment. Additional licensees include medical services, rescue organizations, veterinarians, persons with disabilities, disaster relief organizations, school buses, beach patrols, establishments in isolated areas, communications standby facilities, and emergency repair of public communications facilities.

business entities engaged in radiotelephone communications employing no more than 1,500 persons.¹⁵ With respect to local governments, in particular, since many governmental entities comprise the licensees for these services, we include under public safety services the number of government entities affected. According to Commission records, there are a total of approximately 133,870 licenses within these services.¹⁶ There are 2,442 licenses in the 4.9 GHz band, based on an FCC Universal Licensing System search of May 23, 2012.¹⁷ We estimate that fewer than 2,442 public safety radio licensees hold these licenses because certain entities may have multiple licenses.

7. We observe, however, that “small governmental jurisdictions”—regardless of their status as Public Safety Radio Pool licensees—are ineligible to hold direct Commission authorizations to operate in the spectrum licensed to FirstNet. By statute, FirstNet is charged with constructing, operating and maintaining public safety broadband network in this spectrum on a nationwide basis, under a nationwide license.¹⁸ Accordingly, we do not believe the technical service rules adopted in this *Second Report and Order* to govern operations in this spectrum will directly affect a substantial number of small entities, and that it is thus unnecessary to prepare a regulatory flexibility analysis in connection with these requirements.¹⁹ Nevertheless, to the extent such rules could be construed as having a direct effect on a substantial number of small entities, we estimate that the economic impact on any entity would be minimal. This is because the rules adopted in the *Second Report and Order* largely involve unifying under a single set of Part 90 provisions a number of already existing technical requirements that had been codified in disparate rule sections.

8. The *Second Report and Order* does, however, establish rules governing equipment certification, which would apply directly to equipment manufacturers or other entities seeking to certify equipment for use in FirstNet’s licensed spectrum. The SBA category that includes such entities is that of “Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing,” which the Census Bureau defines as follows: “This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.”²⁰ The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing, which is: all such firms having 750 or fewer employees. According to Census Bureau data for 2007, there were a total of 939 establishments in this category that operated for part or all of the entire year. According to Census bureau data for 2007, there were a total of 919 firms in this category that operated for the entire year. Of this total, 771 had less than 100 employees and 148 had more than 100 employees.²¹ Thus, under that size standard, the majority of firms can be considered small.

¹⁵ See 13 C.F.R. § 121.201, NAICS code 517210.

¹⁶ This figure was derived from Commission licensing records as of June 27, 2008. Licensing numbers change on a daily basis. We do not expect this number to be significantly smaller today. This does not indicate the number of licensees, as licensees may hold multiple licenses. There is no information currently available about the number of public safety licensees that have less than 1,500 employees.

¹⁷ Based on an FCC Universal Licensing System search of May 23, 2012. Search parameters: Radio Service = PA – Public Safety 4940-4990 MHz Band; Authorization Type = Regular; Status = Active.

¹⁸ See Spectrum Act § 6206(b). The statute contemplates that portions of the network may be deployed by State governments, see Spectrum Act § 6302(e), which are categorically excluded from the definition of “small governmental jurisdictions” for purposes of RFA.

¹⁹ See, e.g., *Mid-Tex Elec. Co-op., Inc. v. F.E.R.C.*, 773 F.2d 327, 334 (D.C. Cir. 1985).

²⁰ The NAICS Code for this service 334220. See 13 C.F.R 121/201. See also http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-skip=300&-ds_name=EC0731SG2&-lang=en

²¹ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-skip=4500&-ds_name=EC0731SG3&-lang=en

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

9. The technical service rules adopted in this *Second Report and Order* largely involve consolidating a number of parallel Part 27 and Part 90 rules within the latter rule part, so as to subject FirstNet's licensed spectrum to a unified set of rules. Because FirstNet is the nationwide licensee in this spectrum, it will be primarily responsible on a nationwide basis for complying with any such requirements that are ultimately adopted. Accordingly, as discussed, we do not believe that these requirements would have a significant economic impact on a substantial number of small entities.

10. The *Second Report and Order* also establishes certification requirements for equipment operated in the combined public safety broadband spectrum and directs the Commission's Office of Engineering and Technology (OET) to process certifications under the newly consolidated rules. These certification requirements will be applicable to entities, such as equipment manufacturers, seeking to certify equipment for operation in this spectrum. However, as we observed in the IRFA, equipment certification is a longstanding Commission practice, widely applicable to equipment marketed for operation in radiospectrum licensed by the Commission. As the Commission further anticipated in the IRFA, the equipment certification rules adopted in the *Second Report and Order* do not depart significantly from current practice in this area. Indeed, the rules merely consolidate equipment certification requirements already applicable to the two respective segments of FirstNet's licensed spectrum. We do not believe that such consolidation would have a significant economic impact on a substantial number of small entities.

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

11. The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."²²

12. As previously discussed, the rules adopted in this *Second Report and Order* already involve the "consolidation" of existing requirements into a unified set of Part 90 provisions. We believe that such action will help facilitate the efforts in deploying the network, and there is no reason to believe that such rule consolidation would impose a significant economic impact on small entities.

13. We also do not believe it would be tenable to establish differing requirements for small entities or to exempt such entities from rules adopted in this *Second Report and Order*, including rules governing equipment certification. Given the importance of ensuring that the public safety broadband network is technically and operationally viable on a nationwide basis, it is important that the network be governed by a common set of rules and requirements and that all equipment operated in the network be subject to common certification procedures.

F. Federal Rules that May Duplicate, Overlap, or Conflict With the Proposed Rule

14. None.

²² 5 U.S.C. §§ 603(c)(1)-(c)(4).

**STATEMENT OF
ACTING FCC CHAIRWOMAN MIGNON L. CLYBURN**

Re: *Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012, PS Docket No. 12-94; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229; Service Rules for the 698–746, 747–762, and 777–792 MHz Bands, WT Docket No. 06-150.*

Hurricane Sandy made landfall in the United States one year ago tomorrow with a force so traumatic that an area stretching over 1000 miles, from Florida to Maine, was impacted. Sandy reminded us once again of the importance of communications during disasters – that it is vital for all Americans, particularly our brave public safety responders, who risk their lives every day to keep our communities safe. After that storm, the Commission conducted a series of field hearings to see what lessons we could learn from this historic, catastrophic event. On the anniversary of Sandy, it is fitting that the Commission is moving forward with yet another item that will help improve public safety communications.

When Congress enacted the Middle Class Tax Relief and Job Creation Act of 2012, it provided a solid framework for a nationwide interoperable public safety broadband network – a network that the public safety community needs and deserves to protect our communities. In concert with the First Responder Network Authority (FirstNet) and the National Telecommunications and Information Administration (NTIA), the Commission is working to ensure the success of this first-of-its-kind network.

Today, the Commission meets its Congressional directive by adopting important technical rules for the 700 MHz public safety broadband spectrum. These clear rules will advance FirstNet’s mission by spurring innovation and competition in the market for public safety broadband equipment. The rules provide urgently needed clarity for equipment manufacturers, and will facilitate prompt product development to support the early adopters in this band, and to meet FirstNet’s deployment time line. The rules will also fulfill the Commission’s obligation to provide interference protection to other Commission licensees, ensuring that users in adjacent spectrum can continue to operate without harmful interference.

Today’s action addresses the most pressing concern in this proceeding: technical rules for the public safety band, which provide vendors with the lead time necessary to bring equipment to the marketplace. However, we also remain aware of the other outstanding issues in this docket and understand the importance of their timely resolution. We will continue to work with all stakeholders to ensure that these issues are addressed.

I would like to thank the Public Safety and Homeland Security Bureau and the Office of Engineering of Technology for their work on this issue, along with the International Bureau, Wireless Bureau, and the Office of General Counsel. In particular, I’d like to thank Bureau Chief David Turetsky, and staff members Brain Hurley, Gene Fullano, Rasoul Safavian, Erika Olsen, Behzad Ghaffari and Yoon Chang in the Public Safety Bureau, for their contributions in bringing this item to the Commission today.

**STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL**

Re: *Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012, PS Docket No. 12-94; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229; Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150.*

Our efforts today are a small piece of something historic. History was made in last year's Middle Class Tax Relief and Job Creation Act. It was in this law that Congress came together and determined to right a long-standing wrong. More than a decade after the horror of 9/11 and many years after the watery devastation of Hurricane Katrina, Congress sought to help public safety officials across the country by doing something very simple—putting them all on the same airwaves. This facilitates interoperability, enhances functionality, and creates scale that over time could reduce the cost of first responder communications. But more than that, it means that those who wear the shield will be able to communicate better in crisis and make us more safe.

Congress sought to make all of this happen through the First Responder Network Authority—or FirstNet. Specifically, Congress charged FirstNet with the responsibility to help develop and operate a nationwide, interoperable, public safety wireless broadband network using spectrum in the 700 MHz band.

When FirstNet's board was first put in place fourteen months ago, they faced a steep climb. They had to stand up an organization from scratch. They had to build their efforts on essential input from public safety officials across the country. They had to consider how this network would be deployed in a way that is smart, cost effective, and consistent with congressional goals.

This is a bold undertaking. Getting it done will require grit, gumption, and moving beyond the conventional wisdom. But historic efforts usually do. And because progress sometimes occurs only in obscurity, I think it is worth itemizing the good work done to date.

First, the organization. FirstNet is now staffed by full-time employees. This includes a well-respected permanent management team with extensive experience in wireless networks, public safety communications, governmental outreach, and financial management. Plus, more help is on its way. The board recently approved a \$194 million budget that will be used for—among other things—additional hiring to support its work.

Second, the outreach. To make sure the voice of public safety is always heard, the FirstNet board established a Public Safety Advisory Committee. This committee is made up of 41 individuals from every segment of the public safety community—from state, local, and tribal entities to technology experts and security officials.

As part of its outreach efforts, the board has also acknowledged that the most important input is not from Washington. It is from those on the front lines. So from its very first day, FirstNet reached out to state and local public safety officials. It has held six regional workshops at which every state and virtually every territory participated.

Third, the network. FirstNet has been laying the foundation for the network it will develop through a series of public-private partnerships. Last year, the Commission helped move this effort along by establishing a board that developed minimum technical standards to ensure nationwide interoperability for the network.

But FirstNet has gone further. It has issued 11 requests for information, seeking industry input on

wireless devices, network partnering and provisioning, antenna systems, satellite service, enhanced packet core specifications, data centers, network operation centers and more. More importantly—industry has responded with 340 jam-packed filings dense with information FirstNet will consider as its proceeds.

Finally, some locations are beyond the planning stages and are already moving ahead. To this end, the board has approved spectrum leases with a major city, Los Angeles, and an entire state, New Mexico.

So what's next? That is where our decision today comes in. It is small but important. We respond to a call from FirstNet for consolidated service rules for their spectrum. Consolidated service rules make it possible to develop and certify new equipment for the public safety network. They establish the technical underpinnings for public safety communications to flourish in this band without disturbing their spectral neighbors. But it is just as important to note what these rules do not do. Our rules are streamlined. They do not layer on unnecessary requirements or duplicate build-out obligations already in the law. That is not what Congress asked us to do, that is not what we do here. Instead, we make decisions to help FirstNet get off the ground and get down to the business of improving public safety.

**STATEMENT OF
COMMISSIONER AJIT PAI**

Re: *Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012, PS Docket No. 12-94; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229; Service Rules for the 698–746, 747–762, and 777–792 MHz Bands, WT Docket No. 06-150.*

This morning's Order takes technical rules found in Part 27 and Part 90 for the 700 MHz public safety broadband spectrum and consolidates them into a harmonized set of Part 90 rules. By giving the private sector technical certainty and paving the way for the prompt certification of devices, today's item should help the equipment market for the 700 MHz public safety band to develop and innovation to flourish. The end result hopefully will be a bevy of nationally portable, interoperable public safety broadband devices.

Today's action is important. But our duty to the nation's first responders does not end with it. The First Responder Network Authority is still getting off the ground, and we must maintain continued oversight over the spectrum license we have granted it. There are also complicated issues regarding incumbent narrowband users in this spectrum which must be addressed. And critically, we need to stay on course with our spectrum auctions so that FirstNet is adequately funded. That means holding a successful H Block auction in January. That means designing the rules of the incentive auction with an eye towards maximizing the net revenues produced by that auction. And that means finding creative solutions and working collaboratively with federal users and the private sector to clear and auction prime spectrum like the 1755–1780 MHz band.

I commend the staff of the Public Safety and Homeland Security Bureau for their continued hard work on this and the many other proceedings necessary to meet the objectives that Congress set forth in the Spectrum Act. Thanks to your efforts, I am confident that the Commission's efforts in this area will prove successful.