

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

In the Matter of)	
)	
Promoting Interoperability in the 700 MHz Commercial Spectrum)	WT Docket No. 12-69
)	
)	
Requests for Waiver and Extension of Lower 700 MHz Band Interim Construction Benchmark Deadlines)	WT Docket No. 12-332
)	

REPORT AND ORDER AND ORDER OF PROPOSED MODIFICATION

Adopted: October 25, 2013

Released: October 29, 2013

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

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I. INTRODUCTION

1. In this Report and Order and Order of Proposed Modification, we take certain steps to implement an industry solution to provide interoperable Long Term Evolution (LTE) service in the Lower 700 MHz band in an efficient and effective manner to improve choice and quality for consumers of

mobile services. A number of the principal wireless providers licensed in this band, along with the Competitive Carriers Association, have developed a voluntary industry solution that would resolve the lack of interoperability in this band while allowing flexibility in responding to evolving consumer needs and dynamic and fast-paced technological developments. The amendments to our rules and modifications to licenses proposed herein will serve the public interest by enabling consumers, especially in rural areas, to enjoy the benefits of greater competition and more choices, and by encouraging efficient use of spectrum, investment, job creation, and the development of innovative mobile broadband services and equipment.

2. The steps we take here will assist consumers and the economies in rural areas, as well as small and regional businesses that operate there. Additional competition in rural areas is likely to result in lower-priced services, or plan options that are tailored to local communities. Small or regional providers serving rural areas drive economic growth in these rural areas, directly, by investing in their networks and creating jobs, and indirectly, by enabling the growth of other small businesses. But in order to promote competition – and enable small business customers of 700 MHz band licensees to operate successfully in the 21st century – these licensees need to be able to offer service choices. Interoperability of LTE service in the Lower 700 MHz band will remove an unnecessary barrier to the successful operation of businesses that can drive economic growth, promote competitive service, and create jobs in rural America, where 1.3 million people (and approximately 13% of rural road miles) still lack any mobile wireless broadband coverage and over one-third of the population still lacks coverage by more than two mobile broadband providers.¹

3. As described in more detail below, the Commission launched this proceeding last year to promote interoperability in the Lower 700 MHz band.² It sought comment on the core issue of whether providing interoperable LTE service with the use of a unified band class (to achieve interoperability) would result in harmful interference to customers using service on the Lower 700 MHz B and C Blocks and whether, if harmful interference were likely to exist, it reasonably could be mitigated.³ The Commission expressed its preference for an industry solution for interoperability, but also recognized that, if the industry failed to move in a timely manner toward interoperability, additional regulatory steps might be appropriate to further the public interest.⁴ On September 10, 2013, key parties in this proceeding filed letters with the Commission indicating their support for a voluntary industry consensus agreement to resolve the lack of interoperability in the Lower 700 MHz band.⁵ In this Report and Order and Order of Proposed Modification, we take the following steps:

¹ See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, WT Docket No. 11-186, *Sixteenth Report*, 28 FCC Rcd 3700, 3945 at ¶¶ 392-393 (2013) (*16th Annual Mobile Wireless Competition Report*). Only 65.4% of the Nation's rural population (and only 35.7% of rural road miles) has coverage by more than two mobile broadband providers. *Id.*

² Promoting Interoperability in the 700 MHz Commercial Spectrum, WT Docket 12-69, *Notice of Proposed Rulemaking*, 27 FCC Rcd 3521 (2012) (*Interoperability NPRM*).

³ *Interoperability NPRM*, 27 FCC Rcd at 3522, ¶ 3.

⁴ *Interoperability NPRM*, 27 FCC Rcd at 3543, ¶ 49.

⁵ Letter from Joan Marsh, Vice Pres. Fed. Regulatory, AT&T Services, Inc. to the Hon. Mignon Clyburn, Chairwoman, FCC, WT Docket No. 12-69, filed Sept. 10, 2013 (AT&T Sept. 10, 2013 Ex Parte); Letter from Jeffrey H. Blum, Senior Vice Pres. & Dep. Gen. Counsel, DISH Network, Corp., to the Hon. Mignon Clyburn, Chairwoman, FCC, WT Docket No. 12-69, filed Sept. 10, 2013 (DISH Network Sept. 10, 2013 Ex Parte); Letter from Grant Spellmeyer, Vice Pres. Fed. Affairs & Pub. Policy, US Cellular, Ben Moncrief, Dir. – Govt. Relations, C Spire Wireless, Scott Wills, Vulcan Wireless LLC, Allison Cryor NiNardo, Pres., Gen. Partner, King Street Wireless, L.P., Nash Nyland, Gen. Counsel, Cavalier Wireless LLC, T.Clark Akers, Exec. Vice Pres. Continuum

(continued....)

- We revise our Part 27 rules to modify the technical requirements for the Lower 700 MHz D and E Blocks to eliminate potential harmful interference while continuing to allow high value uses of the D and E Blocks. We establish a process for higher power uses primarily in rural areas if the D/E Block licensee has the consent of affected 700 MHz licensees, or can show no harmful interference.
- We need take no action to address claims of reverse intermodulation interference from adjacent Channel 51 operations to B and C Block operations, because we conclude based on the record that harmful interference from such reverse intermodulation products is unlikely and therefore is not an impediment to implementation of the voluntary industry solution for achieving interoperability.
- Pursuant to Section 316 of the Communications Act,⁶ we propose to modify AT&T's B and C Block licenses as outlined herein and in AT&T's commitment letter⁷ to effectuate the voluntary industry solution that will resolve the lack of interoperability in the Lower 700 MHz band in an effective and efficient manner.
- We waive the construction requirements for E Block licensees, extending the interim and final deadlines and permitting a showing of population coverage, rather than geographic coverage.
- We waive the construction requirements for A and B Block licensees, extending the interim deadline to December 13, 2016, and removing the interim deadline for certain A Block licensees adjacent to Channel 51 operations.

II. BACKGROUND

4. *The 700 MHz Band.* As shown in the diagram below, the 700 MHz band (698-806 MHz) is comprised primarily of 70 megahertz of commercial spectrum and 34 megahertz of public safety spectrum.⁸ The Commission divided the band into the Lower and Upper 700 MHz bands pursuant to the Balanced Budget Act of 1997, which provided for a transition of this spectrum from broadcast to commercial and public safety wireless use and established a deadline for the auction of the Upper 700 MHz band but not for the auction of the Lower 700 MHz band.⁹ That Act also established specific criteria for the mandatory transition to DTV that freed up spectrum for commercial and public safety use.

5. The Lower 700 MHz band spectrum (698-746 MHz), which is the subject of this Report and Order, consists of 48 megahertz of commercial spectrum – three blocks of 12 megahertz each of paired spectrum (Lower A, B, and C Blocks), and two blocks of 6 megahertz each of unpaired spectrum (Lower D and E Blocks). The Lower 700 MHz A Block spectrum is adjacent to Channel 51 (692-698

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700 LLC, and Steven K. Berry, Pres. and CEO, Competitive Carriers Association to the Hon. Mignon Clyburn, Chairwoman, FCC, WT Docket No. 12-69, filed Sept. 10, 2013 (Coalition Sept. 10, 2013 Ex Parte).

⁶ 47 U.S.C. § 316.

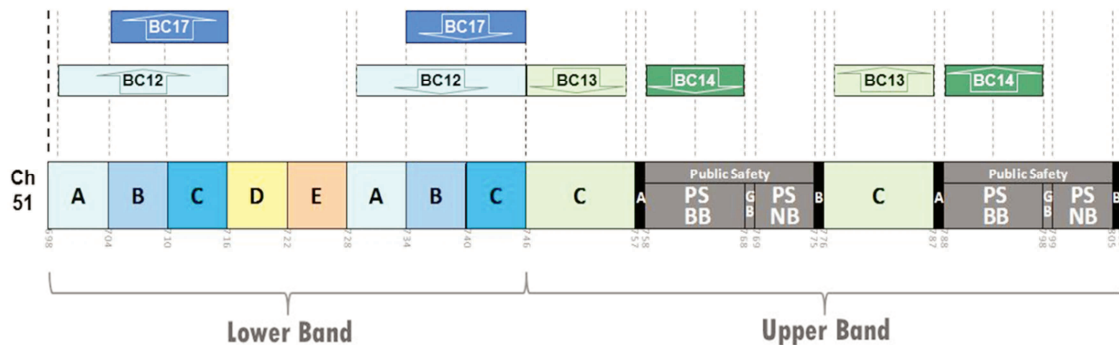
⁷ AT&T Sept. 10, 2013 Ex Parte.

⁸ The band also includes 4 megahertz of guard band spectrum in the Upper 700 MHz band. The 34 megahertz of public safety spectrum includes what was formerly the Upper 700 MHz D Block, which was reallocated to public safety use in September 2012 under the 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, *Report and Order*, 27 FCC Rcd 10953 (2012); *see also* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 1411, 126 Stat. 158, 205 (2012), 47 U.S.C. 1411 (Spectrum Act).

⁹ Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251, § 3004 (1997) (Balanced Budget Act of 1997).

MHz), which has been allocated for TV broadcast operations at power levels of up to 1000 kW.¹⁰ The Lower 700 MHz A Block is also adjacent to the unpaired Lower 700 MHz E Block, where licensees may operate at power levels up to 50 kW.¹¹ The Commission first assigned licenses for the Lower 700 MHz band when it auctioned all the licenses in the Lower 700 MHz C and D Blocks in Auction 44 in 2002.¹² Licenses unsold in Auction 44 were subsequently sold in 2003 and 2005 in Auctions 49 and 60.¹³

700 MHz Band and 3GPP Band Classes



6. In 2005, the Digital Transition and Public Safety Act (DTV Act) established a nationwide deadline for the DTV transition that would make 700 MHz spectrum available for commercial and public safety use and mandated that the Commission commence an auction for all the remaining recovered spectrum.¹⁴ Following the enactment of the DTV Act, the Commission auctioned licenses in the Lower 700 MHz A, B, and E Blocks in 2008 as part of Auction 73, which garnered over \$19 billion in revenues.¹⁵ The relatively few unsold Lower A and B Block licenses were later sold in Auction 92 in 2011.¹⁶

7. Although U.S. service providers have, in the past, deployed different mobile wireless network technologies, today the evolution of these technologies is converging on LTE. LTE increases the capacity and speed of wireless networks by redesigning and simplifying the network architecture to transition from the existing combination of circuit and packet switching to an all-IP architecture system.

¹⁰ See 47 C.F.R. § 73.622(f)(8). As discussed elsewhere in this Report and Order, we are considering the incentive auction of broadcast television spectrum, including Channel 51, in a separate proceeding. See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268, *Notice of Proposed Rulemaking*, 27 FCC Rcd 12357, 12360-61, ¶ 9, 12415, ¶ 160 (2012) (*Incentive Auctions NPRM*).

¹¹ See 47 C.F.R. § 27.50(c)(7). Lower 700 MHz C, D, and E Block fixed and base stations may operate at total power levels up to 50 kW ERP in their authorized spectrum blocks.

¹² See Lower 700 MHz Band Auction Closes, *Public Notice*, 17 FCC Rcd 17272 (2002).

¹³ See Lower 700 MHz Band Auction Closes, *Public Notice*, 18 FCC Rcd 11873 (2003); See Auction of Lower 700 MHz Band Licenses Closes, *Public Notice*, 20 FCC Rcd 13424 (2005).

¹⁴ Deficit Reduction Act of 2005, Digital Transition and Public Safety Act, Pub. L. 109-171, 120 Stat. 4 (2006). The DTV Delay Act subsequently extended the deadline for transition to digital television. See Pub. L. 111-4, 123 Stat. 112 (2009).

¹⁵ See Auction of 700 MHz Band Licenses Closes, *Public Notice*, 23 FCC Rcd 4572 (2008). Auction 73 included licenses for the Lower 700 MHz A, B, and E Blocks and the Upper 700 MHz C and D Blocks.

¹⁶ See Auction of 700 MHz Band Licenses Closes, *Public Notice*, 26 FCC Rcd 10494 (2011).

All of the major mobile wireless providers (including those with both GSM and CDMA legacy networks) now offer or plan to deploy LTE.¹⁷ By September 2012, for example, AT&T announced that it had LTE coverage in 63 markets, and had plans to deploy LTE to 80 percent of the U.S. population by the end of 2013.¹⁸

8. Industry standards for LTE are developed by 3GPP, an international partnership of industry-based telecommunications standards bodies that, among other things, establishes standards for different LTE band classes.¹⁹ A specific band class standard allows LTE operations only in its specified range of frequencies, along with other technical specifications and signaling protocol.²⁰ In November 2007, prior to Auction 73, the Band Class 12 LTE standard was introduced, consistent with its precedent of establishing a unified band class for each spectrum band.²¹

9. After the conclusion in March 2008 of Auction 73, Motorola initiated steps to have 3GPP establish a new industry standard (later designated as Band Class 17) that would be limited to the Lower 700 MHz B and C Blocks. In proposing Band Class 17, Motorola cited the need to address concerns about high power broadcast transmissions in Channel 51 and the Lower 700 MHz D and E Blocks.²² As envisioned and ultimately adopted, the Band Class 17 standard allows LTE operations in only the Lower 700 MHz B and C blocks using a specific signaling protocol that would filter out all other frequencies. Although Band Class 17 operates on two of the three blocks common to Band Class 12, Band Class 17 devices use “more narrow filters,”²³ which have the effect of permitting a smaller range of frequencies to “pass through” the filter. Such filters provide more attenuation of signals from Lower 700 MHz E Block frequencies, and from Channel 51 television stations, whose frequency band (as depicted above) lies immediately below the Lower 700 MHz A Block. This attenuation is accomplished by using the two paired A Block frequencies as *de facto* guard bands. By contrast, Band Class 12 devices use A Block frequencies for transmissions as well as the B and C Block frequencies. In addition, Band Class 12 and Band Class 17 signaling protocols are not compatible. Therefore, services provided by stations using these two band classes are not interoperable in the Lower 700 MHz band. 3GPP finalized the initial standards and specifications for Band Class 17 five months after its introduction in September 2008.²⁴

10. The creation of two non-interoperable band classes has had numerous effects. For example, customers are unable to switch between a licensee deploying its service using Band Class 17 and a licensee that provides its service using Band Class 12 without purchasing a new device (even when the two operators use the same 2G and 3G technologies and bands), and Band Class 12 devices and Band

¹⁷ *16th Annual Mobile Wireless Competition Report*, 28 FCC Rcd at 3822, ¶ 185.

¹⁸ *16th Annual Mobile Wireless Competition Report*, 28 FCC Rcd at 3825-26, ¶ 189.

¹⁹ 3GPP is not associated with any governmental agency. Its worldwide partners come from Asia, Europe, and North America. 3GPP’s many technical specification groups meet in various countries throughout the year to carry out the organization’s mission. See 3GPP – ABOUT 3GPP, <http://www.3gpp.org/-About-3GPP> (last visited Mar. 17, 2013).

²⁰ *Interoperability NPRM*, 27 FCC Rcd at 3525-26, ¶ 10.

²¹ See 3GPP TR 25.822, v1.0.0, 3rd Generation Partnership Project; Technical Specification Group TSG RAN; UMTS 700 MHz Work Item Technical Report (Release 8) (dated Nov. 2007), at 14 (Sec. 6.1); Vulcan Comments at 3; Rural Telecommunications Group Comments at 2 n.7. Band Class 12 was presented to 3GPP in November 2007, but it was ratified in December 2010.

²² See Vulcan Comments at 4 n.12. See also *Interoperability NPRM*, 27 FCC Rcd at 3525-26, ¶ 10.

²³ Motorola Comments at 2.

²⁴ AT&T Comments, Wolter Declaration ¶ 13; Rural Telecommunications Group Comments at 2 n.7. Cf. Vulcan Reply Comments at 37 (Band 17 first proposed in May 2008 and approved in August 2008).

Class 17 devices cannot roam on each other's networks. In September 2009, four Lower 700 MHz A Block licensees filed a petition for rulemaking asking the Commission to impose for this spectrum block an interoperability mandate similar to that imposed in 1981 for the cellular band.²⁵ In the *Interoperability NPRM*, the Commission discussed the importance of interoperability in furthering the public interest, and sought comment on whether taking action to ensure reintegration of the three paired Lower 700 MHz blocks into a single band class would cause harmful interference to LTE operations on the Lower 700 MHz B and C Block licensees if Band Class 12 devices were used.²⁶ The Commission noted that entities involved in the creation of Band Class 17 during 3GPP proceedings had claimed that it was necessary to create a separate band class for Lower 700 MHz B and C Block licenses to avoid reverse intermodulation interference issues from DTV stations operating on Channel 51 and blocking from high power operations in the E Block, and sought comment, as described above, on whether reintegration of the band pursuant to an interoperability mandate would result in "harmful interference."²⁷

11. On September 10, 2013, key stakeholders involved in this proceeding filed letters with the Commission indicating their support for a voluntary industry consensus agreement to resolve the lack of interoperability in the Lower 700 MHz band. In its letter, AT&T outlines its commitments to help achieve Lower 700 MHz interoperability, including its commitment to begin rolling out interoperable devices within 24 months.²⁸ DISH similarly outlines its commitments to address interference concerns regarding high powered operations in the E Block spectrum.²⁹ A coalition of Lower 700 MHz A Block licensees also filed a letter indicating their support for the commitments contained in AT&T's letter as a means to ensure restoration of interoperability in the Lower 700 MHz band.³⁰

12. *Channel 51 Broadcast Operations.* As set out earlier in the 700 MHz band plan, Channel 51 broadcast stations are adjacent to the lower portion of the Lower 700 MHz band. Channel 51 stations give rise to one of the two alleged interference issues potentially affecting interoperability – the possibility of reverse intermodulation interference resulting from the interplay of Channel 51 and Lower 700 MHz B and C Block signals. Separate from this issue, and not relevant to the interoperability of

²⁵ See 700 MHz Block A Good Faith Purchaser Alliance Petition for Rulemaking Regarding the Need for 700 MHz Mobile Equipment to be Capable of Operating on All Paired Commercial 700 MHz Frequency Blocks, filed Sept. 29, 2009 (Petition).

²⁶ *Interoperability NPRM*, 27 FCC Rcd at 3535-36, ¶ 30. The technical analysis in the *Interoperability NPRM* focused on two primary issues, reverse intermodulation interference from adjacent DTV Channel 51 operations, and blocking interference from neighboring high-powered operations in Lower 700 MHz E Block. See *id.* at 3536-37, ¶ 32. The Commission received 36 comments and 17 reply comments in response to the *Interoperability NPRM*. A list of these commenters and reply commenters is set forth in Appendix C to this Report and Order and Order of Proposed Modification.

²⁷ *Interoperability NPRM*, 27 FCC Rcd at 3525-26, ¶ 10. We define "harmful interference" in accordance with established Commission rules. See 47 C.F.R. § 15.3(m). As we discuss below in Sec.III.B.1. with respect to DTV transmissions from Channel 51, an issue concerning reverse intermodulation interference can arise where there is a "mix" or interaction of Channel 51 transmissions and transmissions from a wireless device in Lower 700 MHz B and C Blocks. The issue is whether, and the degree to which, the resulting third transmission, or intermodulation product, can occur on frequencies used by the wireless device to receive transmissions. The risk of reverse intermodulation interference to Lower 700 MHz B and C Block licensees because of the existence of Channel 51 operations is separate and distinct from the limitations placed on Lower 700 MHz A Block licensees to protect Channel 51 operations from adjacent channel interference from Lower 700 MHz A Block operations. See 47 C.F.R. § 27.60(a)(2).

²⁸ AT&T Sept. 10, 2013 Ex Parte.

²⁹ DISH Network Sept. 10, 2013 Ex Parte.

³⁰ Coalition Sept. 10, 2013 Ex Parte.

service within the Lower 700 MHz band, are questions of adjacent channel interference between Channel 51 and Lower 700 MHz A Block signals. Because of the potential for such adjacent channel interference, Commission rules establish “exclusion zones” in which Lower A Block operations are prohibited, which are designed to protect Channel 51 stations from possible interference.³¹ There are currently 27 full-power Channel 51 broadcast stations, and 6 Class A low-power television operations on Channel 51 in the U.S., including Puerto Rico. Nearly 190 million American consumers live *outside* these exclusion zones, including almost 50 million of the 60 million American consumers living in rural areas.³² More than 3.2 million square miles, or more than 90 percent of the land area in the U.S. is located outside the exclusion zones, including 2.8 million square miles in rural areas.

III. DISCUSSION

13. As noted above, on September 10, 2013, parties in this proceeding filed letters with the Commission indicating that they have reached agreement on a voluntary industry solution to resolve the lack of interoperability in the Lower 700 MHz band.³³ Here we take steps to implement this voluntary industry solution, the substantive terms of which we find to be consistent with the public interest, convenience, and necessity as well as the record in this proceeding for the reasons set forth below. First, and in accordance with the industry consensus, we address interference concerns that have been raised as obstacles to the voluntary adoption of interoperability in the Lower 700 MHz band. We find that the current technical rules governing the D and E Blocks would likely lead to harmful interference to Lower 700 MHz B and C Block licensees and therefore do constitute a barrier to interoperability. We therefore modify those rules to eliminate that barrier in a manner consistent with the industry solution. In addition, after review of the extensive record in this proceeding, and based on our technical expertise and predictive judgment, we find that any harmful interference to Lower 700 MHz mobile devices operating on the Lower 700 MHz B and C Blocks as a result of Channel 51 broadcast operations is unlikely. Having addressed the potential interference issues, we propose to modify AT&T’s B and C Block licenses as outlined herein and in AT&T’s commitment letter³⁴ to effectuate the voluntary industry solution and resolve the lack of interoperability in the Lower 700 MHz band in an effective and efficient manner. Implementing the substantive terms of the industry solution to establish a clear path to interoperability in the Lower 700 MHz spectrum is consistent with the Commission’s longstanding interest in promoting the interoperability of wireless mobile services (an objective that has been realized for cellular, PCS, AWS, and public safety broadband, and other services) and furthers important public interests, including promoting the widest possible deployment of mobile broadband services, ensuring the most efficient use of spectrum, promoting competition and enhancing consumer choice of wireless services.

14. Finally, in light of our foregoing actions, we modify the construction requirements for E Block licensees, extending the interim and final deadlines and license terms and permitting licensees to meet a population-based coverage requirement as an alternative to a geographic-based requirement. We also modify the construction requirements for A and B Block licensees, extending the interim construction benchmark deadline to December 13, 2016 and removing the interim deadline for certain A Block licensees adjacent to Channel 51 operations.

³¹ See 47 C.F.R. §27.60.

³²We designate as “rural” the population of Census blocks where the associated county has a population of 100 persons or less per square mile. Likewise, we estimate “rural” area (in square miles) by designating as rural the area within counties that have a population of 100 persons or less per square mile.

³³ See AT&T Sept. 10, 2013 Ex Parte; DISH Network Sept. 10, 2013 Ex Parte; and Coalition Sept. 10, 2013 Ex Parte.

³⁴ See AT&T Sept. 10, 2013 Ex Parte.

A. Technical Rules for D and E Blocks

15. *Background.* Under Section 27.50(c)(7) of the Commission's rules, a licensee authorized to operate in the 710–716, 716–722, or 740–746 MHz bands, or in any unpaired spectrum blocks within the 698–746 MHz band may operate a fixed or base station at an Effective Radiated Power (ERP) of up to 50 kW within its authorized bandwidth.³⁵ Further, the antenna height for such stations is limited only to the extent required to satisfy the power flux density requirements of Section 27.55(b) of the rules, which provide that the power transmitted from a fixed or base station may not exceed 3000 microwatts per square meter on the ground at any distance within 1 km of the stations.³⁶ By contrast, other fixed or base stations in the Lower 700 MHz band transmitting a signal with an emission bandwidth greater than 1 megahertz, including stations authorized in the Lower 700 MHz A and B Block, are restricted to an ERP of 1,000 to 2,000 watts/MHz and an antenna height of 305 m height above average terrain (HAAT).³⁷

16. In 2011, the Commission recognized that high-powered operations in the D and E Blocks could be a source of harmful interference, and conditioned the approval of AT&T's acquisition of Qualcomm's Lower 700 MHz D and E Block spectrum on certain technical requirements designed to ensure that AT&T's operations on the Lower 700 MHz spectrum would not limit the potential of third parties to fully utilize other Lower 700 MHz spectrum.³⁸ The *AT&T-Qualcomm Order* also prohibited AT&T from using the Qualcomm spectrum for uplink transmissions and imposed a coordination and mitigation condition with respect to possible interference caused by AT&T's use of the Lower 700 MHz D and E Blocks for supplemental downlink to the uplink operations of other licensees operating in the Lower 700 MHz A, B, and C Blocks.³⁹

17. The 3GPP has adopted certain technical specifications for user equipment operating in different 700 MHz bands. 3GPP's specifications for output power and the out-of-band emission (OOBE) specifications for LTE equipment are the same for all commercial paired frequencies in the Lower 700 MHz band.⁴⁰ The 3GPP specifications differ, however, with respect to receiver blocking, which is the required ability of a receiver to tolerate a much stronger (Lower 700 MHz E Block) signal spectrally located near the desired signal.⁴¹ The 3GPP-specified requirements for receiver blocking are the same for Band Class 13 and Band Class 14 equipment, but Band Class 12 and Band Class 17 have distinct blocking requirements, due to differences in each band's relative proximity to neighboring high-powered operations in the Lower 700 MHz D and E Blocks.⁴²

³⁵ 47 C.F.R. § 27.50(c)(7).

³⁶ *Id.*; see also 47 C.F.R. § 27.55(b).

³⁷ See 47 C.F.R. § 27.50(c)(3), (4). Antenna height may increase if power level is reduced. See *id.*

³⁸ Application of AT&T Inc. and Qualcomm Incorporated for Consent to Assign Licenses and Authorizations, WT Docket 11-18, FCC 11-188, *Order*, 26 FCC Rcd 17589, 17616-17, ¶¶ 61-67 (2011) (*AT&T-Qualcomm Order*).

³⁹ *AT&T-Qualcomm Order*, 26 FCC Rcd at 17616-17, ¶¶ 61-67.

⁴⁰ See Sections 6.2.2, 6.6.2, and 6.6.2.2.3 of 3GPP TS 36.101 V9.9.0 (2011-09). The class 3 devices (UE) maximum transmit power is 23dBm for all bands with ±2dB tolerance, and Table 6.6.2.2.3-1 specifies the spectrum emission limits for available channel bandwidths.

⁴¹ Receiver blocking requirements address a receiver's ability to receive at least 95% of the maximum throughput at its assigned channel in the presence of an unwanted interfering signal falling into the device receive band or into the first adjacent 15 megahertz. See Table 7.6.1.1-2, Section 7.6.1 of 3GPP TS 36.104 V9.9.0 (2011-09).

⁴² The 3GPP standard specifies blocking requirements of -56 dBm and -30 dBm (maximum received signal strength from the Lower 700 MHz E Block transmissions for LTE operations in the Lower 700 MHz B Block) for Band Class 12 and Band Class 17 devices, respectively. *Id.*

18. In the *Interoperability NPRM*, the Commission sought comment on whether potential interference from the 700 MHz Lower E Block might be preventing the voluntary adoption of Band Class 12 by Lower B and C block licensees.⁴³ The *Interoperability NPRM* sought comment on whether there are any measures the Commission could take to address such interference concerns, including whether they could be adequately addressed by adopting technical conditions set forth in the *AT&T-Qualcomm Order*.⁴⁴ The Commission sought comment on whether there were changes the Commission could adopt to its rules that would address concerns that Lower 700 MHz B and C Block licensees might experience harmful interference from Lower 700 MHz D and E Block operations and encourage these licensees to voluntarily adopt interoperable devices.⁴⁵ The Commission also sought comment on how such modifications would affect the operations and plans of Lower E Block licensees, other than AT&T.⁴⁶

19. On September 10, 2013, AT&T and DISH made *ex parte* filings as part of the voluntary industry solution in which they set out certain steps to address potential interference concerns from the Lower 700 MHz E Block to the Lower 700 MHz B and C Blocks.⁴⁷ DISH states that it shares the Commission's goals of promoting efficient spectrum use of the Lower 700 MHz band and, as part of an industry consensus on interoperability, it is willing to consent to a reduction in power.⁴⁸ Specifically, DISH states that, to support the Commission's efforts and objectives, it "will consent to a reduction of the ERP of base stations for its Lower 700 MHz E Block licenses to 1,000 watts/MHz in urban areas and 2,000 watts/MHz in rural areas."⁴⁹ DISH further states that it "currently plans to deploy an LTE network similar to what Lower 700 MHz A, B, C, and D block operators have deployed today, and to similarly enhance the network as the LTE technology evolves, which would make the above power levels consistent within the band."⁵⁰ Finally, DISH asserts that it "should retain a limited right to operate at existing ERP limits pursuant to operator-to-operator agreements with other affected licensees or upon a demonstration to the Commission of no harmful interference to other relevant Lower 700 MHz licensees."⁵¹ According to DISH "[t]he need to reserve a limited opportunity for high-power operations is particularly important for rural America and the deployment of high-power services to underserved communities."⁵² DISH notes that "[t]his rural-focused flexibility – dependent upon actual licensee agreement or further FCC action – will provide DISH with the opportunity to better serve underserved communities without adversely affecting the Commission's objective to better utilize the Lower 700 MHz band."⁵³ In its filing, AT&T states that its commitments to Lower 700 MHz interoperability are premised on requirements that all Lower 700 MHz E Block licensees transmitting a signal with an emission

⁴³ *Interoperability NPRM*, 27 FCC Rcd at 3540, ¶ 42.

⁴⁴ *Interoperability NPRM*, 27 FCC Rcd at 3541, ¶ 43.

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ See AT&T Sept. 10, 2013 Ex Parte; DISH Network Sept. 10, 2013 Ex Parte.

⁴⁸ DISH Network Sept. 10, 2013 Ex Parte at 1-2.

⁴⁹ DISH Network Sept. 10, 2013 Ex Parte at 2. DISH also states that it "is willing to consent to a reduction of power if the Commission takes similar concrete steps to: (i) make corresponding changes to the E Block licensee obligations and rights to coincide with the dramatic change in operating characteristics; and (ii) unlock the more efficient use of spectrum in the AWS-4 band, the H Block, and the proposed AWS-3 bands." *Id.*

⁵⁰ DISH Network Sept. 10, 2013 Ex Parte at 2.

⁵¹ DISH Network Sept. 10, 2013 Ex Parte at 3.

⁵² *Id.*

⁵³ *Id.*

bandwidth greater than 1 megahertz are restricted to an ERP of 1,000 watts to 2,000 watts per megahertz and an antenna height of 305 m HAAT.⁵⁴

20. *Discussion.* Based on the record, we find that, under the current rules, there is a significant threat of harmful interference from high power transmissions in the Lower 700 MHz D and E Blocks to Band Class 12 devices operating on the Lower 700 MHz B and C Blocks that could jeopardize the viability of interoperability in the band. Consistent with the record in this proceeding and the *AT&T-Qualcomm Order*,⁵⁵ we revise the technical rules applicable to the Lower 700 MHz D and E Blocks by reducing the maximum permissible power levels and antenna heights on these blocks. We also modify our rules to limit all operations in the Lower 700 MHz D and E Blocks to downlink only. We provide that Lower 700 MHz D and E Block licensees may operate particular sites at power levels higher than permitted under the revised rules under certain specified conditions. We find these changes to be in the public interest because they eliminate likely harmful interference, thereby promoting interoperable LTE operations in the Lower 700 MHz band. Indeed, without these measures, the public would not be able to realize the substantial benefits of mobile broadband deployment and interoperability in the Lower 700 MHz band. The technical changes we adopt today will continue to enable the six megahertz of unpaired Lower 700 MHz E Block spectrum to be put to commercial use while facilitating effective and efficient use of 36 megahertz of the Lower 700 MHz A, B, and C Blocks for mobile broadband services.⁵⁶

21. Specifically, we revise our rules to provide that the Lower 700 MHz D and E Block base station transmitting a signal with an emission bandwidth of 1 MHz or less must not exceed 1 kW ERP in non-rural areas or 2 kW ERP in rural areas. In addition, Lower 700 MHz D and E Block base station transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed 1 kW ERP per megahertz in non-rural areas or 2 kW ERP per megahertz in rural areas. Lower 700 MHz D and E Block licensees operating at these maximum permissible ERP are limited to an antenna height of 305 m HAAT.⁵⁷ We also limit operations in the Lower 700 MHz D and E Blocks to downlink only.⁵⁸ Finally, we find that it would serve the public interest to permit a Lower 700 MHz D or E Block licensee to operate particular sites at a higher ERP level up to 50 kW in conjunction with the current power flux density (PFD) limit⁵⁹ if the Lower 700 MHz D or E Block licensee enters into operator-to-operator agreements with other affected licensees or, absent agreements with all affected licensees, pursuant to a waiver upon a demonstration to the Commission of no harmful interference to other relevant Lower 700 MHz licensees.

⁵⁴ AT&T Sept. 10, 2013 Ex Parte at 6.

⁵⁵ See *AT&T-Qualcomm Order*, 26 FCC Rcd at 17616-17, ¶¶ 61-67.

⁵⁶ DISH's current deployment plans and its agreement to these technical rule changes provide further support for such changes.

⁵⁷ Except pursuant to consent or waiver as described below, the specific revisions to the Commission's rules adopted in this Report and Order that modify the applicable power limits and the antenna height restrictions applicable to Lower 700 MHz D and E Block licenses are consistent with the current rules applicable to the Lower 700 MHz A and B Block licenses and with conditions adopted in the *AT&T-Qualcomm Order* that were placed on all the Lower 700 MHz D Block licenses and those E Block licenses that are held by AT&T. See also 47 C.F.R. § 27.50 (Tables 1, 2, 3, and 4). For the reasons set forth in this Report and Order, our revised rules will apply to all D and E Block licensees, including AT&T, and operate to supersede the conditions adopted in the *AT&T Qualcomm Order* applicable to AT&T's D and E Block operations. The revised rules will supersede the conditions adopted in the *AT&T Qualcomm Order* only after they become final and unappealable.

⁵⁸ The new rule that provides that operations in the Lower 700 MHz D and E Blocks are limited to downlink only is consistent with, and as noted above supersedes, a condition adopted in the *AT&T-Qualcomm Order* that applies to all the Lower 700 MHz D Block licenses and those E Block licenses that are held by AT&T.

⁵⁹ 47 C.F.R. §§ 27.50(c)(7) and 27.55(b).

22. As discussed in detail below, we find that the current technical rules, which permit a 50 kW ERP level in conjunction with a PFD limit, are likely not sufficient to prevent harmful blocking interference into neighboring operations in the Lower 700 MHz bands providing interoperable service. More specifically, based on the record in this proceeding, we conclude first that low-powered two-way mobile broadband LTE service provided on the Lower 700 MHz B and C Blocks using Band Class 12 devices would likely be subject to harmful blocking interference from high-powered Lower 700 MHz D and E Block operations. In evaluating whether a Band Class 12 device is being subjected to harmful interference based on the test data submitted in the record, we assume 3 dB desense⁶⁰ as the appropriate threshold, along with considerations of the probability and potential locations of such interference events. In other words, a Band Class 12 device should only be required to receive successfully⁶¹ in the presence of blocking interference, a desired signal 3 dB above the receiver's reference sensitivity. We note that this approach is consistent with the Commission's analysis in the H Block proceeding.⁶² Using 3 dB desense, and based on the test data in the record, we find that there are likely to be significant areas where a Band Class 12 device would be subjected to harmful blocking interference without a change to our current technical rules. In particular, we find that the V-COMM Study shows the 3 dB desense of Band Class 12 devices using the Lower 700 MHz B and C Block spectrum occurs when the Lower 700 MHz E Block received signal strength is about -26 dBm.⁶³ Therefore we conclude that interference to Band Class 12 devices is likely to occur when the interfering signal strengths reach those levels.⁶⁴ Moreover, the V-COMM and Hyslop-Kolodzy test data show that received signals of -26 dBm and higher from E Block transmissions are not uncommon.⁶⁵ Indeed, the Hyslop-Kolodzy Report shows areas on drive tests where signals were stronger than -16 dBm, which is significantly worse than the -26 dBm threshold. Based on these data and on our technical expertise and predictive judgment, we find that the current technical rules

⁶⁰ Receiver "desense" or "desensitization" is the amount of receiver sensitivity degradation due to interference relative to the unencumbered receiver sensitivity (the lowest received signal power that a "noise limited" receiver needs to be functional), measured in dB. For example, a 3 dB desense occurs when the interference power is equal to the receiver's system noise power.

⁶¹ Receiver blocking requirements address a receiver's ability to receive at least 95% of the reference throughput at the reference sensitivity, at its assigned channel in the presence of an unwanted interfering signal falling into the device receive band or into the first adjacent 15 megahertz. See Table 7.6.1.1-2, Section 7.6.1 of 3GPP TS 36.104 V9.9.0 (2011-09).

⁶² See Service Rules for Advanced Wireless Services H Block, WT Docket 12-357, FCC 13-88, *Report and Order*, 28 FCC Rcd. 9483, 9527, 9537-8, ¶¶ 114, 143-45 (2013) (*H Block Report and Order*).

⁶³ See V-COMM Reply Comments at 36, Figure 24 (V-COMM Study).

⁶⁴ Based on these test data, we are not persuaded by DISH Network's assertion that "Band 12 devices [will] exceed the 3GPP minimum [Adjacent Channel Selectivity] and blocking specifications by more than 30 dB and can perform at 95% throughput at adjacent E Block levels as high as -13 dBm." DISH Network Aug. 8, 2013 Ex Parte at 6-7. We note that DISH Network tested a single device and based its results on desense values far in excess of our 3dB threshold, *i.e.*, having used 6dB for the Lower B and C Blocks and 14dB for the Lower A Block, presumably to be consistent with 3GPP test points. See DISH Network Ex Parte letter, Aug. 8, 2013, at 6-7, Attachment A at 10. However, 3GPP test points are not intended to be reflective of an acceptable interference threshold. See Qualcomm Reply Comments at 6.

⁶⁵ See V-COMM Study at 42-44, Figures 28-33 (showing large red dashed lines around E Block sites where signal could exceed -26 dBm) and Letter from R. Nash Neyland, Cavalier Wireless LLC and other parties to Marlene H. Dortch, Secretary, FCC, Letter and Attachment, Doug Hyslop and Paul Kolodzy, "Lower 700 MHz Test Report: Laboratory and Field Testing of LTE Performance near Lower E Block and Channel 51 Broadcast Stations," WT Docket No. 12-69, at 76, Table A.1: Nokia Field Measurements of Analog and Digital Television (May 29, 2012) (Hyslop-Kolodzy Report).

are not sufficient to protect against harmful interference, because harmful blocking interference is likely to occur in a significant number of instances.⁶⁶

23. We next find that mitigation techniques for blocking interference from high-powered Lower 700 MHz E Block transmitters are not practical to overcome potentially many instances of harmful interference from the Lower 700 MHz E Block transmitters, would be costly and difficult⁶⁷ and could address only some instances of potential harmful interference. If Lower 700 MHz E Block stations were to commence high-powered operations, Lower 700 MHz B and C Block licensees using Band Class 12 devices may need to make many RF network design and optimization modifications to mitigate the high-power E Block interference due to a potentially large number of high-power 700 MHz E Block transmitters, including the possible deployment of sites that otherwise would not be needed.⁶⁸ In addition, mitigating interference from high-powered Lower 700 MHz E Block transmitters by co-locating with lower-powered LTE transmitters does not appear to be an effective option in many cases,⁶⁹ given that Lower 700 MHz licensees have already either planned or deployed their LTE networks in many cases and that DISH Network has not deployed the vast majority of its Lower 700 MHz E Block transmitters yet.⁷⁰ As a practical matter, co-location could be cost effective only with respect to Lower 700 MHz E Block transmitters that exist at the time the LTE network is being designed and built. While co-location on subsequently deployed Lower 700 MHz E Block transmitters is possible, newly co-located LTE transmitters could require costly re-engineering for the rest of the LTE network. As a result, we conclude that modification of the maximum permissible ERP level for the Lower 700 MHz D and E Blocks is needed to lower the probability and decrease the potential instances and locations in which the receive signal strengths of Lower 700 MHz D and E Block licensees could exceed -26 dBm.⁷¹

24. Similar to other Lower 700 MHz licensees, we further revise our rules to provide that the Lower 700 MHz D and E Block licensees operating at the maximum permissible ERP are limited to an antenna height of 305 m HAAT.⁷² We note that power levels and antenna heights are closely linked: operating less than the maximum permissible ERP would allow a licensee to have a higher HAAT.⁷³ Fixed or base stations transmitting a signal with an emission bandwidth of 1 MHz or less may operate at antenna heights greater than 305 m HAAT if ERP levels are reduced below 1kW for non-rural areas in accordance with Table 1, or below 2kW ERP for rural areas in accordance with Table 2 of the Commission's rules, Section 27.50. Fixed or base stations transmitting a signal with an emission bandwidth greater than 1 MHz may operate at antenna heights greater than 305 m HAAT if ERP levels

⁶⁶ See Hyslop-Kolodzy Report at 28, Figure 4.5: Signal Strength: Lower E System in Atlanta. A service provider's signal may be significantly weaker in locations that are not represented by an antenna on the roof of a car that is driving down the middle of the street. In some of these cases where the LTE receive signal is weak, the E Block signal may also be weaker, but this is not necessarily true, especially if the E Block and LTE transmitters are not collocated.

⁶⁷ See, e.g., AT&T Comments at 8 and AT&T Reply Comments at 48-50.

⁶⁸ This challenge is in contrast to the ability of B and C Block licensees to address potential reverse intermodulation interference from Channel 51 transmitters, which is described below are limited in number, known, and stable, and expected to decrease over time.

⁶⁹ See AT&T Reply Comments at 8.

⁷⁰ DISH Network Comments at 2-3 and DISH Network March 21, 2013 Ex Parte.

⁷¹ We note that a signal strength threshold of -26 dBm would likely cause harmful interference to adjacent channel operations, and this threshold is much lower than what the current rules allow as signal strength on the ground which is up to -12 dBm, using the current PFD limit.

⁷² 47 C.F.R. § 27.50.

⁷³ *Id.*

are reduced below 1kW per megahertz for non-rural areas in accordance with Table 3, or below 2kW per megahertz ERP for rural areas in accordance with Table 4 of the Commission's rules, Section 27.50.

25. Finally, consistent with DISH's current plans to deploy an LTE network similar to that deployed by Lower 700 MHz A, B, C, and D Block operators, we find it in the public interest to modify our rules to impose certain restrictions on all D and E Block operations that are similar to conditions imposed upon AT&T in the *AT&T-Qualcomm Order* in connection with AT&T's use of its Lower 700 MHz D and E Block licenses. In particular, we revise our rules to provide that Lower 700 MHz D and E Block licensees may not use their licenses for uplink transmission and must instead use this spectrum only for downlink transmissions. This change serves the public interest by preventing harmful interference and facilitating interoperability. Because the surrounding blocks are used for downlink operations, uplink or TDD operations in the E Block will cause harmful interference to mobile receivers in the adjacent bands unless very strict power limits, stringent out of band emission limits, and guard bands are employed on all three blocks.

26. These rule changes reflect the significant developments in the Lower 700 MHz band since the original adoption of the technical rules in 2002. In 2002, the Commission recognized that high power transmissions could cause interference to adjacent channels, especially those that operate at low power levels, but found that the risk of harmful interference from power levels up to 50 kW could be mitigated by limiting permissible power flux density levels for base stations operating in excess of 1kW ERP.⁷⁴ At that time, however, the Commission's expectation was that operations at lower power would not be prevalent, and we permitted power levels up to 50 kW in all of the Lower 700 MHz Blocks.⁷⁵ Operation at similar power levels would result in signal desired to undesired ratios that would minimize the likelihood of harmful interference. The Lower 700 MHz band was then the home to broadcasters "in the midst of a technically complex transition to digital television."⁷⁶ In particular, when the Commission adopted these rules in the *Lower 700 MHz Report and Order*, it observed that the Lower 700 MHz band "will remain principally a television band until the end of the digital transition" pursuant to the requirements of the Balanced Budget Act of 1997.⁷⁷ In light of the uncertainty regarding the availability and future use of this band, and the expectation that much of the band would be occupied by full-power broadcast stations for an indefinite period of time, the Commission adopted a flexible use approach to allow for fixed and mobile services, along with "broadcast and other broadband applications that could include two-way interactive, cellular, and mobile television broadcasting services."⁷⁸

27. Since 2002, significant developments in the Lower 700 MHz band include the active deployment of mobile broadband services in the Lower 700 MHz Band and the fact that it is no longer a TV band. After the Commission adopted the *Lower 700 MHz Report and Order*, Congress passed the Digital Television Transition and Public Safety Act of 2005 (DTV Act),⁷⁹ which accelerated the DTV

⁷⁴ Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket 01-74, *Report and Order*, 17 FCC Rcd 1022,1064, ¶ 104 (2002) (*Lower 700 MHz Report and Order*).

⁷⁵ *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1063-65, ¶¶ 102-107.

⁷⁶ *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1028, ¶ 9.

⁷⁷ See Balanced Budget Act of 1997. Although this Act required analog broadcasters to cease operations in the 700 MHz band by the end of 2006, it also required the Commission to extend the end of the transition on a market-by-market basis if one or more of the four largest network stations or affiliates were not broadcasting in digital, digital to analog converter technology was generally not available, or 15 percent or more television households were not receiving a digital signal. *Id.*

⁷⁸ *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1051-52, ¶ 70.

⁷⁹ Deficit Reduction Act of 2005, Pub. L. No. 109-171, 120 Stat. 4 (2006).

transition by providing a date certain, February 17, 2009, for the end of the transition.⁸⁰ The Commission subsequently revised its rules in 2007 pursuant to the DTV Act prior to Auction 73, which included the Lower A, B, and E Blocks.⁸¹ There also have been significant developments since 2007, when, as DISH notes, the Commission declined to adjust the 50 kW power limit⁸² applicable to the Lower D and E Blocks. Now six years later, by contrast, the demand for and use of mobile broadband services have grown significantly and continue to increase, and Lower 700 MHz licensees are deploying LTE networks to respond to this demand⁸³ in spectrum adjacent to the Lower E Block, and there is no longer any high-power broadcast service being provided to consumers on this spectrum. Moreover, the record of this proceeding includes detailed studies of interference effects on the mobile devices now in use in connection with the lower power services that have displaced higher power broadcast operations in the band, which lower power services are more vulnerable to blocking interference from high power E Block transmissions. The Commission has thus changed its position on this matter in light of these intervening developments and the updated information in this record.

28. As indicated above, we also find that these rule changes are fully consistent with the current plans by the two major licensees of these Blocks and with the voluntary industry solution proposed by stakeholders. Indeed, we find that these changes to our technical rules also will facilitate the anticipated uses of the Lower 700 MHz D and E Blocks.⁸⁴ As stated in its recent *ex parte* filing, DISH Network plans to use its unpaired 700 MHz E Block licenses to deploy an LTE network similar to what Lower 700 MHz A, B, C, and D Block operators have deployed today, and to similarly enhance the networks as the LTE technology evolves.⁸⁵ AT&T has indicated that its current plans are to use the unpaired 700 MHz Lower D and E Block licenses it acquired from Qualcomm in December 2011 for LTE video services while also looking at pairing this spectrum with other bands, as a supplemental downlink for mobile LTE.⁸⁶ These facts strongly support our conclusion that these modifications will further the public interest.

29. In sum, modifying the power limits and the antenna height restrictions for the Lower 700 MHz D and E Blocks, along with limiting these licenses to downlink transmissions, is necessary to enable Lower 700 MHz interoperability by resolving concerns about interference from high-powered transmissions and enable provisioning of mobile broadband LTE services in the adjacent bands. These changes also will facilitate the plans of the Lower D and E Block licensees to utilize this spectrum to provide commercial services to American consumers.

⁸⁰ The end of the DTV transition was subsequently extended to June 30, 2009 pursuant to the DTV Delay Act. See DTV Delay Act, Pub. L. 111-4, 123 Stat. 112 (2009).

⁸¹ See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT 06-150, *Second Report and Order*, 22 FCC Rcd 15289 (2007) (*700 MHz Second Report and Order*).

⁸² See 47 C.F.R. 27.50(c)(7).

⁸³ For instance, AT&T has stated that it is using its Lower 700 MHz B and C Block spectrum for its LTE deployment. See *AT&T-Qualcomm Order 26* FCC Rcd at 17626-27, ¶¶ 91-92.

⁸⁴ DISH Network Comments at 2 and DISH Network Ex Parte, March 21, 2013; *AT&T-Qualcomm Order 26* FCC Rcd at 17626-27, ¶¶ 91-92.

⁸⁵ DISH Network Comments at 2 and DISH Network Ex Parte, March 21, 2013.

⁸⁶ See “AT&T’s Randall Stephenson at Goldman Sachs 2013 Communacopia Conference” Sept. 24, 2013, available at <http://www.att.com/gen/landing-pages?pid=5718>; as an audio file at http://mp3.talkpoint.com/gold006/092413a_gm/20_M40XKUD_audio.mp3. See also *AT&T-Qualcomm Order 26* FCC Rcd at 17626-27, ¶¶ 86-93.

30. We also find that, in addition to ensuring interoperability and facilitating use of the D and E Blocks, these rule changes also will facilitate Lower 700 MHz A Block operations because LTE service provided on the A Block would otherwise likely be subject to harmful interference from high-power operations in the Lower 700 MHz E Block. In particular, mobile devices operating near a Lower E Block transmitter but far from their serving LTE base stations face a substantial risk of receiving harmful interference from E Block transmitters. The potential for this interference would exist because of vastly different radio propagation characteristics between the high-powered Lower 700 MHz E Block and lower powered A Block LTE systems, and such interference would result in significant degradation of service to A Block operations in areas close to high-powered E Block transmitters. Accordingly, the harmonized technical rules will facilitate provisioning of mobile broadband LTE services to consumers in all of the paired Lower 700 MHz bands without significant service degradation.

31. We agree as well with DISH's proposal⁸⁷ in its recent *ex parte* filing that it also would serve the public interest to permit particular Lower 700 MHz D or E Block stations to operate under the existing ERP level of up to 50 kW, in conjunction with the existing power flux density (PFD) limit, so long as the licensee obtains consent of all affected licensees. In taking this action, we find that this flexibility will provide D and E Block licensees with the opportunity to better serve rural and underserved communities without adversely affecting the Commission's objective to more effectively utilize the Lower 700 MHz band.⁸⁸ Specifically, we amend Section 27.50 to provide that Lower 700 MHz D and E Block licensees may operate stations at existing power limits⁸⁹ if they are able to obtain the written concurrence of all potentially affected licensees. For purposes of this rule, we find that potentially affected licensees are all A, B, C, D and E Block licensees licensed within 120 km of the proposed higher powered site.⁹⁰ Prior to operation, Lower 700 MHz D and E Block licensees must obtain written concurrence from each potentially affected licensee and file a copy of each agreement with the Wireless Telecommunications Bureau via FCC Form 601.⁹¹ If a licensee is unable to obtain written concurrence from one or more affected licensees, it may seek a waiver of this rule with respect to a particular transmitter. The waiver request must meet the waiver standard articulated in Section 1.925 of the Commission's Rules.⁹² In assessing whether a waiver grant is warranted, we will determine whether the licensee has made reasonable efforts to obtain the written concurrence of all affected licensees and has shown that operation at higher power from the particular transmitter facility will not cause harmful interference to affected licensees' existing operations. Our determination will take into account a number of factors, including the following: the location of the transmitter, the technology, and relevant technical parameters of the transmitter facility; the location(s) and technical characteristics of the potentially affected licensees' stations; and any engineering studies demonstrating no harmful interference. The nature of the potential harmful interference suggests that it likely will be more difficult to demonstrate no harmful interference to affected licensees in urban areas than in rural areas. Finally, in order to protect future operations of potentially affected licensees, any waiver granted will be conditioned on causing no

⁸⁷ DISH Network Sept. 10, 2013 Ex Parte at 3.

⁸⁸ DISH Network Sept. 10, 2013 Ex Parte at 3.

⁸⁹ 47 C.F.R. §§ 27.50(c)(7) and 27.55(b).

⁹⁰ This provision is consistent with our rule requiring coordination when licensees operate at higher power levels in rural areas. 47 C.F.R. § 27.50(c)(5).

⁹¹ We note that there are fewer than 10 licensees that will file a copy of the agreement via FCC Form 601, and thus our action here does not trigger the Paperwork Reduction Act, 5 C.F.R. § 1320.3(c)(4).

⁹² 47 C.F.R. § 1.925.

harmful interference to future deployments by affected licensees (or obtaining their written concurrence).⁹³

32. Consistent with the *AT&T Qualcomm Order*, we also require that the Lower 700 MHz D and E Block licensees take steps to mitigate the potential for harmful interference from their downlink operations to uplink operations in the A, B, and C Blocks. In particular, we require D and E Block licensees to take the following measures: (1) coordinate with A, B, or C Block licensees to mitigate the potential for harmful interference; (2) mitigate interference to A, B, or C Block operations within 30 days after receiving written notice from the affected A, B, or C Block licensees; and (3) ensure that D or E Block transmissions are filtered at least to the extent that the D or E Block transmissions are filtered in markets where the D or E Block licensee holds an A, B, or C Block license, as applicable.⁹⁴ Coordination and mitigation steps should include, but are not limited to, the following measures: If a Lower A, B, or C Block licensee deploys a network after the D or E Block deploys a network on its Lower 700 MHz D or E Block spectrum in the same geographic market, the D or E Block licensee will work with the A, B, or C Block licensee to identify sites that will require additional filtering, and will help the A, B, or C Block licensee to identify proper filters.⁹⁵ The D or E Block licensee is also required to permit these licensees to collocate on the towers it owns at prevailing market rates.⁹⁶ On the other hand, if a Lower A, B, or C Block licensee deploys a network before a D or E Block licensee deploys a network in the same geographic market, the D or E Block licensee will work with the A, B, or C Block licensee to identify sites that will need additional filtering and will purchase and pay for installation of required filters on such sites.⁹⁷ For purposes of this condition, “deployment of a network” shall be the date upon which the network is able to support a commercial mobile voice or data service.⁹⁸

33. We find that we have authority to adjust the technical requirements for the Lower 700 MHz D and E Blocks as outlined above. Title III of the Act provides the Commission with broad authority to manage spectrum, including allocating and assigning radio spectrum for spectrum based services and modifying spectrum usage conditions in the public interest. The Commission is charged with maintaining control “over all the channels of radio transmission” in the United States.⁹⁹ Section 301 states that “[i]t is the purpose of this Act, among other things, to maintain the control of the United States over all the channels of radio transmission; and to provide for the use of such channels, but not the ownership thereof, by persons for limited periods of time, under licenses granted by Federal authority, and no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license.”¹⁰⁰ The issuance of a Commission license does not convey any ownership or property interests in the spectrum and does not provide the licensee with any rights that can override the Commission’s proper

⁹³ While we did not address such a limited exception to reduced power in the *AT&T-Qualcomm Order*, that order was premised on questions raised by other Lower 700 MHz band licensees about “the potential for harmful interference” to them. *AT&T-Qualcomm Order*, 26 FCC Rcd at 17615-16 ¶¶ 60-65. The requirements set forth above for this limited exception to the reduced power limits for D and E Block licensees are consistent with protecting against such harmful interference. As noted above, our revised rules supersede the operational conditions adopted in the *AT&T-Qualcomm Order* that are applicable to AT&T’s D and E Block licenses.

⁹⁴ See *AT&T-Qualcomm Order*, 26 FCC Rcd at 17617, ¶ 67.

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ 47 U.S.C. § 301.

¹⁰⁰ *Id.*

exercise of its regulatory power over the spectrum.¹⁰¹ As the D.C. Circuit held well before the E Block auction here, Congress specifically applied to licenses acquired by auction this “long tradition of Commission authority to change rules governing already-issued licenses.”¹⁰²

34. We therefore take our actions here to revise the technical service rules applicable to the D and E Blocks pursuant to Sections 303(b) and 303(f) of the Act.¹⁰³ Section 316 of the Act grants the Commission broad authority to modify existing licenses if it determines that such action “will promote the public interest, convenience, and necessity.”¹⁰⁴ We do not disregard the importance of stability in our rules, but the substantial record evidence now compiled in this proceeding concerning both the likely harmful interference from higher power D and E Block operations to the services actually now deployed in the B and C Blocks and the public interest benefits of securing interoperability outweighs this concern. As the demand for mobile broadband continues to grow, it is critical that there is nationwide mobile broadband coverage, including service in rural and underserved areas, competition within the mobile wireless broadband industry that provides consumers (particularly in these isolated areas) with greater selection from among different service offerings and pricing plans, and choice for consumers so that they can more readily change providers in order to avail themselves of competitive alternatives. Revising the technical requirements for Lower 700 MHz D and E Block licenses is a critical part of allowing interoperability and necessary to eliminate the potential for harmful interference to other 700 MHz bands. These changes are thus strongly in the public interest and authorized by Title III.

B. Channel 51

1. Assessment of Likelihood of Reverse Intermodulation Interference

35. *Background.* Channel 51 (692-698 MHz), which has been allocated for TV broadcast operations at power levels up to 1000 kW, lies just below the Lower 700 MHz Band.¹⁰⁵ One of the interference issues raised by some as a possible technical obstacle to interoperability in the Lower 700 MHz band is “reverse intermodulation interference” from DTV Channel 51 broadcast transmissions to the operations of wireless providers in the Lower 700 MHz B and C Blocks.¹⁰⁶ The issue of reverse intermodulation interference could arise when the Channel 51 signals interact, or “mix,” with transmissions from a wireless device to create a third transmission, or intermodulation product, that falls on a frequency used by the wireless device for receiving operation.¹⁰⁷

¹⁰¹ 47 U.S.C. §§ 301, 304, 309. Section 301 states that the Act provides for use, under federally-issued licenses of limited duration, of channels of radio transmission, “but not the ownership thereof,” and that “no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license.” Section 304 states that “[n]o station license shall be granted by the Commission until the applicant therefore shall have waived any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.” Section 309(h) requires that each FCC license contain, *inter alia*, a condition that the “station license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized therein.”

¹⁰² *Celtronix Telemetry, Inc. v. FCC*, 272 F.3d 585, 589-90 (D.C. Cir. 2001) (citing 47 U.S.C. §§ 309(j)(6)(C)-(D)).

¹⁰³ 47 U.S.C. §§ 303(b), 303(f).

¹⁰⁴ 47 U.S.C. § 316.

¹⁰⁵ See 47 C.F.R. § 73.622(f)(8). Maximum ERP of 1000 kW is allowed if antenna HAAT is at or below 365 meters. For higher HAAT levels, lower maximum ERP is allowed according to the “Maximum Allowable ERP and Antenna Height for DTV Stations on Channels 14-59, All Zones” table. *Id.* § 73.622(f)(8)(i).

¹⁰⁶ *Interoperability NPRM*, 27 FCC Rcd at 3536 ¶ 32.

¹⁰⁷ See, e.g., AT&T Comments at 29; Qualcomm Comments at 34-35; V-COMM Study at 4-5.

36. In the *Interoperability NPRM*, the Commission requested that interested parties submit measurements and quantitative analyses regarding the interference risk from adjacent Channel 51 transmissions for Band Class 12 devices operating in the Lower B and C Blocks, asked how the Commission could encourage voluntary industry efforts to find interference solutions, and requested that commenters quantify the costs of implementing any proposed solutions to interference issues.¹⁰⁸

37. The record includes studies on reverse intermodulation interference to Band Class 12 devices on Lower 700 MHz Blocks B and C from Channel 51 operations. Studies were submitted by a number of Lower 700 MHz A Block licensees (consisting of the V-COMM Study and the Hyslop-Kolodzy Report),¹⁰⁹ to demonstrate that any such interference is unlikely, and if it does occur there are reasonable steps an operator can take to mitigate it. AT&T and Qualcomm filed studies that argue to the contrary (consisting of AT&T submitted studies from Reed and Tripathi,¹¹⁰ PCTEST,¹¹¹ and 7Layers¹¹², and Qualcomm's own study).¹¹³ In its recent commitment letter, AT&T states that "high power broadcasts currently permitted in Channel 51 and in the Lower 700 MHz E block create the potential for significant interference problems for LTE deployments."¹¹⁴

38. *Discussion.* Based on the extensive record in this proceeding and our technical and predictive judgment, we conclude that harmful interference to Lower 700 MHz mobile devices operating on the Lower 700 MHz B and C Blocks as a result of Channel 51 broadcast operations is unlikely for a number of reasons.¹¹⁵ Moreover, we find that providers can undertake reasonable steps to mitigate the impacts of any interference that might occur from Channel 51 transmissions to LTE Band Class 12

¹⁰⁸ See *Interoperability NPRM*, 27 FCC Rcd at 3539-44 ¶¶ 40-52.

¹⁰⁹ V-COMM Study; V-COMM, L.L.C.'s Ex Parte Reply Comments, WT Docket No. 12-69 (Oct. 26, 2012) (V-COMM Oct. 26, 2012 Ex Parte Reply Comments); Hyslop-Kolodzy Report.

¹¹⁰ AT&T Comments, Exhibit A, Jeffrey H. Reed and Nishith D. Tripathi, "Impact of Channel 51 and E Block Interference on Band 12 and Band 17 User Equipment Receivers" (Reed and Tripathi Report); AT&T Reply Comments, Attachment A, Jeffrey H. Reed and Nishith D. Tripathi, "Supplemental Analysis: Impact of Channel 51 and E Block Interference on Band 12 and Band 17 User Equipment Receivers," (Reed and Tripathi Reply Report) and Exhibit A Test Methodology. AT&T submitted additional material from Reed and Tripathi. See Letter from David L. Lawson, Sidley Austin LLP, for AT&T, to Marlene H. Dortch, Secretary, FCC, Letter & Attachment (AT&T Oct. 3, 2012 Letter), Attachment, Reed and Tripathi, "Analysis of the V-COMM Report Estimating the Impact of Channel 51 and E Block Interference on Band 12 and Band 17 User Equipment Receivers" (Reed and Tripathi Supplement).

¹¹¹ Reed and Tripathi Reply Report, Attachment A, Exhibit B, "Evaluation Report; Assess Potential Interference to Band Class 12 and Band Class 17 LTE Devices from Channel 51 Broadcasting" (prepared by PCTEST Engineering Laboratory, Inc., (PCTEST) for AT&T Services Inc.) (PCTEST Study).

¹¹² Reed and Tripathi Reply Report, Attachment A, Exhibit C, "Test Report: Assess Interference to Band Class 12 LTE Devices from Channel 51 Broadcasting" (prepared by 7Layers for AT&T Services Inc.) (7Layers Study); AT&T Oct. 3, 2012 Letter, Reed and Tripathi Supplement, Exhibit A, 7Layers, "Test Report: Test Configuration for Evaluation of the Impact of Varying LTE Signal Levels on the Band 12 Device Performance in the Presence of Channel 51 Interference" (7Layers Supplement).

¹¹³ See Qualcomm Comments (also referred to as "Qualcomm Study"); see also Qualcomm Reply Comments. In addition, Motorola comments that Band Class 12 devices will have reduced sensitivity due to Channel 51 operations. See Motorola Comments at 2-3.

¹¹⁴ AT&T Sept. 10, 2013 Ex Parte at 1.

¹¹⁵ See 47 C.F.R. §2.1(c)(defining "Interference" and "Harmful Interference"); *H Block Report and Order*, 28 FCC Rcd at 9494-95 ¶ 23. See also Hyslop-Kolodzy Report at 67-68; Vulcan Comments at 14-15; U.S. Cellular Comments at 6-8; V-COMM Study at 2, 9, 11-29.

devices.¹¹⁶ In addition, any issue is likely to be time-limited, as the number of full-power Channel 51 stations decreases over time. We note as well that, even though AT&T identifies this issue in its September 10 letter, the proposed conditions in its letter and attachment, upon which its commitment of interoperability is based, address only potential E Block interference, and do not include any provisions relating to potential reverse intermodulation interference from Channel 51 broadcast operations.¹¹⁷

39. We find first that reverse intermodulation interference would occur only in the unlikely event of a coincidence of a number of different factors. For Channel 51 broadcast transmission to cause reverse intermodulation interference, all of the following would have to occur at the same time: the Channel 51 broadcast transmission reaches a very strong signal strength threshold received at the LTE mobile device, the LTE device is transmitting and receiving in certain specific frequencies within that carrier, and the mobile device is transmitting at maximum power.¹¹⁸ We also note there is a stable set of no more than 27 full-power, licensed broadcast facilities in the U.S., including Puerto Rico, and over time the number of full-power Channel 51 stations will likely decrease, principally as a result of the incentive auction proceeding.

40. Our conclusions rely as well on our evaluation of the evidence in the record. We find that the tests and analyses of the proponents of an interoperability rule are more convincing than the tests and analyses submitted by opponents because, *inter alia*, the proponents used more reasonable testing parameters such as the placement of the LTE carrier frequency and the number of resource blocks.¹¹⁹ The proponents also tested more devices under more possible interference scenarios which give a more comprehensive picture of the overall device performance, in both lab and field tests.¹²⁰ Qualcomm used a “commercially-available power amplifier” that transmitted at 1930 MHz,¹²¹ which is not as representative of operating in the 700 MHz band as the 700 MHz devices that were used in the other tests.

41. The evidence in the record also shows that the high Channel 51 signal levels that raise the risk of interference occur rarely. For instance, V-COMM’s testing shows that the level of a Channel 51 signal strength threshold that would likely cause interference is -13 dBm with 1 dB desense.¹²² According to the record, only 8 of 26 Channel 51 full-power, licensed broadcast facilities in the continental U.S. could, using the conservative line-of-sight (LOS) propagation model, theoretically exceed the signal strength threshold of -13 dBm, and these areas are limited to 450 meters or less from the Channel 51 broadcast tower.¹²³ In addition, V-COMM’s drive testing results near actual Channel 51 DTV transmitters show that very high Channel 51 signal strengths, *e.g.* above -13 dBm, are mostly confined to

¹¹⁶ See V-COMM Study at 2, 9; *see also* RCA Reply Comments at 8, n. 19.

¹¹⁷ See AT&T Sept. 10, 2013 Ex Parte, *generally*.

¹¹⁸ See Hyslop-Kolodzy Report at 67-68; Vulcan Comments at 14-15; U.S. Cellular Comments at 6-8.

¹¹⁹ See, *e.g.*, Letter from Christopher J. Termini, Counsel to Vulcan Wireless LLC, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at 2 (filed Aug. 9, 2012) (Vulcan Aug. 9, 2012 Ex Parte) at 2; V-COMM Oct. 26, 2012 Ex Parte Reply Comments at 14. *See also* PCTEST Study at 14; 7Layers Supplement at 6-7.

¹²⁰ Compare V-COMM Study at 5-6; V-COMM Oct. 26, 2012 Ex Parte Reply Comments at 10, 14-15; Hyslop-Kolodzy Report at 15; Letter from Michele C. Farquhar, Counsel to Vulcan Wireless LLC, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at attachment slide 3 (filed Nov. 20, 2012) (Vulcan Nov. 20, 2012 Ex Parte) with PCTEST Study, 7Layers Study, 7Layers Supplement, Exhibit A at 3.

¹²¹ See Qualcomm Comments at 37 & n.40; Letter from Benjamin M. Moncrief, Dir. Govt. Relations, C Spire Wireless to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at 2 (filed Aug. 3, 2012) (C Spire Aug. 3, 2012 Ex Parte) at 1.

¹²² V-COMM Study at 9.

¹²³ *Id.* at 2, 9, 11-14 and Figures 5, 6; *see also* Hyslop-Kolodzy Report at 48-51.

locations near Channel 51 transmitters.¹²⁴ However, to be consistent with the Commission's analysis in the H Block proceeding,¹²⁵ we find that using a 3dB desensitization level is more appropriate in this case. According to lab tests in the record, this requires a Channel 51 signal strength of -9 dBm, or 4 dB stronger than the level used by V-COMM. The drive tests in the record demonstrate that a signal level of -9 dBm is very rare in the field.

42. Accordingly, we conclude that interference allegations based on reverse intermodulation products arising from Channel 51 broadcast operations are not an impediment to implementation of the voluntary industry solution for achieving interoperability.

2. Clearing Channel 51

43. While we find that the presence of Channel 51 broadcast stations is not an impediment to 700 MHz interoperability, the clearing of Channel 51 broadcast stations can lead to other important public interest benefits by removing certain limitations placed on operations in the adjacent Lower A Block.¹²⁶ The Commission has taken a number of steps to limit the potential impact of Channel 51 broadcast operations on the use of Lower 700 MHz band spectrum.¹²⁷ In August 2011, the Media Bureau adopted a freeze on both the filing of new applications and the processing of pending applications with respect to operations on Channel 51, in order to permit the Commission to evaluate claims of interference for Lower 700 MHz A Block licensees in planning their network deployments.¹²⁸ In addition, the Media Bureau lifted the previous freeze on the filing of petitions for rulemaking by full power television stations seeking to relocate from Channel 51 pursuant to voluntary relocation agreements with Lower 700 MHz A Block licensees.¹²⁹ Media Bureau staff has approved, or has under review, agreements to relocate Channel 51 operations or otherwise modify those operations that reduce the possibility of interference.¹³⁰

44. Moreover, in September 2012, the Commission launched, pursuant to the Spectrum Act, the incentive auction process with the aim of repurposing broadcast television spectrum for mobile broadband use.¹³¹ In the *Incentive Auctions NPRM*, the Commission sought comment on facilitating requests for channel relocation prior to the auction associated with voluntary agreements between the

¹²⁴ See V-COMM Study at 11-29.

¹²⁵ See *H Block Report and Order*, 28 FCC Rcd at 9527 ¶¶ 114, 9537-38 ¶¶ 143-45.

¹²⁶ See *infra* Sec. III.D.2.

¹²⁷ Parties have raised issues concerning broadcast operations in Channel 51, including the clearing of the channel. See, e.g., Letter from Michele C. Farquhar, Counsel to Vulcan Wireless LLC, to Marlene H. Dortch, Secretary, FCC, Ex Parte (filed Sept. 20, 2013) (Vulcan Sept. 20, 2013 Ex Parte).

¹²⁸ See General Freeze on the Filing and Processing of Applications for Channel 51 Effective Immediately and Sixty (60) Day Amendment Window for Pending Channel 51 Low Power Television TV Translator and Class A Applications, *Public Notice*, 26 FCC Rcd 11409 (MB 2011) (*Channel 51 PN*); see also Petition for Rulemaking and Request for Licensing Freezes by CTIA - the Wireless Association and Rural Cellular Association, RM-11626, filed March 15, 2011.

¹²⁹ *Channel 51 PN*, 26 FCC Rcd at 11411; see also Freeze on the Filing of Petitions for Digital Channel Substitutions, Effective Immediately, *Public Notice*, 26 FCC Rcd 7721 (MB 2011).

¹³⁰ See, e.g., Amendment of Section 73.622(i), Post-Transition Table of DTV Allotments, Television Broadcast Stations (Greenville, North Carolina), MB Docket No. 12-130, RM-11662, *Report and Order*, 27 FCC Rcd 8865 (MB 2012); Amendment of Section 73.622(i), Post-Transition Table of DTV Allotments, Television Broadcast Stations (Lincoln, Nebraska), MB Docket No. 110192, RM-11646, *Report and Order*, 27 FCC Rcd 433 (MB 2012).

¹³¹ See *Incentive Auctions NPRM*; see also Wireless Telecommunications Bureau Seeks to Supplement the Record on the 600 MHz Band Plan, GN Docket No. 12-268, *Public Notice*, 28 FCC Rcd 7414 (WTB 2013) (*Band Plan PN*).

affected parties.¹³² In addition, the Commission clarified that any Channel 51 station that relocates pursuant to a private arrangement, and is subsequently required to relocate a second time because its channel assignment is changed during the auction's repacking process, will be eligible for payment of costs and will not be disadvantaged in its ability to claim reimbursement.¹³³

45. In April 2012, the Commission adopted rules for the sharing of broadcast channels in connection with the incentive auction.¹³⁴ The Commission is interested in possibly authorizing one or more channel sharing pilots in order to demonstrate the technical and legal arrangements necessary to implement a successful channel sharing operation. We encourage Channel 51 broadcasters to consider participating in such a pilot and to bring proposals for channel sharing pilots to the Media Bureau for consideration. Although it is likely that Channel 51 clearing issues in connection with the *Incentive Auctions* proceeding will not be resolved and fully implemented for several years, we note that all of the band plans in the *Incentive Auctions NPRM* and record propose to clear Channel 51, and that the *Incentive Auctions NPRM* seeks comment on the appropriate length of time for television stations to move channels or cease broadcasting after the completion of the incentive auction.¹³⁵

C. Transition to Interoperability

46. *Background.* In the *Interoperability NPRM*, the Commission expressed its preference for an industry solution to the lack of interoperability in the Lower 700 MHz band.¹³⁶ The Commission stated that an industry solution would be preferable because it would allow the market greater flexibility in responding to evolving consumer needs and dynamic and fast-paced technological developments.¹³⁷ At the same time, the Commission recognized that, if the industry failed to move toward interoperability in a timely manner, additional regulatory steps might be justified.¹³⁸

47. *Discussion.* As noted above, an industry solution that will resolve the lack of interoperability in the Lower 700 MHz band has now been developed. In a letter filed on September 10, 2013, AT&T committed to adopting interoperability upon resolution of interference issues associated with high power broadcast transmissions from the Lower 700 MHz E Block.¹³⁹ A coalition of Lower 700 MHz A Block licensees, joined by the Competitive Carriers Association, filed a letter supporting AT&T's

¹³² *Incentive Auctions NPRM*, 27 FCC Rcd at 12416 ¶ 165 & n.246 (noting the Commission has been facilitating such relocation requests since August 2011). Apart from relocation, in the *Channel Sharing Report and Order* the Commission adopted a general framework for channel sharing in connection with the incentive auction process, and stated that it would establish in a future proceeding additional rules governing channel sharing arrangements. Innovation in the Broadcast Television Bands: Allocations, Channel Sharing and Improvements to the VHF, ET Docket No. 10-235, *Report and Order*, 27 FCC Rcd 4616, 4621-25 ¶¶ 11-18 (2012) (*Channel Sharing Report and Order*). The Commission sought comment on channel sharing issues in the *Incentive Auctions NPRM*. See *Incentive Auctions NPRM*, 27 FCC Rcd at 12477-80 ¶¶ 362-72.

¹³³ *Incentive Auctions NPRM* 27 FCC Rcd at 12472 ¶ 349.

¹³⁴ See *Channel Sharing Report and Order*, 27 FCC Rcd 4616; see also *Incentive Auctions NPRM*, 27 FCC Rcd at 12477-80 ¶¶ 362-72. The Commission specified that the rules adopted in the *Channel Sharing Report and Order* "will be limited to broadcasters participating in an incentive auction process," and that channel sharing outside of the incentive auction context would be considered in a future proceeding. *Channel Sharing Report and Order*, 27 FCC Rcd at 4622 ¶ 11.

¹³⁵ *Incentive Auctions NPRM*, 27 FCC Rcd at 12464-66 ¶¶ 321-329.

¹³⁶ See *Interoperability NPRM*, 27 FCC Rcd at 3543, ¶ 49.

¹³⁷ See *Interoperability NPRM*, 27 FCC Rcd at 3543, ¶ 49.

¹³⁸ See *Interoperability NPRM*, 27 FCC Rcd at 3543, ¶ 49.

¹³⁹ See AT&T Sept. 10, 2013 Ex Parte at 1-3.

commitments as a means to ensure restoration of interoperability.¹⁴⁰ Having resolved the potential interference issues as discussed above, we now take steps to implement AT&T's voluntary commitments and establish a path to interoperability in the Lower 700 MHz band.

48. Specifically, pursuant to Section 316, we propose in the Order of Proposed Modification below to modify AT&T's B and C Block licenses to implement its interoperability commitments.¹⁴¹ These commitments relate both to AT&T's deployment of a Multi-Frequency Band Indicator (MFBI) software feature (a network technology that enables interoperability by permitting simultaneous support of both Band Class 12 and Band Class 17 devices) and to AT&T's transition to Band Class 12 capable devices. As set out in AT&T's letter:

Deployment of MFBI

- 1) AT&T commits to moving forward expeditiously with testing the 3GPP Multi-Frequency Band Indicator software feature as soon as it is made available to AT&T by its RAN vendors. AT&T further agrees to fully deploy the new MFBI software feature in its 700 MHz network within 24 months of September 30, 2013. The end of the 24-month period will also commence the beginning of the device roll-out period.
- 2) If AT&T concludes that, despite its best efforts, implementation of the MFBI feature within 24 months as committed to herein will result in significant negative customer impact, AT&T will file a certification, consistent with Commission rules (including but not limited to Sections 1.16, 1.17 and 1.65¹⁴²), so asserting and outlining in specific detail the commercially reasonable steps taken to meet the deadline and the reason for the delay. Any such filing must be made on or before August 31, 2015. With the filing of such a certification, the 24-month deadline for MFBI implementation and the start of the Band 12 capable device roll-out period shall be extended by the period requested in the certification, up to an additional 6 months.
- 3) Once MFBI has been fully implemented by AT&T consistent with paragraph 2, AT&T shall provide LTE roaming to carriers with compatible Band 12 devices, consistent with the Commission's rules on roaming.

The Transition

- 4) "Band 12 capable device" shall mean any device that is capable of supporting 3GPP Band Class 12. At this time, AT&T is exploring various Band 12 implementation approaches with its chipset and OEM partners and AT&T reserves the right to pursue the most efficient solutions available based on evolving network and device capabilities on a technology neutral basis.
- 5) During the first year of the device roll-out period, 50% of all new unique devices that operate on the paired Lower 700 MHz bands, as identified by unique SKU numbers, introduced by AT&T into its device portfolio will be Band 12 capable devices. Memory or color finish variations on a single device shall not be considered separate unique SKUs. Machine-to-

¹⁴⁰ See Coalition Sept. 10, 2013 Ex Parte.

¹⁴¹ AT&T's commitments are premised on final resolution of the E Block interference issues, in accordance with the power and height limitations adopted above. AT&T Sept. 10, 2013 Ex Parte at 6.

¹⁴² 47 C.F.R. §§ 1.16, 1.17.1.65.

Machine (M-to-M) devices shall not be counted as “new unique devices” for purposes of this commitment.

- 6) During the second year of the device roll-out period, 75% of new unique devices that operate on the paired Lower 700 MHz bands, as identified by unique SKU numbers, introduced by AT&T into its device portfolio will be Band 12 capable devices. Memory or color finish variations on a single device shall not be considered separate unique SKUs. M-to-M devices shall not be counted as “new unique devices” for purposes of this commitment.
- 7) Commencing at the conclusion of the second year of the device roll-out period, all new unique devices that operate on the paired Lower 700 MHz bands introduced by AT&T into its device portfolio will be Band 12 capable devices. In addition, from that time forward, AT&T will agree that its specifications for all new devices that are designed to operate in the paired Lower 700 MHz frequencies, including M-to-M devices, will call for Band 12 capability. However, M-to-M devices shall not be counted as “new unique devices” for purposes of this commitment.
- 8) The commitments outlined above apply to all new unique data-capable devices that connect to or provide connectivity on AT&T’s paired Lower 700 MHz FDD network. AT&T’s commitment shall not extend to any devices that are uniquely designed to operate on spectrum bands owned and operated by AT&T that are not in the paired Lower 700 MHz bands. AT&T reserves the express right to support devices that do not operate in the paired Lower 700 MHz bands.
- 9) To demonstrate progress on its commitments, AT&T shall submit comprehensive written reports and meet with the Commission staff at each of 12 months, 18 months and 24 months from the date of its September 10, 2013 commitment letter that will provide information on AT&T’s progress toward meeting these commitments. Additionally, AT&T shall provide comprehensive written reports at 28 months, 40 months and 46 months to report on progress during the device roll-out period, and it shall file a certification to the Commission at the end of the device roll-out period to certify final completion of these commitments within 30 days.
- 10) Fulfillment of these commitments will require the implementation of new functionality in AT&T’s paired Lower 700 MHz network as well as collaboration with AT&T’s chipset and OEM partners and vendors. AT&T will use its best efforts to proceed diligently to complete the activities necessary to fulfill its commitments. However, if at any time, AT&T encounters obstacles beyond its control that threaten its ability to meet these commitments, or undermine the quality of the service it is providing on its network, AT&T reserves the right to so inform the Commission and seek an extension of time or a waiver as appropriate.
- 11) Consistent with these commitments, AT&T anticipates that its focus and advocacy within the 3GPP standards setting process will shift to Band 12 related projects and work streams. More specifically, upon adoption of this commitment, AT&T commits to placing priority within the 3GPP RAN committee on the development of various Band 12 carrier aggregation scenarios. Upon completing implementation of the MFBI feature, AT&T anticipates that its focus on new standards related to the paired Lower 700 MHz spectrum will be almost exclusively on Band 12 configurations, features and capabilities. AT&T reserves the right to seek revisions and updates to Band 17 standards to the extent necessary to support legacy Band 17 devices and continuing Band 17 functionality on its network.

- 12) AT&T's commitments to Lower 700 MHz interoperability outlined in its letter are premised on final resolution of the E Block interference issues, which requires the Commission to adopt an Order requiring that all E Block licensees transmitting a signal with an emission bandwidth greater than 1 megahertz are restricted to an ERP of 1,000 to 2,000 watts/MHz and an antenna height of 305 m above average terrain. AT&T anticipates that the Commission will adopt such an Order no later than December 31, 2013. If such an Order is not adopted by the Commission, or if it is adopted but subject to appellate review, AT&T reserves the right to declare these commitments null and void.

49. We find that implementing the voluntary industry solution for interoperability by adopting AT&T's commitments as modifications would promote the public interest, convenience and necessity. These modifications would establish a clear path toward interoperability for the Lower 700 MHz band. In doing so, they would promote the efficient use of spectrum, the availability of higher quality and lower priced offerings and enhanced choices for customers of all wireless broadband providers, overall timely deployment of nationwide wireless broadband coverage, and the delivery of such service to rural and underserved areas. Our actions in proposing these modifications here are consistent with the Commission's longstanding interest in promoting the interoperability of mobile services (an objective that has been realized for cellular, PCS, AWS, and public safety broadband service), and allow the market greater flexibility in responding to evolving consumer needs and dynamic and fast-paced technological developments. By ensuring that AT&T, the largest license holder of spectrum in the B and C Blocks, transitions to interoperability, we conclude that the steps we take today will be enough to ensure that the public interest benefits of interoperability are realized while avoiding unnecessary regulatory burdens.

50. The record demonstrates that the existence of two incompatible band classes is a substantial obstacle to the ability of subscribers to switch their service provider to take advantage of higher quality or lower cost service.¹⁴³ Conversely, as the Commission has recognized, interoperability directly promotes "the ability of consumers to switch . . . at low cost."¹⁴⁴ Accordingly, by establishing a clear path to interoperability, we promote consumers' ability to choose the higher quality service at affordable prices and thus increased competition.

51. In addition, adopting the industry plan for achieving interoperability will help promote deployment of mobile broadband services and the full and efficient use of Lower 700 MHz spectrum. The record shows that the absence of interoperability has delayed deployment of networks in Lower 700 MHz band spectrum. U.S. Cellular, for example, asserts that, except for its own deployment, "there has been no comparable deployment of advanced 4G LTE services by Band 12 licensees, including Cavalier Wireless, LLC, Continuum 700 LLC, C Spire Wireless, Vulcan Wireless LLC and others, despite significant efforts to overcome the lack of a Band 12 device ecosystem. Cox TMI Wireless LLC even was forced to abandon its original plans to launch 4G LTE services."¹⁴⁵ Likewise, Cellular South, Inc. d/b/a C Spire Wireless (Cellular South) asserts that the lack of available Band Class 12 devices and the

¹⁴³ See, e.g., Comments of Rural Telecommunications Group at 6.

¹⁴⁴ Amendment of the Commission's Rules to Establish New Personal Communications Services, *Memorandum Opinion and Order*, 9 FCC Rcd 4957, 5021-22 ¶¶ 163-64 (1994). See also T-Mobile Reply Comments at 5-6; Letter from Michele C. Farquhar, Counsel to Vulcan Wireless LLC to Marlene H. Dortch, Secretary, FCC WT Docket No. 12-69, filed July 15, 2013 at 3; Consumers Union et al. Comments at 5. See also Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, WT Docket No. 10-133, *Fifteenth Report*, 26 FCC Rcd 9664, 9816 at ¶ 256; *16th Annual Mobile Wireless Competition Report* 28 FCC Rcd at 3900-01 ¶ 306.

¹⁴⁵ U.S. Cellular Comments at 3.

inability of such devices to roam nationwide render the current environment inadequate “to support commercial deployment of a LTE network on Band 12.”¹⁴⁶ Cavalier Wireless argues that the lack of interoperability has “delayed new wireless broadband deployments, services, and competition in Mississippi, Arkansas, and in rural states across the country.”¹⁴⁷

52. The record indicates that interoperability will promote further build out and deployment of Lower 700 MHz spectrum, with the resulting benefits of competitive mobile broadband service available to consumers. Cellular South, for example, asserts that, upon adoption of an interoperability requirement, it would begin “network design, site acquisition, and engaging equipment and device vendors to support the deployment of 4G LTE services.”¹⁴⁸ Other parties likewise assert that resolving interoperability would facilitate their deployment of advanced wireless services.¹⁴⁹ We find that the lack of interoperability and of the development of a Band Class 12 ecosystem has seriously limited development of the Lower 700 MHz band and that 700 MHz interoperability will encourage and enable Lower 700 MHz A Block licensees to further invest in and build out advanced broadband networks. The difficulties of obtaining prompt delivery from vendors of the choices of 4G devices at affordable prices necessary to attract and retain subscribers have discouraged LTE network deployments for smaller new market entrants. We conclude that, by promoting deployment of advanced mobile broadband networks, AT&T’s interoperability commitments would serve the public interest by encouraging licensees to deploy networks in the Lower 700 MHz band using the most efficient wireless technology available today.

53. Our actions today also further our statutory mandate to promote nationwide service.¹⁵⁰ Most A Block licensees are small or regional businesses,¹⁵¹ many of which provide or would be able to provide wireless broadband service to nearly 50 million people in rural areas, where 1.3 million people (and approximately 13% of rural road miles) still lack any such service at all. More than one-third of the population in rural areas still lacks coverage from more than two mobile broadband service providers.¹⁵² Rural low density areas are often low income areas (per capita income less than \$30,000 per year.) Evidence in the record shows that the absence of interoperability has affected these licensees’ ability to deploy broadband services in the Lower 700 MHz bands.¹⁵³ By eliminating barriers to deployment by

¹⁴⁶ Cellular South Comments at 3-5, 20. Similarly, Pittsburgh Mobile asserts that “lack of interoperability is an absolute barrier to entry for small businesses.” See Letter from Vincent D. McBride, Pittsburgh Mobile to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69 at 2 (filed Jun. 13, 2013).

¹⁴⁷ Letter from Susan Butler on behalf of Cavalier Wireless, LLC to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at 2 (filed Jun. 24, 2013). By contrast, Cavalier asserts, when interoperability existed during the first three generations of wireless networks, “rural, regional and new entrant carriers” in Mississippi and Arkansas “effectively competed against national carriers and were first to build out rural markets and economically depressed areas.” *Id.* at 1.

¹⁴⁸ Letter from Benjamin M. Moncrief, Dir. Govt. Relations, C Spire Wireless to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, at 2 (filed Jan. 14, 2013) (C Spire Jan. 14, 2013 Ex Parte).

¹⁴⁹ See, e.g., Letter from Michele C. Farquhar, Counsel to Vulcan Wireless LLC to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, filed Jan. 31, 2013; Letter from Michael Hagg, CEO, Horry Telephone Cooperative to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69, filed July 26, 2013.

¹⁵⁰ 47 U.S.C. § 151.

¹⁵¹ See *infra* Appendix B (Final Regulatory Flexibility Analysis), at ¶¶ 9-10.

¹⁵² See n.1, *supra*.

¹⁵³ See e.g., Cellular South Reply Comments at 2; Vulcan Comments at 19; Cavalier Wireless and Continuum Comments at 6-7

small and rural providers, we take another important step toward fulfilling our mandate to bring these advanced services, “so far as possible, to all the people of the United States.”¹⁵⁴

54. In addition, the AT&T license modifications we propose today in the Order of Proposed Modification below also will help promote reasonable roaming arrangements among 700 MHz providers. As noted above, AT&T commits to providing LTE roaming to carriers with compatible Band 12 devices once AT&T has implemented the MFBI software feature in its network.¹⁵⁵ As a result, the number of technically compatible providers for nationwide LTE roaming partnerships would increase.

D. Performance Requirements and Construction Benchmarks

1. Construction Benchmarks Applicable to Lower 700 MHz E Block

55. *Background.* Section 27.14(g) of the Commission’s rules requires EA licensees holding authorizations for Block E in the 722-728 MHz bands to provide signal coverage and offer service over at least 35 percent of the geographic area of their license no later than June 13, 2013, or within four years of initial license grant, if the initial authorization is granted after June 13, 2009.¹⁵⁶ Certain E Block licensees in the band, including DISH, have requested a waiver of 27.14(g) seeking an extension of the interim construction benchmark deadline to at least two years from the current deadline,¹⁵⁷ stating they have faced challenges related to equipment availability and uncertainty created by the *Interoperability NPRM*,¹⁵⁸ including the possibility that the Commission may “dramatically reduce maximum operation power in the Lower 700 MHz E Block.”¹⁵⁹ As discussed above, DISH outlined its proposal to address interference concerns regarding high-powered operations in the E Block spectrum, contingent on certain Commission actions, including extending relief regarding its Lower 700 MHz E Block buildout requirements.¹⁶⁰

56. *Discussion.* Today we adopt technical rule changes affecting all Lower 700 MHz E Block licensees to reduce potential interference and facilitate interoperability in the 700 MHz band, and in order to more fully implement the voluntary industry solution, including DISH’s commitment, we find it is in the public interest to provide the same regulatory flexibility to all E Block licensees to promote rapid deployment of mobile broadband services. Accordingly, we take various actions discussed below.¹⁶¹ We grant the requests for extension of time or waiver regarding 700 MHz E Block licenses filed by DISH and Kurian only to the extent discussed herein and extend relief to all active Lower 700 MHz band E Block licensees regarding certain buildout requirements. We also provide additional relief on our own motion to all active Lower E Block licensees as discussed below to facilitate implementation of the industry solution.¹⁶² Specifically, for all active Lower 700 MHz E Block licensees, we extend the interim

¹⁵⁴ 47 U.S.C. § 151.

¹⁵⁵ See AT&T Sept. 10, 2013 Ex Parte at 4.

¹⁵⁶ 47 C.F.R. § 27.14(g).

¹⁵⁷ See ULS File No. 0005773320, Attachment, Waiver Request for Extension of Time and Construction – WQJZ677 by Thomas K. Kurian (filed May 07, 2013) (Kurian Extension Request); ULS File Nos. 0005817992-0005818159, Attachment, Request for Extension and/or Waiver by Manifest Wireless L.L.C. (filed June 12, 2013) (DISH Extension Request). We note that Manifest Wireless L.L.C. is a subsidiary of DISH Network Corporation.

¹⁵⁸ See Kurian Extension Request at 1-3; DISH Extension Request at 8.

¹⁵⁹ DISH Extension Request at 5.

¹⁶⁰ DISH Network Sept. 10, 2013 Ex Parte.

¹⁶¹ We clarify that the relief described herein for active Lower 700 MHz E block licensees is transferrable, so that proposed assignees or transferees are not required to file individual justifications seeking application of such relief.

¹⁶² An active license is a license granted by the Commission that has not expired or been cancelled or terminated. A license becomes active immediately upon grant. See Universal Licensing System Glossary, at

(continued....)

construction benchmark deadline in Section 27.14(g) until March 7, 2017 and the end-of-term construction benchmark deadline in Section 27.14(g) until March 7, 2021. This additional time will afford licensees a sufficient opportunity to adjust their business plans in light of the technical changes to the band and also provide valuable services to the public in the near term. We also waive the ten-year license period set forth in Section 27.13(b) and extend the license term for all active Lower 700 MHz E Block licensees until March 7, 2021.¹⁶³

57. We waive section 27.14(g) for all active Lower E Block licensees in order to permit them to meet a population-based coverage requirement as an alternative to the geographic-based requirement in Section 27.14(g).¹⁶⁴ Specifically, we waive the requirement that Lower 700 MHz band E Block licensees must provide signal coverage and offer service over at least 35 percent of the geographic area to meet the interim construction benchmark deadline and provide signal coverage and provide service over at least 70 percent of the geographic area to meet the end-of-term construction benchmark deadline.¹⁶⁵ Under this waiver, all active Lower 700 MHz band E Block licensees may meet their interim construction benchmark deadline by providing signal coverage and offering service to at least 40 percent of its total E Block population, and a licensee's total E Block population shall be calculated by summing the population of each of its license areas in the E Block. Under this waiver, all active Lower 700 MHz band E Block licensees may meet their end-of-term construction benchmark deadline by providing signal coverage to at least 70 percent of the population in each of its license areas.¹⁶⁶ When filing a notification of construction pursuant to section 1.946(d),¹⁶⁷ licensees must state whether they are using the population-based performance benchmark or the geographic-based performance benchmark to meet the respective interim and end-of-term requirements.

58. We also waive section 27.14(g)(1) to the extent necessary and, accordingly, provide that, depending on the elected benchmark, in the event a Lower 700 MHz E Block licensee fails (a) to provide signal coverage and offer service to either 40 percent of its total E Block population or (b) provide signal coverage or offer service over at least 35 percent of the geographic area by March 7, 2017, respectively, the term of all the that license authorization (in case of (a)) or each deficient license (in case of (b)) will be reduced by one year.¹⁶⁸

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<http://wireless.fcc.gov/uls/index.htm?job=glossary> (last visited Sept. 18, 2013). The status of a license is reflected in the Commission's Universal Licensing System.

¹⁶³ See 47 C.F.R. § 27.13(b). The waiver extending the license term until March 7, 2021 does not apply to E Block licensees that provide broadcast services, whether exclusively or in combination with other services, which terms are limited by statute to a period not to exceed eight years. See 47 U.S.C. § 307(c); 47 C.F.R. § 27.13(b).

¹⁶⁴ See 47 C.F.R. § 27.14(g).

¹⁶⁵ See 47 C.F.R. § 27.14(g).

¹⁶⁶ We clarify that, through this waiver, E Block licensees have the option of complying with the current Section 27.14(g) geographic-area based interim and/or end-of-term construction benchmarks or complying with the respective population-based benchmarks described herein. We note, however, that the option provided in Section 27.14(g) to exclude land owned or administered by the government as part of the relevant service area is not applicable to a population-based coverage requirement. See 47 C.F.R. § 27.14(g).

¹⁶⁷ 47 C.F.R. § 1.946(d).

¹⁶⁸ Consistent with current rule section 27.14, Lower 700 MHz band E Block licensees that fail to meet the interim construction benchmark deadline remain subject to potential proportional license reduction and enforcement actions, including forfeitures. Licensees that fail to meet the end-of-term construction benchmark deadline remain subject to automatic license termination without Commission action for those geographic portions of its license in which the licensee is not providing service and potential license termination and enforcement actions, including forfeitures. See 47 C.F.R. § 27.14(g)(1) and (2). In the event that a licensee's authority to operate in a license area terminates

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59. Finally, we grant a limited waiver of Section 27.14(l) to extend the deadline until March 7, 2019, for the filing of the required second status report regarding the licensees' efforts to meet the performance requirements applicable to their authorizations in their respective spectrum bands and the manner in which that spectrum is being utilized.¹⁶⁹

2. Interim Construction Deadlines for A and B Block Licenses

60. *Background.* As noted above, the Commission adopted performance requirements for the 700 MHz band to promote commercial access to the spectrum that require licensees to provide specified levels of service and certain consequences for failing to meet those requirements within prescribed timeframes.¹⁷⁰ For licensees that fail to meet the applicable interim benchmark, the license term is reduced by two years, which would require that the end-of-term benchmark be met within eight years, and the Commission may take other enforcement action.¹⁷¹ At the end of the license term, licensees that fail to meet the end-of-term benchmark are subject to a "keep what you use" rule, which will make unused spectrum available to other potential users.¹⁷²

61. We take the opportunity in this Report and Order and Order of Proposed Modification to address the requests for waiver and extension of the interim construction benchmark deadline filed individually by Lower 700 MHz band A and B Block licensees, which the Wireless Telecommunications Bureau placed on public notice in a separate docket.¹⁷³ We also recognize that the issues raised in this proceeding may substantially affect Lower 700 MHz band licensees that have not specifically sought an extension of the interim construction benchmark deadline. In light of today's action reducing permissible ERP levels for D and E Blocks and voluntary industry commitments on the record to promote interoperability,¹⁷⁴ we extend the interim construction benchmark deadline for all active 700 MHz band

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automatically without Commission action, such areas will become available for reassignment pursuant to Section 27.14(j). *See* 47 C.F.R. § 27.14(j).

¹⁶⁹ *See* 47 C.F.R. § 27.14(l) (requiring that each licensee that meets its interim benchmark shall file a second report with the Commission no later than June 13, 2016, and no sooner than 30 days prior to this date, and that each licensee that does not meet its interim benchmark shall file this second report no later than on June 13, 2015, and no sooner than 30 days prior to this date). *See id.* We note that licensees were required to file their first status report by January 13, 2012. *See* 700 MHz Reporting Requirements Public Notice.

¹⁷⁰ *See* 47 C.F.R. § 27.14(a); *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1079 ¶¶ 149-51; 47 C.F.R. § 27.13(b); *700 MHz Second Report and Order*, 22 FCC Rcd at 15348 ¶ 153.

¹⁷¹ *See* 47 C.F.R. §§ 27.14(g)(1), (h)(1). The Wireless Telecommunications Bureau reminded licensees of enforcement actions for failure to meet interim construction benchmarks. *See* 700 MHz Reporting Requirements Public Notice.

¹⁷² *See* *700 MHz Second Report and Order*, 22 FCC Rcd at 15293-94 ¶ 6. *See also* Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, WT Docket No. 06-150; PS Docket No. 06-229, *Memorandum Opinion and Order and Order on Reconsideration*, 28 FCC Rcd 2671 (2013).

¹⁷³ Wireless Telecommunications Bureau Seeks Comment on Requests for Waiver and Extension of Time to Construct 700 MHz A and B Block Licenses, WT Docket 12-332, *Public Notice*, DA 12-1827 (WTB 2012) (700 MHz PN). The Commission sought comment on the requests filed as of November 2012, and since the release of the public notice, additional Lower 700 MHz band licensees filed similar requests. Additionally, Cavalier and Continuum filed an *ex parte* letter regarding the need for extensions of the construction deadlines and made proposals for such extensions. *See* Letter from Thomas Gutierrez, Counsel for Continuum 700 LLC and Cavalier Wireless L.L.C., to the Hon. Mignon Clyburn, Chairwoman, FCC, WT Docket No. 12-69, filed Sept. 18, 2013.

¹⁷⁴ *See* AT&T Sept. 10, 2013 Ex Parte; DISH Network Sept. 10, 2013 Ex Parte.

Lower A and B Block licensees until December 13, 2016, and issue a waiver of the interim construction benchmark deadline for certain Lower 700 MHz A Block licensees as described below.¹⁷⁵

62. Specifically, as their interim construction benchmark deadlines approached, a number of Lower 700 MHz band A and B Block licensees requested a waiver of Section 27.14(g) of the rules¹⁷⁶ to provide for an extension of at least two years from the applicable interim construction deadlines.¹⁷⁷ These licensees generally claimed that an extension or a waiver is warranted for reasons including a lack of interoperability in the 700 MHz band.¹⁷⁸ Some of the licensees claimed an extension was warranted because of issues regarding protection of TV Channel 51 stations, and some licensees claimed that high power Lower 700 MHz band E Block operations have affected their ability to meet the deadline.¹⁷⁹

63. As discussed above, on September 10, 2013, DISH filed a letter stating that it will consent to an ERP reduction of its base stations for its Lower 700 MHz band E Block licenses.¹⁸⁰ AT&T also filed a letter on September 10, 2013, stating that it is committed to supporting interoperability in the

¹⁷⁵ We clarify that this relief is transferrable, so that proposed assignees or transferees are not required to file individual justifications seeking application of the December 13, 2016 interim construction benchmark deadline or waiver of the interim construction benchmark deadline, as applicable.

¹⁷⁶ 47 C.F.R. §27.14(g).

¹⁷⁷ See 700 MHz PN. In addition, in its *Ex Parte* letter of March 1, 2013, NTCA also urged the Commission to grant 700 MHz B Block licensees an extension to keep them on the same construction schedule as the A Block licensees. NTCA *Ex Parte* letter, March 1, 2013. We note that the Competitive Carriers Association (CCA) filed a pleading seeking an extension of the interim construction benchmark deadline for two years from the conclusion of the Commission's interoperability rulemaking for Lower 700 MHz Band A Block licensees, many of which have filed individual requests for extension of time. See CCA Request for Extension of the Build-Out Deadlines for Lower 700 MHz A Block Licensees, *Letter*, WT Docket No. 12-69 (filed Oct. 17, 2012). We also note that the Minority Media and Telecommunications Council (MMTC) filed a pleading on September 24, 2012, requesting that the Commission waive, extend or modify the interim benchmarks for section 27.14(g) for certain Lower 700 MHz A and B Block licensees so that prospective licensees would enter into transactions with 700 MHz license holders granted relief. MMTC also requested that the Commission apply population coverage percentages in lieu of the current requirement that licensees cover a percentage of specific geographic area. On May 21, 2013, MMTC filed a Supplemental Showing of Standing in support of its September, 2012 Petition. Given the relief provided to Lower 700 MHz licensees in today's action, we dismiss as moot both the CCA Petition and the MMTC Petition, as supplemented. We also dismiss the MMTC Petition as moot because the Commission recently addressed in a separate proceeding, in which MMTC did not participate, arguments by other licensees that the Commission should reconsider its adoption of a requirement for coverage to certain percentages of geographic area in lieu of population coverage. See Service Rules for the 698-746, 747-762, and 777-792 MHz Bands, *Memorandum Opinion and Order on Reconsideration*, 28 FCC Rcd 2671, 2674-75 ¶¶ 6-8 (2013).

¹⁷⁸ 700 MHz PN at 2.

¹⁷⁹ *Id.* On February 13, 2013, the Wireless Telecommunications Bureau issued a limited waiver and extended the interim construction deadline in Section 27.14(g) until December 13, 2013, for all active Lower 700 MHz A Block licensees with an interim four-year construction benchmark deadline before December 13, 2013. See Wireless Telecommunications Bureau Extends 700 MHz A Block Licensee Interim Construction Benchmark Deadline Until December 13, 2013, WT Docket 12-332, *Public Notice*, DA 13-210 (WTB rel. Feb. 13, 2013). On April 10, 2013, the Bureau issued a similar waiver and extension for the majority of active Lower 700 MHz B Block licensees. See Wireless Telecommunications Bureau Extends 700 MHz B Block Licensee Interim Construction Benchmark Deadline Until December 13, 2013, *Public Notice*, 2013 WL 1497036 (WTB rel. Apr. 10, 2013).

¹⁸⁰ DISH Network Sept. 10, 2013 *Ex Parte* at 2. As noted above, DISH, which holds 168 E Block licenses, consents to an ERP reduction of its E Block bases stations from 50 kW to 1,000 watts/MHz in urban areas and 2,000 watts/MHz in rural areas. *Id.*

Lower 700 MHz band, conditioned on final resolution of the E Block interference issue.¹⁸¹ As outlined above, AT&T provided a number of commitments to achieve this goal including a staggered rollout period during which AT&T will introduce Band Class 12 capable devices into its device portfolio.¹⁸²

64. *Discussion.* In the extension requests, licensees claim that, due to a lack of available devices, they are unable to offer compelling or competitive advanced mobile services to potential customers and therefore building out such a network by the current interim deadline is not economically viable.¹⁸³ Further, licensees state that the “fragmentation of the Lower 700 MHz band was unforeseen,” making the situation “unique and unusual.”¹⁸⁴ We find that today’s decision, in conjunction with the voluntary industry commitments on the record, addresses these concerns and will facilitate interoperability and promote rapid deployment of advanced mobile services for consumers. The vast majority of licensees seek an extension of the interim construction benchmark deadline until two years after the Commission concludes the interoperability rulemaking proceeding.¹⁸⁵ Taking into account today’s action and the timeline specified by AT&T for roll-out of Band Class 12 capable devices, we find that an extension until December 13, 2016 will allow licensees to make appropriate business decisions regarding build-out and to meet the interim construction benchmark deadline. We therefore extend the interim construction benchmark deadline in Section 27.14(g)¹⁸⁶ until December 13, 2016 for all active Lower 700 MHz band A and B Block licensees, with certain exceptions described below.

65. We find it in the public interest to waive the interim construction benchmark deadline for certain Lower 700 MHz A Block licensees that must limit their deployments in order to protect incumbent Channel 51 operations.¹⁸⁷ Pursuant to Section 27.60, Lower 700 MHz band A Block licensees must provide interference protection to existing U.S. full power DTV and Class A stations¹⁸⁸ operating in the adjacent Channel 51 by maintaining a minimum distance separation (from base station to TV transmitter) of as much as 108 km.¹⁸⁹ Further, Section 27.60 specifies a minimum distance separation of 96.5 km

¹⁸¹ AT&T Sept. 10, 2013 Ex Parte at 1-2.

¹⁸² AT&T Sept. 10, 2013 Ex Parte at 4-5.

¹⁸³ See 700 MHz PN at 2.

¹⁸⁴ See ULS File No. 0005448442, Request for Extension of Initial Construction Benchmarks filed by Continuum, Attachment at 6 (filed Oct. 15, 2012). See also ULS File No. 0005449634, Supplement to Request for Extension of Build Out Requirement for A and B Block Licenses in the Lower 700 MHz Band filed by Cellular South, Attachment at 1 (filed Feb. 25, 2013). Cellular South states that “a two-year extension of its build-out deadline is warranted due to the unforeseen and unresolved lack of device interoperability in the 700 MHz Band.” *Id.* at 1.

¹⁸⁵ See e.g., Cavalier Waiver Request at 1; Continuum Extension Request at 1; Cox Extension Request at 1; Nex-Tech Wireless Extension Request at 1.

¹⁸⁶ 47 C.F.R. § 27.14(g).

¹⁸⁷ See 47 C.F.R. § 27.14(g) (requiring A Block licensees to provide signal coverage and offer service over at least 35 percent of their license area within four years of the initial license grant, with a failure to do so resulting in a two-year reduction of the license term).

¹⁸⁸ Under the Community Broadcasters Protection Act of 1999, Pub. L. No. 106-113 (codified at 47 U.S.C. § 336(f)), certain qualifying LPTV stations (*i.e.*, what are now Class A stations) are accorded primary status as television broadcasters as long as they continue to meet the requirements set forth in the statute for a qualifying low-power station. See also *In the Matter of a Class A Television Service*, MM Docket No. 00-10, *Report and Order*, 15 FCC Rcd 6355, 6359 (2000). Thus, A Block licensees must afford the Class A stations in Channel 51 the same protection as for full power broadcast stations.

¹⁸⁹ See 47 C.F.R. § 27.60(b)(1). Pursuant to this section, 700 MHz band licensees are also permitted to demonstrate compliance with TV/DTV protection requirements through the following alternative means: (i) calculating geographic separations in accordance with the required designed signal-to-undesired signal ratios when station

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between mobile units operating on the A Block adjacent to Channel 51 broadcast stations.¹⁹⁰ A substantial number of Lower 700 MHz A Block licensees argue in requests for extension of the interim construction benchmark deadline that Channel 51 broadcasters have been unwilling to negotiate consent or relocation agreements in advance of the impending incentive auction, leaving affected licensees with no reasonable alternative for providing service to certain areas of their markets before the interim deadline.¹⁹¹ Based on the record, we find that, although interoperability is likely to facilitate the provision of service by many licensees with Channel 51 broadcast stations in their license areas, relief from the particular interim construction benchmark deadline is warranted in certain circumstances. We therefore waive, on our own motion, the interim construction benchmark deadline of Section 27.14(g) for each Lower 700 MHz band A Block licensee where a 108 km radius around a Channel 51 transmitter overlaps at least a portion of the licensee's market area ("overlap") and either: (1) 30 percent or more of the geographic license area is within that overlap; or (2) less than 30 percent of the geographic license area is within that overlap but more than two-thirds of the population is within that overlap.¹⁹² We find that such relief is necessary because these licensees either face siting restrictions in a substantial portion of their license areas, or a majority of the market's population is in an area of overlap. Accordingly, these licensees will only be subject to the end-of-term construction benchmark requirement and other status reporting requirements.¹⁹³ We expect that many Lower 700 MHz band A Block licensees will provide service in areas unaffected by the existence of Channel 51 and that others will take meaningful steps toward constructing their systems even while broadcasters remain on Channel 51—such as procuring equipment, designing their networks, and securing transmitter sites—so that installation, testing, and deployment can occur rapidly upon relocation of the broadcasters. We note that 700 MHz band licensees are free to negotiate early relocation agreements with Channel 51 broadcasters to further speed deployment.

66. Finally, for all active Lower 700 MHz band A and B Block licensees, other than licensees subject to a waiver of the interim construction benchmark deadline due to Channel 51 interference protection requirements, as described above, we waive the requirement in Section 27.14(l) of the Commission's rules that these licensees file a second status report regarding the licensees' efforts to meet

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parameters are greater than those indicated in the table; (ii) submit an engineering study justifying the proposed separations based on the parameters of the land mobile station and the TV/DTV station; or (iii) obtain written concurrence from the applicable TV/DTV station. *Id.* See also 47 C.F.R. § 90.309.

¹⁹⁰ See 47 C.F.R. § 27.60(b)(2)(ii)(C). As Verizon and AT&T have noted, licensees deploying LTE (where mobile units transmit within the lower A Block spectrum, 698 – 704 MHz, adjacent to Channel 51) will be required to configure their systems to ensure that mobiles do not operate within 96.5 km of a Channel 51 broadcast station. See Letter from Tamara Preiss, Verizon, to Marlene H. Dortch, FCC, WT Docket No. 06-150, RM-11592, dated Sept. 1, 2011 (and attached Technical Report Analysis of Cavalier Wireless, LLC at 1) (Verizon Sept. 1, 2011 Ex Parte); AT&T Comments at 15 (citing Verizon Sept. 1, 2011 Ex Parte); AT&T Reply Comments at 64 (citing Verizon Sept. 1, 2011 Ex Parte Letter).

¹⁹¹ See e.g., CBW Extension Request at 12; Continuum Extension Request at 10; Cox Extension Request at 7; MetroPCS Extension Request at 6-7.

¹⁹² Although we expect Lower A Block license holders will deploy LTE networks using a band plan consistent with adjacent deployments, the proposed parameters for obtaining relief from the interim construction benchmark are technologically neutral and would allow for different deployment options. Specifically, the use of the rule 27.60 required distance separation of up to 108 km (base to Channel 51 station) as the basis for calculations, as opposed to calculations based solely on a mobile exclusion zone of 96.5 km applicable to LTE deployments, is generally a more conservative approach and will afford substantial relief to licensees sufficiently impacted by our Channel 51 interference protection requirements, regardless of technology deployed.

¹⁹³ A Block licensees that do not meet this standard remain subject to the extended interim construction benchmark deadline of December 13, 2016.

the performance requirements applicable to their authorizations in their respective spectrum bands and the manner in which that spectrum is being utilized.¹⁹⁴ The Commission adopted reporting requirements “to monitor whether further assessment of the rules or other actions are necessary in the event spectrum is being stockpiled or warehoused, or if it is otherwise not being made available despite existing demand.”¹⁹⁵ Due to the extended interim construction benchmark deadline licensees will now file similar information in their notifications of construction in December 2016 shortly after the existing deadlines for the second status report. Therefore, we find it is in the public interest to reduce filing burdens on the industry and waive the requirement that Lower 700 MHz band A and B Block licensees file a second status report. However, because A Block licensees sufficiently affected by Channel 51 interference protection requirements to warrant a waiver of the interim construction benchmark deadline will not file interim notifications of construction, we do not waive the Section 27.14(l) requirement and these licensees are still required to file a second status report on June 13, 2016, so that the Commission can monitor their buildout progress.

IV. ORDER OF PROPOSED MODIFICATION

67. For the reasons discussed above, we propose to modify AT&T’s B and C Block licenses pursuant to Section 316 to implement the commitments contained in AT&T’s letter of September 10, 2013 and effectuate the voluntary industry solution that will resolve the lack of interoperability in the Lower 700 MHz band in an effective and efficient manner.¹⁹⁶ Specifically, pursuant to Section 316, we propose to modify AT&T’s B and C Block licenses to implement the following interoperability commitments. These commitments relate both to AT&T’s deployment of a Multi-Frequency Band Indicator (MFBI) software feature and to AT&T’s transition to Band Class 12 capable devices. For the reasons discussed throughout this Report and Order and Order of Proposed Modification, we conclude that it is in the public interest, convenience, and necessity to propose to modify AT&T’s B and C Block licenses as follows:

- AT&T must move forward expeditiously with testing the 3GPP Multi-Frequency Band Indicator software feature as soon as it is made available to AT&T by its RAN vendors. AT&T must fully deploy the new MFBI software feature in its 700 MHz network within 24 months of September 30, 2013. The end of the 24-month period will also commence the beginning of the Band 12 capable device roll-out period.
- If AT&T concludes that, despite its best efforts, implementation of the MFBI feature within 24 months will result in significant negative customer impact, AT&T will file a certification, consistent with Commission rules (including but not limited to Sections 1.16, 1.17 and 1.65¹⁹⁷), so asserting and outlining in specific detail the commercially reasonable steps taken to meet the deadline and the reason for the delay. Any such filing must be made on or before August 31, 2015. With the filing of such a certification, the 24-month deadline for MFBI implementation and the start of the Band 12 capable device roll-out period shall be extended by the period requested in the certification, up to an additional 6 months.

¹⁹⁴ See 47 C.F.R. § 27.14(l) (requiring that each licensee that meets its interim benchmark shall file a second report with the Commission no later than June 13, 2016, and no sooner than 30 days prior to this date. Each licensee that does not meet its interim benchmark shall file this second report no later than on June 13, 2015, and no sooner than 30 days prior to this date). See *id.* We note that licensees were required to file their first status report by January 13, 2012. See 700 MHz Reporting Requirements Public Notice.

¹⁹⁵ See 700 MHz Second Report and Order, 22 FCC Rcd at 15352 ¶ 165.

¹⁹⁶ See *supra* Section III.C; AT&T Sept. 10, 2013 Ex Parte.

¹⁹⁷ 47 C.F.R. §§ 1.16, 1.17.1.65.

- Once MFBI has been fully implemented by AT&T, AT&T shall provide LTE roaming to carriers with compatible Band 12 devices, consistent with the Commission's rules on roaming.
- "Band 12 capable device" shall mean any device that is capable of supporting 3GPP Band Class 12. At this time, AT&T is exploring various Band 12 implementation approaches with its chipset and OEM partners and AT&T may pursue the most efficient solutions available based on evolving network and device capabilities on a technology neutral basis.
- During the first year of the device roll-out period, 50% of all new unique devices that operate on the paired Lower 700 MHz bands, as identified by unique SKU numbers, introduced by AT&T into its device portfolio will be Band 12 capable devices. Memory or color finish variations on a single device shall not be considered separate unique SKUs. Machine-to-Machine (M-to-M) devices shall not be counted as "new unique devices" for purposes of this commitment.
- During the second year of the device roll-out period, 75% of new unique devices that operate on the paired Lower 700 MHz bands, as identified by unique SKU numbers, introduced by AT&T into its device portfolio will be Band 12 capable devices. Memory or color finish variations on a single device shall not be considered separate unique SKUs. M-to-M devices shall not be counted as "new unique devices" for purposes of this commitment.
- Commencing at the conclusion of the second year of the device roll-out period, all new unique devices that operate on the paired Lower 700 MHz bands introduced by AT&T into its device portfolio will be Band 12 capable devices. In addition, from that time forward, AT&T must ensure that its specifications for all new devices that are designed to operate in the paired Lower 700 MHz frequencies, including M-to-M devices, will call for Band 12 capability. However, M-to-M devices shall not be counted as "new unique devices" for purposes of this commitment.
- The commitments outlined above apply to all new unique data-capable devices that connect to or provide connectivity on AT&T's paired Lower 700 MHz FDD network. AT&T's commitment shall not extend to any devices that are uniquely designed to operate on spectrum bands licensed for use by AT&T that are not in the paired Lower 700 MHz bands. AT&T reserves the express right to support devices that do not operate in the paired Lower 700 MHz bands.
- To demonstrate progress on its commitments, AT&T shall submit comprehensive written reports and meet with the Commission staff at each of 12 months, 18 months and 24 months from the date of its September 10, 2013 commitment letter that will provide information on AT&T's progress toward meeting these commitments.¹⁹⁸ Additionally, AT&T shall provide comprehensive written reports at 28 months, 40 months and 46 months to report on progress during the device roll-out period, and it shall file a certification to the Commission at the end of the device roll-out period to certify final completion of these commitments within 30 days.
- Fulfillment of these commitments will require the implementation of new functionality in AT&T's paired Lower 700 MHz network as well as collaboration with AT&T's chipset and OEM partners and vendors. AT&T will use its best efforts to proceed diligently to complete

¹⁹⁸ See AT&T Sept. 10, 2013 Ex Parte.

the activities necessary to fulfill its commitments. However, if at any time, AT&T encounters obstacles beyond its control that threaten its ability to meet these commitments, or undermine the quality of the service it is providing on its network, AT&T may so inform the Commission and seek an extension of time or a waiver as appropriate.

- Consistent with these commitments, AT&T anticipates that its focus and advocacy within the 3GPP standards setting process will shift to Band 12 related projects and work streams. AT&T must place priority within the 3GPP RAN committee on the development of various Band 12 carrier aggregation scenarios. Upon completing implementation of the MFBI feature, AT&T anticipates that its focus on new standards related to the paired Lower 700 MHz spectrum will be almost exclusively on Band 12 configurations, features and capabilities. AT&T may seek revisions and updates to Band 17 standards to the extent necessary to support legacy Band 17 devices and continuing Band 17 functionality on its network.¹⁹⁹

68. We find that the proposed license modifications will serve the public interest by establishing a clear path toward interoperability for the Lower 700 MHz band. Resolving the lack of interoperability is an important objective for the Commission and we intend to remain vigilant to ensure that AT&T follows through with its commitments and transitions to interoperability in an efficient manner.

69. We find that we have the legal authority to adopt these proposed modifications to AT&T's licenses. Section 316 of the Act authorizes the Commission to "modif[y]" existing licenses when taking such action will "promote the public interest, convenience, and necessity."²⁰⁰ Title III provides the Commission with broad authority to manage spectrum and endows the Commission with "expansive powers" and a "comprehensive mandate to 'encourage the larger and more effective use of radio in the public interest.'"²⁰¹ Section 303 of the Act, authorizes the Commission to exercise its authority as "the public interest, convenience, and necessity requires" to "[p]rescribe the nature of the service to be rendered by each class of licensed stations and each station within any class."²⁰²

70. We find that these provisions give us ample authority to adopt the proposed modifications to AT&T's B and C Block licenses, which track AT&T's commitments and which we find to be in the public interest. Specifically, we find that, pursuant to our authority under Title III, the proposed modifications described above will "promote the public interest, convenience, and necessity" by promoting competition and consumer choice among mobile broadband service providers for innovative services (both initially and in switching to higher quality or lower cost offerings), promoting the widespread deployment of 4G networks (particularly in rural and unserved areas), and strengthening the

¹⁹⁹ As discussed above, AT&T's commitments were premised on final resolution of the E Block interference issues. By this Order, we modify the E Block technical rules to address the E Block interference issues. AT&T has reserved the right to declare its commitments null and void if those modifications are not adopted by December 31, 2013, or if adopted but subject to appellate review. Because resolution of the E Block interference issue has always been essential to a resolution of the interoperability issue, any order of modification of AT&T's licenses pursuant to the terms of the foregoing proposal shall become effective only at such time as the changes adopted today to the technical rules applicable to E Block operations become final and unappealable. In the event that AT&T elects to declare its commitments null and void, the Commission continues to retain all its authority under the Communications Act of 1934, as amended, to adopt any rules or further orders in this proceeding necessary or appropriate to promote interoperability in the Lower 700 MHz band.

²⁰⁰ 47 U.S.C. § 316.

²⁰¹ *NBC v. United States*, 319 U.S. 190 (1943), (quoting 47 U.S.C. § 303(g)). *Accord, Cellco*, 700 F. 3d at 542.

²⁰² 47 U.S.C. § 303(b). *See also id.* §§ 153 (40), 153(49), 153(57), 303(r).

ability of providers to offer consumers nationwide coverage. Establishing interoperability will remove barriers to infrastructure investment for mobile broadband services and increase spectrum utilization among Lower 700 MHz A Block licensees.

71. In accordance with Section 316(a) of the Communications Act, as amended, and Section 1.87(a) of the Commission's rules, we will not issue a modification order(s) until AT&T has received notice of our proposed action and has had an opportunity to protest.²⁰³ We direct the staff to send this Report and Order and Order of Proposed Modification by certified mail, return receipt requested to AT&T. Pursuant to Section 316(a)(1) of the Act and Section 1.87(a) of the Commission's rules, receipt of this Report and Order and Order of Proposed Modification by certified mail, return receipt requested, shall constitute notification in writing of our Order of Proposed Modification proposing to modify AT&T's B and C Block licenses and of the grounds and reasons therefor.²⁰⁴ AT&T shall have until January 15, 2014 to protest such Order of Proposed Modification. For the reasons discussed throughout this Report and Order and Order of Proposed Modification, the Commission finds that it will serve the public interest to adopt the voluntary industry solution that will provide interoperability in the Lower 700 MHz band. To effectuate the terms of the industry agreement,²⁰⁵ we conclude that it is reasonable to allow AT&T until January 15, 2014 to protest the proposed license modifications. To protest the proposed modifications, AT&T must, by January 15, 2014 submit a written statement with sufficient evidence to show that the modification would not be in the public interest. The protest must be filed in the Electronic Comment Filing System (ECFS) under WT Docket No. 12-69²⁰⁶ or with the Office of the Secretary, Federal Communications Commission, 445 Twelfth Street, S.W., Room TW-A235, Washington, D.C. 20554; and the protesting party must send a copy of the protest via electronic mail to Jennifer Salhus of the Spectrum Competition and Policy Division of the Wireless Telecommunications Bureau at Jennifer.Salhus@fcc.gov.²⁰⁷ Once the protest period has lapsed, AT&T's right to file a protest expires, and the Commission may modify the licenses as noticed.²⁰⁸

72. We delegate to the Wireless Telecommunications Bureau the authority to issue a license modification order for AT&T's B and C Block licenses, but the Bureau's delegation of authority does not extend to any modification of AT&T's B and C Block licenses that is materially different from the provisions in paragraphs 67 through 70 above.

73. *Ex Parte Status.* Unless otherwise provided by the Commission or its staff pursuant to Section 1.1200(a),²⁰⁹ a license modification proceeding under Title III of the Communications Act is treated as a restricted proceeding for *ex parte* purposes under Section 1.1208 of the Commission's

²⁰³ 47 U.S.C. § 316(a); 47 C.F.R. § 1.87(a).

²⁰⁴ *Id.*

²⁰⁵ See AT&T Sept. 10, 2013 Ex Parte.

²⁰⁶ As discussed below, we are using WT Docket No. 12-69 for any filings related to the instant Order of Proposed Modification for administrative convenience only.

²⁰⁷ This address is proper only for protests submitted by U.S. mail. For hand-delivered or messenger-delivered paper filings, the proper address is 236 Massachusetts Ave., N.E., Suite 110, Washington, D.C. 2002. For documents sent by overnight delivery service other than United States Postal Service Express Mail and Priority Mail, the proper address is 9300 East Hampton Dr., Capitol Heights, MD 20743. For further information, contact the Office of the Secretary at (202) 418-0300 or mdortch@fcc.gov.

²⁰⁸ We also note, as set forth in Section 316(a)(2), that "[a]ny other licensee or permittee who believes its license or permit would be modified by the proposed action may also protest the proposed action before its effective date." 47 U.S.C. § 316(a)(2); see also 47 C.F.R. § 1.87(c).

²⁰⁹ 47 C.F.R. §§ 1.1200(a) ("[w]here the public interest so requires in a particular proceeding, the Commission and its staff retain the discretion to modify the applicable *ex parte* rules by order, letter, or public notice.").

rules.²¹⁰ In this case, the license modification proceedings are related to the above-captioned rulemaking proceeding, WT Docket No. 12-69, which is designated as a permit but disclose proceeding under the *ex parte* rules.²¹¹ Due to the interrelated nature of these proceedings, we find that it is in the public interest to treat the license modification proceedings as permit but disclose proceedings under Section 1.1206 of the Commission's rules.²¹² Therefore, any *ex parte* presentations that are made with respect to the issues involved in the subject license modification proceedings subsequent to the release of this Order of Proposed Modification will be permissible but must be disclosed in accordance with the requirements of Section 1.1206(b) of the Commission's Rules.²¹³ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). For administrative convenience only, any filings related to this Order of Proposed Modification must be filed in WT Docket No. 12-69 and may be filed using the Electronic Comment Filing System (ECFS), <http://apps.fcc.gov/ecfs/2d>. In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

V. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Analysis

74. The Regulatory Flexibility Act (RFA)²¹⁴ requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.”²¹⁵ Accordingly, we have prepared a Final Regulatory Flexibility Analysis concerning the possible impact of the rule changes contained in the Report and Order on small entities. The Final Regulatory Flexibility Analysis is set forth in Appendix B.

²¹⁰ 47 C.F.R. § 1.1208 (restricted proceedings).

²¹¹ See *Interoperability NPRM*, 27 FCC Rcd at 3548, ¶ 61.

²¹² 47 C.F.R. § 1.1206 (permit-but-disclose proceedings).

²¹³ 47 C.F.R. § 1.1206(b).

²¹⁴ See 5 U.S.C. § 601–612. The RFA has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

²¹⁵ 5 U.S.C. § 605(b).

B. Paperwork Reduction Act Analysis

75. This document does not contain new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. 3506(c)(4).

C. Further Information

76. For further information about this Report and Order, please contact Jennifer Salhus at (202) 418-1310, Jennifer.Salhus@fcc.gov.

VI. ORDERING CLAUSES

77. IT IS ORDERED that pursuant to sections 1, 2, 4(i), 4(j), 301, 302(a), 303(b), 303(e), 303(f), 303(g), 303(r), 304, 307(a), 309(j)(3), and 316(a)(1) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(j), 301, 302(a), 303(b), 303(e), 303(f), 303(g), 303(r), 304, 307(a), 309(j)(3), and 316(a)(1), and Sections 1.87 and 1.401 *et seq.* of the Commission's Rules, 47 C.F.R. §§ 1.87, 1.401 *et seq.*, this Report and Order and Order of Proposed Modification IS ADOPTED.

78. IT IS FURTHER PROPOSED, pursuant to Sections 4(i) and 316(a) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 316, and Section 1.87 of the Commission's Rules, 47 C.F.R. § 1.87, that AT&T's 700 MHz B and C Blocks licenses BE MODIFIED consistent with Section IV (Order of Proposed Modification) of this Report and Order and Order of Proposed Modification. Pursuant to Section 316(a)(1) of the Communications Act of 1934, as amended, 47 U.S.C. § 316(a)(1), and Section 1.87(a) of the Commission's rules, 47 C.F.R. § 1.87(a), receipt of this Report and Order and Order of Proposed Modification by certified mail, return receipt requested, shall constitute notification in writing of our Order of Proposed Modification that proposes to modify AT&T's Lower 700 MHz B and C Block licenses and of the grounds and reasons therefor, and AT&T shall have until January 15, 2014 to protest such Order of Proposed Modification. The Wireless Telecommunications Bureau is delegated authority to issue an order of modification if no protests are filed.

79. IT IS FURTHER ORDERED that the Wireless Telecommunications Bureau SHALL SEND this Report and Order and Order of Proposed Modification by certified mail, return receipt requested to AT&T.

80. IT IS FURTHER ORDERED that the license modification proceeding commenced by the Order of Proposed Modification shall be treated as a permit-but-disclose proceeding under the Commission's *ex parte* rules, 47 C.F.R. § 1.1200 *et seq.*

81. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(g) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(g), we grant a limited waiver of Section 24.14(g) and extend the interim construction benchmark deadline until December 13, 2016, for all active Lower 700 MHz band A and B Block licensees. Accordingly, the pending requests for extension and waiver of Section 27.14(g) of the Commission's Rules filed by Lower 700 MHz A and B Block are GRANTED to the extent described herein and are otherwise DENIED.

82. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(g) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(g), we waive, on our motion, the interim construction benchmark deadline in Section 27.14(g) of the Commission's Rules for each active Lower 700 MHz A Block licensee where a 108 km radius around a Channel 51 transmitter overlaps at least a portion of the license's market area ("overlap") and either: (1) 30 percent or more of the geographic license area is within that overlap; or (2)

less than 30 percent of the geographic license area is within that overlap but more than two-thirds of the population is within that overlap.

83. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(l) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(l), we grant, on our own motion, a waiver of the requirement in Section 24.14(l) for all active Lower 700 MHz band A and B Block licensees subject to the extended interim construction benchmark deadline to file a second status report regarding the licensees' efforts to meet the performance requirements applicable to their spectrum authorizations, except that Lower 700 MHz band A Block licensees subject to a waiver of the interim construction benchmark deadline because of Channel 51 interference protection requirements shall remain subject to the Section 27.14(l) requirement to file a second status report no later than June 13, 2016.

84. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(g) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(g), we grant a limited waiver of Section 24.14(g) to extend the interim construction benchmark deadline until March 7, 2017, for all active Lower 700 MHz band E Block licensees and, on our motion, extend the end-of-term construction benchmark deadline until March 7, 2021, for all active Lower 700 MHz band E Block licensees. Accordingly, the pending requests for extension and waiver of Section 27.14(g) of the Commission's Rules filed by Lower 700 MHz band E Block licensees are GRANTED to the extent described herein and are otherwise DENIED.

85. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.13(b) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.13(b), we grant, on our own motion, a waiver of Section 24.13(b) and waive the ten year license period and extend the license term until March 7, 2021, for all active Lower 700 MHz E Block licensees.

86. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(g) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(g), we grant, on our own motion, a limited waiver of Section 24.14(g) to allow all active Lower 700 MHz band E Block licensees to meet their interim construction benchmark deadline by providing signal coverage and offering service to at least 40 percent of its total E Block population (where a licensee's total E Block population shall be calculated by summing the population of each of its license areas in the E Block), and to meet their end-of-term construction benchmark by providing signal coverage to at least 70 percent of the population in each of its license areas, as an alternative to meeting geographic-based performance requirements.

87. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(g) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(g), we grant, on our own motion, a limited waiver of Section 24.14(g) so that all active Lower 700 MHz band E Block licensees that fail to meet the interim construction benchmark deadline will have the term of that license authorization reduced by one year.

88. IT IS FURTHER ORDERED that pursuant to Section 4(i) of the Communications Act, as amended, 47 U.S.C. § 154(i), and Sections 1.3, 1.925, and 27.14(l) of Commission's Rules, 47 C.F.R. §§ 1.3, 1.925, and 27.14(l), we grant, on our own motion, a limited waiver of the filing requirement in Section 27.14(l), to extend the deadline until March 7, 2019, for all active Lower 700 MHz band E Block licensees to file a second status report regarding the licensees' efforts to meet the performance requirements applicable to their spectrum authorizations.

89. IT IS FURTHER ORDERED that Part 27 of the Commission's rules IS AMENDED as set forth in Appendix A, effective 30 days after publication in the Federal Register, except as otherwise provided herein.

90. IT IS FURTHER ORDERED that the Final Regulatory Flexibility Analysis in Appendix B hereto IS ADOPTED.

91. IT IS FURTHER ORDERED that the Commission SHALL 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).

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

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

Part 27 of Title 47 of the Code of Federal Regulations is amended to read as follows:

1. Section 27.2 is amended by adding new paragraph (e) to read as follows:

§ 27.2 Permissible communications.

* * * * *

(e) *716–722 MHz and 722-728 MHz bands.* The 716-722 and 722-728 MHz frequencies may not be used for uplink transmission and must be used only for downlink transmissions.

2. Section 27.50 is amended by revising paragraph (c)(7) and adding new paragraphs (c)(12) and (c)(13), to read as follows:

§ 27.50 Power limits and duty cycle.

* * * * *

(c) ***

* * * * *

(7) A licensee authorized to operate in the 710-716 or 740-746 MHz bands may operate a fixed or base station at an ERP up to a total of 50 kW within its authorized, 6 megahertz spectrum block if the licensee complies with the provisions of § 27.55(b). The antenna height for such stations is limited only to the extent required to satisfy the requirements of § 27.55(b).

* * * * *

(12) A licensee authorized to operate in the 716-722 or 722-728 MHz bands may operate a fixed or base station at an ERP up to a total of 50 kW within its authorized, 6 megahertz spectrum block if the licensee complies with the provisions of § 27.55(b), obtains written concurrences from all affected licensees in the 698-746 MHz bands within 120 km of the proposed high power site, and files a copy of each written concurrences with the Wireless Telecommunications Bureau on FCC Form 601. The antenna height for such stations is limited only to the extent required to satisfy the requirements of § 27.55(b).

(13) Licensees authorized to operate in the 716-722 or 722-728 MHz bands must coordinate with licensees with uplink operations in the 698-716 MHz band to mitigate the potential for harmful interference. Licensees authorized to operate in the 716-722 or 722-728 MHz bands must mitigate harmful interference to licensees' uplink operations in the 698-716 MHz band within 30 days after receiving written notice from the affected licensees. A licensee authorized to operate in the 716-722 or 722-728 MHz bands must ensure that 716-728 MHz band transmissions are filtered at least to the

extent that the 716-728 MHz band transmissions are filtered in markets where the 716-728 MHz band licensee holds any license in the 698-716 band, as applicable. For purposes of coordination and mitigations measures in paragraphs (i) and (iii) below, network will be deemed “deployed” as of the date upon which the network is able to support a commercial mobile or data service. The coordination and mitigation measures should include, but are not limited to, the following:

- (i) If a licensee operating in the 698-716 and 728-746 MHz band deploys a network after the 716-722 or 722-728 MHz bands licensee deploys a network on its 716-722 or 722-728 MHz spectrum in the same geographic market, the 716-722 or 722-728 MHz bands licensee will work with the licensee with uplink operations in the 698-716 MHz band to identify sites that will require additional filtering, and will help the licensee operating in the 698-716 and 728-746 MHz bands to identify proper filters;
- (ii) The 716-722 or 722-728 MHz bands licensee must permit licensees operating in the 698-716 and 728-746 MHz bands to collocate on the towers it owns at prevailing market rates; and
- (iii) If a 698-716 and 728-746 MHz bands licensee deploys a network before a licensee in the 716-722 or 722-728 MHz bands deploys a network in the same geographic market, the 716-722 or 722-728 MHz bands licensee will work with licensees in the 698-716 and 728-746 MHz bands to identify sites that will need additional filtering and will purchase and pay for installation of required filters on such sites.

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Interoperability NPRM*.² The Wireless Telecommunications Bureau (WTB) sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.³

2. We find that it would serve the public interest to analyze the possible significant economic impact of the policy and rule changes in the 700 MHz band on small entities. Accordingly, this FRFA contains an analysis of this impact in connection with the technical rule changes that fall within the scope of this Report and Order.

A. Need for, and Objectives of, the Report and Order

3. The Report and Order and Order of Proposed Modification takes steps to implement an industry solution to provide interoperable long term evolution (LTE) service in the Lower 700 MHz band in an efficient and effective manner to improve choice and quality for consumers of mobile services. The public interest benefits of the steps taken in the Report and Order will assist consumers and the economies in rural areas, as well as for small and regional businesses that operate there. Small or regional providers serving rural areas drive economic growth in these rural areas, directly, by investing in their networks and creating jobs, and indirectly, by enabling the growth of other small businesses. But in order to promote competition – and enable small business customers of 700 MHz band licensees to operate successfully in the 21st century – these licensees need to be able to offer service choices, including the potential for nationwide coverage through roaming, comparable to those offered by the national providers. Interoperability of LTE service in the Lower 700 MHz band will remove an unnecessary barrier to the successful operation of businesses that can drive economic growth, promote competitive service, and create jobs in rural America.

4. To effectuate the industry solution, the Report and Order addresses interference concerns that have been raised as possible obstacles to interoperability. It finds that, under the current rules, there is a significant threat of harmful interference from high power transmissions in the Lower 700 MHz D and E Blocks to Band Class 12 devices operating on the Lower 700 MHz B and C Blocks that could jeopardize the viability of interoperability in the band. The Report and Order therefore revises the technical rules applicable to the Lower 700 MHz D and E Blocks by reducing the maximum permissible power levels and antenna heights on these blocks. It also modifies the rules to limit all operations in the Lower 700 MHz D and E Blocks to downlink only. The Report and Order also provides that Lower 700 MHz D and E Block licensees may operate particular sites at power levels higher than permitted under the revised rules under certain specified conditions. The Report and Order finds these changes to be in the public interest because, without them, the public would not be able to realize the substantial benefits of mobile broadband deployment and interoperability in the Lower 700 MHz band. The technical changes the Report and Order adopts will continue to enable the six megahertz of unpaired Lower 700 MHz E

¹ See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² See *Interoperability NPRM*, 27 FCC Rcd at 3551-56.

³ See 5 U.S.C. § 604.

Block spectrum to be put to commercial use while facilitating effective and efficient use of 36 megahertz of the Lower 700 MHz A, B, and C Blocks for mobile broadband services.

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

5. There were no comments filed that specifically addressed the rules and policies proposed in the IRFA.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Would Apply

6. 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.⁴ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁵ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.⁶ A “small business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).⁷

7. *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 that encompass entities that could be directly affected by the proposals under consideration.⁸ As of 2009, small businesses represented 99.9% of the 27.5 million businesses in the United States, according to the SBA.⁹ Additionally, a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”¹⁰ Nationwide, as of 2007, there were approximately 1,621,315 small organizations.¹¹ Finally, the term “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹² Census Bureau data for 2007 indicate that there were 89,527 governmental jurisdictions in the United States.¹³ We estimate that, of this total, as many as 88,761

⁴ 5 U.S.C. § 604(a)(3).

⁵ 5 U.S.C. § 601(6).

⁶ 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.”

⁷ 15 U.S.C. § 632.

⁸ See 5 U.S.C. § 601(3)–(6).

⁹ See SBA, Office of Advocacy, “Frequently Asked Questions,” available at <http://web.sba.gov/faqs/faqindex.cfm?areaID=24> (last visited Aug. 31, 2012).

¹⁰ 5 U.S.C. § 601(4).

¹¹ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

¹² 5 U.S.C. § 601(5).

¹³ U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007).

entities may qualify as “small governmental jurisdictions.”¹⁴ Thus, we estimate that most governmental jurisdictions are small.

8. *Wireless Telecommunications Carrier (Except Satellite)* This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular phone services, paging services, wireless Internet access, and wireless video services.¹⁵ The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers. The size standard for that category is that a business is small if it has 1,500 or fewer employees.¹⁶ Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.¹⁷ For this category, census data for 2007 show that there were 11,163 firms that operated for the entire year.¹⁸ Of this total, 10,791 firms had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.¹⁹ Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.²⁰ Similarly, according to Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Services (“PCS”), and Specialized Mobile Radio (“SMR”) Telephony services.²¹ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.²² Consequently, the Commission estimates that approximately half or more of these firms can be considered small. Thus, using available data, we estimate that the majority of wireless firms can be considered small.

¹⁴ The 2007 U.S Census data for small governmental organizations are not presented based on the size of the population in each such organization. There were 89,476 local governmental organizations in 2007. If we assume that county, municipal, township, and school district organizations are more likely than larger governmental organizations to have populations of 50,000 or less, the total of these organizations is 52,095. If we make the same population assumption about special districts, specifically that they are likely to have a population of 50,000 or less, and also assume that special districts are different from county, municipal, township, and school districts, in 2007 there were 37,381 such special districts. Therefore, there are a total of 89,476 local government organizations. As a basis of estimating how many of these 89,476 local government organizations were small, in 2011, we note that there were a total of 715 cities and towns (incorporated places and minor civil divisions) with populations over 50,000. CITY AND TOWNS TOTALS: VINTAGE 2011 – U.S. Census Bureau, *available at* <http://www.census.gov/popest/data/cities/totals/2011/index.html>. If we subtract the 715 cities and towns that meet or exceed the 50,000 population threshold, we conclude that approximately 88,761 are small. U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Tables 427, 426 (Data cited therein are from 2007).

¹⁵ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search>

¹⁶ 13 C.F.R. § 121.201, NAICS code 517210.

¹⁷ 13 C.F.R. § 121.201, NAICS code 517210. The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

¹⁸ U.S. Census Bureau, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210” (issued Nov. 2010).

¹⁹ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “100 employees or more.”

²⁰ *See*

http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ2&prodType=table

²¹ *See Trends in Telephone Service* at Table 5.3.

²² *See id.*

9. *Lower 700 MHz Band Licenses.* The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.²³ The Commission defined a “small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.²⁴ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.²⁵ Additionally, the Lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (MSA/RSA) licenses—“entrepreneur”—which is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$3 million for the preceding three years.²⁶ The SBA approved these small size standards.²⁷ An auction of 740 licenses (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)) was conducted in 2002. Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business or entrepreneur status and won licenses.²⁸ A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256 licenses.²⁹ Seventeen winning bidders claimed small or very small business status, and nine winning bidders claimed entrepreneur status.³⁰ In 2005, the Commission completed an auction of 5 licenses in the Lower 700 MHz band. All three winning bidders claimed small business status.

10. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.³¹ An auction of A, B and E block 700 MHz licenses was held in 2008.³² Twenty winning bidders claimed small business status (those with attributable average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years). Thirty three winning bidders claimed very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years).

11. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing.* The Census Bureau defines this category 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.” The SBA has developed a small business size standard for Radio and Television Broadcasting and Wireless

²³ See Reallocation and Service Rules for the 698–746 MHz Spectrum Band (Television Channels 52–59), *Report and Order*, 17 FCC Rcd 1022 (2002) (“*Channels 52–59 Report and Order*”).

²⁴ See *id.*, 17 FCC Rcd at 1087–88 ¶ 172.

²⁵ See *id.*

²⁶ See *id.*, 17 FCC Rcd at 1088 ¶ 173.

²⁷ See Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, FCC (Aug. 10, 1999).

²⁸ See Lower 700 MHz Band Auction Closes, *Public Notice*, 17 FCC Rcd 17,272 (2002).

²⁹ See Lower 700 MHz Band Auction Closes, *Public Notice*, 18 FCC Rcd 11,873 (2003).

³⁰ See *id.*

³¹ *700 MHz Second Report and Order*, 22 FCC Rcd at 15359 n.434 (2007).

³² See Auction of 700 MHz Band Licenses Closes, *Public Notice*, 23 FCC Rcd 4572 (2008).

Communications Equipment Manufacturing, which is: all such firms having 750 or fewer employees.³³ 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. Of this total, 912 had fewer than 500 employees and 27 had more than 500 employees.³⁴ Thus, under this size standard, the majority of firms can be considered small.

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

12. The Report and Order will not impose any new reporting or recordkeeping requirements on small entities. As described in Section A of this FRFA, to minimize interference and enable interoperability, the Report and Order revises the technical rules applicable to the Lower 700 MHz D and E Blocks by reducing the maximum permissible power levels and antenna heights on these blocks. It also modifies the rules to limit all operations in the Lower 700 MHz D and E Blocks to downlink only. The Report and Order also provides that Lower 700 MHz D and E Block licensees may operate particular sites at power levels higher than permitted under the revised rules under certain specified conditions.

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

13. The RFA requires an agency to describe any significant, specifically small business 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.”³⁵

14. The changes to the rules will benefit small or regional wireless providers serving rural areas by facilitating Lower 700 MHz A Block operations because LTE service provided on the A Block would otherwise likely be subject to harmful interference from high-power operations in the Lower 700 MHz E Block. In particular, mobile devices operating near a Lower E Block transmitter but far from their serving LTE base stations face a substantial risk of receiving harmful interference from E Block transmitters. The potential for this interference would exist because of vastly different radio propagation characteristics between the high-powered Lower 700 MHz E Block and lower powered A Block LTE systems, and such interference would result in significant degradation of service to A Block operations in areas close to high-powered E Block transmitters. Accordingly, the changes to the technical rules will facilitate Lower A Block licensees’ ability to provision mobile broadband LTE services to consumers in all of the paired Lower 700 MHz bands without significant service degradation.

15. In revising the technical rules for the Lower 700 MHz D and E Blocks, the Commission carefully considered the various benefits identified in the record, and the costs for Lower 700 MHz D and E Block licensees that would be associated with a new rule. The Commission considered alternative actions, including maintaining the current technical rules, but determined that modifying the power limits and antenna height restrictions for the Lower 700 MHz D and E Blocks would enable Lower 700 MHz interoperability by resolving concerns about interference from high-powered transmissions. The Report and Order provides flexibility for licensees by indicating that Lower 700 MHz D and E Block licensees

³³ 13 C.F.R. § 121.201, NAICS code 334220.

³⁴ 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.

³⁵ 5 U.S.C. § 603(c)(1) – (c)(4).

may operate particular sites at power levels higher than permitted under the revised rules under certain specified conditions.

16. In addition, to minimize the impact of the changes in the technical rules, the Report and Order waives the construction requirements, extending the construction benchmark deadlines for Lower 700 MHz A, B, and E Block licensees. The Report and Order concludes that waiving the construction requirements will allow licensees to make appropriate business decisions regarding build-out and to meet the construction benchmark deadlines.

17. **Report to Congress:** The Commission will send a copy of the Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act.³⁶ In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the Report and Order and FRFA (or summaries thereof) will also be published in the *Federal Register*.³⁷

³⁶ See 5 U.S.C. § 801(a)(1)(A).

³⁷ See 5 U.S.C. § 604(b).

APPENDIX C**List of Commenters****Comments**

AT&T Services, Inc. (AT&T)
Blooston Rural Carriers (Blooston)
CTIA – The Wireless Association (CTIA)
Cavalier Wireless, LLC (Cavalier)
Cellular South, Inc. d/b/a C Spire Wireless (Cellular South)
Chris Barton
Community Liberty and Innovation Project (CLIP)
Continuum 700 LLC (Continuum)
Cricket Communications, Inc. (Cricket)
DISH Network, Inc. (DISH Network)
Donald G. Everist, P.E., on behalf of Cohen, Dippell and Everist, P.C. (Everist)
Edison Electric Institute (Edison)
Horry Telephone Cooperative, Inc.
Information Age Economics
King Street Wireless, L.P. (King Street)
Maneesh Pangasa
McBride Spectrum Partners, LLC (McBride)
MetroPCS Communications, Inc. (MetroPCS)
Mike Cornell
Motorola Mobility, Inc. (Motorola)
NTCH, Inc. (NTCH)
National Association of Police Organizations, Inc. (NAPO) National Telecommunications Cooperative Association (NTCA)
Nick Dunklee
Office of Advocacy, U.S. Small Business Administration (SBA)
Qualcomm Incorporated (Qualcomm)
RCA – The Competitive Carriers Association (RCA)
Research in Motion Corporation (RIM)
T-Mobile USA, Inc. (T-Mobile)
The Consumer Electronics Association (CEA)
The Rural Telecommunications Group, Inc. (RTG)
The Telecommunications Industry Association (TIA)

Vulcan Wireless, LLC (Vulcan)

Reply Comments

AT&T Services, Inc. (AT&T)

Blooston Rural Carriers (Blooston)

CenturyLink, Inc. (Century Link)

Consumers Union

CTIA – The Wireless Association (CTIA)

Cricket Communications, Inc. (Cricket)

DISH Network, LLC (DISH)

Free Press

Information Age Economics

King Street Wireless, L.P. (King Street)

McBride Spectrum Partners, LLC (McBride)

Metro PCS Communications, Inc. (Metro PCS)

New America Foundation

Public Knowledge

Qualcomm Inc. (Qualcomm)

RCA - The Competitive Carriers Association (RCA)

SouthernLINC Wireless (SouthernLINC)

T-Mobile USA, Inc. (T-Mobile)

United States Cellular Corporation (USCC)

V-COMM, LLC (V-COMM)

Verizon Wireless

Vulcan Wireless, LLC (Vulcan)

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

Re: Promoting Interoperability in the 700MHz Commercial Spectrum, WT Docket No. 12-69; Requests for Waiver and Extension of Lower 700 MHz Band Interim Construction Benchmark Deadlines, WT Docket No. 12-332.

In rural America, where nearly 50 million consumers live, work and play, just over one-third receive coverage from two or fewer mobile broadband providers. For years, small wireless carriers in these communities have stated that the lack of interoperability in the Lower 700 MHz band has stifled growth and limited options for their customers. Today's Order removes barriers that have kept these carriers from operating in this band, and acts to spur private investment, job creation and the development of new services and devices. It does so by implementing a voluntary industry solution to restore a framework that will substantially benefit the public interest and promote greater competition for advanced wireless services.

This expected innovation and investment in advanced communications has been on hold for far too long. In 2006, the Commission first initiated a proceeding to adopt service rules and auction this band. That proceeding was widely followed, not just by wireless companies, but application developers and other technology innovators due to the excellent propagation characteristics of the band. Those who participated in the 2008 auction for this spectrum fully expected that the band would be interoperable across all allocated blocks just as with other wireless mobile services, including cellular, PCS, AWS, and public safety broadband. After this spectrum was auctioned, however, a standard setting process created two non-interoperable separate band classes that ended up stifling deployment of service into rural areas.

That is why, when the Commission first initiated this rulemaking proceeding in March 2012, I stated a preference for an expeditious path towards a voluntary solution to restore interoperability in the lower 700 MHz band. I had hoped that NPRM would create the proper incentives for wireless companies on opposite sides of this debate to reach a solution before the end of 2012. Unfortunately, that did not happen.

In fact, when I became Acting Chairwoman in May 2013, these parties still seemed as far apart as they did a year earlier. Nonetheless, I remained steadfast in my belief that the quickest way for consumers to see the benefits of an interoperability solution for this band was not a regulatory mandate that would likely be challenged in court; but a collaborative industry wide solution with a timetable for implementation. That is why I issued statements indicating that I expected an interoperability solution – whether voluntary or regulatory -- during my tenure. I was pleased that the parties accepted my invitation to meet and engage in good-faith. I am particularly grateful to AT&T, The Interoperability Alliance, The Competitive Carriers Association, DISH, and the consumer advocacy groups who worked collaboratively with FCC staff to hammer out a solution that benefits all consumers.

Under the agreement, AT&T will modify its 700 MHz LTE network with new software that will enable it to support Band 12-capable devices and also work with manufacturers to develop devices that support Band Class 12. In plain English, it will be possible for customers of small and regional providers to roam on AT&T's LTE network, and devices like the iPhone that used to work exclusively for AT&T, will work on other networks in the Lower 700 MHz band.

The adoption of this Order is an important step in ensuring a proper transition to interoperability. It addresses interference concerns by modifying the technical rules of the D and E blocks, so as to remove the likelihood of harm caused by attendant power levels, and finds that harmful interference from Channel 51 broadcast operations is unlikely. The Order also carefully notes the responsibilities of all involved to finally bring interoperability to the Lower 700 MHz band to ensure full coverage in all markets and compatibility on a nationwide basis.

This is a big win for consumers, especially in rural areas, who will soon see more competition and have more choices.

My sincere thanks to Ruth Milkman, Jim Schlichting, and the rest of her staff in the Wireless Bureau as well as Michele Ellison and Louis Peraertz in the Chair's office for working so diligently throughout this proceeding and for quickly drafting this Order.

**STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL**

Re: Promoting Interoperability in the 700MHz Commercial Spectrum, WT Docket No. 12-69; Requests for Waiver and Extension of Lower 700 MHz Band Interim Construction Benchmark Deadlines, WT Docket No. 12-332.

For too long, lack of interoperability in the lower 700 MHz band has left some carriers and some consumers with fewer choices and higher prices. That is why I have long supported the push to find a voluntary solution to this problem. I am gratified today that we do so by codifying an industry technical consensus.

The Commission is taking steps that have the potential to provide consumers of small and rural wireless carriers access to more cutting-edge devices. Moreover, these devices will be available faster. Thanks to economies of scale, they also will be less expensive. In fact, according to some estimates, interoperability can cut development costs for new equipment by as much as \$200 million. Furthermore, at a time when demand for our airwaves is growing at a breathtaking pace, we are ushering into use 12 megahertz of prime wireless spectrum that previously had been barely used. This is good all around.

However, I remain concerned by the way the Commission has tied other upcoming auction and spectrum decisions to this interoperability effort. Nonetheless, I believe that today's decision warrants support on its own merits.