

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

In the Matter of)	
)	
PTC-220, LLC, Request for Waiver to Facilitate)	WT Docket 13-59
Deployment of Positive Train Control Systems)	
)	File Nos. 0005631265, 0005631266,
)	0005631269, 0005631270, 0005631271,
)	0005631272, 0005631282, 0005631284,
)	0005631286, and 0005631289, and
)	0006225216

MEMORANDUM OPINION AND ORDER

Adopted: March 13, 2015

Released: March 13, 2015

By the Chief, Mobility Division, Wireless Telecommunications Bureau:

I. INTRODUCTION

1. In this Memorandum Opinion and Order, we address a Request for Waiver filed by PTC-220, LLC (PTC-220),¹ a joint venture of the nation’s seven Class I freight railroads. PTC-220 has acquired substantial spectrum in the 220-222 MHz band (220 MHz Band) for the purpose of enabling the deployment of positive train control (PTC) safety systems by its members and other railroads in the United States. PTC-220 requests a waiver of Section 90.729(b) (power and antenna height limits) and Section 90.723(f) (coordination requirements) of the Commission’s rules² to facilitate the deployment of PTC systems in the upper one megahertz segment (221-222 MHz) of the 220 MHz Band. For the reasons below, we find that the public interest will be served by grant of the Waiver Request, subject to conditions adopted herein to ensure that operations under the waiver do not cause harmful interference to operations of other 220 MHz Band licensees.

II. BACKGROUND

2. *Rail Safety Improvement Act of 2008*. Pursuant to the Rail Safety Improvement Act of 2008 (RSIA), most freight, intercity passenger, and commuter railroads are required to install and operate interoperable PTC systems by December 31, 2015.³ Once implemented, PTC systems are intended to reduce the risk of rail accidents caused by human error, including train-to-train collisions, derailments caused by excessive speed, and unauthorized train movements in work zones. PTC wireless communications networks are intended to enable real-time information sharing between trains, rail wayside devices, and control centers, regarding train movement authorities, speed restrictions, train consist, position, and speed, and the state of signal and switch devices.

¹ PTC-220 Request for Waiver, filed February 1, 2013 (Waiver Request).

² 47 C.F.R. §§ 90.729(b) and 90.723(f).

³ Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, § 104, 122 Stat. 4848, 4857 (2008).

3. *PTC-220.* PTC-220 was formed to facilitate the development and deployment of interoperable PTC communications systems to benefit both freight and commuter railroads in the United States. To serve this purpose, PTC-220 acquired licenses in the 220 MHz Band, including four nationwide licenses,⁴ six J Block licenses (which together form a *de facto* nationwide license),⁵ and six Economic Area E Block licenses.⁶ PTC-220 has leased its 220 MHz spectrum to the Southern California Regional Rail Authority (SCRRA) and other commuter railroads to enable their implementation of PTC systems, and plans to lease spectrum to other railroads for PTC implementation.⁷

4. *Waiver Request.* PTC-220 seeks, through the Waiver Request, to maximize the use of its 220 MHz spectrum resources for its members and other railroads to implement PTC systems. Specifically, PTC-220 seeks a waiver of Section 90.729(b), which generally prohibits licensees from operating stations in the 221-222 MHz upper band segment with an effective radiated power (ERP) greater than 50 watts and with antenna height above average terrain (HAAT) higher than 7 meters.⁸ Second, PTC-220 requests a waiver of Section 90.723(f), which requires coordination of certain Phase II 220 MHz licensees' facilities to ensure that frequencies are selected to avoid interference in the 220 MHz Band.⁹ On October 24, 2014, PTC-220 amended the Waiver Request to remove its six 220 MHz J-Block licenses,¹⁰ which it is assigning to the Association of American Railroads (AAR), and to add a nationwide 220 MHz license (call sign WPWY753), which it is acquiring from AAR.¹¹

5. *Comments and Replies.* The Bureau placed the Waiver Request on Public Notice for comment on March 8, 2013.¹² There is broad support for the Waiver Request. The Association of American Railroads (AAR), whose members include major freight railroads and Amtrak,¹³ the Joint Council on Transit Wireless Communications (Joint Council), whose participants include commuter

⁴ These licenses include two Phase I nationwide licenses (WPF284 and WPF444), one L Block nationwide license (WPOI701), and one M Block nationwide license (WPOJ271). Licenses in the 220 MHz band resulting from applications filed on or before May 24, 1991 are referred to as Phase I licenses. See 47 C.F.R. § 90.701(b). Phase I non-nationwide licensees were granted site-specific authorizations. Licenses in the 220 MHz band resulting from applications filed after May 24, 1991 are referred to as Phase II licenses.

⁵ These licenses include call signs WPOI702, WPOI703, WPOI704, WPOI705, WPOI706, and WPOI708.

⁶ These licenses include call signs WPOJ279 (Rochester, MN-IA-WI), WPOJ280 (Minneapolis-St. Paul, MN-WI-IA), WPOJ281 (San Francisco-Oakland-San Jose, CA), WPOI774 (Memphis, TN-AR-MS-KY), WPOI800 (St. Louis, MO-IL), and WPVL860 (Los Angeles-Riverside-Orange County, CA-AZ).

⁷ Waiver Request at 21-22.

⁸ 47 C.F.R. § 90.729(b).

⁹ Waiver Request at 9-10, 15-17.

¹⁰ These licenses include call signs WPOI702 (file no. 0005631281), WPOI703 (file no. 0005631278), WPOI704 (file no. 0005631277), WPOI705 (file no. 0005631275), WPOI706 (file no. 0005631274), and WPOI708 (file no. 0005631273).

¹¹ File Nos. 0006225158 (assignment of six J-Block licenses from PTC-220 to AAR), and 0006225216 (assignment of nationwide license from AAR to PTC-220). Letter dated October 24, 2014 from PTC-220, *et al.* to Marlene Dortch, Secretary, FCC, WT Docket 13-59 (October 24, 2014 Letter).

¹² Wireless Telecommunications Bureau Seeks Comment on Request for Waiver to Facilitate Deployment of Positive Train Control Systems, WT Docket 13-59, DA 13-364, *Public Notice*, 28 FCC Rcd 2243 (WTB 2013). Comments were due on April 8, 2013, and replies were due on April 23, 2013.

¹³ AAR Comments, filed April 8, 2013. AAR members include the major Class I railroads of the United States, Canada and Mexico, as well as smaller non-Class I and passenger railroads including Amtrak, rail supply companies, rail car owners, engineering firms, and signal and communications firms. See <https://www.aar.org/Pages/AboutUs.aspx>, website last visited March 12, 2015.

transit agencies,¹⁴ SCRRRA,¹⁵ and the Union Pacific Railroad (UP, the nation's largest railroad), all support the Waiver Request.¹⁶

6. Initially, the National Rural Telecommunications Cooperative (NRTC), whose subsidiary NRTC LLC holds 220 MHz Band licenses,¹⁷ and Pepco Holdings, Inc. (PHI), whose wholly-owned affiliate PHI Service Company (PHISC) has obtained spectrum from NRTC LLC,¹⁸ expressed concern with the Waiver Request. Subsequently, on October 24, 2014, NRTC, PHISC, and PTC-220 notified the Commission that they had executed a coordination agreement, containing specific procedures and requirements to address interference concerns related to the Waiver Request.¹⁹ NRTC and PHI withdrew their respective comments and affirmed their support of PTC-220's Waiver Request.²⁰

7. Two parties, rural electric cooperatives Berkeley Electric Cooperative, Inc. (BEC) and Dixie Electric Membership Corporation, Inc. (DEMCO) jointly oppose the Waiver Request.²¹

III. DISCUSSION

8. In the discussion that follows, we first address PTC-220's request for waiver of Section 90.729(b)'s power and antenna height limits. We then address its request for waiver of Section 90.723(f)'s coordination requirements. Third, we address the comments of BEC and DEMCO.

A. Conditional Waiver of Section 90.729(b)'s Power and Antenna Height Limits

9. For the reasons that follow, we hereby grant PTC-220 a conditional waiver of Section 90.729(b)'s power and antenna height limits to facilitate the deployment of PTC systems in the 221-222 MHz band segment. Our waiver of these limits is conditioned on specific measures to ensure that co- and adjacent channel licensees in the 220 MHz Band do not suffer harmful interference. As detailed below, we will require PTC-220 to: (1) provide 30 days prior written notice to certain licensees of its intent to site a PTC base station taking advantage of the eased power and antenna height limits; (2) meet a predicted 38 dBu field strength at the license area's border, unless all affected co-channel licensees agree

¹⁴ Joint Council Comments, filed April 23, 2013. The Joint Council is an alliance of professionals and transportation organizations created to represent surface land passenger transportation service operators nationwide within the United States on matters of wireless voice and data communications. *Id.* at 3.

¹⁵ SCRRRA Comments filed April 8, 2013. SCRRRA is a Joint Powers Authority, consisting of five county transportation planning agencies: the Los Angeles County Metropolitan Transportation Authority, the Orange County Transportation Authority, the Riverside County Transportation Commission, the San Bernardino Associated Governments and the Ventura County Transportation Commission. *Id.* at 1.

¹⁶ UP Comments, filed April 8, 2013.

¹⁷ NRTC Comments, filed April 8, 2013. NRTC is a non-profit cooperative association representing the interests of more than 1,500 rural utilities and affiliates in 48 states. *Id.* at 2. NRTC LLC holds the following 220 MHz licenses: (1) a 5-channel Phase I Nationwide license (WPCU518); (2) a 10-channel Phase II Nationwide license (WPOI700); (3) six 7-channel Phase II Regional licenses (WPOL329-334); and (4) a 15-channel Phase II Regional license (WPOK780). NRTC LLC incorporates these licenses into a network of twenty-two 5 kHz channels effectively covering the entire United States, including all of rural America. *Id.* NRTC filed Reply Comments on April 23, 2013.

¹⁸ Letter dated June 6, 2013 from Russell Ehrlich, Manager, PHI to Marlene Dortch, Secretary, FCC (PHI June 6, 2013 *Ex Parte* Comments).

¹⁹ October 24, 2014 Letter at 1-2.

²⁰ *Id.* at 2.

²¹ BEC/DEMCO *Ex parte* Comments, filed May 14, 2013. BEC provides electric service to three counties in South Carolina, covering approximately 80 square miles. *Id.* at 3. DEMCO provides electric service to seven parishes in Louisiana. *Id.* at 2.

to a higher field strength; and (3) meet bright-line frequency and geographic spacing requirements, to further reduce the possibility that PTC operations under the waiver could cause interference to adjacent channel licensees. We emphasize that should interference to other licensees' operations occur despite these safeguards, PTC-220 will be required to promptly remedy such interference at its own expense.

10. The Commission planned the 220 MHz Band as a frequency division duplex (FDD) band, with the lower one megahertz designated as the base transmit band and the upper one megahertz designated as the mobile transmit band. Section 90.715(a) of the Commission's rules accordingly generally limits base station operations to 220-221 MHz and mobile operations to 221-222 MHz.²²

11. In 2009, the Commission granted PTC-220 a waiver of Section 90.715(a)'s base/mobile limits to enable deployment of time division duplex (TDD) PTC systems that utilize both band segments for base and mobile operations.²³ Although the *PTC-220 2009 Waiver Order* permits PTC-220 to operate base stations in the 221-222 MHz band segment, the segment's more restrictive power and antenna height rules limit its utility for base station operations. Stations in the 221-222 MHz band segment are limited to 50 watts ERP and 7 meters HAAT under Section 90.729(b),²⁴ while stations in the 220-221 MHz band segment are permitted to use 500 watts ERP with a HAAT of up to 150 meters.²⁵

12. PTC-220 states that under Section 90.729(b)'s current limits, base station transmissions in the upper band segment would have a much smaller coverage footprint than those with higher power and antenna height in the lower band segment.²⁶ PTC-220 states that waiver of Section 90.729(b)'s power and height limits would enable it to increase network capacity and allow more railroads to benefit from PTC-220's spectrum resources, including commuter and short line railroads, and especially in congested markets, where obtaining spectrum is often challenging.²⁷ PTC-220 further states that operation at the proposed power and height levels would not cause harmful interference to co-channel or adjacent channel operations.²⁸

13. *Legal Standard.* The Commission may grant a request for a waiver when: (i) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and a grant of the requested waiver would be in the public interest; or (ii) in view of the unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome, or contrary to the public interest, or the applicant has no reasonable alternative.²⁹ The Commission also may waive a rule, in whole or in part, on its own motion or on petition if good cause therefor is shown.³⁰

²² 47 C.F.R. § 90.715(a) (“[f]requencies shall be assigned in pairs with base station frequencies taken from the 220-221 MHz band with corresponding mobile and control station frequencies being 1 MHz higher and taken from the 221-222 MHz band”).

²³ Request of PTC-220, LLC for Waivers of Certain 220 MHz Rules, *Memorandum Opinion and Order*, 24 FCC Rcd 8537, 8544-45 ¶18 (2009) (*PTC-220 2009 Waiver Order*).

²⁴ 47 C.F.R. § 90.729(b). Transmissions from antennas higher than 7 meters HAAT are permitted if the ERP is reduced below 50 watts ERP by $20 \log_{10}(h/7)$ dB, where h is the HAAT in meters.

²⁵ 47 C.F.R. § 90.729(a). When a station in the lower band exceeds 150 meters HAAT, it must reduce its ERP correspondingly.

²⁶ Waiver Request at 7.

²⁷ *Id.* at 9.

²⁸ *Id.* at 12.

²⁹ 47 C.F.R. § 1.925(b)(3).

³⁰ 47 C.F.R. § 1.3.

14. We adopt specific conditions below to ensure that operations under waiver of Section 90.729(b)'s power and antenna height limits do not cause harmful interference to other licensees. Subject to such conditions, we find under the first prong of the Commission's Section 1.925 waiver standard that the underlying purpose of Section 90.729(b)—to address the possibility of interference to co- and adjacent channel operations³¹—would not be served by strict application of the rule to PTC base station operations in the 221-222 MHz band segment.

15. We also find that waiver of Section 90.729(b)'s power and antenna height limits would serve the public interest of all Americans in rail safety, including the safety of life and property,³² by facilitating PTC deployments in urban and other areas.³³ We note that PTC-220's Radio Frequency (RF) network analyses indicate that all of its 220 MHz channels—including upper band segment channels operating with comparable power and height limits as lower band segment channels—are required to provide adequate PTC network capacity for both freight and commuter railroads in major urban areas.³⁴ PTC-220 states that grant of the waiver will enable final RF planning for major markets including Chicago (the nation's busiest rail market), the Northeast Corridor, New York/Newark, the Los Angeles Basin, Kansas City, Minneapolis/St Paul, Dallas/Fort Worth, and San Francisco Bay.³⁵

16. We also find that the public interest in promoting innovative and efficient spectrum use³⁶ will be served by waiver of Section 90.729(b)'s power and antenna height limits, by enabling more intensive use of PTC-220's unique spectrum resources to deploy advanced rail safety systems. Our finding is supported by SCRRRA, which states that waiver of Section 90.729(b)'s power and antenna height limits would “increase the number of channels useable for PTC in the Los Angeles basin, and for similar reasons, in spectrum congested areas nationwide.”³⁷ AAR states that waiver of Section 90.729(b)'s power and antenna height limits “would allow the railroad industry to leverage the existing 160 MHz communication infrastructure it has in place and will minimize the risk that PTC-220 will need to obtain more spectrum to deploy PTC.”³⁸ PTC-220 explains that the rail industry chose to acquire 220 MHz band spectrum to implement PTC because of its similar propagation characteristics to 160 MHz band spectrum, which is widely used by railroads and covers nearly 100 percent of U.S. rail track.³⁹ PTC-220 states that its members plan to use existing towers wherever feasible, and that grant of the waiver will enable them to deploy transmitters in the 221-222 MHz band segment on many of the several thousand

³¹ Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service, *Memorandum Opinion and Order on Reconsideration*, PR Docket 89-552, 13 FCC Red 14569, 14607 ¶82 (1998) (*220 MHz MO&O*) (“permitting 500 watt ERP fixed station transmissions on the mobile channels in the 220 MHz band could cause interference to adjacent channel operations”).

³² The Commission was formed “for the purpose of promoting safety of life and property through the use of wire and radio communication” 47 U.S.C. § 151.

³³ Letter dated January 15, 2015, from Michele C. Farquhar, counsel to PTC-220, to Marlene H. Dortch, Secretary FCC at 1 (PTC-220 January 15, 2015 Letter).

³⁴ *Id.* at 5.

³⁵ *Id.*

³⁶ Congress, through the Communications Act, requires the Commission to implement spectrum policies that promote competition, innovation, and the efficient use of spectrum to best serve the public interest, convenience and necessity. *See* 47 U.S.C. § 309(j)(3)(B).

³⁷ SCRRRA Comments at 4.

³⁸ AAR Comments at 2.

³⁹ *See* Letter dated March 3, 2015 from Michele C. Farquhar, counsel to PTC-220, to Marlene H. Dortch, Secretary FCC at 2 (PTC-220 March 3, 2015 Letter).

towers where 160 MHz transmitters are now deployed.⁴⁰ Such deployments will reduce the number of new towers that will need to be constructed to implement PTC safety systems, and serve the public interest by limiting the potential environmental and other impacts that could be associated with new tower construction.

17. We agree with PTC-220 that Congress' PTC mandate and the PTC implementation deadline of December 31, 2015, constitute unique and unusual factual circumstances supporting a waiver under the second prong of the Commission's Section 1.925 waiver standard, which allows for a waiver where unique or unusual factual circumstances are present (as here) and application of the rule would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative.⁴¹ Here, strict application of Section 90.729(b)'s power and antenna height limits would be contrary to the public interest in the safety of life and property, and in efficient spectrum use. Accordingly, we hereby waive Section 90.729(b)'s power and antenna height limits, and will permit PTC base station operations in the 221-222 MHz band segment to use up to 500 watts ERP with a HAAT of up to 150 meters, subject to the conditions enumerated below.⁴²

18. *Co-Channel Interference, Nationwide Licenses.* PTC-220 states that an increase in the power and antenna height limits for its nationwide licenses will cause no co-channel user interference because there are no co-channel users (other than railroads using the spectrum for PTC).⁴³ We agree and find that waiver of Section 90.729(b)'s power and antenna height limits should cause no co-channel interference on any of PTC-220's nationwide licenses or on the nationwide license it intends to acquire from the AAR.⁴⁴

19. *Co-Channel Interference, Economic Area Licenses.* In 2009, when the Commission granted PTC-220 a waiver to permit base station operations in the 221-222 MHz band segment for its then three (now six) Economic Area E Block licenses,⁴⁵ it noted that the potential for interference to co-channel licensees in adjacent markets should generally be limited to areas along established rail lines.⁴⁶ To mitigate the potential for co-channel interference, the Commission required PTC-220 to provide adjacent market E-Block licensees at least 30 days prior notice before commencing operations.⁴⁷ The Commission also required PTC-220 to promptly cure any interference that may occur to other licensees at its own expense.⁴⁸ We believe that the 30-day prior notice requirement coupled with our adoption of a 38 dBu field strength limit below will help ensure that co-channel licensees suffer no harmful interference from PTC base station operations in the 221-222 MHz band segment pursuant to waiver of Section 90.729(b)'s power and antenna height limits.

20. *Field Strength Limit Condition.* Section 90.771(a) of the Commission's rules prohibits a

⁴⁰ *Id.*

⁴¹ 47 C.F.R. § 1.925(b)(3)(ii).

⁴² 47 C.F.R. § 90.729(a). When a station in the lower band exceeds 150 meters HAAT, it must reduce its ERP correspondingly.

⁴³ Waiver Request at 12.

⁴⁴ *Id.*

⁴⁵ The three licenses included call signs WPOI774 (Memphis, TN-AR-MS-KY), WPOI800 (St. Louis, MO-IL), and WPVL860 (Los Angeles-Riverside-Orange County, CA-AZ). PTC-220 subsequently acquired three more E-Block licenses and the Commission extended the 2009 waiver relief to these licenses: WPOJ279 (Rochester, MN-IA-WI), WPOJ280 (Minneapolis-St. Paul, MN-WI-IA), WPOJ281 (San Francisco-Oakland-San Jose, CA).

⁴⁶ *PTC-220 2009 Waiver Order* at 8545 ¶19.

⁴⁷ *Id.*

⁴⁸ *Id.*

licensee's transmissions from base station frequencies (220-221 MHz) in the 220 MHz band from exceeding a predicted 38 dBu field strength at the license area's border, unless all affected co-channel licensees agree to a higher field strength.⁴⁹ The Commission adopted this field strength limit to protect co-channel licensees from harmful interference.⁵⁰ As a condition of today's waiver relief, we will require PTC-220 to meet a 38 dBu field strength limit at the license area's border of its six E Block licenses for operations under the waiver in the 221-222 MHz band segment.⁵¹ This condition will help protect adjacent market co-channel users from harmful interference that might otherwise arise from PTC base station operations at increased power or height under the waiver. We emphasize that should a co-channel licensee suffer harmful interference despite PTC-220's compliance with a 38dBu field strength limit, PTC-220 must promptly resolve such interference.

21. *Adjacent Channel Interference.* We agree with PTC-220 that the steep emission mask that the Commission adopted for the narrow 5 kHz channels in the 220 MHz band will mitigate the risk of interference to adjacent channel licensees.⁵² PTC-220 states that under Section 90.210(f) of the Commission's rules—which requires transmissions in the 220 MHz band to comply with emission mask F⁵³—PTC transmitter emissions must be below -25 dBm at the center of an adjacent 5 kHz channel (that is, 2.5 kHz removed from the edge of a 25 kHz channel that PTC-220's members and other railroads will use to implement PTC).⁵⁴ PTC-220 further notes that radios under development will have emission levels closer to -35 dBm at the center of an adjacent 5 kHz channel, making the risk of interference even remoter.⁵⁵

1. Geographic and Spectral Separation Conditions

22. We adopt frequency and geographic spacing requirements to reduce the possibility that PTC base station operations under the waiver could cause interference to adjacent channel licensees. PTC-220 suggests that we adopt frequency and geographic spacing requirements similar to those that the Commission adopted to protect certain base or fixed station receivers in Sub-band A (221.0025-221.1975 MHz) from spectrally proximate base station transmitters in Sub-band B (220.8025-220.9975 MHz) of the 220 MHz band.⁵⁶ The Commission adopted these protections, which are enumerated in Section 90.723(d) of the Commission's rules,⁵⁷ because there is no guard band between the base and mobile segments of the 220 MHz Band.

23. Section 90.723(d) establishes geographic separation requirements of up to six kilometers,

⁴⁹ 47 C.F.R. § 90.771(a).

⁵⁰ Amendment of Part 90 of the Commission's Rules To Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Services, PR Docket No. 89-552, *Third Report and Order*, 12 FCC Rcd 10943, 11030-31 ¶182 (1997).

⁵¹ The predicted 38 dBu field strength is calculated using the F(50,50) field strength chart for Channels 7–13 in Section 73.699 of the Commission's rules (Fig. 10), with a 9 dB correction factor for antenna height differential. See 47 C.F.R. § 90.771(a).

⁵² Waiver Request at 13.

⁵³ 47 C.F.R. § 90.210(f).

⁵⁴ Waiver Request at 13. Amtrak and the commuter rails serving the Northeast Corridor (NEC) are implementing a PTC technology using 12.5 kHz channels. Outside the NEC, Amtrak and commuter rails generally are implementing a PTC technology using 25 kHz channels. The freight rails are implementing a 25 kHz PTC technology nationwide.

⁵⁵ Waiver Request at 13.

⁵⁶ *Id.* at 14.

⁵⁷ 47 C.F.R. § 90.723(d).

which vary depending on radiated power, to mitigate potential interference.⁵⁸ The rule requires a minimum separation of 0.3 kilometers between Phase I base stations transmitting on Sub-band B channels and base stations receiving on Sub-band A channels if the transmitting channel is within 200 kHz of the receive channel.⁵⁹ The rule establishes a graduated power scale (from 5 to 200 watts ERP) based on separation distance.⁶⁰ For stations within 0.3 to 0.5 kilometers of each other, a base station transmitting on Sub-band B is limited to 5 watts ERP. As station separation increases, permitted power increases. If stations are within 2 to 4 kilometers of each other, a base station transmitting on Sub-band B may operate at up to 50 watts ERP. If the stations are within 5 to 6 kilometers of each other, a base station transmitting on Sub-band B may operate at up to 200 watts ERP.

24. Because there will be no guard band between PTC transmitters and other licensees' receivers in the upper 221-222 MHz band segment, we believe that requiring PTC-220 to comply with analogous safeguards will mitigate the possibility that PTC base station operations under the waiver could cause interference to adjacent channel licensees. We also note that due to their close spectral adjacency (within 25 kHz) to the mobile band segment, "[b]ase station and fixed station transmissions on base station transmit Channels 196–200 are limited to 2 watts ERP and a maximum antenna HAAT of 6.1 meters (20 ft)" under Section 90.729(c) of the Commission's rules.⁶¹

25. Based on the record before us and consistent with Sections 90.723(d) and 90.729(c), we will require PTC-220 to comply with the following geographic and spectral separation requirements, and related power limits:

- PTC-220 must obtain the concurrence of a licensee to site a PTC transmitter within 25 kHz and between 0.3 and 6 kilometers of a non-nationwide Phase I receiver, and must comply with the geographic separation/graduated ERP limits of Section 90.723(d).
- PTC-220 must comply with the geographic separation/graduated ERP limits of Section 90.723(d) to site a PTC transmitter within 25-200 kHz and between 0.3 and 6 kilometers of a non-nationwide Phase I receiver.
- PTC-220 must obtain the concurrence of a licensee to site a PTC transmitter within 25 kHz and between 0.3 and 6 kilometers of an existing nationwide Phase I or Phase II receiver, and must comply with the geographic separation/graduated ERP limits of Section 90.723(d).
- PTC-220 must comply with the geographic separation/graduated ERP limits of Section 90.723(d) to site a PTC transmitter within 25-200 kHz and between 0.3 and 6 kilometers of an existing nationwide Phase I or Phase II receiver.

26. The protections we adopt above are similar to the protections that the Commission adopted to protect Sub Band A licensees under rule 90.723(d), and are intended to provide the necessary separation between base station receivers in the 221-222 MHz band segment and the base station transmitters that PTC-220 proposes to operate in the same band segment.

27. As noted above, we are requiring PTC-220 to obtain the concurrence of a licensee to site a PTC transmitter within 25 kHz and between 0.3 and 6 kilometers of a receiver. We believe that

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.*

⁶¹ 47 C.F.R. § 90.729(c). The rule allows "[l]icensees authorized on these channels [to] operate at power levels above 2 watts ERP or with a maximum antenna HAAT greater than 6.1 meters (20 ft)" provided (1) "[t]hey obtain the concurrence of all Phase I and Phase II licensees with base stations or fixed stations receiving on base station receive Channels 1–40 and located within 6 km of their base station or fixed station" and (2) "[t]heir base station or fixed station is not located in the United States/Mexico or United States/Canada border areas." *Id.*

additional measures are appropriate to mitigate the potential for interference to receivers within 25 kHz and between 6 and 10 kilometers of a proposed PTC transmitter. The signal from PTC-220's adjacent channel operations under the waiver could increase the noise floor and thereby decrease the signal to noise (S/N) ratio at licensees' receivers beyond 6 kilometers, potentially impacting receiver performance. We will require PTC-220 to limit any increase in the noise floor to ensure the performance of existing nationwide Phase I and Phase II receivers within 25 kHz and between 6 and 10 kilometers of a proposed PTC transmitter as follows:

- PTC-220 must provide a licensee an engineering study showing that degradation of the noise floor from the proposed PTC transmitter at a potential victim site will be 2dB or less.⁶²
- If the degradation in the noise floor is greater than 2dB, PTC-220 may not operate the proposed PTC transmitter unless it receives concurrence from the affected licensee.
- If a licensee believes it would suffer interference, despite PTC-220 meeting the 2dB requirement, PTC-220 must coordinate further.

28. For new nationwide Phase I and Phase II receivers, we expect PTC-220 and affected 220 MHz Band licensees to coordinate their operations.

2. Prior Notification Condition

29. We must ensure that 220 MHz Band licensees have sufficient time to consider PTC-220's proposed waiver-enabled transmitter operations. Accordingly, before operating a waiver-enabled transmitter or operating an existing waiver-enabled transmitter with increased height or power, PTC-220 must notify all 220 MHz Band licensees within 200 kHz and 20 kilometers of a proposed transmitter. The notice must:

- specify the proposed transmitter's operating parameters, including site location, frequencies, antenna height, and power;
- include a point of contact, its address, email address, and phone number, to address any concerns regarding potential interference: and
- be concurrently transmitted by mail and email to the licensee, to the licensee contact and, if different, to the licensee's FCC Registration Number (FRN) contact.

30. PTC-220 may begin operating a waiver-enabled transmitter 30 days after the date it transmits the required notice, unless a recipient seeks further information to address concerns regarding potential interference. We agree with PTC-220 that to address time-sensitive situations, it should be allowed to begin operating a transmitter before 30 days have passed, provided it obtains the affirmative concurrence of all notice recipients that they consent to operation of a transmitter before 30 days have passed.⁶³

31. *Metrolink PTC Deployment.* PTC-220 asks that we allow it to use a one-time, 15-day notification period to deploy four waiver-enabled transmitters in the Los Angeles area.⁶⁴ PTC-220 states that these four transmitters are necessary to enable Metrolink⁶⁵ to deploy PTC in interoperable revenue

⁶² Waiver Request at 15.

⁶³ Letter dated March 9, 2015 from Michele C. Farquhar, counsel to PTC-220, to Marlene H. Dortch, Secretary FCC at 2 (PTC-220 March 9, 2015 Letter).

⁶⁴ *Id.* at 1.

⁶⁵ Metrolink is operated by the Southern California Regional Rail Authority (SCRRA) and serves Los Angeles, Orange, Riverside, San Bernardino, Ventura, and North San Diego counties. See http://www.metrolinktrains.com/agency/page/title/member_agencies, website last visited March 12, 2015.

service (with passengers onboard a train).⁶⁶ It states that personnel from Metrolink, the North County Transit District (NCTD),⁶⁷ and two freight railroads have coordinated their schedules and are prepared to implement interoperable PTC the week of March 23, 2015.⁶⁸

32. In light of the unique and limited circumstances of Metrolink's PTC revenue-service implementation, we will allow PTC-220 to provide 15 days' prior notice of the proposed deployment.⁶⁹ PTC-220 must comply with the notification requirements adopted above, and also transmit the required notice by certified mail, return receipt or by overnight delivery. PTC-220 may begin operating a waiver-enabled transmitter upon affirmative concurrence of all notice recipients that they consent to operation of a transmitter before 15 days have passed. If PTC-220 is unable to obtain concurrence, it may begin operating a transmitter 15 days after receiving oral or written confirmation (for example, a signature on a return receipt) that the notice was received, unless a recipient seeks further information to address concerns regarding potential interference.

33. *Special Temporary Authority Procedure.* PTC-220 states that there may be circumstances where a railroad urgently needs to deploy a waiver-enabled transmitter to address a specific safety or network reliability concern.⁷⁰ We agree that exigent circumstances could arise where the public interest in rail safety would be served by immediate deployment of a waiver-enabled transmitter. In extraordinary circumstances (for example, where PTC service has been interrupted and prompt restoration requires deployment of a waiver-enabled transmitter), PTC-220 may request special temporary authority (STA) to begin waiver-enabled operations without 30 days prior notice.⁷¹ We remind PTC-220 that requests for special temporary authority must include "complete details about the proposed operations and the circumstances that fully justify and necessitate the grant of STA."⁷² We expect that when requesting STA to deploy a waiver-enabled transmitter, PTC-220 will provide confirmation that it is concurrently transmitting the STA request to all 220 MHz Band licensees within 200 kHz and 20 kilometers of a proposed transmitter. Staff will promptly consider requests for STA.

B. Conditional Waiver of Section 90.723(f)'s Coordination Requirement

34. PTC-220 requests a waiver of Section 90.723(f) of the Commission's rules,⁷³ which requires Phase II licensees with base or fixed stations transmitting on frequencies in Sub-band B (220.8025-220.9975 MHz) of the 220-221 MHz band segment and Phase II licensees with base or fixed stations receiving on Sub-band A (221.0025-221.1975 MHz) of the 221-222 MHz band segment to coordinate the location of stations to avoid interference where the transmitting and receiving frequencies are 200 kHz or less apart.⁷⁴ The Commission adopted this general coordination requirement "to ensure

⁶⁶ See PTC-220 March 3, 2015 at 1-2.

⁶⁷ NCTD provides commuter rail service in San Diego County. See <http://www.gonctd.com/>, website last visited March 12, 2015.

⁶⁸ PTC-220 March 9, 2015 at 1.

⁶⁹ *Id.* at 1.

⁷⁰ PTC-220 March 3, 2015 Letter at 1.

⁷¹ PTC-220 March 9, 2015 Letter at 2.

⁷² 47 C.F.R. § 1.931(a). STA requests should be received by the Commission at least 10 days prior to the date of the proposed operation; requests received less than 10 days prior to the date of proposed operation may be given expedited consideration if compelling reasons are given. *Id.*

⁷³ Waiver Request at 9-10, 15-17.

⁷⁴ 47 C.F.R. § 90.723(f). The rule provides in full "Phase II licensees with base or fixed stations transmitting on 220–221 MHz frequencies assigned from Sub-band B and Phase II licensees with base or fixed stations receiving on Sub-band A 221–222 MHz frequencies, if such transmitting and receiving frequencies are 200 kHz or less removed

(continued...)

that appropriate geographic separations are maintained” among licensees deploying in sub-bands A and B.⁷⁵

35. PTC-220 states that a waiver of Section 90.723(f)’s coordination requirement is necessary to avoid the extended deployment delays that could occur if PTC-220 is required to enter into coordination discussions with potentially hundreds of Phase II licensees across the country.⁷⁶ PTC-220 also states that it has experienced difficulties locating and engaging representatives of incumbent licensees with decision-making authority in the coordination process.⁷⁷

36. Above, we require PTC-220 to adhere to specific geographic and spectral spacing requirements as a condition of deploying waiver-enabled transmitters in the 221-222 MHz band segment. We agree with PTC-220 that our adoption of these spacing requirements should generally obviate the need for PTC-220 to coordinate the location of base stations pursuant to Section 90.723(f).⁷⁸ We also agree with the Joint Council that PTC-220’s request would not undermine Section 90.723(f)’s underlying purpose to protect licensees from co- and adjacent channel interference.⁷⁹ Nevertheless, we must preserve the rights of potentially affected licensees and will require PTC-220 to provide at least 30 days prior written notice of a planned waiver-enabled PTC transmitter to Phase II licensees, within 200 kHz and 20 kilometers of a proposed PTC transmitter, that would otherwise be covered by Section 90.723(f)’s coordination requirements. The notice must be delivered by the means and include the information specified above.⁸⁰

37. *Compliance with Section 90.173(b).* Section 90.723(f) requires licensees to cooperate to resolve any instances of interference pursuant to Section 90.173(b) of the Commission’s rules. We find it in the public interest to apply Section 90.723(f)’s requirement to comply with Section 90.173(b). We remind PTC-220 that under Section 90.173(b), it must “cooperate in the selection and use of frequencies in order to reduce interference and make the most effective use of the authorized facilities.”⁸¹ The rule provides “[l]icensees of stations suffering or causing harmful interference are expected to cooperate and resolve this problem by mutually satisfactory arrangements.”⁸² Where licensees are unable to cooperatively resolve interference concerns, “the Commission may impose restrictions including specifying the transmitter power, antenna height, or area or hours of operation of the stations concerned.”⁸³

38. *Interference Remediation Condition.* We note that consistent with the requirements of Section 90.173(b), PTC-220 has committed to take measures necessary to prevent or correct interference to co- and adjacent channel receivers that might arise from PTC operations in the 221-222 MHz band

(...continued from previous page)

from one another, will be required to coordinate the location of their base stations or fixed stations to avoid interference and to cooperate to resolve any instances of interference in accordance with the provisions of § 90.173(b).” *Id.*

⁷⁵ 220 MHz MO&O, 13 FCC Rcd at 14617 ¶100.

⁷⁶ Waiver Request at 9.

⁷⁷ *Id.*

⁷⁸ *Id.* at 15-16.

⁷⁹ Joint Council Comments at 4.

⁸⁰ *See supra* discussion at para. 29.

⁸¹ 47 C.F.R. § 90.173(b).

⁸² *Id.*

⁸³ *Id.*

segment under the waiver.⁸⁴ In this regard, PTC-220 notes that its member railroads have “decades of experience designing, deploying, and maintaining large scale radio networks,” and that [t]hey routinely design systems to avoid and eliminate interference” should it occur.⁸⁵ We acknowledge this expertise and will require PTC-220 to promptly remedy, at its own expense, any interference to other licensees’ operations should it occur.

39. Subject to the prior notification and interference remediation conditions we adopt above and compliance with Section 90.173(b) of the Commission’s rules, we find that the purpose of Section 90.723(f)—to ensure appropriate geographic spacing of certain Phase II facilities to mitigate the potential for interference—will not be served by its strict application to the instant case. We further find that a grant of the requested waiver will serve the public interest in the timely deployment of PTC rail safety systems. We therefore grant the requested waiver as conditioned above.

C. Coordination Procedures

40. Although we are granting a conditional waiver of Section 90.723(f)’s coordination requirements, PTC-220 states that coordination may be required where another licensee seeks to deploy a new station to receive in the 221-222 MHz band segment near an existing or planned PTC-220 transmitter operating under waiver of Section 90.729(b)’s power and antenna height limits.⁸⁶ PTC-220 notes that the Commission’s Part 90 rules do not include detailed coordination procedures to ensure that affected parties cooperate and timely engage in coordination.⁸⁷

41. We find that the public interest in efficient spectrum use and timely deployments in the 220 MHz Band would be served by our providing general guidance regarding possible coordination discussions. Foremost, the coordination process should enable other licensees to deploy in the 220 MHz band under the Commission’s existing rules without suffering harmful interference, while affording PTC-220 a reasonable period to modify its network, where necessary, to avoid a sudden disruption of PTC operations. Where a licensee seeks to site a new receive station in the 221-222 MHz band segment near a waiver-enabled PTC-220 transmitter, PTC-220 must engage in the collaborative process contemplated by Section 90.173. We expect that in the spirit of Section 90.173(b), PTC-220 would expeditiously work with licensees, and would if necessary adjust the operating parameters of a PTC base station. If a licensee finds its coordination discussions with PTC-220 are unsatisfactory, it may seek Commission assistance to facilitate such discussions pursuant to Section 90.173(b).

D. BEC and DEMCO Comments

42. Two parties—BEC and DEMCO, electric cooperatives that serve rural areas of South Carolina and Louisiana, respectively—oppose PTC-220’s Waiver Request. While BEC and DEMCO assert that grant of the Waiver Request could undermine interference protection rules designed to protect incumbent 220 MHz Band users,⁸⁸ they fail to explain how grant of the requested relief would impact their 220 MHz Band operations.⁸⁹ We also disagree with BEC and DEMCO’s blanket assertion that

⁸⁴ Waiver Request at 17.

⁸⁵ *Id.*

⁸⁶ *Id.* at 16-17.

⁸⁷ Letter dated October 17, 2014, from Michele C. Farquhar, counsel to PTC-220, to Marlene H. Dortch, Secretary FCC at 1.

⁸⁸ BEC/DEMCO *Ex parte* Comments at 4-5.

⁸⁹ BEC and DEMCO also oppose granting relief by waiver and argue that we should proceed by rulemaking instead. *Id.* at 4. The Commission has broad discretion in deciding whether to address PTC-220’s specific request for relief by the waiver process. *SEC v. Chenery Corp.*, 332 U.S. 194, 232 (1947).

deployment of waiver-enabled PTC transmitters will harm existing 220 MHz Band stations or limit future expansion by incumbent licensees.⁹⁰

43. We have adopted specific conditions to ensure that co- and adjacent channel licensees do not suffer interference. And no action we take today limits the ability of licensees to deploy in the 220 MHz Band under the Commission's existing rules. In addition to providing 30 days prior written notice to licensees of its intent to site a waiver-enabled transmitter, PTC-220 must meet a predicted 38 dBu field strength at a license area's border, and adhere to bright-line frequency and geographic spacing requirements. We reiterate that should interference occur despite these and other safeguards adopted above, PTC-220 must promptly remedy such interference at its own expense.

44. BEC states that the frequency coordination required by Section 90.723(f) of the Commission's rules "means BEC will have protection and advanced warning of nearby users on the 220 MHz channels."⁹¹ As noted above, we are requiring PTC-220 to provide a 30-day advance written notification of planned operations to licensees, which would otherwise be covered by the coordination requirements of Section 90.723(f).⁹² PTC-220 moreover has committed to contact BEC and DEMCO at least 30 days in advance of any operations under the waiver within their service territories, whether or not covered by Section 90.723(f).⁹³ We find that requiring PTC-220 to meet such a commitment will ensure that BEC and DEMCO have ample notice of any proposed PTC deployments in their areas of operation.

IV. CONCLUSION

45. For the reasons stated above, we find good cause to grant PTC-220 a conditional waiver of Section 90.723(f) (coordination requirements) and Section 90.729(b) (power and antenna height limits) of the Commission's rules⁹⁴ to facilitate the deployment of PTC base stations in the upper one megahertz segment of the 220 MHz Band. We emphasize that the relief granted herein is inseparably tied to Congress' directive that certain freight, intercity passenger, and commuter railroads implement PTC safety systems and the substantial public interest benefits that will accrue from a nationwide interoperable rail safety network. Accordingly, to help ensure that we achieve the public safety objectives that PTC-220 cites as justification for the waivers, we limit the relief to PTC systems. Should PTC-220, its members, other railroads, or non-railroad third parties use PTC-220's MHz spectrum for non-PTC related purposes, they may not avail themselves of today's waiver relief for such purposes.

46. Further, we remind PTC-220 that in deploying any waiver-enabled facility, it must comply with any applicable international treaty or agreement.

V. ORDERING CLAUSES

47. Accordingly, IT IS ORDERED, pursuant to Sections 1, 4(i), 4 (j), 5(c), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 154(j), 155(c), and 303(r) , and sections 0.331, 1.3, 1.925 of the Commission's rules, 47 C.F.R. §§ 0.331, 1.3, and 1.925, that the Request for Waiver filed by PTC-220, LLC on February 1, 2013 (FCC File Nos. 0005631265, 0005631266, 0005631269, 0005631270, 0005631271, 0005631272, 0005631282, 0005631284, 0005631286, 0005631289, and 0006225216) and amended by letter dated October 24, 2014, filed in WT Docket 13-59, IS HEREBY GRANTED to the extent provided and subject to the conditions enumerated above.

48. IT IS FURTHER ORDERED, pursuant to Section 1.935 of the Commission's rules, 47

⁹⁰ BEC/DEMCO *Ex parte* Comments at 5.

⁹¹ *Id.* at 3.

⁹² *See supra* discussion at paras. 29-30.

⁹³ PTC-220 January 15, 2015 Letter at 4.

⁹⁴ 47 C.F.R. §§ 90.723(f) and 90.729(b).

C.F.R. § 1.935, that the request of the National Rural Telecommunications Cooperative to withdraw its comments and reply comments, filed April 8 and 24, 2013, respectively, IS GRANTED.

49. AND IT IS FURTHER ORDERED, pursuant to Section 1.935 of the Commission's rules, 47 C.F.R. § 1.935, that the request of Pepco Holdings Inc. to withdraw its letter, filed June 6, 2013, IS GRANTED.

FEDERAL COMMUNICATIONS COMMISSION

Roger S. Noel
Chief, Mobility Division
Wireless Telecommunications Bureau