

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
Realignment of the) RM-11738
896-901/935-940 MHz Band)
to Create a Private Enterprise)
Broadband Allocation)

To: The Commission

**COMMENTS
OF THE
ENTERPRISE WIRELESS ALLIANCE
AND
PACIFIC DATAVISION, INC.**

Respectfully submitted,

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TABLE OF CONTENTS

SUMMARY ii

I. BACKGROUND 2

II. PUBLIC NOTICE QUESTIONS 3

1) What need do B/ILT entities, particularly CII entities, have for broadband services that can be provided over a 3/3 MHz channel and cannot be met by existing broadband service providers? What functionality do these entities currently lack that could be provided pursuant to the proposed realignment? Does the need for such services exist nationwide?..... 3

2) In addition to realigning the band, what changes to the Commission’s technical rules would be required to enable the PEBB licensee to provide the contemplated broadband service? What other rule changes would be needed to prevent interference between the PEBB licensee and adjacent-channel operations? 5

3) What are the estimated costs to relocate incumbents from the broadband segment to the narrowband segment? Will the narrowband segment accommodate all relocating licensees, even in congested areas? 8

4) If the necessary changes to the technical rules are adopted to permit the contemplated broadband service, can the aggregation of spectrum to be accomplished by means other than the process proposed by Petitioners? For example, are existing secondary market rules sufficient to allow realignment that would effectively separate narrowband and broadband operations?..... 12

III. CONCLUSION 15

TABLE 116

SUMMARY

The Enterprise Wireless Alliance (“EWA”) and Pacific DataVision, Inc. (“PDV”) appreciate the Commission’s prompt action in seeking comment on the parties’ November 17, 2014 Petition for Rulemaking¹ proposing a realignment of the Part 90 900 MHz band to create a 2/2 MHz narrowband and a 3/3 MHz broadband allocation.² The realigned band would remain dedicated to the needs of private enterprise (“PE”), including critical infrastructure industry (“CII”), entities. Companies with broadband needs could negotiate deployment of build-to-suit systems to meet their coverage, reliability, security and, for CII, priority access requirements with the Private Enterprise Broadband (“PEBB”) licensee in that area if this option best suited their requirements. Licensees that wish to continue operating narrowband systems would be permitted to do so, if necessary by modifying their systems to fully comparable channels in the narrowband allocation, with all costs paid by the PEBB licensee.

The Public Notice sought comment on the Petition generally, but also requested input on four related questions. While the issues raised will require a thorough examination in the context of a Notice of Proposed Rulemaking, EWA and PDV offer the following initial responses:

- 1) The CII community has advised the FCC on numerous occasions that commercial networks do not offer the reliability, redundancy, hardening, security, priority access, and, in some instances, coverage needed for their mission-critical applications. A 3/3 MHz allocation will provide sufficient broadband functionality for the great majority of PE, including CII, entities and applications.

¹ Petition for Rulemaking of the Enterprise Wireless Alliance and Pacific DataVision, Inc., filed Nov. 17, 2014 (“Petition”).

² Wireless Telecommunications Bureau Seeks Comment on Enterprise Wireless Alliance and Pacific DataVision, Inc. Petition for Rulemaking Regarding Realignment of 900 MHz Spectrum, *Public Notice*, RM-11738, DA 14-1723 (rel. Nov. 26, 2014).

- 2) The FCC has a blueprint for the technical rules changes that would be needed for the proposed PEBB allocation. The Part 90 Subpart R rules governing 700 MHz Public Safety broadband spectrum that is immediately adjacent to a Public Safety narrowband allocation offers a useful model both with regard to power and emission limitations. Those regulations should be imported into the proposed rules for the 900 MHz PEBB spectrum.
- 3) It is premature to estimate the aggregate cost of this band realignment, since all the data needed to do so is not yet available. However, in light of PDV's extensive spectrum holdings in most major markets and the fact that only channels in the 3/3 MHz PEBB allocation are impacted, it is evident that the number of systems that will be affected is relatively small by comparison with the 800 MHz rebanding process. Although some of those systems are large and complex such that their realignment will require careful planning and implementation, the majority of 900 MHz systems are small with five or fewer repeaters. Moreover, there are no public safety licensees at 900 MHz, and no repeaters or subscriber units will need to be replaced.

PDV and EWA believe there will be sufficient capacity to implement realignment on a nationwide basis and have undertaken a site-by-site, frequency-by-frequency analysis of the most challenging markets to validate that assessment. A critical element is the fact that incumbent site-based systems, for the most part, will be relocated to spectrum that is available on a geographic basis, which will allow for optimal spectrum utilization while still providing comparable facilities.
- 4) The secondary market rules are not sufficient to support the band realignment proposed in the Petition. As in other instances when the Commission has determined that the

public interest would be served by rule changes that result in the deployment of more advanced technologies and more intensive use of spectrum, there must be a mechanism that prevents a single recalcitrant incumbent from defeating that objective.

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To: Chief, Wireless Telecommunications Bureau

**COMMENTS
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ENTERPRISE WIRELESS ALLIANCE
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The Enterprise Wireless Alliance (“EWA”) and Pacific DataVision, Inc. (“PDV”) (collectively, the “Parties” or “Petitioners”), pursuant to Federal Communications Commission (“FCC” or “Commission”) Rule Section 1.415, respectfully submit the following Comments in response to the Public Notice (“Public Notice”)³ issued by the Wireless Telecommunications Bureau (“WTB” or “Bureau”) seeking comment on the Parties’ above-identified Petition for Rulemaking regarding realignment of Part 90 900 MHz spectrum.⁴ The Petitioners greatly appreciate the FCC’s prompt action in soliciting input on the Petition. The importance of broadband in meeting the communications needs of private enterprise (“PE”) entities, in particular those classified as critical infrastructure industry (“CII”), continues to escalate. The realignment

³ Wireless Telecommunications Bureau Seeks Comment on Enterprise Wireless Alliance and Pacific DataVision, Inc. Petition for Rulemaking Regarding Realignment of 900 MHz Spectrum, *Public Notice*, RM-11738, DA 14-1723 (rel. Nov. 26, 2014).

⁴ Petition for Rulemaking of the Enterprise Wireless Alliance and Pacific DataVision, Inc., filed Nov. 17, 2014 (“Petition”).

proposed in the Petition represents a meaningful option for addressing those needs by allowing CII and other PE entities to negotiate deployment of build-to-suit broadband systems that meet their demanding coverage, reliability, security and, for CII, priority access requirements.

The proposal is fully consistent with the Commission's own assessment of how best to address CII spectrum requirements:

Energy, water and railroad interests are critical to the nation's infrastructure and rely on radio spectrum to perform core operations, ranging from routine monitoring to emergency responses. These interests have raised concerns about their ability to access and use spectrum due to congestion and interference. The designated industries are encouraged to continue to migrate to more efficient technologies and to make use of available commercial spectrum services where practicable....They are also encouraged to utilize new methods of sharing and licensing to meet their needs, to ensure that efficient and effective use of spectrum is achieved.⁵

CII and other PE entities do utilize commercial systems when practicable, but, as recognized by the FCC, other communications solutions are needed as well. The realignment proposed by the Parties will permit a 30-year old Business/Industrial/Land Transportation ("B/ILT") allocation to support more advanced and more intensive spectrum utilization by CII and PE entities while allowing 900 MHz B/ILT licensees with narrowband needs to continue operating as they have during those 30 years.

I. BACKGROUND

As described in the Public Notice, the Petition proposes to realign this band to create a 3/3 MHz broadband allocation while retaining 2/2 MHz for narrowband operations.⁶ The Private Enterprise Broadband ("PEBB") license in each Major Trading Area ("MTA") would be assigned to the licensee that currently holds at least fifteen (15) of the twenty (20) Specialized Mobile Radio

⁵ FCC Staff Report on NTIA's Study of Current and Future Spectrum Use by the Energy, Water and Railroad Industries, submitted pursuant to Pub. L. No. 106-553 at 25 (July 30, 2002).

⁶ The Petition proposed a narrowband 2/2 MHz segment at 896-98/935-37 MHz with the 3/3 MHz broadband segment at 898-901/937-940 MHz. As addressed below, after discussion with entities operating within and adjacent to this 900 MHz allocation, the Parties are evaluating whether a slightly modified band plan might be preferable.

(“SMR”) MTA authorizations in that area.⁷ The PEBB licensee would be responsible for funding the relocation of narrowband licensees in the 3/3 MHz broadband segment to fully comparable facilities in the 2/2 MHz narrowband portion of the band. Further, the PEBB licensee would be obligated to enter into good faith negotiations with PE and CII entities to offer build-to-suit broadband capability, including mandatory priority access for CII entities.

II. PUBLIC NOTICE QUESTIONS

In addition to seeking comment on the Petition itself, the Public Notice also requests that interested parties address certain related questions. The Bureau’s questions highlight important issues that will need to be investigated thoroughly in the more detailed context of the rulemaking proceeding itself, but the Parties are pleased to offer the following initial responses.

- 1) What need do B/ILT entities, particularly CII entities, have for broadband services that can be provided over a 3/3 MHz channel and cannot be met by existing broadband service providers? What functionality do these entities currently lack that could be provided pursuant to the proposed realignment? Does the need for such services exist nationwide?**

This question raises two related, but distinct, issues. The first is whether B/ILT/CII broadband needs can be satisfied on commercial networks. If the answer to that query is no, the Public Notice asks whether those unsatisfied needs can be served in a 3/3 MHz broadband allocation.

The CII community has advised the FCC on multiple occasions that commercial broadband systems, while well-suited for certain non-critical functions, do not meet all CII requirements and cannot be expected to do so in the future.⁸ As detailed in the Petition, commercial broadband networks – understandably – are designed around the needs of the

⁷ The Petition also addressed the PEBB license award process in the small number of MTAs in which no SMR licensee holds at least fifteen authorizations.

⁸ See Petition n. 19-22.

broad consumer market. They focus on providing coverage in areas of highest population density, not necessarily the geography required for PE or CII operations, and are not built to PE, and certainly not to CII, specifications in terms of reliability, redundancy, hardening, security, or guaranteed priority access. It simply is not economically practical for either a commercial operator or a CII entity to underwrite the increased cost that would be incurred to meet those exacting demands throughout a commercial network.

At present, without a dedicated broadband allocation, utilities, petroleum companies and other businesses providing critical services to the American public largely are relegated to shared spectrum at 3.65 GHz and entirely unlicensed spectrum for broadband operations beyond those that can be provided on commercial networks. As addressed in the Petition and in comments from the CII community,⁹ it is not in the public interest that these vital services rely on shared – or, even less reliable, unlicensed – frequencies with no protection from interference, no priority access, and the unavoidable reality that this spectrum will become increasingly congested even in lightly populated areas. This is why the CII industry repeatedly has sought a “greenfield” broadband allocation for its exclusive use and why the Petitioners, seeing no probability that such spectrum is forthcoming in the foreseeable future, recommend the realignment of a long-standing, dedicated PE/CII allocation to address these highly particularized needs.

With regard to PE/CII broadband capacity requirements, the answer, of course, is dependent on specific factual situations, but a 3/3 MHz allocation can be expected to accommodate the types of broadband applications these users are likely to deploy. The attached Table 1 offers a high-level overview of the bandwidth required to handle various

⁹ *Id.*

types of broadband functionality. It was developed specifically with reference to CII entities.¹⁰ As with virtually all telecommunications, more bandwidth offers enhanced capacity, but addressing the needs of the PE/CII community is far different than needing capacity to serve the consumer market with its seemingly insatiable thirst for video and other streaming data downloads. A 3/3 MHz allocation will offer ample bandwidth in the great majority of situations and, importantly, is 6 MHz of dedicated broadband capacity with priority access to which these users do not have access today.

The Petitioners believe, over time, that the demand will reach nationwide proportions but in a manner very different than the traditional commercial wireless system that invariably deploys first in major markets and only gradually expands outward following major freeways. That model is one of the factors that make such networks unusable for the many CII and other PE entities with coverage requirements outside densely populated areas, oftentimes in remote regions. The build-to-suit approach proposed in the Petition means that usage will be driven by identified PE/CII requirements that, literally, could be anywhere in the nation. It is expected that urban entities will turn to this broadband option for its reliability, security, and, most important, priority access features, while coverage will be an equally essential factor for those outside the service areas of commercial networks.

- 2) In addition to realigning the band, what changes to the Commission's technical rules would be required to enable the PEBB licensee to provide the contemplated broadband service? What other rule changes would be needed to prevent interference between the PEBB licensee and adjacent-channel operations?**

¹⁰ Kenneth C. Budka & Jayant G. Deshpande & Marina Thottan, *Communication Networks for Smart Grids: Making Smart Grid Real* (Computer Communications and Networks), 183, (A.J. Sammes ed., Springer-Verlag London, 2014).

The extensive technical work done already by the FCC in introducing broadband technology into bands adjacent to those supporting narrowband operations offers a solid foundation for the rule changes needed for the proposed PEBB allocation.¹¹ The Part 90 Subpart R rules governing the 700 MHz public safety broadband and narrowband segments are instructive. Many of those provisions track those in Part 27, in particular the Part 27, Subpart C technical regulations, and can be imported into the rules governing the PEBB allocation.

The two primary areas that will need to be addressed are power limits and emission standards. The Petitioners recommend that the provisions governing power limits (EIRP/ERP) for base, mobiles and portable stations mirror the Part 90, Subpart R rules,¹² which themselves are consistent with the power levels authorized for equipment operating on 700 MHz commercial systems. Maintaining these same levels will enable PE/CII users to harness the tremendous economies of scale that flow from a multi-billion unit LTE ecosystem. These power limits are lower than those applicable to narrowband 900 MHz systems and will help ensure that operations on PEBB spectrum remain compatible with adjacent narrowband operations.

The second critical technical element is the emission restriction on broadband systems. LTE technology comes with an internal guardband of 150 kHz that is the first level of interference protection between broadband and adjacent narrowband operations. The Petitioners also recommend that the attenuation requirements applicable to Part 90 Subpart R be applied to the PEBB allocation as well since, in both cases, the emission rules

¹¹ See, e.g., Inquiry Concerning the Deployment of Advanced Telecommunications Capability, GN Docket No. 14-126, *Tenth Broadband Progress Notice of Inquiry*, 29 FCC Rcd 9747 (2014).

¹² 47 C.F.R. § 90.542.

will govern broadband spectrum that is immediately adjacent to a narrowband allocation. Because of this adjacency, the Part 90 Subpart R rules are somewhat more restrictive than the emission standards for 700 MHz commercial allocations.

Additionally, however, as noted above, the Petitioners have received useful input from 900 MHz incumbents and from utilities that have deployed sensing devices manufactured by Sensus USA Inc. (“Sensus”) on the immediately adjacent narrowband PCS (“NPCS”) spectrum at 901-902/940-941 MHz. Because those devices may prove less able to reject emissions from adjacent band operations, the Parties are considering whether the PEBB allocation should be shifted down somewhat, leaving a small narrowband segment between the PEBB and the NPCS allocations. Discussions with Sensus and certain of its customers are ongoing, and the parties are exploring joint testing to examine this issue more closely.

Consistent with the FCC’s long-standing policy, the Parties recognize that the PEBB licensee would be considered the “newcomer” with full responsibility for rectifying interference caused to existing, authorized services.¹³ However, they do not intend to rely on prophylactic measures. They will work proactively with Sensus and others to ensure that any potential interference is eliminated in advance, not rectified after the fact, and will keep the FCC apprised of their efforts in this area.

Shifting the PEBB allocation down would have the additional advantage of creating two narrowband segments separated by a 3 MHz broadband segment. While the Parties are confident that all narrowband systems could be redeployed in a single contiguous 2/2

¹³ See, e.g., *Sudbrink Broadcasting of Georgia, Inc.*, 65 FCC 2d 691 (1977); see also *Jack Straw Memorial Foundation*, 24 FCC 2d 397, *recon. denied*, 37 FCC 2d 544 (1972) and *Broadcast Corp. of Georgia*, 92 FCC 2d 910 (1982).

MHz allocation without compromising their coverage or other operational characteristics, this modified band plan will better enable the duplication of intra-system channel separation in incumbent narrowband systems during the channel replacement process. Some 900 MHz incumbents have indicated that such a band plan might address a concern that reduced separation between frequencies in a contiguous 2/2 MHz narrowband allocation could require the PEBB licensee to fund additional sites to compensate for reduced coverage due to combiner losses. Although the Petitioners believe that careful selection of replacement frequencies will address most, perhaps all, such situations, they also acknowledge unequivocally that any coverage loss would trigger an obligation on the part of the PEBB licensee to satisfy the comparable facilities standard. To the extent that a modified band plan further minimizes the likelihood that this will be an issue for incumbents, this alternative is being given serious consideration.

3) What are the estimated costs to relocate incumbents from the broadband segment to the narrowband segment? Will the narrowband segment accommodate all relocating licensees, even in congested areas?

It is not possible at this point to estimate an aggregate cost of relocating incumbents to the narrowband segment or segments. However, the relatively small number of systems that will need to be touched by comparison with similar rebanding projects at 800 MHz and the cost information developed during those earlier projects provide useful guidance.

The cost for realigning this and any other band is dependent on the number and complexity of systems that must be relocated. In this instance, PDV itself holds, on average, sixty percent (60%) of all 900 MHz spectrum in the top twenty (20) markets, the areas in which most 900 MHz systems are located. The remaining forty percent (40%) of the spectrum is held by other licensees or is not licensed at all, but only those operating in

the 3/3 MHz PEBB allocation will need to be relocated. Some of the facilities that will be relocated are large, complex systems operated by utilities, energy companies, transportation providers, and other users whose relocations will require careful planning and implementation to ensure minimal disruption of their operations and comparable facilities post-realignment. Even then, however, because there are no public safety licensees in this band, the interoperability inter-dependencies that have greatly complicated and added both cost and time to the ongoing 800 MHz rebanding process are rare in the 900 MHz band.

Importantly, although the Petitioners do not underestimate the number of systems whose realignment will be challenging, the far greater number of 900 MHz licensees are authorized for relatively small systems with only one or perhaps two sites and five or fewer repeaters. The Petitioners' preliminary investigation suggests that some percentage of those systems perhaps were never constructed or were abandoned in the intervening decades as users migrated to other communications solutions. Thus, although ULS research indicates that there are approximately 7,000 permanent, fixed repeaters that could need to be realigned from the currently proposed 3/3 MHz PEBB allocation above 937 MHz, until it can be determined how many of those systems remain operational and require relocation, no meaningful aggregate cost estimate can be developed. It should be noted that these repeaters are associated with approximately 1,300 licensed call signs. By comparison, the 800 MHz Transition Administrator ("TA") reported that approximately 2,700 incumbent call signs would need to be rebanded in the 3/3 MHz General Category block (806-809/851-854 MHz) alone. That figure does not include the many large Public Safety systems that were rebanded from the old National Public Safety Planning Advisory

Committee (“NPSPAC”) spectrum (821-824/866-869 MHz) to the previously General Category block that had been cleared as the new NPSPAC spectrum.¹⁴

The total cost also will be impacted by the number of incumbents that choose a broadband solution rather than retaining their narrowband systems. Those elections still will involve cost for the PEBB licensee, but that cost will be addressed in the larger build-to-suit negotiation and may be reflected in service credits or other arrangements that will not trigger an upfront payment to the incumbent.

A further complication is the unreliability of the ULS license information regarding the number of mobiles and portables operating on systems. Even if that information was reported accurately at the outset, it is the rare licensee that modifies its authorization to reflect increases or decreases in its mobile count over the course of multiple license terms, since the number has no regulatory significance, at least for trunked systems. Based on experience in rebanding 800 MHz systems, and because no 900 MHz radios will need to be replaced, the Parties believe that a \$50 per subscriber unit realignment cost is a reasonable estimate.

Some of these same factors will impact the amount of spectrum needed to achieve realignment. Systems that are no longer operational and those that elect to convert to broadband will not require replacement frequencies. For those that will be affected, with the exception of the relatively small number of MTA licenses held by entities other than PDV, the systems to be realigned are licensed on a site- and frequency-specific basis, while much of the spectrum to which they will be moved is geographically-authorized MTA

¹⁴ See 800 MHz Transition Administrator, LLC Combined Quarterly Progress Report for the Quarter Ended June 30, 2006 and for the Quarter Ended September 30, 2006, WT Docket No. 02-55, filed Oct. 31, 2006.

spectrum. Site-based systems in the B/ILT segment of the band were coordinated and licensed for frequencies on a random basis, consistent with the FCC's co-channel separation requirements in Rule Section 90.621. The timing of application requests and the scope of the various systems did not lend themselves to more methodical frequency coordination analyses that might have maximized the re-use of frequencies within an area. In realignment, there will be an ability to derive better use of spectrum within an MTA by assigning the same frequencies to multiple incumbents, provided their areas of operation have sufficient geographic separation to permit frequency re-use while also providing comparable facilities.

While the FCC rules will define the realignment process, the Petitioners strongly recommend that replacement frequency analyses in each area address first the needs of the largest incumbents that do not elect to migrate to broadband, the so-called "long poles in the tent." Identifying suitable replacement frequencies for them, frequencies that comply with the comparable facilities standard, must be the first order of business. There will be substantial flexibility in finding optimal replacement frequencies for their use, since there are a relatively small number of such licensees in each area and, in most instances, their site-based systems will be relocated to frequencies that are available on a geographic MTA basis. Moreover, these are sophisticated companies that often have technical resources on staff. Experience suggests that projects involving replacement frequencies go more smoothly when the incumbent has in-house technical expertise that is intimately familiar with the system.

Some markets, for example Boston, Los Angeles, Miami, and Phoenix, unquestionably will be more challenging than others. The Petitioners already are working

on a detailed, site-by-site, frequency-by-frequency review of several markets to validate the replacement frequency analysis. Of necessity, this analysis will not be fully accurate, as the Petitioners have only ULS license data on which to rely in most instances, not granular data about each system, but it will provide at least an overview of how 900 MHz realignment could be accomplished. The Parties will be pleased to provide this data to the FCC and interested parties once it is completed.

The Petition states that PDV intended to engage EWA to oversee the frequency analysis aspect of 900 MHz realignment.¹⁵ When multiple parties in a band are changing frequencies essentially simultaneously, there must be a single organizing party to avoid mutually exclusive frequency assignments. This is one critical function the TA has provided in the 800 MHz rebanding process. However, the Petitioners anticipate that EWA will work closely with the CII frequency advisory committees in developing and vetting the realignment plan to ensure that the needs of their members are addressed. These organizations have worked cooperatively on numerous spectrum-related matters over many decades and can be expected to do so in this instance as well.

- 4) If the necessary changes to the technical rules are adopted to permit the contemplated broadband service, can the aggregation of spectrum to be accomplished by means other than the process proposed by Petitioners? For example, are existing secondary market rules sufficient to allow realignment that would effectively separate narrowband and broadband operations?**

The secondary market rules work well in allowing individual FCC authorizations to be purchased or leased by parties that value them most highly, but they are not sufficient to support a band realignment such as that proposed in the Petition. As in other instances when the Commission has determined that the public interest warrants repurposing a band,

¹⁵ Petition at 18.

there must be a mechanism that prevents a single recalcitrant incumbent from defeating that objective.

There are numerous examples of mandatory relocation provisions under these circumstances. When the FCC concluded that licensing 800 MHz SMR spectrum in contiguous blocks was warranted because it “permits use of spread spectrum and other broadband technologies that are available to other CMRS providers but unavailable to systems operating on non-contiguous blocks,”¹⁶ it also adopted mandatory relocation rules. The FCC found that “voluntary negotiations in and of themselves will not be adequate to usher in the wide-area licensing approach we are implementing....”¹⁷ In reaching that conclusion, the Commission pointed to its experience with rules authorizing broadband PCS.¹⁸ The FCC included the same mandatory provision when it adopted rules transitioning to geographic licensing for 900 MHz SMR systems.¹⁹

A similar approach was used in the 2495-2690 MHz band when the FCC adopted rules to “facilitate the development of wireless broadband systems in this band that could offer consumers another choice for broadband access – competing in price and features with existing landline offerings, reaching areas not currently served by landline networks, and offering consumers portability or mobility.”²⁰ The Commission established a

¹⁶ Amendment of Part 90 of the Commission’s Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, PR Docket No. 93-144, *First Report and Order, Eighth Report and Order and Second Further Notice of Proposed Rulemaking*, 11 FCC Rcd 1596 at ¶ 9 (1995).

¹⁷ *Id.* at ¶ 73.

¹⁸ *See, e.g.*, Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET Docket No. 92-9, *First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd 6886 (1992); *Second Report and Order*, 8 FCC Rcd 6495 (1993); *Third Report and Order and Memorandum Opinion and Order*, 8 FCC Rcd 6589 (1993).

¹⁹ *See* 47 C.F.R. § 90.699.

²⁰ Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, WT Docket No. 03-66, *Order on Reconsideration and Fifth Memorandum Opinion and Order and Third memorandum Opinion and Order and Second Report and Order*, 21 FCC Rcd 5606 at ¶ 2. (2006).

transition process for the already auctioned Educational Broadband Service and Broadband Radio Service spectrum that effectively required incumbents to participate in band-clearing pursuant to rules defining transition costs and replacement spectrum comparability, among other matters. Completion of the transition process was subject to a deadline and, as stated by the FCC, “At the end of the transition, licensees must be in the new channel locations and operating according to the new technical rules.”²¹

The Commission determined that the public interest in ensuring unencumbered contiguous spectrum to support more advanced broadband technology, primarily for consumer use, justified a mandatory mechanism in each of these instances. One will be needed here as well to address critical PE/CII broadband needs. Without it, a single incumbent would be able to prevent broadband capability in its area, either because it wishes to extract more than comparable facilities from the broadband proponent, or because it simply has no motivation to allow its system to be relocated. A 900 MHz incumbent with no identified need for broadband could make a rational, entirely self-interested decision that it would not accept any disruption of its operations and refuse to be moved to comparable facilities. Assuming the Commission concludes that the broadband proposal in the Petition would serve the public interest, the self-interest of an individual incumbent cannot be allowed to thwart that determination. Incumbents should be entitled to a minimally disruptive relocation to fully comparable facilities, with all reasonable costs paid by the PEBB licensee pursuant to clearly defined FCC rules, but realignment cannot be accomplished through secondary market transactions with no mandatory provision.

²¹ *Id.* at ¶ 148.

III. CONCLUSION

The Commission has consistently expressed its commitment to making broadband capability available for all Americans. This commitment must include addressing the broadband needs of the PE/CII entities on which the public depend for the delivery of critical services. The Petitioners urge the FCC to initiate a Notice of Proposed Rulemaking consistent with the Petition and with the comments herein as promptly as possible.

Table 7.2 Summary of the data rate estimates in an LTE macrocell in 700 MHz spectrum

Application	Minimum required data rates (worst case) in kbps											
	Dense urban with AMI data concentrators		Dense urban <i>without</i> AMI data concentrators		Urban with AMI data concentrators		Suburban with AMI data concentrators		Rural <i>without</i> AMI data concentrators			
	Normal	Critical	Normal	Critical	Normal	Critical	Normal	Critical	Normal	Critical		
SCADA and DA	165	138	165	138	95	79	140	116	236	197		
DG, DS	80	67	80	67	97	80	129	107	161	134		
Synchrophasors	213	178	213	178	213	178	213	178	426	355		
AMI	165	165	210	279	83	83	83	83	120	160		
CCTV	826	1,238	826	1,238	826	1,238	826	1,238	1,651	2,064		
Mobile workforce	16	161	16	161	16	129	16	81	16	81		
push-to-talk voice												
Mobile workforce live video	0	550	0	550	0	550	0	550	0	550		
Person-to-person voice (MWF and substation personnel)	113	435	113	435	113	371	97	274	97	274		
Business data (MWF and substation personnel)	124	554	124	554	124	459	96	287	105	296		
Dynamic line rating	0	0	0	0	0	0	3	3	8	7		
Total data rate	1,703	3,487	1,747	3,601	1,566	3,167	1,601	2,917	2,820	4,118		
Total data only	748	1,102	793	1,216	612	879	663	773	1,056	1,149		
Total video only	826	1,789	826	1,789	826	1,789	826	1,789	1,651	2,614		
Total voice only	129	597	129	597	129	500	113	355	113	355		