

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

In the Matter of)	
Unlicensed Operation in the TV Broadcast Bands)	ET Docket No. 04-186
)	
Additional Spectrum for Unlicensed Devices)	ET Docket No. 02-380
Below 900 MHz and in the 3 GHz Band)	

REPLY TO OPPOSITIONS

FiberTower Corporation (“FiberTower”), the Rural Telecommunications Group, Inc. (“RTG”), COMPTTEL, and Sprint Nextel Corporation (“Sprint Nextel”) (collectively, the “Petitioners”) respectfully submit this Reply to various oppositions filed in response to Petitioners’ Petition for Reconsideration (the “Petition”) of the Commission’s *Second Report and Order and Memorandum Opinion and Order* (“*Second R&O*”) in the above-captioned proceeding.¹ The Petition proposed that the Commission designate six vacant channels in rural areas for Part 101-type licensing of fixed wireless operations, which would provide an urgently-needed solution for affordable “middle mile” backhaul for wireless carriers and Internet service providers in rural areas.²

I. Fixed Wireless Licensing In Underserved Areas Would Leave Substantial Amounts of Spectrum for Unlicensed Operations

A small number of the oppositions mischaracterize Petitioners’ proposal and attempt to give the impression that, if the Petition were granted, TV Band Devices (“TVBDs”) would be

¹ *Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008) (“*Second R&O*”).

² The Petition also sought fixed wireless licensing in third or greater adjacent channels in any market, if they exist. The vast majority of such channels are located outside of urban and suburban markets. Petition at 8.

precluded nationwide from operating in the proposed six designated channels.³ These dire predications simply do not hold up under even the most cursory scrutiny. First, unlicensed devices such as TVBDs would still be able to operate in the channels that are designated for fixed licensed use, subject to the normal non-interference protections afforded to licensed users when they are present and operational. Thus, from a practical perspective, TVBDs would see absolutely no reduction in the amount of useable spectrum anywhere, unless and until a fixed wireless path has actually been licensed and constructed in a given area, and the path somehow limits unlicensed operations in all or some section of that path's operating area.

Second, the Petitioners proposed a designation in rural areas of six channels which would be available for the licensing of fixed wireless links. PISC's assertion that "the use of TV band white space is inherently constrained and encumbered" may be true in most urban areas, but runs contrary to common knowledge with regard to rural areas.⁴ Similarly, the Society of Broadcast Engineers' ("SBE") statement that "there are no vacant TV channels for backhaul use" failed to recognize that the Petitioners are focused on areas where there are vacant TV channels and that the fixed licensed operations would have to protect TV broadcast operations.⁵ (SBE also misunderstood that Petitioners were proposing *unlicensed* operations for the provision of fixed wireless services, which is not correct.) Petitioners have calculated, for example, that 15 to 45 channels or more often lie fallow in the nation's underserved areas.⁶ Petitioners recognize, of

³ See Dell, Inc. and Microsoft Corp. Opposition at 19 ("such use necessarily will preclude unlicensed use"); PISC Opposition at 2 (proposal would "foreclose[e] open, shared access to TV white space spectrum"); Carlson Wireless Technologies ("CWT") Opposition at 3 (proposal would be "at the expense of WISPs and others that could use the spectrum").

⁴ PISC Opposition at 3.

⁵ SBE Opposition at 12.

⁶ Attachment to *Ex Parte* letter from Michele C. Farquhar to Marlene Dortch, filed in ET Docket Nos. 04-186, 02-380, and GN Docket No. 09-29, at 3 (Apr. 13, 2009). While the Petition requests a designation of

course, that there may be rare instances of rural areas that have fewer vacant channels, and the Commission may decide to further limit total channels available for fixed wireless operations in such areas.

Finally, the Petition's opponents seem to miss the point that, as Petitioners have previously stated, the availability of low-cost backhaul will actually be a *benefit* to unlicensed broadband providers in rural areas.⁷ Indeed, in some areas, the provision of licensed backhaul links may make unlicensed services possible where they were not previously.

II. Petitioners' Proposal Would Increase Efficient Utilization of the Band, as well as Ensure Some Utilization of the Band in Rural Areas

The Petition's opponents wrongly assert that the proposal would result in spectrum warehousing and "gross underutilization" of the spectrum.⁸ In unserved and underserved areas, the fixed wireless uses suggested in the Petition would be the most efficient and most needed use for the white spaces. The proposed fixed wireless systems can literally "light" an unserved or underserved community by connecting its many mobile, wireline, commercial, public safety, educational, medical and government broadband needs back to switches or the Internet, on a more cost effective basis than anything else currently available.

As was clearly stated in the Petition, the Commission has an adequate record on which to promulgate rules that would permit the immediate licensing of fixed wireless operations in the white spaces. Petitioners are only suggesting that six channels be "reserved" for licensed use if

six channels for licensed use in rural areas, the Commission should not preclude licensed uses in other unserved and underserved areas where spectrum is lying fallow. Petition at n.22.

⁷ Petition at 2-3; *see also, e.g., Ex Parte* filing by FiberTower, Sprint Nextel, RTG, and COMPTTEL, ET Docket Nos. 04-186, 02-380, 4, 10 (filed Oct. 31, 2008) ("October 31 *Ex Parte*"); *Ex Parte* filing by FiberTower, Sprint Nextel, RTG, and COMPTTEL, ET Docket Nos. 04-186, 02-380 (filed Sept. 15, 2008) ("September 15 *Ex Parte*"); *Ex Parte* filing by COMPTTEL (filed May 9, 2008).

⁸ CWT Opposition at 3; PISC Opposition at 3; Dell/Microsoft Opposition at 19.

the Commission decides to conduct a further rulemaking proceeding before deciding on specific licensing rules (although Petitioners believe that the Commission could proceed to adopt such rules now, as proposed in previous filings⁹). The spectrum reservation would only last as long as necessary for the Commission to complete any additional rulemaking steps, which can hardly be deemed “warehousing.”

Contrary to opponents’ charges, providing for limited fixed wireless licensing in the white spaces would not result in underutilization or inefficient use of the spectrum. Just the opposite is true. As stated above, TVBDs could continue to use the channels unless and until a licensed link is constructed and precludes unlicensed use on a particular frequency in the area of the link. Moreover, licensees of the fixed links would have an obligation to construct and begin using the spectrum within 18 months of licensing.¹⁰ By contrast, equipment manufacturers have no obligation even to develop devices that can be used in the white spaces, and consumers have no obligation to use such equipment even if it is developed. Furthermore, the low density of consumers in rural areas, coupled with the limited power and transmission range of TVBDs, makes it highly improbable that a full 15 to 45 channels of TV white space could possibly be needed or used by TVBDs. Indeed, it is far more likely that prohibiting fixed licensed operations in rural areas would be significantly less spectrally efficient than permitting such use. Providing for limited licensed use greatly increases the chance that there will be some utilization of this spectrum in rural areas, especially given that off-the-shelf equipment for licensed use is already available today and the need for cost-effective backhaul is particularly urgent to provide broadband service to rural areas (by

⁹ Petition at 7; *see also, e.g.*, October 31 *Ex Parte* at 2, 10.

¹⁰ This assumes Part 101 rules are imported as proposed. *See* 47 C.F.R. § 101.63 (18 month construction requirement).

licensed as well as unlicensed providers). On the other hand, it is not clear when or even if unlicensed devices will be available in this spectrum in rural America (and it may take years just to complete the development, equipment certification, and manufacturing process to begin introducing such products in urban markets).

In addition to the unsupportable assertions noted above, PISC's Opposition further mischaracterizes the Petition by alleging – without citing to any filing – that the Petitioners are seeking licensed access to the band “free of charge (through a proposal to license by rule).”¹¹ The Petitioners have made no such proposal, which is evident by simply reading the Petition. As with current Part 101 licensing, licensees would pay FCC application and regulatory fees, in addition to incurring significant coordination and application preparation expenses, with the total typically averaging \$3,000 per link. The licensee could then easily spend \$100,000 to \$200,000 or more in building-out the path in order to keep its license. If this is PISC's idea of a “free lunch,”¹² then surely restricting the benefits of the band to equipment manufacturers and unlicensed users who pay no fees, have no obligations, and incur no penalties for non-use, would constitute a free breakfast, lunch and dinner.

III. Opponents Are Wrong in Suggesting that Fixed Wireless Is Not an Appropriate Use for the White Spaces, or that Comparable Spectrum Options Exist

Google makes an unsupported statement that “the favorable propagation characteristics of this spectrum for high-bandwidth service offerings do not translate well into point-to-point backhauling of voice and data traffic over considerable distances in narrow beams.”¹³ In fact, it is precisely the favorable propagation characteristics of TV band

¹¹ PISC Opposition at 2.

¹² *Id.*

¹³ Google Opposition at 20.

spectrum that make it ideal for backhauling traffic over very long distances (*e.g.*, 70 miles and longer) at low cost. And it is also for this reason that over 300 fixed links have already been licensed and installed in the TV bands under the existing Broadcast Auxiliary Service rules. By contrast, many of the unlicensed uses championed by Google and others are intended for short-range applications, which could be accomplished at higher frequencies without the same increase in cost that backhauling would incur at those frequencies. Likewise, PISC states that “it is elementary ‘Spectrum 101’ that very low-frequency bands below 1 GHz are most valuable” for uses other than fixed wireless.¹⁴ Unfortunately, PISC seems to have skipped “Economics 101.” As Petitioners have previously explained, a single 100-mile wireless backhaul link could be constructed at a cost of \$100,000 – \$200,000, using two small, lightweight antennas. Covering the same distance using 3.65 GHz or 6 GHz spectrum would require four relay towers and a total of 10 six-foot diameter dish antennas, at a cost of \$3 million or more.¹⁵ This dramatic cost differential can make or break the economic feasibility of providing wireless broadband to remote communities. In addition, as PISC itself notes, the TV bands are heavily encumbered in many non-rural areas, which limits their availability for more typical high-value uses.

Google further asserts that white spaces would not be appropriate for licensed operations, quoting a statement from the *Second R&O* – which was not specifically addressed to Petitioners’ proposal – that “adding licensed services to the TV White Spaces would not benefit carriers, ‘because of the tenuous rights that would actually be granted to the

¹⁴ PISC Opposition at 3. *See also* Dell/Microsoft Opposition at 18 (TV spectrum is “uniquely desirable” for mobile, portable and broadcast use).

¹⁵ The cost of providing the backhaul by fiber would vary depending on terrain, but even under the best circumstances would be far more expensive than any wireless option.

licensee,”¹⁶ referring to the fact that fixed wireless operations would be licensed on a secondary basis to incumbents. Petitioners are fully prepared to accept secondary status as detailed in their Proposed Technical Rules.¹⁷ (These proposed rules call for, *inter alia*, the permanent full protection of Class A TV stations, as well as a period of time to accommodate the digital transition of LTPV, TV translators and TV booster stations, which should address the concerns raised by the Community Broadcasters Association.)¹⁸ Most incumbent services in the band are not highly transient in nature, and careful pre-licensing coordination will ensure clear spectrum for the new fixed licensees in the vast majority of cases. There will, of course, be instances of higher-priority users moving into a fixed licensee area, which will require the fixed licensee to relocate. Such infrequent moves will be a small price to pay in light of the overall economic advantages of the spectrum discussed above.

Opponents repeat old arguments (to which the Petitioners have previously responded) that multiple other bands exist that would be more suitable for wireless backhaul, but they can only name two: 3.65 GHz and 2.5 GHz.¹⁹ Neither of these bands, however, offers the same propagation as the TV bands and would therefore entail far more sites and expense to cover the long distances that are common in remote, underserved areas. Moreover, the non-exclusive hybrid licensing regime (which provides for an unlimited number of potential

¹⁶ Google Opposition at 20 (citing *Second R&O* at ¶ 48).

¹⁷ See “Proposed Technical Rules for Licensed, Fixed Use of TV White Spaces” at ¶ 6, Attachment to October 31 *Ex Parte*.

¹⁸ *Id.*; see also Community Broadcasters Association (“CBA”) Opposition at 3. CBA does not define how much time will be needed for the transition.

¹⁹ PISC Opposition at 2-3; see also Google Opposition at 20-21; *Ex Parte* Letter from Harold Feld, Media Access Project, to Marlene H. Dortch, ET Doc. No. 04-186, at 2 (filed Mar. 18, 2008); *Ex Parte* Letter from Richard S. Whitt, Google Inc., to Marlene H. Dortch, ET Doc. Nos. 04-186 and 02-380, WC Doc. No. 05-25, RM-10593, at 2 (filed Jan. 22, 2008); *Ex Parte* filing by FiberTower, RTG, Sprint Nextel, T-Mobile USA, Inc., and the National Telecommunications Cooperative Association, ET Docket Nos. 04-186, 02-380, at 2 (filed Mar. 31, 2008).

licensees), the various exclusion zones and the restrictive power limits in the 3.65 GHz band prevent the high quality of service required for effective broadband deployment and would be unacceptable to many carrier-grade and government-grade customers. Finally, Dell/Microsoft offer up no specific alternatives, but vaguely refer to the fact that 150 MHz of licensed spectrum was recently auctioned, evidently ignoring the fact that it would never be economically rational to purchase an entire geographic area license at auction in the high-value spectrum bands below 1 GHz for a licensee that only needs point-to-point links.²⁰ Given the mixed licensed/unlicensed use and existing encumbrances in some parts of the TV bands, however, these bands are perfectly suited for point-to-point licensing on a non-interference basis.

IV. The Recent National Prioritization of Nationwide Broadband Deployment Greatly Increases the Urgency for Affordable Backhaul Solutions

PISC incorrectly claims that the Petition contains nothing new.²¹ In fact, the Petition points to the very significant passage, since the issuance of the *Second R&O*, of the American Recovery and Reinvestment Act of 2009 (“ARRA”), which reflects an assessment by Congress and the Administration that the prompt expanded deployment of broadband throughout the nation is an important component in the recovery from the current economic recession and for long-term economic growth.²² The ARRA allocates over \$7 billion dollars to be used to expand broadband availability, especially in unserved and underserved areas. It also requires the Commission to develop a national broadband strategy by February 2010. In addition to the ARRA, other recent legislation has similarly reflected Congressional recognition that the nation’s broadband

²⁰ Dell/Microsoft Opposition at 19.

²¹ PISC Opposition at 2.

²² Petition at 4.

infrastructure is in urgent need of improvement, particularly in rural areas.²³ These recent developments should weigh heavily in the Commission’s decision on the Petition.

In recent public hearings held and public comments filed in relation to the ARRA’s broadband grant programs, commenters universally cited the current costs of “middle mile” backhaul in unserved and underserved areas as a major impediment to the deployment of broadband in those areas.²⁴ The Petition’s opponents suggest that the Commission should issue a Notice of Inquiry (“NOI”) rather than solving the problem now, a course of action that would delay resolution of this urgent issue by years.²⁵ In fact, an NOI alone would result in *no* solution, as rules cannot be amended in response to an NOI. Moreover, PISC and Microsoft/Dell propose an NOI, referenced in the *Second R&O*, that would be limited to considering the use of high-

²³ Broadband Data Improvement Act of 2008, Pub. L. No. 110-385, 122 Stat. 4096 (codified at 47 U.S.C. §§ 1301-1304); Food, Conservation, and Energy Act of 2008, Pub. L. No. 110-246, 122 Stat. 1651 § 6112 (Jun. 18, 2008) (requiring the FCC and USDA to submit a report to Congress recommending a comprehensive rural broadband strategy).

²⁴ See, e.g., Comments of DigitalBridge Communications Corp. (“DBC”), GN Docket No. 09-29 (filed March 25, 2009) at 8-9 (“The lack of middle mile infrastructure is one of the greatest obstacles to building sustainable rural broadband networks.... DBC has been able to bring cost-efficient and affordable wireless broadband to rural communities, but only where it has access to affordable middle mile backhaul. When considering markets to serve, one of DBC’s essential considerations is whether it can acquire middle mile backhaul facilities at economic rates.”); Comments of the Organization for the Promotion and Advancement of Small Telecommunications Companies (“OPASTCO”), GN Docket No. 09-29 (filed March 25, 2009) at 8 (“Another significant obstacle that rural ILECs face in deploying broadband to additional rural consumers and increasing the broadband speeds that they offer is the high price of access to the Internet backbone.”). See also, e.g., oral comments of attendees at the NTIA/RUS BTOP public meetings: Evelyn Jerden, CPA, Lynch Interactive Communication Technology, March 18, 2009, Session 2 (“[M]iddle mile cost is a critical component.”); Unidentified Phoenix-based ISP provider, March 18, 2009, Session 2 (“[O]ne of the biggest challenges for us is the middle mile. It’s very costly to provide ...we really do need to come up with a way to resolve the middle mile cost issue.”); John Lucas, Chief Information Officer, Graham County, March 18, 2009, Session 2 (“The real problem is the middle mile. The middle mile is an entry barrier to local ISPs. Basically if you’re an ISP in Graham County, you have to pay four times the cost of an ISP in Maricopa County. ...they can’t function because they’re having this barrier to entry and it also keeps other people from coming in because of the cost.”); Kelly Bonnham (representative of a rural last mile and backhaul provider), March 19, 2009, Session 3 (“We pay on some of our networks when we get rural service from other carriers as much as \$700 a megabit for backhaul.”).

²⁵ See, e.g., Google Opposition at 19-21; PISC Opposition at 3; Dell/Microsoft Opposition at 18-19.

powered unlicensed transmitters in rural areas.²⁶ As previously explained, unlicensed operations will not be acceptable to most broadband providers and thus would not solve issues presented in the Petition.²⁷

Rather than wait additional years, the Petitioners' proposal is narrowly tailored to provide an immediate tool for broadband providers who face an urgent need for low-cost backhaul. Off-the-shelf equipment suitable for backhaul in the white spaces is available today, meaning that the white spaces would be a realistic, near-term backhaul option, even for those prospective broadband service providers who will be applying for ARRA grant funding over the coming months. The Commission should therefore take expedited action to grant the Petition, even if it is necessary to bifurcate this issue from issues raised in other petitions for reconsideration.

Respectfully Submitted,

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May 18, 2009

²⁶ PISC Opposition at 3; Dell/Microsoft Opposition at 18-19.

²⁷ See *supra*, p. 7; Petition at 2 and n.19; see also September 15 *Ex Parte*; "Optimizing the TV Bands White Spaces: A Licensed, Fixed-Use Model for Interference-Free Television and Increased Broadband Deployment in Rural and Urban Areas," *Ex Parte* filing by FiberTower and RTG, at 10, 16 (filed Oct. 2, 2007).

CERTIFICATE OF SERVICE

I, Betty Porter, certify that copies of the foregoing Reply to Oppositions were placed into the U.S.

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