

**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	)	

**PETITION FOR RECONSIDERATION**

Pursuant to Section 1.429 of the Commission’s rules, FiberTower Corporation (“FiberTower”), the Rural Telecommunications Group, Inc. (“RTG”), COMPTTEL, and Sprint Nextel Corporation (“Sprint Nextel”) (collectively, the “Petitioners”) respectfully submit this Petition for Reconsideration of the Commission’s *Second Report and Order and Memorandum Opinion and Order* (“Second R&O”) in the above-captioned proceeding.<sup>1</sup>

In the Second R&O, the Commission adopted rules to allow the operation of unlicensed devices in unused portions of the broadcast television spectrum (“White Spaces”).<sup>2</sup> Although the Commission correctly determined that it should authorize more extensive use of the White Spaces for broadband and other services, it erred in failing to dedicate spectrum for fixed, licensed services, including critical wireless backhaul services, based on the full record developed in this proceeding. As discussed below, the Commission’s failure to authorize fixed, licensed services in at least a small portion of the White Spaces (and its failure to reserve any spectrum for such use on further review) compromises the significant benefits of expanded use of the White Spaces and key goals the Commission sought to achieve through this proceeding. Most White Space lies fallow in unserved, and some underserved, areas, and ample spectrum exists in those areas to accommodate backhaul. Accordingly, the Commission should reconsider

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<sup>1</sup> *Unlicensed Operation in the TV Broadcast Bands*, Second Report and Order and Memorandum Opinion and Order, 23 FCC Rcd 16807 (2008) (“Second R&O”). All of the Petitioners participated in the proceeding.

<sup>2</sup> *Id.* at 1.

its decision expeditiously and help expand backhaul capacity and support broadband stimulus efforts by dedicating – or at least reserving – a portion of the White Spaces now for fixed, licensed use before unlicensed devices are marketed to consumers and it is too late.

**I. THE COMMISSION ERRED IN FAILING TO ACT ON THE ROBUST RECORD DEVELOPED IN THIS PROCEEDING AND DEDICATE A PORTION OF THE WHITE SPACES FOR FIXED, LICENSED USE.**

**A. The Commission Failed to Address the Profound Benefits of Fixed, Licensed Use of the White Spaces.**

In authorizing exclusively unlicensed use in the Second R&O, the Commission overlooked the profound benefits of fixed, licensed use of the White Spaces, including use for critical wireless backhaul services. Although the Commission mentioned certain economic and technical arguments in favor of licensed use, it failed to consider adequately the robust record supporting fixed, licensed use of a portion of the White Spaces for backhaul solutions and the ideal suitability of the White Spaces for such solutions, as well as the fact that backhaul can benefit consumers – particularly unserved and underserved, as well as rural, consumers – immediately and without interfering with incumbent operations under a fixed, licensed approach. The Commission also failed to address arguments made in the record that licensed spectrum (and the higher power, interference protection and other benefits associated with such spectrum) is necessary to ensure the reliability and quality-of-service needed to deliver viable wireless backhaul solutions.<sup>3</sup> In view of these failures, the Commission should reconsider the Second R&O and dedicate a portion of the White Spaces for fixed, licensed use.

***1. All Mobile Broadband Networks Require Wireless Backhaul.***

As the Petitioners and other parties to this proceeding have repeatedly explained, wireless backhaul is a necessary, essential input for all mobile wireless broadband networks, whether they

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<sup>3</sup> Wireless backhaul for commercial mobile providers or first responder networks, and transport connectivity to government or medical buildings, typically requires strict service level agreement (SLA) standards for signal availability. Due to their mission-critical nature, those end users almost always insist on licensed spectrum for their backhaul and transport connections.

are licensed or unlicensed.<sup>4</sup> Thus, backhaul infrastructure must be built before consumers can fully realize the benefits of new unlicensed and licensed broadband networks and devices. Absent this infrastructure, broadband networks (and future White Spaces unlicensed devices) cannot operate.<sup>5</sup>

**2. *There is a Critical Shortage of Spectrum Available for Wireless Backhaul, and the Propagation Characteristics of the White Spaces are Ideal for Long-Range Wireless Backhaul, Particularly in Unserved and Underserved Areas.***

Many participants in this proceeding have expressed significant concern over the critical shortage of spectrum available for reliable, affordable, and ubiquitous backhaul services, particularly in unserved and underserved areas, including rural areas. These parties agree that the exceptional propagation characteristics of the White Spaces make that spectrum ideal for much needed, lower-cost, long-range wireless backhaul solutions. As FiberTower stated:

By far, the most cost-effective backhaul solutions, particularly in rural areas, can be provided by wireless fixed licensed point-to-point systems. [The White Spaces] spectrum is particularly well-suited for licensed use given its long-range propagation characteristics, allowing coverage of much longer distances – up to 70 miles – compared to 12 miles at most with spectrum currently available (mostly in the microwave bands) for backhaul services. Moreover, much of the [White Spaces] availability is in rural areas, and rural carriers especially need access to lower-cost and longer-range spectrum to expand and upgrade their service offerings to their customers and those traveling in rural America.<sup>6</sup>

Indeed, the Petitioners estimate that a 100-mile wireless broadband connection using the White Spaces would cost less than \$100,000-200,000 to construct, while the same connection using 6 GHz or 3.65 GHz spectrum would cost more than \$3 million, more than ten times as much. In

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<sup>4</sup> See, e.g., *Ex Parte* filing by FiberTower, Sprint Nextel, RTG, and COMPTTEL, ET Docket Nos. 04-186, 02-380 (filed Oct. 31, 2008) (“October 31 *Ex Parte*”) at 4, 10 (all *Ex Partes* referenced in this Petition for Reconsideration were filed in ET Docket Nos. 04-186 and 02-380); *Ex Parte* filing by RTG, NTCA, and RICA (filed Oct. 24, 2008) (“October 24 *Ex Parte*”); *Ex Parte* filing by COMPTTEL (filed May 9, 2008); *Ex Parte* filing by Sprint Nextel and T-Mobile USA, Inc. (filed Jan. 3, 2008); “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 (filed Oct. 2, 2007) (“White Paper”).

<sup>5</sup> See, e.g., October 31 *Ex Parte* at 4. As Commissioner McDowell made clear: “all wireless services have to be backhauled to the PSTN and the Internet via a network of some kind.” Second R&O, Statement of Commissioner Robert M. McDowell (“McDowell Statement”) at 2.

<sup>6</sup> *Ex Parte* filing by FiberTower (filed Oct. 28, 2008) (“October 28 *Ex Parte*”) at 1-2; see also *Ex Parte* filing by Aloha Partners, et al. (filed Oct. 31, 2008) (“Aloha et al. *Ex Parte*”) at 2.

these economic times, the Commission has the opportunity to stimulate investment in and proliferation of broadband services by dedicating some of the White Spaces to fixed, license use.

RTG, the National Telecommunications Cooperative Association (“NTCA”), and the Rural Independent Competitive Alliance (“RICA”) also urged the Commission to “confront the critical shortage of wireless broadband services in rural areas by licensing the TV bands white spaces for fixed services” and agreed that the White Spaces are “well suited for the delivery of lower-cost and reliable fixed wireless services to rural consumers.”<sup>7</sup> They noted that “[t]he excellent propagation characteristics of the TV Bands spectrum ensure that ‘[f]ewer towers are needed to cover greater distances than with other spectrum,’” and recognized that “[w]ith lower build-out expenses, services can be deployed at lower costs in rural areas,” ensuring that carriers “have the ability to ‘serve critical rural broadband access needs immediately and cost-effectively.’”<sup>8</sup>

Importantly, the President and Congress have also recently renewed the national commitment to ensuring universal broadband access with passage of the American Recovery and Reinvestment Act of 2009. The broadband initiatives funded by the Act are specifically designed to accelerate broadband deployment in unserved, underserved, and rural areas. Indeed, the Act expressly allocates \$2.5 billion “to facilitate rural economic development” in areas “without sufficient access to high speed broadband service.”<sup>9</sup> Recent public hearings on the Act’s broadband grant programs have made it clear that many current and potential broadband service providers believe there is a critical, overwhelming need for expanding broadband availability in the “middle mile.”<sup>10</sup> The White Spaces provide the ability to address middle mile

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<sup>7</sup> October 24 *Ex Parte* at 1-2; *see also* October 28 *Ex Parte*; White Paper at 7.

<sup>8</sup> October 24 *Ex Parte* at 2 (quoting an *Ex Parte* filing by NTCA, filed Mar. 6, 2008).

<sup>9</sup> *See* H.R. 1, 111<sup>th</sup> Cong., Section 1, Division A, Title I. This Act was signed into law on February 19, 2009, after the Commission issued the Second R&O. *See also* 47 C.F.R. § 1.429(b).

<sup>10</sup> The “middle mile” is generally considered to be the portion of a broadband network that connects towns, cities and communities to the Tier 1 Internet backbone, exactly the same portion of the broadband network that fixed, licensed White Space operations would address.

problems and to reach these areas directly, often without the need to build additional more costly intervening fiber routes or the additional towers that current microwave bands require.

Furthermore, four Commissioners adopting the Second R&O recognized the need for additional wireless backhaul, particularly in rural areas, and the potential of the White Spaces to satisfy that need. Commissioner Adelstein stated that “[f]or the white spaces to achieve maximum utilization in rural areas, rural wireless Internet service providers will need cheap, available and reliable backhaul.”<sup>11</sup> Similarly appreciating the potential of the White Spaces for low-cost backhaul solutions, Commissioner McDowell stated that “[l]imited white spaces point-to-point licensing may allow entrepreneurs to find more efficient paths for their backhaul needs while leaving the lion’s share of white spaces spectrum on the table for unlicensed users.”<sup>12</sup> Commissioner Tate also commented that authorizing higher-power fixed operations in rural areas (such as by licensing a portion of the White Spaces) “could have been used to provide much needed backhaul, a key component of broadband service in rural communities.”<sup>13</sup> Finally, Acting Chairman (then Commissioner) Copps highlighted the suitability of the White Spaces (and their “enhanced propagation characteristics”) for “solving the broadband deficit in many rural areas,” explaining that “it should be quite possible, at some point, to authorize higher-power devices in rural areas that will support backhaul and broadband infrastructure.”<sup>14</sup>

***3. Because Fixed, Point-to-Point Backhaul Equipment is Available Now, Fixed, Licensed Operations Would Spur Immediate Broadband Deployment to Unserved and Underserved Areas and Benefit Consumers Directly.***

The Commission also failed to address the Petitioners’ and other commenters’ position that, unlike unlicensed devices that require further development and are not yet ready for consumer use, the fixed backhaul equipment currently available to television broadcast licensees

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<sup>11</sup> Second R&O, Statement of Commissioner Jonathan S. Adelstein, at 2.

<sup>12</sup> *Id.*, McDowell Statement at 2.

<sup>13</sup> *Id.*, Statement of Commissioner Deborah Taylor Tate (“Tate Statement”) at 3.

<sup>14</sup> *Id.*, Statement of Commissioner Michael J. Copps, at 2.

is sold off-the-shelf now and can be easily adapted for use in the White Spaces. Thus, if the Commission were to adopt a fixed, licensed regime for a portion of the White Spaces, it would immediately spur broadband deployment to long-unserved and -underserved areas<sup>15</sup> and create jobs, thus contributing both to short-term stimulus (shovel-ready) and long-term broadband proliferation with its attendant benefits. As FiberTower noted, consumers would “benefit from the faster deployment of innovative and ubiquitous wireless broadband services, especially in rural areas, as well as the related cost savings from more affordable backhaul services.”<sup>16</sup>

***4. Facilitating Fixed, Licensed Use Fosters Regulatory Certainty and Protects Incumbent Users – Particularly Broadcasters – Operating in the TV Bands.***

Finally, as noted previously in this proceeding, authorizing fixed, licensed use also fosters regulatory certainty and protects incumbent users operating in the White Spaces against harmful interference.<sup>17</sup> In particular, the proposed technical rules for fixed, licensed use of the White Spaces set forth by the Petitioners in this proceeding are designed to address and mitigate harmful interference from new fixed operations to other pre-existing operations in the band, including broadcasters, low-power television stations, wireless microphone users, medical devices, radio astronomy, TV studio transmitter and relay links, and pre-existing fixed operations, as well as potential cable headend and television receiver direct pickup interference.<sup>18</sup> These proposed rules are the result of a consensus reached through extensive communications among the incumbent licensee organizations principally responsible for spectrum interference issues and will fully protect incumbents operating in the TV bands. Thus, unlike the unlicensed use authorized in the Second R&O, there are no interference concerns with respect to licensing a portion of the White Spaces for fixed operations such as critical wireless backhaul and

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<sup>15</sup> See, e.g., October 31 *Ex Parte* at 2, 9-10; October 28 *Ex Parte* at 1, 3; October 24 *Ex Parte* at 2; *Ex Parte* filing by FiberTower, Sprint Nextel, and RTG (filed Oct. 9, 2008).

<sup>16</sup> October 28 *Ex Parte* at 2; see also October 31 *Ex Parte* at 4.

<sup>17</sup> See, e.g., October 31 *Ex Parte* at 1-2, 9-10; see also Aloha *et al. Ex Parte* at 2.

<sup>18</sup> See, e.g., October 31 *Ex Parte* at 1-2, 5-8, 10; see also *Ex Parte* filing by FiberTower, RTG, Sprint Nextel, and COMPTTEL (filed Jun. 25, 2008, updated version filed Oct. 29, 2008).

transport.<sup>19</sup> The Commission failed entirely to address this issue.

**B. The Commission Failed to Address the Petitioners' Narrowly Tailored Approach to Fixed, Licensed Use.**

In addition to overlooking the key benefits of wireless backhaul and other fixed, licensed uses, the Second R&O failed to consider the Petitioners' narrowly tailored approach to authorizing fixed, licensed operations in a portion of the White Spaces.<sup>20</sup> The Commission should reconsider the Second R&O and adopt the approach advocated by the Petitioners.

***1. The Commission Should Have Set Aside Six Channels in the White Spaces for Fixed, Licensed Use in Rural Areas.***

The Commission should reconsider the Second R&O and designate the White Spaces in six UHF TV Bands channels in all rural areas for fixed, licensed operations, similar to the Canadian Remote Rural Broadband Systems model.<sup>21</sup> That model is fully consistent with U.S. policy, and, by setting aside these UHF channels in rural areas (*e.g.*, counties with a population density of 100 people or less per square mile), the Commission can encourage the deployment of new fixed, licensed services with sufficient capacity and scalability and help expand wireless backhaul facilities to facilitate rural broadband deployment.<sup>22</sup> As the Petitioners previously noted, the White Spaces in Channels 33-35 and 49-51 are particularly well-suited for point-to-point services, while the technical characteristics of VHF Channels 2-13 prevent the economic use of directional antennas that are essential for establishing backhaul links. In addition, UHF Channels 14-20 are heavily encumbered with land mobile operations authorized by rule and through waivers that would prevent fixed, licensed use of these bands in many rural areas.<sup>23</sup>

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<sup>19</sup> In addition, as noted in the proceeding record, the higher power and interference protection associated with licensed use is necessary to ensure the reliability and quality-of-service needed to deliver viable wireless backhaul solutions. *See, e.g., Ex Parte* filing by FiberTower, Sprint Nextel, RTG, and COMPTTEL, ET Docket Nos. 04-186, 02-380 (filed Sept. 15, 2008); White Paper at 10, 16.

<sup>20</sup> *See, e.g.,* October 31 *Ex Parte* at 2, 10.

<sup>21</sup> *Id.*

<sup>22</sup> While the Commission should set these channels aside for licensed use in rural areas, it should also not preclude licensed uses in other unserved and underserved areas where unused spectrum is available.

<sup>23</sup> *See, e.g.,* October 31 *Ex Parte* at 10.

**2. *The Commission Also Should Have Authorized Fixed, Licensed Operations in the White Spaces in the Third or Greater Adjacent Channels Existing in any Market.***

Alternatively, where available, the Commission should authorize fixed, licensed operations in the third or greater adjacent White Spaces channels and restrict fixed, licensed services from operating on the first and second adjacent channels of a DTV station when inside the DTV station's 41 dBuV/m noise-limited service area contour.<sup>24</sup> Fixed, licensed operations thus would be able to occupy the white spaces in third or greater adjacent channels in any market, if they exist. The vast majority of White Spaces in third or greater adjacent channels are located outside of urban and suburban markets, ensuring that fixed, licensed operations would facilitate the deployment of new services in rural areas while retaining substantial amounts of spectrum in both urban and rural areas for incumbent and new unlicensed operations.

**3. *The Petitioners' Narrowly Tailored Approach is Fully Consistent with Robust Deployment of Unlicensed Services.***

The Commission erroneously declined to consider the merits of the Petitioners' proposal for fixed, licensed use, despite the fact that their proposal is fully compatible with allowing unlicensed or other licensed uses of the White Spaces. Under the Petitioners' narrowly tailored approach, the Commission can ensure that wireless backhaul facilities will be available for both unlicensed and licensed services to facilitate rural broadband deployment and adoption, while still enabling extensive deployment of unlicensed services in the White Spaces. In fact, unlike the proposed unlicensed uses, the Petitioners' proposal for fixed, licensed use does not create interference concerns with existing TV Bands operations.

In adopting the Petitioners' proposal, the Commission can license fixed, point-to-point operations in the White Spaces on a site-by-site basis, consistent with the Petitioners' proposed technical rules.<sup>25</sup> These operations can be licensed quickly and efficiently, without the need for

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<sup>24</sup> *Id.* at 2, 10.

<sup>25</sup> *See supra* n. 18.

spectrum auctions, using an approach similar to Part 101 of the Commission’s rules. The Commission erred by failing even to consider the Petitioners’ proposal and technical rules.

## **II. THE COMMISSION ALSO ERRED IN FAILING TO RESERVE ANY WHITE SPACES CHANNELS FOR FUTURE FIXED, LICENSED POINT-TO-POINT USES SUCH AS CRITICAL WIRELESS BACKHAUL AND TRANSPORT SERVICES.**

In the Second R&O, the Commission stated that it “will further explore in a separate Notice of Inquiry (“NOI”) whether higher powered unlicensed operation might be accommodated in the TV white spaces in rural areas.”<sup>26</sup> Rather than committing to undertake a separate and needless NOI, the Commission should have determined, on the basis of the robust record developed in this proceeding, to dedicate a portion of the White Spaces for fixed, licensed uses under the Petitioners’ narrowly tailored approach. Barring that approach, the Commission, at the very least, should have *reserved* a portion of the spectrum pending the outcome of the separate NOI in which it intends to consider higher power uses. Yet, it failed to do so.

The problem with that failure is clear. While the Second R&O mentions “unlicensed operation,” the Commission ultimately could conclude that a limited number of channels in the White Spaces should be authorized for fixed, licensed use such as wireless backhaul and transport (particularly in rural areas) as several Commissioners indicated in their separate statements.<sup>27</sup> However, given the ubiquitous, nomadic nature of existing and proposed unlicensed devices, it will essentially be impossible for the Commission to authorize licensed use effectively after such unlicensed devices already occupy the same frequencies in the White Spaces. Consequently, by failing to reserve any channels for licensed use pending further review, the Commission has effectively precluded licensed use in the White Spaces. That move essentially denies consumers in unserved and underserved areas the backhaul and transport facilities necessary for taking full advantage of unlicensed broadband service offerings. The

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<sup>26</sup> Second R&O ¶ 106.

<sup>27</sup> See, e.g., McDowell Statement at 2; Tate Statement at 3.

Commission should accordingly reconsider its decision and, at a minimum, reserve some White Spaces channels while it considers higher power operations in a later NOI proceeding.

**III. THE COMMISSION CAN STILL HELP EXPAND BACKHAUL AND TRANSPORT CAPACITY BY RECONSIDERING ITS DECISION BEFORE UNLICENSED DEVICES ARE MARKETED TO CONSUMERS.**

It is not too late for the Commission to cure the critical errors infecting its Second R&O – its failure to recognize the benefits of wireless backhaul and transport and adopt the Petitioners’ approach for fixed, licensed use of a portion of the White Spaces, as well as its failure to reserve some channels as it undertakes to examine higher-power use in the bands. Unlicensed White Spaces devices have not yet been marketed to consumers. As a result, the Commission has a limited window of opportunity in which it can help expand backhaul and transport capacity (particularly in rural areas) by reconsidering its decision. But time is of the essence. Therefore, for all of the foregoing reasons, the Petitioners respectfully request that the Commission reconsider the Second R&O expeditiously and dedicate – or at the very least reserve – a portion of the White Spaces for fixed, licensed uses, including wireless backhaul and transport before new unlicensed devices are marketed to consumers.

Respectfully Submitted,

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