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

In the Matter of	)	
	)	
Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees	)	WT Docket No. 10-153
Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., *et al.*	)	WT Docket No. 09-106
Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.	)	WT Docket No. 07-121
Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition	)	

To: The Commission

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INTRODUCTION AND SUMMARY

FiberTower Corporation ("FiberTower")[1] generally supports the Federal Communications Commission's ("Commission") proposal to make 750 MHz of additional upper band spectrum available for wireless backhaul, subject to Part 101 of the Commission's rules, and the related proposals outlined in the Notice of Proposed Rulemaking ("*NPRM*") and Notice

[1] FiberTower is a leading alternative backhaul provider in the U.S., with an extensive spectrum footprint, carrier-class microwave and fiber networks in 13 major markets, customer commitments from nine of the leading commercial mobile carriers, partnerships with leading government contractors, a GSA Schedule 70 holder, and partnerships with the largest tower operators in the U.S., which provide FiberTower with access to over 100,000 towers and buildings. Commercial mobile carriers, enterprises and government agencies rely on FiberTower's backhaul and premises access solutions to deliver mission- and business-critical performance.

of Inquiry ("*NOI*") in this proceeding.[2] It also supports efforts to authorize greater use of adaptive modulation techniques by fixed service licensees. Nevertheless, FiberTower takes exception to any characterization of this proceeding as a comprehensive solution for ensuring adequate deployment of wireless backhaul.[3] In reality, the *NPRM* proposals and issues specifically identified for comment in the *NOI* focus too narrowly on upper band spectrum allocation and technical proposals which, if implemented, would not move the needle considerably in spurring wireless backhaul.

While FiberTower lauds the Commission for making such proposals and encourages the Commission to adopt them, it also urges the Commission to use information provided in response to the *NOI* portion of this proceeding[4] to take additional steps to address the core wireless backhaul issues. Such steps include more aggressively enforcing existing OTARD protections, providing better incentives and information regarding the deployment and availability of multiple-use shared-access backhaul systems, developing regulatory drivers for the development and deployment of smaller and lighter wireless backhaul equipment, and focusing on providing fixed wireless licensees access to the lower bands once again (including by, separate from its efforts in this proceeding, promptly authorizing limited licensed fixed use of

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[2] *Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees*, Notice of Proposed Rulemaking and Notice of Inquiry, 25 FCC Rcd 11246 (2010) *("NPRM" and "NOI*").

[3] *See, e.g.*, *NPRM* at ¶ 1 ("[W]e commence a proceeding to remove regulatory barriers to the use of spectrum for wireless backhaul and other point-to-point and point-to-multipoint communications. This proceeding will surface ways to increase efficient use of spectrum for backhaul, especially by updating regulatory classifications that may not have kept pace with evolution of converged digital technologies . . . . Our proposed rules should increase opportunities for all users of point-to-point and point-to-multipoint services, while protecting established license holders who are already using these bands.").

[4] *See, e.g.*, *NOI* at ¶ 68 ("We also seek comment on whether we should examine any additional modifications to the Part 101 rules, or other policies or regulations, to promote flexible, efficiently and cost-effective provisions of wireless backhaul service.").

the TV White Spaces to spur the deployment of wireless backhaul in support of commercial and government mobile broadband throughout the nation). If these additional steps are taken, the Commission will have truly addressed comprehensively the regulatory environment for wireless backhaul and spurred its deployment.

I. THE COMMISSION'S PROPOSALS ARE A *GOOD, YET INCOMPLETE,* PLAN TO ADDRESS GROWING WIRELESS BACKHAUL DEMAND

A. There is an Acute Need for Wireless Backhaul, and Demand Will Increase Significantly in the Short Term

The need for backhaul has skyrocketed with the emergence of mobile wireless data, and the Commission has been at the forefront of acknowledging this need.[5] Chairman Genachowski recently predicted that "we are likely to see a 35X increase in mobile broadband traffic over the next [five] years."[6] Because of cost, technical and other reasons, it will not be possible to deploy fiber optic or other wireline solutions every place backhaul is needed, making it essential that wireless backhaul solutions be available. As the Commission has stated, "[I]n certain remote geographies, microwave is the only practical high-capacity backhaul solution available."[7] Moreover, many sites require physically diverse and redundant backhaul networks, creating a need for wireless backhaul facilities even where wireline facilities are available. In addition, federal standards require physically diverse networks to meet the mission-critical needs of numerous federal agencies.[8]

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[5] *See* "Connecting America: The National Broadband Plan," Federal Communications Commission, 93 (March 2010) ("NBP") (noting that "[b]ackhaul costs currently constitute a significant portion of a cellular operator's network expense" and "[w]ith 4G deployments, this burden will become more acute as demand for backhaul capacity increases.").

[6] Remarks of FCC Chairman Julius Genachowski, FCC Spectrum Summit (Oct. 21, 2010) at 3.

[7] *See* NBP at 93.

[8] *See generally* GSA Networx at Schedule C.

As suggested by the Commission, the demand for wireless backhaul will continue to increase as commercial mobile carriers and first responder system operators upgrade their networks to provide 4G and other high data-rate mobile services.[9] Without adequate backhaul, these networks will not be capable of supporting the applications, including public safety, machine-to-machine ("M2M"), smart grid and telemedicine, that 4G and other high-capacity last mile mobile networks enable.[10] Once data-rich mobile wireless applications become commonplace, the need for wireless backhaul will increase significantly.

B. The Commission Should Adopt the Proposal to Make an Additional 750 MHz of Upper Band Spectrum Available for Wireless Backhaul

FiberTower supports the Commission's proposal to make 750 MHz of new upper band spectrum available for fixed wireless services such as wireless backhaul.[11] The services currently operating in the candidate bands, Broadcast Auxiliary Service ("BAS") and Cable Relay Service ("CARS"), are generally compatible with some fixed wireless backhaul operations and the Part 101 coordination regime applicable to the licensing of fixed wireless services in the vicinity of these new bands can be easily adapted for the licensing of fixed microwave links in them as well. As recognized by the Commission, the 6875-7125 MHz and 12700-13200 MHz bands are well-suited for some fixed wireless services.[12] The 6875-7125 MHz band is immediately adjacent to existing fixed wireless operations, and the 12700-13200 MHz band was

[9] *See NPRM* at ¶ 2.

[10] *See id.* at ¶ 3.

[11] *See id.* at ¶¶ 15-18.

[12] *See id.* at ¶ 15 (noting that the 6875-7125 MHz band "is adjacent to existing FS operations in the 6525-6875 MHz band and well suited for backhaul and other microwave operations"); *id*. at ¶ 16 (noting that the 12700-13200 MHz band is "well-suited for short to medium length microwave applications and in fact prior to 1988 was available to certain relocated FS systems.").

previously available to certain fixed wireless systems.[13] Moreover, the close proximity of the 6875-7125 MHz band to existing fixed microwave operations should make it possible to use existing equipment in the new band. Although FiberTower supports the allocation of spectrum in the 6875-7125 MHz band for fixed services, it is concerned that existing uses in the band, including temporary BAS operations, may create challenges that make it difficult for viable fixed services to operate there; as discussed below, *lower band spectrum will also be necessary* to satisfy growing backhaul demand.

As the Commission proposes, application of existing Part 101 technical rules and parameters should allow for consistency with respect to fixed wireless operations in the new bands.[14] FiberTower supports the Commission's proposal to apply the Upper 6 GHz band technical parameters to fixed wireless operations in the adjacent 6875-7125 MHz band,[15] and to apply existing Part 101 technical rules and parameters to new fixed microwave operations in the 12700-13200 MHz band, with the additional requirement of applying the 11 GHz band minimum payload capacity and loading requirements.[16]

C. Although Additional Upper Band Spectrum Will Be Helpful, Lower Band Spectrum Will Also Be Necessary to Satisfy Growing Wireless Backhaul Needs

Although, as noted above, the Commission's proposal for additional upper band spectrum is a good start in the process of meeting some spectrum needs for wireless backhaul, the Commission should by no means rest on its laurels. Not all backhaul spectrum is the same. Distance, equipment cost, siting cost, siting availability, propagation characteristics, equipment

[13] *Id*. at ¶ 16.

[14] *Id*. at ¶ 20.

[15] *Id*.

[16] *Id*.

size, and weight are all key factors that vary from spectrum band to spectrum band. Thus, the Commission should explore additional opportunities to "promote flexible, efficient, and cost-effective provisions of wireless backhaul service."[17]

The upper band spectrum identified in the *NPRM* is not capable of supporting the longer-distance propagation links necessary to support exploding mobile wireless data growth. To meet this demand, spectrum allocations between 450 MHz to 4 GHz, where signal propagation is far superior and equipment costs are far cheaper, will be necessary. Section II.A below addresses in detail the significant benefits of allowing limited licensed wireless backhaul operations in the lower band TV White Spaces.

Over the last two decades, fixed microwave spectrum in the 2 GHz and 4 GHz bands has been reallocated for commercial mobile services such as Personal Communications Service ("PCS"), Advanced Wireless Service ("AWS") and others. This lower band spectrum has never been replaced, and that loss directly contributed to the current crisis in affordable long-haul systems reasonably available to serve rural and tribal areas. Therefore, meeting the demand for more cost-effective wireless backhaul is a critical problem that must be solved if the Commission's NBP goal of deploying mobile broadband nationwide is to become a reality.

Relegated to the higher spectrum bands (*e.g.*, Upper 6 GHz, 11 GHz, 13 GHz), providers of medium-distance wireless backhaul have been required to deploy links using heavy and relatively large equipment whose signals propagate distances far less than what is possible in the 2-4 GHz bands. The technical and economic gaps between lower, middle, and upper band operations have, unfortunately, not closed significantly since the spectrum reallocations, making long-haul wireless backhaul far less viable, especially in rural and unserved areas.

[17] *See NOI* at ¶ 68.

D. Allowing Use of Adaptive Modulation Will Increase Reliability for Critical Wireless Backhaul

FiberTower supports the Commission's proposal to amend Section 101.141 of its rules to allow greater use of adaptive modulation by fixed service licensees, including allowing licensees to temporarily drop below minimum payload capacity requirements in certain circumstances.[18] Under the Commission's current rules, all modulation modes, including adaptive modulation, must comply with minimum payload capacities at all times.[19] Given that fixed service links provide critical backhaul and public safety applications,[20] licensees should be allowed to combat fading through adaptive modulation in accordance with the plan proposed by the National Spectrum Managers Association ("NSMA"), of which FiberTower is a member.

By facilitating greater use of adaptive modulation, the Commission can increase the reliability of fixed service links.[21] It can also reduce operational costs for fixed service licensees.[22] Moreover, as the Commission recognizes, it can also facilitate the use of wireless backhaul in rural areas.

II. ADDITIONAL ACTIONS ARE NEEDED TO SPUR WIRELESS BACKHAUL DEPLOYMENT

A. The Commission Should Quickly License Limited Fixed Use of the TV White Spaces

In addition to implementing the proposals discussed above and separate from its efforts in this proceeding to promote wireless backhaul services,[23] FiberTower urges the Commission to

[18] *See NPRM* at ¶¶ 28, 36-40.

[19] *See* 47 C.F.R. § 101.141(a)(3).

[20] *See NPRM* at ¶ 37.

[21] *See id.* at ¶ 28.

[22] *See id.*

[23] *See NOI* at ¶ 68.

quickly permit fixed licensed use of a limited portion of the vacant TV White Spaces ("White Spaces") channels in rural and tribal areas, as described in numerous filings by FiberTower and others in the Commission's White Spaces proceeding.[24] If action is not taken soon, providers serving many rural and tribal areas will be unable to afford the backhaul necessary to light broadband networks. Likewise, Commissioners McDowell and Baker have recently expressed support for "near-term" action to address licensed backhaul use of the White spaces in rural areas "quickly."[25]

For some time now, supporters of licensed fixed wireless in the White Spaces have highlighted the viability of licensing use of channels within the TV Bands, particularly rural vacant UHF Channels 14-20, and the possibility of limiting licensed fixed use to a limited percentage of vacant available channels in rural and tribal areas.[26] Supporters have also noted that the licensed fixed proposal can largely accommodate any subsequent "repacking" in the TV White Spaces because dozens of vacant channels exist in the rural and tribal areas at issue, and the supporters propose utilizing at most a limited amount of the vacant channels in those areas.[27] Moreover, supporters of the proposal have shown that existing BAS equipment available for

[24] *See, e.g., Ex Parte* filing by FiberTower, WCAI, Sprint Nextel, and RTG, ET Docket Nos. 02-380 and 04-186 (filed Sept. 16, 2010) ("September 16 *Ex Parte*").

[25] *See also* Remarks of Commissioner Robert M. McDowell, FCC Spectrum Summit, 2 (Oct. 21, 2010) (stating that "providers will need to increase their backhaul capacity, including microwave backhaul, to accommodate the expected exponential increase in traffic," and expressing support for the "Commission's express commitment to pursue quickly the question of . . . licensed rural backhaul in the white spaces"); Remarks of Commissioner Meredith Atwell Baker, Law Seminars International Conference on Spectrum and Broadband: National Broadband Plan Implementation, 4-5 (Oct. 19, 2010) (stating that one "near-term" action the Commission can take to improve rural 4G deployment is "authorizing licensed backhaul in rural areas in unused TV bands").

[26] *See, e.g.*, September 16 *Ex Parte*.

[27] *See, e.g., Ex Parte* filing by FiberTower, WCAI, Sprint Nextel, and RTG, ET Docket Nos. 02-380 and 04-186, 2-3 (filed Sept. 8, 2010).

UHF Channels 14-20 can be readily used in providing wireless backhaul in the White Spaces.[28] Long-haul BAS "fixed wireless style" UHF links, for example, are licensed and in operation throughout the country. Those links are often longer than 50 miles and can reach up to 100 miles long. Some antennas are only 38 pounds, compared to the 6-7 GHz band antennas that often weigh 300-500 pounds and reach 6-8 feet tall.

Adopting the licensed fixed proposal now would be especially critical and time-sensitive for rural carriers because major license construction deadlines are rapidly approaching in the Broadband Radio Service/Educational Broadband Service ("BRS/EBS"), 700 MHz, and other bands. Carriers are now deciding whether and where to construct mobile broadband networks in rural areas across the country, and time is of the essence. By adopting the proposal now, the Commission can ensure that the White Spaces spectrum is deployed for cost-effective backhaul to support and facilitate viable rural build-out in the BRS/EBS, 700 MHz, and other wireless services.

Finally, supporters of the proposal have shown that by taking advantage of fallow White Spaces spectrum, backhaul costs could be reduced by as much as 80-90% in rural areas while fully protecting incumbents and ensuring that ample spectrum remains for unlicensed White Spaces use.[29] This cost advantage could make the difference in whether a rural or tribal area will have adequate backhaul to support consumer and public safety broadband services. Moreover, adopting the proposal now would help address the "notable lack of competition for special access in rural areas" recognized by the U.S. Government Accountability Office in a July 2010 Report

[28] *See, e.g., id.* at 2.

[29] *See, e.g., Ex Parte* filing by FiberTower, RTG, and Sprint Nextel, ET Docket Nos. 04-186 and 02-380, "Licensed, Fixed Use of the TV White Spaces" Attachment at Slide 15 (filed Sept. 3, 2010); Reply Comments of FiberTower, RTG, COMPTEL, and Sprint Nextel – NBP Public Notice #6, GN Docket Nos. 09-47, 09-51, and 09-137, at 3-4 (filed Nov. 13, 2009).

to Congress,[30] and the "prohibitively expensive" backhaul transport costs highlighted by the Commission in the 2009 Rural Broadband Report.[31]

The exceptional propagation features of the White Spaces, and the availability of low cost, light-weight antennas, make it ideal for the provision of lower-cost backhaul at longer distances. These benefits are not available at 6875-7125 MHz and 12700-13200 MHz. FiberTower therefore urges the Commission to act quickly on the licensed fixed White Spaces proposal.

B. The Commission Should Proactively Educate Stakeholders Regarding OTARD and Engage in More OTARD Compliance Monitoring and Enforcement

The Commission's Over-the-Air Reception Device ("OTARD") rule[32] protects fixed wireless devices, as well as satellite video receivers, from governmental and private restrictions on their placement and use. Despite this fact, local zoning authorities (and private landlords and homeowner associations) regularly ignore the rule and subject deployments involving fixed wireless antennas of one meter or less in diameter to pre-clearance reviews. This even occurs when the fixed wireless equipment is deployed at the same location as satellite dishes that are not so encumbered. Some reviews require the hiring of local zoning attorneys, engaging mechanical drawing engineers to draft multiple, detailed varied-view graphics that outline where exactly the tiny dish will be deployed on a structure, and additional actions. The reviews often take 30, 60

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[30] *Enhanced Data Collection Could Help FCC Better Monitor Competition in the Wireless Industry*, Government Accountability Office Report to Congressional Requesters, 32 (July 2010).

[31] *Bringing Broadband to Rural America: Report on a Rural Broadband Strategy*, Federal Communications Commission, at ¶ 114 (May 22, 2009) (explaining correctly that "backhaul transportation costs in rural areas can be significantly higher than for networks in other areas" and that the lack of suitable facilities "can deter last-mile broadband investments," and noting that existing middle mile facilities "may have insufficient capacity, causing the transmission speed on otherwise adequate last-mile broadband facilities to come to a crawl or stall before the data reach the Internet backbone").

[32] *See* 47 C.F.R. § 1.4000.

or even 90 days or more. *At the most, the dish deployments in these cases (dishes that are one meter or less in diameter) should only involve notifying the zoning authority that the deployment is underway, rather than engaging in this highly expensive and wasteful process and then waiting for approval.*[33]

Any additional time and expense associated with these wasteful and essentially illegal approval processes is a direct impediment to rolling out broadband nationwide. OTARD is supposed to prevent such occurrences, and the Commission must provide local zoning authorities with clear reasons to abandon such behavior. In the meantime, more extensive wireless backhaul deployment is being hobbled, and wireless backhaul providers are often left with no viable alternative but to comply with such reviews, contrary to the goals of the NBP.

The Commission could improve the situation by using its contacts with state and local officials (through NARUC and other fora such as local government advisory bodies), and building landlords and homeowners associations, to educate the public regarding the applicability of the OTARD rule to fixed wireless devices. Proactive engagement by the Commission would likely generate positive results in this area. For example, the Commission could issue clear, simple fact sheets regarding the OTARD rule.

The Commission could also improve the usefulness of the OTARD rule by clarifying in its fact sheets that laws, regulations, restrictions, contractual provisions or other requirements mandating pre-approval for the placement of fixed wireless antennas less than one meter in diameter "impair" the "installation, maintenance, or use" of such antennas under the rule. Again,

[33] Reasonable exemptions may apply, such as if a wireless backhaul provider seeks to deploy a 1-meter or smaller antenna on a building on the historic registry.

clear guidance on the issue would make a significant difference in the usefulness of the OTARD rule and result in much more efficient mobile broadband deployments.

C. Greater Transparency Regarding the Existence of Shared-Access Backhaul Platforms Is Needed

Wireless backhaul could also be more widely used if more information were readily accessible regarding its availability. If a tower or building structure in a rural area already has backhaul service to a single mobile provider, information regarding that fact is often of interest to others with a need for backhaul or transport services in the area, including other commercial mobile or fixed providers, or local, state or federal governments, including public safety. If information regarding backhaul availability were easily searchable by those entities, shared-use access could become much more prevalent, reducing the current backhaul gap in many areas.

Multiple-use, shared-access backhaul networks are consistent with the national policy and the goals of the NBP. The NBP encourages the sharing of federal infrastructure.[34] It also seeks to induce commercial carriers to harden their networks.[35] In both cases, the Commission is looking for federal and commercial infrastructure sharing to deploy the national first responder network, and a critical first step in any such deployment of that proposed +44,000 site network is to deploy the backhaul infrastructure. See Attachment 1 for a sample of a multiple-use, shared-access backhaul platform, known as a MuniFrame.™ The Commission should publish industry guidelines for making multiple-use, shared-access backhaul platforms available to commercial carriers (wireless and wireline), as well as to local, state, federal and tribal governments.

Additionally, the NBP recommended that Congress amend Section 224 of the Communications Act to give the Commission the authority to "compile and update a

[34] *See* NBP at 319.

[35] *See id.* at 318.

comprehensive database of physical infrastructure assets," including backhaul facilities.[36] FiberTower encourages the Commission to make this recommendation a priority on account of its significant potential to spur shared use of wireless backhaul facilities.

D. Greater Use of Smaller, Lighter Antennas and Other Wireless Backhaul Equipment is Needed

1. Fixed Service Licensees Should Be Able to Use Smaller and Lighter Antennas Wherever Feasible

FiberTower supports efforts to allow fixed service licensees to use smaller antennas whenever feasible.[37] Smaller antennas provide many substantial benefits for fixed services licensees and consumers, including manufacturing, installation, and maintenance cost advantages.[38] Larger antennas dramatically increase weight and wind loading. The antenna mounts and the tower or building upon which the antenna is installed are directly impacted. Heavier or larger antennas cannot be deployed if a sufficiently sturdy structure is not available, or is too expensive to build or reinforce. The massive backhaul antennas in the 6-7 GHz band (*i.e.*, often 300-500 pounds and 6-8 feet tall), for example, simply do not work in many areas for this reason. Fixed service licensees can also reduce their deployment costs by using smaller antennas because tower space costs are often based significantly on the size and weight of the antenna being placed on the tower.

By authorizing the use of smaller antennas, therefore, the Commission can promote additional viable wireless backhaul deployment, particularly in high-cost rural areas. In addition, smaller antennas can increase siting opportunities for licensees because such antennas can be installed in more places (*e.g.*, rooftops, electrical transmission towers, water towers, monopole

[36] *See id.* at 112 (Recommendation 6.5).

[37] *See NOI* at ¶¶ 64-67.

[38] *See, e.g., id.* at ¶ 66 (internal citations omitted).

and other radio towers) due to their reduced size and weight.[39] The Commission can also adopt appropriate technical standards to address any valid concerns about interference from smaller antennas. For example, the use of smaller antennas can be limited to certain fixed service bands.

2. Providing Incentives for the Deployment of Smaller and Lighter Equipment Would Facilitate Wireless Backhaul Deployments

As part of its review of antenna standards,[40] the Commission should also consider the development of regulatory incentives for promoting the development of viable wireless backhaul equipment, including for next-generation networks. Backhaul is currently considered the "Achilles heel" of broadband networks. The currently dominant Time Division Multiplex ("TDM") backhaul infrastructure, which has not been upgraded in two decades, has failed to keep pace with other network enhancements. This has inhibited growth, service quality, and operational efficiencies. In addition, the national first responder network is expected to be based on a long term evolution (LTE) platform, and many other 4G networks have numerous code or time division protocols that also require substantially larger "pipelines" of 100 Megabits per second to 1 Gigabit per second or more per tower or building site.

Given the clear benefits of using smaller and lighter microwave equipment for backhaul deployments, the Commission should consider encouraging the development and usage of such equipment through the license renewal process. One possible approach would be to give fixed wireless licensees tangible credit for developing and deploying smaller and lighter microwave equipment in determining whether they have satisfied their "substantial service" license construction obligations. Some recognition and credit should be given to licensees, such as FiberTower, that have spear-headed investment in equipment and business plans aimed at

[39] *See id.*

[40] *See id.* at ¶¶ 64-67.

enhancing the viability of such equipment, especially in the upper band spectrum. The license renewal process would be one appropriate forum for recognizing and crediting these efforts, and such credits would create positive incentives for continued development of viable wireless backhaul equipment.

E. The Commission Should Clarify That the Universal Service Fund Can Be Used To Provide Backhaul to Qualifying Areas

The key first-stage impediment to bringing broadband to underserved or unserved areas is often the lack of affordable backhaul. Wireless backhaul is often the only viable option in many areas, as explained above. Therefore, the Commission should, as a matter of federal policy, utilize the Universal Service Fund to make wireless backhaul available to qualifying areas and for qualifying purposes.

F. The Commission Should Continue Progress in the Other Infrastructure Accessibility Proceedings, Including the Tower Siting Shot Clock and the Pole Attachment Proceedings

Access to poles, ducts, conduits, rights-of-way and timely sited towers are all key to providing wireless backhaul services now and in the future. A sustained focus on these matters is highly recommended. For example, FiberTower recommends that the Commission conduct quarterly reviews addressing whether wireless backhaul operations are negatively impacted (or thriving) as a result of the Commission's pole attachment and wireless equipment siting proceedings.

III. CONCLUSION

For the foregoing reasons, the Commission should adopt the *NPRM* proposals expeditiously. It should also to take additional steps to accelerate wireless backhaul deployment, including authorizing licensed fixed use of a limited portion of the White Spaces, increasing its monitoring and enforcement of existing OTARD protections (and refining its interpretation of

the protections), offering better information regarding shared access backhaul system availability, and facilitating the development and deployment of smaller and lighter antennas and wireless backhaul equipment through incentives and other regulatory actions.

Respectfully submitted,

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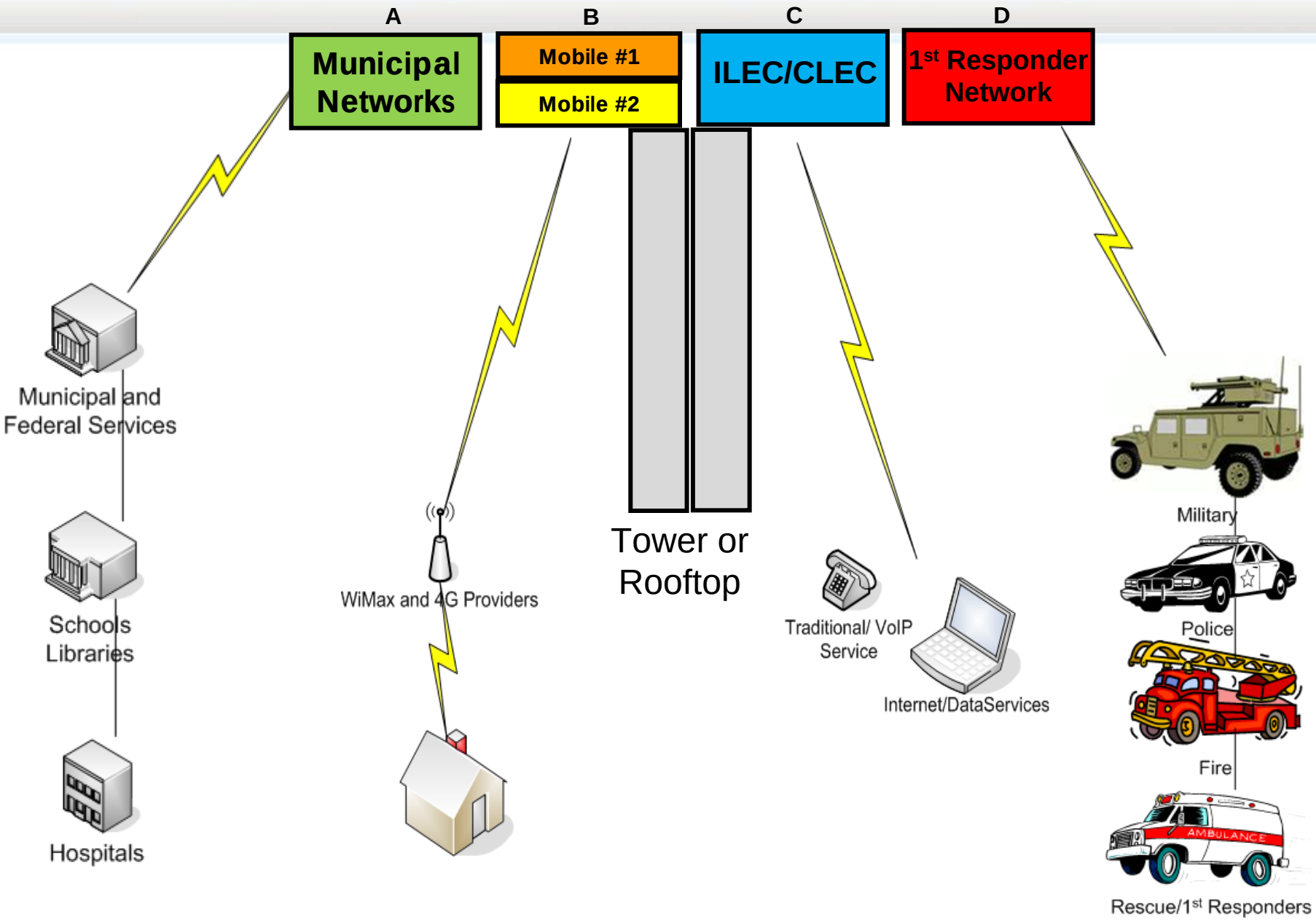
Attachment 1

MuniFrame ™ Multi-use Infrastructure



MuniFrame™ Multi-use Infrastructure – Details